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ARTYKUŁ ORYGINALNY / ORIGINAL ARTICLE

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Nothing in Biology Makes Sense Except in Light of Its "Proper" Epistemic Framework[1]

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Abstract: Dobzhansky argues in a specific way in favour of the theory of evolution, using an argumentative scheme that, in his view, allows one to demonstrate the superiority of naturalistic explanations over anti-naturalistic ones. However, using such a research tool as epistemic frameworks it is relatively easy to show that the same scheme can be employed to demonstrate the superiority of anti-naturalistic explanations over naturalistic ones.

Keywords:

biology;
Dilley;
Dobzhansky;
epistemic frameworks;
incommensurability;
Jodkowski;
making sense;
Weltanschauungen

1. Preliminary Remarks

The discussion presented here was inspired by Stephen Dilley's paper "Nothing in Biology Makes Sense Except in Light of Theology?". [2] With the title of his article, Dilley deliberately refers to Theodosius Dobzhansky's famous paper "Nothing in Biology Makes Sense Except in the Light of Evolution", [3] while Dobzhansky had

[1] I dedicate this study to Professor František Mihina on the occasion of his 80th birthday. Profesorovi Mihinovi ďakujem za podnetné rozhovory.

[2] Stephen Dilley, "Nothing in Biology Makes Sense Except in Light of Theology?", *Studies in History and Philosophy of Biological and Biomedical Sciences* 2013, Vol. 44, No. 4, pp. 774–786, http://dx.doi.org/10.1016/j.shpsc.2013.06.006.

already made this statement in his 1964 paper, "Biology, Molecular and Organismic". [4]

I will first present Dobzhansky's scheme of argumentation in the form in which it will be employed in subsequent sections here. My discussion of this scheme will also provide an opportunity to point out the elementary error which Dobzhansky makes in analysing the creationist account of the origin of life. Next, I will refer to Dilley's approach, as he points out an important problem concerning the influence of the acceptance of a *Weltanschauung* on the content of scientific claims. This, in turn, is directly related to the idea of epistemic frameworks, which I will present afterwards. Finally, I will show how acceptance of a particular epistemic framework makes sense of the practice of biology as a science.

2. Dobzhansky's Scheme of Argumentation

Basically, the argumentation scheme Dobzhansky uses to argue for the theory of evolution looks like this:

1. If the theory of evolution is pertinent, then the natural phenomenon *X* is expected to occur.

2. If creationism is pertinent, then the occurrence of natural phenomenon X is unexpected.

3. If, accepting one hypothesis, one expects the occurrence of a phenomenon that is unexpected in light of the other hypothesis, then the phenomenon makes sense in light of the first hypothesis, but not in light of the second.

4. Therefore, the theory of evolution, not creationism, makes sense of the occurrence of natural phenomenon *X*. [5]

Incidentally, "[e]ach time Dobzhansky uses this argument-form, premise [sic] two hinges upon one or another claim about what the God of miracles would do

[3] Theodosius Dobzhansky, "Nothing in Biology Makes Sense Except in the Light of Evolution", *American Biology Teacher* 1973, Vol. 35, No. 3, pp. 125–129, https://doi.org/10.2307/4444260.

[4] See Theodosius Dobzhansky, "Biology, Molecular and Organismic", *American Zoologist* 1964, Vol. 4, No. 4, p. 449 [443–452], https://doi.org/10.1093/icb/4.4.443.

[5] See Dobzhansky, "Nothing in Biology…", e.g., p. 125; Dilley, "Nothing in Biology…", p. 775.

(or would not do)". [6] Dobzhansky is not the only one who seems to know perfectly well how God would act. [7] Here is one of many examples of such anthropomorphising: "what science cannot explain, that is, the gaps in our understanding of the world, is supposed to be a vestige of Intelligent Design. Not too intelligent, however, since gaps remain". [8]

Dobzhansky's arguments in favour of the theory of evolution concern radiometric evidence, the diversity of living beings, the unity of life, comparative anatomy and embryology, and adaptive radiation (discussed using Hawaii's fruit flies as an example). [9] I will focus on the last argument, because it is in this one that Dobzhansky's serious error is best seen. He notes that

> [t]here are about 2,000 *species* of drosophilid flies in the world as a whole. About a quarter of them occur in Hawaii, although the total area of the archipelago is only about that of the state of New Jersey. All but 17 of the species in Hawaii are endemic (found nowhere else). [10]

Dobzhansky's reconstructed argument can be presented as follows:

1. Either adaptive radiation or creationism makes sense of such an abundance of endemic fruit fly *species* in Hawaii compared to other Pacific islands.

2. Adaptive radiation makes sense of this data.

3. The God of creationists senselessly created an inordinate number of endemic species of these flies in Hawaii without creating as many species of these flies on other Pacific islands.

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[6] Dilley, "Nothing in Biology…", p. 775.

[7] For example: "what a senseless operation it would have been, on God's part, to fabricate a multitude of species *ex nihilo* and then let most of them die out!" (Dobzhansky, "Nothing in Biology…", pp. 126–127).

[8] Michał Heller, "Nie za bardzo inteligentny Inteligentny Projekt", *WielkiePytania.pl*, https://tiny.pl/wwdjg [30.12.2024]. However, it has also been observed that "if one were to treat God anthropomorphically — that is, as having natural human characteristics — then, in looking critically […] one would have to judge God as incompetent […]" (Robert T. Pennock, "God of the Gaps: The Argument from Ignorance and the Limits of Methodological Naturalism", in: Andrew J. Petto and Laurie R. Godfrey (eds.), **Scientists Confront Creationism: Intelligent Design and Beyond**, W. W. Norton & Company, New York — London 2007, p. 317 [309–338]).

[9] These arguments are discussed in detail by Dilley, "Nothing in Biology…", pp. 776–782.

[10] Dobzhansky, "Nothing in Biology…", p. 128 [italics added].

4. The claim that the Creator unintentionally created too many endemic species of these flies in Hawaii, but not in other Pacific islands, makes no sense.

5. Therefore, adaptive radiation, in contrast to creationism, makes sense of the occurrence of endemic species of these flies in Hawaii compared to other Pacific islands. [11]

Dobzhansky, speaking of creationism, does not specify which version of this approach he has in mind. The context in which he uses that term allows us, though, to assume that he is referring to some version of young earth creationism: [12]

> Anti-evolutionists fail to understand how natural selection operates. They fancy that all existing species were generated by supernatural *fiat* a few thousand years ago, pretty much as we find them today. [...] Creation is not an event that happened in 4004 B.C.; it is a process that began some 10 billion years ago and is still under way. [13]

Some young-earth creationists, however, may be scientific creationists at the same time: that is, they may assert that life, man and the universe are the result of special creative acts, and this fact can be justified in a manner characteristic of the natural sciences. [14] Some scientific creationists also maintain that God created

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[11] See Dobzhansky, "Nothing in Biology...", pp. 128–129; Dilley, "Nothing in Biology...", p. 781.

[12] There are many classifications of creationist positions. See Millard J. Erickson, **Christian Theology**, Baker Books, Grand Rapids 1985, pp. 478–484; Eugenie C. Scott, **Evolution vs. Creationism. An Introduction**, University of California Press, Berkeley — Los Angeles — London 2004, pp. 67–68; Otis Dudley Duncan, "The Creationists: How Many, Who, and Where?", *Reports of the National Center for Science Education* September-October 2004, Vol. 24, No. 5, https://tiny.pl/wwdj9 [30.12.2024]; Donald U. Wise, "Creationism's Propaganda Assault on Deep Time and Evolution", *Journal of Geoscience Education* 2001, Vol. 49, No. 1, pp. 30–35, https://doi.org/10.5408/1089-9995-49.1.30. However, those classifications have a lot of shortcomings. A proposal for a classification that avoids the errors of the above-mentioned approaches can be found in the paper by Kazimierz Jodkowski, "Klasyfikacja stanowisk kreacjonistycznych", *Filozoficzne Aspekty Genezy* 2005/2006, Vol. 2/3, pp. 261–268 [241–269].

[13] Dobzhansky, "Nothing in Biology...", p. 128.

[14] This belief makes it possible to distinguish scientific creationism from biblical creationism. According to the latter, the universe, life and man are the result of special creative acts, while this fact can be justified in a manner characteristic of Biblical studies. See Jodkowski, "Klasyfikacja stanowisk...", pp. 262–263.

An example of such a scientific explanation can be found in the research of the creationist, geophysicist, and expert in designing computer models of geophysical convection John R. Baumgardner (from Los Alamos National Laboratory). He has claimed that geological plates covering the earth

baramins, not species. Thus, according to this view, all fruit flies belong to one baramin.

In all his arguments, Dobzhansky writes about the creation of species – something which made it easier for him to criticize creationism. There are, however, 72 pages of correspondence between Dobzhansky and Frank Lewis Marsh, who introduced the term "baramin". [15] This was conducted between 1944 and 1945 [16] — that is, after Marsh's **Fundamental Biology** had already been published. In the letter dated 21.02.1945, Marsh explained to Dobzhansky what baramins are. The problem of the status of baraminology is of little importance here. A critical approach to this issue is one thing, [17] but another is that replacing the name "species" with "baramin" makes a good portion of his arguments lose their force. This is what Dobzhansky failed to see. [18]

3. Epistemic Frameworks

In one of his remarks, Dilley addressed the very important, long recognized, and universal problem of the relationship between the content of scientific claims

may once have moved thousands of times faster than they do today. If that was the case, then major geological changes could have occurred over a relatively small period of time, which would justify some of the young-earth creationist views. See John R. Baumgardner, "Catastrophic Plate Tectonics: The Physics Behind the Genesis Flood", *The Proceedings of the International Conference on Creationism* 2003, Vol. 5, Article 13, pp. 113–126, https://tiny.pl/wwdl8 [30.12.2024].

[15] See Frank Lewis Marsh, "Fundamental Biology" (originally published as a book in 1941), in: Ronald N. Numbers (ed.), **Creationism in Twentieth-Century America. A Ten Volume Anthology of Documents, 1903-1961**, Vol. 8, Garland Publishing, New York 1995, p. 502 [395–530].

[16] See Theodosius Dobzhansky and Frank L. Marsh, "Correspondence: November 15, 1944 to February 21, 1945", Center for Adventist Research, Andrew University, https://tiny.pl/wwd4j [30.12.2024].

[17] Marsh did not give the term "baramin" a clear meaning, and this caused a wave of criticism from evolutionists. The case was described by Wood, Wise, Sanders, and Doran. See Todd Charles Wood, Kurt P. Wise, Roger Sanders, and N. Doran, "A Refined Baramin Concept", *Occasional Papers of the Baraminology Study Group* 2003, No. 3, pp. 1–12 [1–14], https://tiny.pl/wwd4s [30.12.2024].

[18] See Dilley, "Nothing in Biology…", p. 777, n. 13. The failure to recognize this can have two sources. One is the relationship of incommensurability that arises between creationist and Darwinian-evolutionist views regarding the problem of the origin of life. The other is the profound worldview differences underlying these two different approaches. I will return to these issues in the next paragraph.

and "non-scientific" beliefs: [19]

> We may begin with the title of the article, "nothing in biology makes sense except in the light of evolution". The statement appeals to understanding and intelligibility: *nothing "makes sense" aside from a particular perspective*. [20]

This problem, called the "thesis of the irreducible presence of philosophy in science", [21] is combined with the thesis of presuppositionalism. According to the latter, science cannot exist without philosophical presuppositions. The latter claim has three components. [22]

Of these, the most important from the perspective of the considerations being pursued here is the first. According to this, before anyone begins to practise science, he or she must *a priori* determine what this practising of science consists in. These assumptions, instilled in a trainee during their scientific education, tell us what practising science is all about. Dobzhansky had also done this, citing with approval the following statement by Teilhard de Chardin:

> Evolution is a light which illuminates all facts, a trajectory which all lines of thought

[19] Even though this issue has been known about for a long time ("Natural scientists believe that they free themselves from philosophy by ignoring it or abusing it. They cannot, however, make any headway without thought […]. Hence, they are no less in bondage to philosophy […]", Frederick Engels, **Dialectics of Nature**, trans. and ed. by Clemens Dutt, International Publishers, New York 1940, pp. 183–184, https://tiny.pl/wwdk3 [30.12.2024]), it is still quite common for researchers to direct their attention away from it. ("Despite the tight historical links between science and philosophy, present-day scientists often perceive philosophy as completely different from, and even antagonistic to, science." Lucie Laplane, Paolo Mantovani, Ralph Adolphs, Hasok Chang, Alberto Mantovani, Margaret McFall-Ngai, Carlo Rovelli, Elliott Sober, and Thomas Pradeu, "Why Science Needs Philosophy", *PNAS* 2019, Vol. 11, No. 10, p. 3948 [3948–3952], https://doi.org/10.1073/pnas.1900357116.)

[20] Dilley, "Nothing in biology…", p. 775 [italics added].

[21] See Krzysztof J. Kilian, "Geneza idei epistemicznych układów odniesienia i ich odmiany", *Filozoficzne Aspekty Genezy* 2017, Vol. 14, p. 140 [137–190], https://doi.org/10.53763/fag.2017.14.143.

[22] See Kazimierz Jodkowski, "Racjonalność Kopernika i Darwina. Polemika z drem Eugeniuszem Moczydłowskim", *Na Początku...* 2003, No. 11–12A (174–175), p. 435 [433–448]; Kazimierz Jodkowski, "Nienaukowy fundament nauki", in: Zbigniew Pietrzak (ed.), **Granice nauki**, *Lectiones & Acroases Philosophicae* 2013, Vol. VI, No. 1, p. 105 [59–108], https://tiny.pl/n-36qskz [30.12.2024]; Kazimierz Jodkowski, "Metafizyczne opowieści nauki jako fundament pluralizmu naukowego", in: Philip E. Johnson, **Wielka metafizyczna opowieść nauki (z posłowiem Kazimierza Jodkowskiego)**, *Archiwum Na Początku...*, Vol. 13, Polskie Towarzystwo Kreacjonistyczne, Warszawa 2003, pp. 80–81 [74–85], https://tiny.pl/65kmmdyt [30.12.2024].

must follow […]. [23]

According to the second component, within any given science there is the possibility of revising its basic assumptions. This thesis, also accepted by Dobzhansky, [24] has gone unchallenged since the times of Charles Sanders Peirce. According to the third component, which Dobzhansky also accepted, [25] there are indelible, but changeable, metaphysical components of scientific theories within scientific activity. These components can be changed quite freely. However, they cannot be completely eliminated.

Despite the fact that there are still voices today saying that science should be free from all worldview influences, [26] the belief that there exists science that is free from such influences is wrong. The fact that even before research begins, decisions are made about what will be studied and how, has been repeatedly emphasized. In turn, such decisions, as has also been repeatedly pointed out, do not depend solely on facts and logic. [27] They are shaped by different traditions of practising science, which exert a powerful influence on scientists' biases and beliefs. Motives of a metaphysical, religious and even aesthetic and volitional nature also play an important role, allowing the scientist to persist with his or her chosen path of research. [28]

Moreover, the thesis of the complete theorization of observations (according to which observations are not merely theory-laden but fully theoretical, so that

[23] Pierre Teilhard de Chardin, **The Phenomenon of Man** [**Le Phénomène Humain**, 1955], Harper Perennial Modern Thought, New York 2008, p. 219. See also Dobzhansky, "Nothing in Biology…", p. 129.

[24] See Dobzhansky, "Biology, Molecular and Organismic…", pp. 445–446.

[25] See Dobzhansky, "Biology, Molecular and Organismic…", pp. 445–446.

[26] See Keith B. Miller, "Countering Public Misconceptions about the Nature of Evolutionary Science", *Georgia Journal of Science* 2005, Vol. 63, No. 3, p. 178 [175–189], https://tiny.pl/tqw12 [30.12.2024].

[27] See Paul K. Feyerabend, "Problems of Empiricism", in: Robert G. Colodny (ed.), **Beyond the Edge of Certainty. Essays in Contemporary Science and Philosophy**, Prentice-Hall, Englewood Cliffs — New Jersey 1965, p. 227 [145–260]; Thomas S. Kuhn, **The Structure of Scientific Revolutions**, The University of Chicago Press, Chicago 1970, p. 4.

[28] See Paul K. Feyerabend, "Explanation, Reduction and Empiricism", in: Herbert Feigl and Grover Maxwell (eds.), **Scientific Explanation, Space and Time**, *Minnesota Studies in the Philosophy of Science*, Vol. III, University of Minnesota Press, Minneapolis, 1962, pp. 48–49 [28–97].

observation statements have no "observational core") [29] is in principle widely accepted today. [30] Thus, if there are no bare or brute facts, and all facts are always interpreted in some theoretical framework, then, *mutatis mutandis*, there is no "bare or brute science" either, the latter always being practised in some pre-accepted context.

Such contexts have been called "epistemic frameworks" (EFs), [31] where this term denotes "a set of the most general assumptions about how science can and cannot be done". [32] They express the greatest possible difference in scientific views. [33] In other words, EFs are small, two- or three-element sets of the most general, historically variable assumptions, adopted on the basis of decisions made by scientists, and which determine the necessary conditions for doing science. [34] By

[29] Paul K. Feyerabend, "Introduction to the Volumes 1 and 2", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 1. Realism, Rationalism & Scientific Method**, Cambridge University Press, Cambridge — New York — Port Chester — Melbourne — Sydney 1981, p. x [ix-xiv].

[30] See Themistoklis Pantazakos, "Problems of Empirical Solutions to the Theory-ladenness of Observation", Synthese 2021, Vol. 199, pp. 12987-13005 [2985–13007], https://doi.org/10.1007/s11229-021-03363-6 [30.12.2024].

[31] The term "epistemic framework", and the core ideas pertaining to this, were presented by Kazimierz Jodkowski in 2004 (see Kazimierz Jodkowski, "Epistemiczne układy odniesienia i «warunek Jodkowskiego»", in: Anna Latawiec and Grzegorz Bugajak (eds.), **Filozoficzne i naukowo-przyrodnicze elementy obrazu świata 7**, Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego, Warszawa 2008, p. 115 [108–123]). Those ideas were taken up in various texts by members of Zielona Góra's "Science and Religion" Local Group. See also Krzysztof J. Kilian, **Współczesne epistemiczne układy odniesienia w nauce**, *Biblioteka Filozoficznych Aspektów Genezy*, Vol. 9, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2021.

[32] See Jodkowski, "Nienaukowy fundament...", p. 96.

[33] See Kazimierz Jodkowski, "Kreacjoniści przed sądem. Aspekty filozoficzne «małpich procesów»", in: Jakub Michalczenia, Jadwiga Mizińska, and Katarzyna Ossowska (eds.), **Poszukiwania filozoficzne. Tom I: Nauka, Prawda. Panu Profesorowi Józefowi Dębowskiemu w darze**, Instytut Filozofii Uniwersytetu Warmińsko-Mazurskiego w Olsztynie, Olsztyn 2014, p. 177 [175–198]; Krzysztof J. Kilian, "Czym są epistemiczne układy odniesienia?", *Filozoficzne Aspekty Genezy* 2017, Vol. 14, pp. 192–213 [191–235], https://doi.org/10.53763/fag.2017.14.144.

[34] The approach presented here moves the discussion of the rationality of science from the traditional level – promoted by various schools of philosophy of science via analyses of rather extensive sets of methodological rules (Feyerabend, for example, when he considered himself a critical rationalist, defended about ten rules for the effective practice of science) – to the (meta)level of the two, or at most three, most basic methodological decisions. These latter decisions determine the sets of acceptable scientific explanations. Were it not for the fact that the label "simplicism" is mainly associated with the conventionalism of Poincaré and Duhem, it would be ideal for the approach presented here.

means of two or three conditions, one tentatively decides what is science and what is not; and, consequently, what is rational and what is not. EFs only set necessary conditions for doing science, without setting sufficient conditions. And, as such, contemporary EFs do not set a criterion of demarcation. [35] A key determinant of scientificity today is the nature of acceptable explanations in science. It is well known that the axis of the dispute over the nature of acceptable explanations in science are the life sciences. At the core of the dispute between gradualist evolutionism and scientific creationism and the theory of intelligent design there is the conflict between distinct EFs: naturalistic, supernaturalistic and artificialistic, that is, the conflict between radically different conceptions of how to do science.

Before discussing the idea of EFs in more detail, it is worth discussing/explaining briefly what EFs are. According to this approach, nowadays, three epistemic frameworks based on methodological naturalism compete with the epistemic frameworks of supernaturalism and artificialism.

The epistemic framework of antisupernaturalistic naturalism adheres to the precept of accepting only naturalistic explanations for facts and processes. That precept is correlated with a proscription on accepting antinaturalistic explanations, construed in turn as a proscription on referring to supernatural causes.

The epistemic framework of supernaturalism follows the precept of accepting not only naturalistic explanations for facts and processes, but also supernaturalistic ones — such as interventions by a divine being, namely God.

The epistemic framework of anti-artificialistic naturalism obeys the precept of accepting only naturalistic explanations for facts and processes. That precept is correlated with a proscription on accepting antinaturalistic explanations, construed in turn as a proscription on referring to artificial (intelligent) causes.

The epistemic framework of artificialism embraces the precept of accepting, in

[35] See Piotr Bylica, Krzysztof J. Kilian, and Dariusz Sagan, "Wstęp", in: Piotr Bylica, Krzysztof J. Kilian, Robert Piotrowski, and Dariusz Sagan (eds.), **Filozofia — nauka — religia. Księga jubileuszowa dedykowana Profesorowi Kazimierzowi Jodkowskiemu z okazji 40-lecia pracy naukowej**, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2015, p. 18 [11–33]; Dariusz Sagan, "Kazimierz Jodkowski o teorii inteligentnego projektu", in: Piotr Bylica, Krzysztof J. Kilian, Robert Piotrowski, and Dariusz Sagan (eds.), **Filozofia — nauka — religia. Księga jubileuszowa dedykowana Profesorowi Kazimierzowi Jodkowskiemu z okazji 40-lecia pracy naukowej**, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2015, p. 217 [213–227].

the context of scientific research, not only natural causes, but artificial (intelligent) ones as well.

There is another variation of naturalism, the so called epistemic framework, namely theistic naturalism, aimed at both supernaturalism and artificialism.

It is worth mentioning at this point that the very idea of EFs is already a familiar one. For example, a necessary condition for the naturalistic practice of science is the presence of

> a basic epistemological and metaphysical framework, which either excludes the existence of God or, at best, places him entirely outside the boundaries of the natural universe. [36]

The assumptions (methodological decisions) on which EFs are based cannot be scientifically justified without falling into a vicious circle, [37] as all research that

[36] Thomas Nagel, "Public Education and Intelligent Design", *Philosophy & Public Affairs* 2008, Vol. 36, No. 2, p. 205 [187–205], https://doi.org/10.1111/j.1088-4963.2008.00132.x. See also: Jonathan Bartlett, "Philosophical Shortcomings of Methodological Naturalism and the Path Forward", in: Jonathan Bartlett and Eric Holloway (eds.), **Naturalism and Its Alternatives in Scientific Methodologies: Proceedings of the 2016 Conference on Alternatives to Methodological Naturalism**, Blyth Institute Press, Broken Arrow 2017, pp. 32–33 [13–37], https://tiny.pl/tr32k [30.12.2024]; Eric Holloway, "Problems With Non-Naturalistic Theories of Science", in: Jonathan Bartlett and Eric Holloway (eds.), **Naturalism and Its Alternatives in Scientific Methodologies: Proceedings of the 2016 Conference on Alternatives to Methodological Naturalism**, Blyth Institute Press, Broken Arrow 2017, p. 163 [163–176]; Stephen C. Meyer, "Scientific Tenets of Faith", *Journal of the American Scientific Affiliation* 1986, Vol. 38, No. 1, pp. 41–42 [40–42], https://tiny.pl/wwfqv [30.12.2024]; J.P. Moreland, **Scientism and Secularism: Learning to Respond to a Dangerous Ideology**, Crossway, Wheaton 2018, p. 32; Andrzej Zybertowicz (with: Maciej Gurtowski, Katarzyna Tamborska, Mateusz Trawiński, and Jan Waszewski), **Samobójstwo Oświecenia? Jak neuronauka i nowe technologie pustoszą ludzki świat**, Wydawnictwo Kasper, Kraków 2015, p. 21.

[37] It has been noted that justifications of EFs can be attempted at a meta-scientific level. If, among alternative scientific hypotheses, one is chosen that proposes the best explanation of the phenomena in a given field, then, following the same principle, among alternative EFs, one should be chosen that guides research work in the field better than others. Here is one example of such an attempt: "Naturalism was a major premise of Darwin's thinking and the success of his theory gave strong sanction to the validity of naturalism, showing that the supernatural account of the world's seeming design was a superfluity" (David R. Oldroyd, **Darwinian Impacts: An Introduction to the Darwinian Revolution**, Humanities Press, Atlantic Highlands 1980, p. 254). However, the acceptance of this meta-scientific justification depends on the rejection of the incommensurability thesis and Kuhn's loss thesis. And, therefore, such an attempt at justification has significant limitations. I will return to these issues in the ensuing paragraphs below.

counts as scientific already presumes them.[38] They tell us what, according to a given group of scientists, is forbidden in the practice of science, and what not, indicating how science can and cannot be done. They thus determine the range of acceptable solutions of problems. They also indirectly inform scientists about what exists, and in so doing determine, in addition, the most general metaphysical perspective involved in the practice of science.[39] The latter two questions call for a broader commentary, stating what specific assumptions are being discussed in this regard, and indicating what kind of metaphysical theses these assumptions are based on.

One Reviewer noted at this point that "Not so. They [the assumptions on which EFs are based] can prove their worth over time. Acceptance of the laws of nature is an example." The Reviewer is, to some extent, right, when he writes that they can prove their worth *in time*. However, they must *first* be accepted and only then evaluated. Let us use an even more general example than the one provided by the Reviewer. "The Myth of Rationality [...] reflects a conviction that our rational methods of investigating the world are not merely a *savoir vivre* of some eccentric people but reflect something that transcends us. The Myth of Rationality, like all myths, cannot be rationally established, because every argumentation presupposes the myth" (George V. Coyne and Michael Heller, **A Comprehensible Universe. The Interplay of Science and Theology**, Springer–Verlag, New York 2008, p. 8). The very thesis that one's own beliefs should be rationally justified cannot be rationally justified (see Karl R. Popper, **The Open Society and Its Enemies. Vol. 2: The High Tide of Prophecy: Hegel, Marx and Aftermath**, Princeton University Press, Princeton 1963, p. 231). It can be justified *ex post* by stipulating the benefits that such a way of thinking offers. And, it seems, this is what the Reviewer had in mind when he referred me to the books by Jeffrey Koperski and Del Ratzsch. For example, the former suggests that without accepting the thesis of the uniformity of nature "few sound inferences could be made in astrophysics or geology" (Jeffrey Koperski, **The Physics of Theism: God, Physics, and the Philosophy of Science**, Wiley-Blackwell, Chichester 2015, p. 27). However, the latter maintains a thesis similar to the one I defend. "Not only is this «sense» faculty thus not infallible, but there is apparently no noncircular procedure for justifying reliance upon it. Any such case, to have any chance of being convincing, would have to employ resources and procedures the justification for employment of which would ultimately track back at least in part to the faculty itself. And there is, obviously, no hope whatever for an empirically based case of the required, noncircular sort" (Del Ratzsch, **Nature, Design and Science. The Status of Design in Natural Science**, State University of New York Press, Albany 2001, p. 87, see also Coyne and Heller, **A Comprehensible Universe...**, p. 8).

[38] See Jodkowski, "Epistemiczne układy odniesienia...", p. 115. See also Robert A. Larmer, "Is Methodological Naturalism Question-Begging?", *Philosophia Christi* 2003, Vol. 5, No. 1, pp. 117–118, 130 [113–130], https://doi.org/10.5840/pc2003518. Larmer has formulated his argument only for methodological naturalism.

[39] See Kazimierz Jodkowski, "Dlaczego kreacjonizm jest pseudonauką?", in: Józef Zon (ed.), **Pogranicza nauki. Protonauka — paranauka — pseudonauka**, Wydawnictwo KUL, Lublin 2009, p. 322 [317–323]. See also Ernan McMullin, "Varieties of Methodological Naturalism", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature: Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 82 [82–92].

The only EF that is widely known and well described in modern philosophy of science is methodological naturalism.[40] This consists of three decisions, all of which stem from Charles Darwin. The first prescribes that we accept only naturalistic explanations for facts, processes and phenomena.[41] This decision was supplemented by Darwin with two others, with the aim of excluding anti-naturalistic explanations: these are the prohibitions on accepting explanations that invoke supernatural[42] and final causes, respectively.[43] In short, methodological naturalism[44] is a prescription to the effect that scientific inquiry be confined to the nat-

[40] It is not difficult to see that the criteria of scientificality laid down by methodological naturalism have determined the character of contemporary science. Even so, prior to our contemporary understanding of scientificality, there were other construals of it, and therefore there must have been other EFs. This issue is not directly related to the problem addressed in this article, and so will not be discussed here. I have discussed it elsewhere. See Krzysztof J. Kilian, "Epistemiczne układy odniesienia – nowe spojrzenie na racjonalność naukową", *Sofia. Pismo Filozofów Krajów Słowiańskich* 2018, Vol. 18, pp. 45–51 [37–58], https://doi.org/10.15584/sofia.2018.18.3.

One can, of course, treat EFs more broadly, and consider any such assumption or set of assumptions that control research practice in any significant way as EFs (see Radosław Kazibut, "*Potentia absoluta* i epistemiczny układ odniesienia Roberta Boyle'a", *Filo–Sofija* 2015/3, Vol. 15, No. 30, p. 112 [111–122], https://tiny.pl/d4hnl [30.12.2024]). For example, considering what Koperski calls "metatheoretic shaping principles" as EFs, methodological naturalism would be just one of many EFs (see Koperski, **The Physics of Theism...**, pp. 26–29). However, the idea presented in this article is about yet a different matter, namely finding the most elementary assumptions that pre-determine what is contemporary science and what is not.

[41] See Charles Darwin, **The Origin of Species**, P. Collier & Son, New York 1909, p. 400, https://tiny.pl/wwfg9 [30.12.2024].

[42] In its original form, methodological naturalism involved a set of three decisions: the first required that scientific research be limited to the natural world, the second that only naturalistic explanations for facts and processes be accepted, and the third that no explanations invoking supernatural causes be admitted. See Darwin, **The Origin...**, p. 400.

[43] Darwin's later statement clearly suggests a prohibition on allowing teleological explanations: "There seems to be no more design in the variability of organic beings, and in the action of natural selection, than in the course which the wind blows." (Charles Darwin, **Autobiography of Charles Darwin with Two Appendices by His Son Francis Darwin**, Rupa & Co., New Delhi 2003, p. 136, https://tiny.pl/wwfgl [30.12.2024]. See also Grzegorz Malec, "Teologiczne dylematy Karola Darwina", *Roczniki Filozoficzne* 2012, Vol. 60, No 1, pp. 69–70 [67–85], http://tiny.pl/g4751 [30.12.2024]).

[44] It is generally claimed that the term "methodological naturalism" was first used by the American philosopher Paul de Vries in 1983 (see Paul De Vries, "Naturalism in the Natural Sciences: A Christian Perspective", *Christian Scholar's Review*, Summer 1986, Vol. 15, No. 4, pp. 388–396). However, it was used earlier by another American philosopher and Christian theologian in the Methodist tradition, Edgar Sheffield Brightman. See Edgar Sheffield Brightman, "An Empirical Ap-

ural world, and thus that only naturalistic explanations for facts and processes be accepted, along with a simultaneous prohibition on accepting explanations invoking anything other than natural causes. Thus, the latter prohibition applies to two different types of explanations: on the one hand, those invoking supernatural causes (anti-naturalism$_1$), and on the other, those invoking intelligent causes (anti-naturalism$_2$), [45] for not every intelligent cause is a supernatural cause. [46] The fact that these are sometimes equated [47] does not mean that they are the same. *De facto*, therefore, we are dealing here with two varieties of this naturalism, and two variants of the naturalistic EF. The first is anti-supernaturalistic naturalism, while the second is anti-artificialistic naturalism. [48] The former prohibits invoking supernatural causes, while the latter prohibits appealing to artificial (intelligent) causes.

In practice, however, these two prohibitions are generally brought to bear simultaneously. For example:

> It was Darwin's greatest accomplishment to show that the directive organization of living beings can be explained as the result of a natural process, natural selection, without any need to resort to a Creator or other external agent. [49]

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proach to God", *The Philosophical Review* 1937, Vol. 44, No. 2, pp. 157–158 [147–169], https://tiny.pl/wwfgs [30.12.2024].

[45] See on this Kazimierz Jodkowski, "Antynaturalizm teorii inteligentnego projektu", *Roczniki Filozoficzne* 2006, Vol. 54, No. 2, pp. 68–73 [63–76].

[46] See Ratzsch, **Nature, Design and Science...**, pp. 17–19.

[47] See Phillip Kitcher, "Born-again Creationism", in: Robert T. Pennock (ed.), **Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives**, MIT Press, Cambridge 2001, pp. 257–288; Barbara Carroll Forrest, "Inside Creationism's Trojan Horse: A Closer Look at Intelligent Design", *Georgia Journal of Science* 2005, Vol. 63, No. 3, pp. 153–166; Julian Chela-Flores and Joseph Seckbach, "Divine Action and Evolution by Natural Selection. A Possible and Necessary Dialogue", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, pp. 1035–1048.

[48] The term "artificialism" was introduced into the study of EFs by Kazimierz Jodkowski. It expresses the conviction that neither the origin of life itself, nor the subsequent evolution of its various forms, can be explained by means of impersonal and unintelligent causes (see Jodkowski, "Antynaturalizm teorii...", p. 73. See also Kilian, "Geneza idei epistemicznych....", p. 139). However, it was first used by Brunschvicg in a more general sense, denoting the belief that all things result from a transcendent act of creation (see Leon Brunschvicg, **L'Expérience Humaine Et La Causalité Physique**, Felix Alcan, Paris 1922, pp. 155, 159, https://tiny.pl/wwftj [30.12.2024]).

Even so, the widespread acceptance of such a broad criterion, which has laid stress on extending the requirements of methodological naturalism to include a decision prohibiting the admission of artificialist explanations, has led to serious theoretical problems, in that a set of restrictions has been proposed that are incompatible with what is standardly done in science. These lead to disciplines whose scientific character is not in question being considered unscientific. There are fields (such as archaeology) that allow for artificial explanations (in that archaeologists repeatedly conclude that the objects they discover are the creations of intelligent beings), yet no one denies their claim to scientificality.

Returning to our main problem, it should be said that methodological naturalism, as a set of three methodological decisions, is grounded in a particular metaphysics. These stipulative commitments derive their *raisons d'être* from very general metaphysical theses that delimit the scope of what exists, which are called "hard cores". [50] The hard core of anti-supernaturalism can be presented in the

[49] Francisco J. Ayala, "Darwin's Revolution", in: John H. Campbell and J.W. Schoff (eds.), **Creative Evolution!?**, Jones and Bartlett, New York 1994, p. 5 [1–18].

One Reviewer noted at this point that "there is no prohibition here against making such arguments or that they would be unscientific. Darwin did not invoke methodological naturalism but rather Ockham's Razor."

However, as I note in the footnotes 40 and 41, some of Darwin's statements suggest that neither supernaturalistic nor artificialistic explanations should be invoked. Moreover, the main idea of methodological naturalism – expressed in the belief that the phenomena of this world should be explained only by *verae causae*, causes refering to natural phenomena only – is commonly attributed to Darwin (see Stephen Dilley, "The Evolution of Methodological Naturalism in the **Origin of Species**", *HOPOS: The Journal of the International Society for the History of Philosophy of Science* 2013, Vol. 3, No. 1, p. 20 [20–58], https://doi.org/10.1086/667897; statement by Kazimierz Jodkowski, in: Bartosz Borczyk, Adam Chmielewski, Andrzej Elżanowski, Kazimierz Jodkowski, Damian Leszczyński, Jerzy Lukierski, Łukasz Nysler, and Bogusław Pawłowski, "Dyskusja", in: Damian Leszczyński (ed.), Ewolucja. Filozofia. Religia, *Lectiones & Acroases Philosophicae* 2010, Vol. III, p. 157 [155–172]). It is also claimed that his greatest discovery is the definition, by means of the postulate of methodological naturalism, of the contemporary understanding of scientificity (see Jodkowski, "Antynaturalizm teorii...", p. 63; Bruce L. Gordon, "The Rise of Naturalism and Its Problematic Role in Science and Culture", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 25 [3–44]). It is also argued that methodological naturalism *is a* form of Ockham's razor — it implements the principle of parsimony. I discuss it in more detail in section 4.1 (Arguments in favour of methodological naturalism), point 6 (Naturalism is a form of Ockham's razor...).

[50] See Kazimierz Jodkowski, "Darwinowska teoria ewolucji jako teoria filozoficzna", in: Stefan Konstańczak and Tomasz Turowski (eds.), **Filozofia jako mądrość bycia**, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2009, p. 19 [17–23]. Such a basing of methodological de-

form of the following thesis: either God does not exist, or, if he does exist, he does not act in nature in a direct way. [51] Meanwhile, the hard core of anti-artificialist naturalism states that the course of events in the universe is not influenced by any intelligent factor. [52]

A counterproposal to anti-supernaturalist naturalism will be furnished by the supernaturalist EF associated with the supernaturalist interventionism of creationism. According to this approach, supernatural explanations – the intervention of a supernatural being, i.e. God – should be allowed to figure in the explanation of natural phenomena, in addition to natural causes: "explanations in terms of the direct and immediate activity of a divine agent may constitute a proper part of natural science". [53]

Incidentally, it is worth mentioning at this point that neither within supernaturalism, nor within artificialism (which we shall characterize in due course), is it assumed that *explanations* that pretend to be scientific can refer to deities or non-human intelligences deliberately intervening in the natural world. In other words, within these approaches, it is not claimed that *the premises* in scientific explanations are claims that appeal to deities or non-human intelligences. [54]

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cisions on metaphysical assumptions is not only a characteristic of EFs: "The standards we use and the rules we recommend make sense only in a world that has a certain structure. They become inapplicable, or start running idle in a domain that does not exhibit this structure" (Paul K. Feyerabend, **Against Method. Third Edition,** Verso, London 1993, p. 233).

[51] See, on this issue, the remarks of Jodkowski (Jodkowski, "Darwinowska teoria ewolucji…", p. 19) and Nagel (Nagel, "Public Education…", p. 205).

[52] See Charles Thaxton, "A New Design Argument", *Discovery Institute*, https://tiny.pl/wwf9d [30.12.2024].

[53] Robert C. O'Connor, "Science on Trial: Exploring the Rationality of Methodological Naturalism", *Perspectives on Science and Christian Faith* 1997, Vol. 49, No. 1, p. 15 [15–31], https://tiny.pl/wwf95 [30.12.2024]. The theses and arguments presented here come from various texts. Some of the latter defend methodological naturalism, some argue with it, and some merely discuss it. My attention here is focused only on the theses and arguments, not the persons defending or criticizing the claims I am examining. *Consequently, it is not always the case that the cited author is a defender of the naturalistic or anti-naturalistic approach. It may be just that the author in question is responsible for having explicitly formulated a given thesis or argument.*

[54] See Ronald H. Pine, "But Some of Them Are Scientists, Aren't They?", *Creation/Evolution Journal* 1984, Vol. 4, No. 4, p. 10 [6–18], https://tiny.pl/j_thbm4f [30.12.2024]; Stephen C. Meyer, **Signature in the Cell: DNA and the Evidence for Intelligent Design**, Harper One, New York 2009, p. 171.

The hard core of supernaturalist EF can be expressed by the following two theses: (a) the metaphysical one: God exists and acts in nature in a direct way (it is not difficult to notice that this thesis is the inversion of the hard core of antisupernaturalism) and (b) the quasifactual one: life is the unique work of the creation period. Creation took place by virtue of unique processes that no longer occur nowadays. [55]

Meanwhile, the counterproposal to anti-artificialistic naturalism will be the artificialistic EF associated with the theory of intelligent design (ID). The latter can be presented as a prescription to allow artificial, intelligent causes in scientific research alongside natural causes:

> the central claim [of artificialism] is that only intelligent causes can adequately explain the complex, information-rich structures of biology and that these causes are empirically detectable. [56]

The hard core of artificialism can be formulated thus: in addition to chance and necessity, intelligent causes also operate in nature in a direct way.

The EFs presented so far can be arranged in the following pairs:

- anti-supernaturalist naturalism — supernaturalism;
- anti-artificialist naturalism — artificialism.

However, there is another EF, which is a variant of naturalism — namely, theistic naturalism — which targets both supernaturalism and artificialism.

Theistic naturalism, as a worldview, is supposed to be oriented towards defending Christian civilization against attempts to turn the latter into something post-Christian. The aforementioned naturalistic and anti-naturalistic EFs are intended to form the most general cognitive framework for the pursuit of science. Naturalistic theism, meanwhile, also seeks to create such a framework, and at the same time gives rise to another, *sui generis* worldview framework for scientific practice. Of course, at the heart of the previously discussed EFs there are also to

[55] See Henry M. Morris, **Scientific Creationism**, Creation-Life Publishers, San Diego 1974, p. 46.

[56] William A. Dembski, "Intelligent Design: A Brief Introduction", *4Truth.NetScience* 2008, February 5, https://tiny.pl/tmkvf [30.12.2024].

be found certain worldviews that give meaning to some human actions while denying it to others. [57] However, such theism is primarily stated as a worldview:

> By naturalistic theism I mean a comprehensive theistic worldview that takes the existence and non-coercive action of God to be essential to the nature of Nature. This worldview sees supernatural (coercive) divine intervention as something that is precluded by the very natures of God, the World, and the God/World relationship [...]. [58]

Naturalistic theism is such an EF, it being primarily intended to obviate "the crisis of faith among educated people, especially scientists, which is the result of the incompatibility of the traditional theistic and contemporary scientific description of the world", [59] and to restore this faith to scientists. This crisis is alleviated by an important and religiously significant *change in the content of faith*: God does not act in nature in a special, empirically recognizable way. (God, as thus conceived by such naturalistic theists themselves, is referred to as "the God of a believing scientist".) [60] In turn, the effect of this change is to reconcile the worldview of the contemporary natural sciences with Christian theism.

Theistic naturalists also believe that "the evolutionary vision of nature expresses the Christian doctrine of creation and the immanence of God much better than pre-Darwinian biology did". [61] The latter suggested that God created a ready-made world, while Darwinian biology is supposed to lead to the belief that God created a world that is self-creating. According to this belief, evolution not only

[57] See Krzysztof J. Kilian, "Światopoglądowy i ideologiczny wymiar epistemicznych układów odniesienia a teistyczno-naturalistyczny epistemiczny układ odniesienia", *Filozoficzne Aspekty Genezy* 2018, Vol. 15, pp. 142–194 [139–222], https://doi.org/10.53763/fag.2018.15.151.

[58] Howard J. Van Till, "Cosmic Evolution, Naturalism, and Divine Creativity, or Who Owns the Robust Formational Economy Principle?", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 540 [535–546].

[59] Piotr Bylica, "Główne założenia i problemy teizmu naturalistycznego w sprawie relacji sfery nadprzyrodzonej i świata przyrodniczego", in: Wiesław Dyk (ed.), **Sozologia systemowa. Vol. IV. Biosfera. Człowiek i jego środowisko w aspekcie przyrodniczym, filozoficznym i teologicznym**, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, Szczecin 2012, p. 88 [55–95].

[60] See George V. Coyne S.J., "Evolution and Intelligent Design. Who Needs God?", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, p. 24 [9–26].

[61] Józef Życiński, **Bóg i ewolucja. Podstawowe pytania ewolucjonizmu chrześcijańskiego**, *Prace Wydziału Filozoficznego,* Vol. 89, Towarzystwo Naukowe KUL, Lublin 2002, p. 24.

does not stand in opposition to creation, but together with it provides a synthetic picture of the world. [62] It is not difficult to see that Dobzhansky's views fit into this EF. [63]

The EF of naturalistic theism is the injunction to accept only naturalistic explanations for natural phenomena, accompanied by prohibitions against appealing to supernaturalistic and artificialistic explanations ("creation, a creator, an intelligent designer are simply outside the confines of scientific investigation"). [64] Moreover, the hard core of this EF can be formulated in terms of the idea that God exists and is immanently present in the laws of nature, while not acting in nature in an empirically detectable way. Thus:

> God does not act on the world by some extraordinary interventions, but always through the natural course of the world. His action is not revealed in the natural course of the world not because His action is not there, but because the entire natural course of the world is His action. [65]

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[62] See Michael Heller, **The New Physics and a New Theology**, trans. G.V. Coyne, S.J.S. Giovannini, and T.M. Sierotowicz, Vatican Observatory Publications, Vatican 1996, p. 44.

[63] In fact, it is widely accepted that Dobzhansky was a Christian. For example, Collins writes that Dobzhansky was "a prominent scientist who subscribed to the Russian Orthodox faith and to theistic evolution" (Francis C. Collins, **The Language of God: A Scientist Presents Evidence for Belief**, Free Press, New York — London — Toronto — Sydney 2006, p. 206), and it seems that he is right. This is evidenced, for example, by such statements on the part of Dobzhansky as the following, which also expresses the core of what theistic evolutionists believe: "Does the evolutionary doctrine clash with religious faith? It does not. It is a blunder to mistake the Holy Scriptures for elementary textbooks of astronomy, geology, biology, and anthropology. Only if symbols are construed to mean what they are not intended to mean can there arise imaginary, insoluble conflicts. [...] The organic diversity becomes, however, reasonable and understandable if the Creator has created the living world not by caprice but by evolution propelled by natural selection. It is wrong to hold creation and evolution as mutually exclusive alternatives. I am a creationist and an evolutionist. Evolution is God's, or Nature's, method of Creation" (Dobzhansky, "Nothing in Biology...", p. 129). Dobzhansky even coined the name "Teilhardian synthesis" to denote a coherent worldview that was to include a combination of Christianity and science (see Theodozius Dobzhansky, **The Biology of Ultimate Concern**, The New American Library, New York 1967, p. 115). But despite this, opinions on his religious views are mixed (see Dilley, "Nothing in Biology...", p. 775).

[64] Coyne SJ, "Evolution and Intelligent...", p. 18. See also Van Till, "Cosmic Evolution...", p. 539; Francisco J. Ayala, "Darwin's Greatest Discovery: Design without Designer", in: John C. Avise and Francisco J. Ayala (eds.), **In the Light of Evolution. Volume I: Adaptation and Complex Design**, The National Academies Press, Washington 2007, p. 20 [3–21].

[65] Michał Heller, "Chrześcijański naturalizm", *Roczniki Filozoficzne* 2003, Vol. 51, No 3, p. 47 [41–58], https://tiny.pl/tq2q2 [30.12.2024].

The hard cores of naturalistic and anti-naturalistic EFs indicate how these EFs differ on the metaphysical level. This leads directly to the thesis that they also differ on that of worldviews. In the classic Diltheyan understanding of the term, *Weltanschauungen* were supposed to shed light on the riddles posed by both life and the world. The EFs presented here not only provide answers to these, but also these are ones that lie at the heart of their functioning.

The worldview component of the EF of supernaturalist interventionism is clearly visible in the widespread references within this interventionism to the Holy Scriptures (or other holy books, such as the Quran or the Upanishads). Indeed, a feature of creationism, highlighting this component, is that the results of scientific research are continuously reconciled with the relevant parts of the holy books. Here is one of many examples:

> The data of geology, in our view, should be interpreted in light of the Scripture, rather than distorting Scripture to accommodate current geological philosophy. [66]

This supernaturalism also leads to the conception of man as an entity who is at the centre of the divine plan of creation: "In my Father's house are many mansions" [John 14:2].

The model example of a scientific theory based on the naturalistic EF is gradualist evolutionism. The latter also seeks to resolve the riddles mentioned above. In so doing, it does not appeal to supernatural forces, and is considered a worldview alternative to Christianity:

> Evolution is promoted by its practitioners as more than mere science. Evolution is promulgated as an ideology, a secular religion — a full-fledged alternative to Christianity, with meaning and morality. [67]

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[66] Henry M. Morris and John D. Morris, **Science, Scripture, and the Young Earth**, Master Books, El Cajon 1989, p. 36.

[67] Michael Ruse, "Saving Darwinism from the Darwinians", *National Post* 2000, Saturday 13th May, p. B3 [B1, B3, B7].

One Reviewer rightly points out that "[m]any philosophers would disagree with Ruse here". However, this view of Ruse's is not isolated, see for example: "Consider the Grand Evolutionary Myth [...]. According to this story, organic life somehow arose from non-living matter by way of purely natural means and by virtue of the workings of the fundamental regularities of physics and chemistry. [...] I call this story a myth not because I do not believe it [...] but because it plays a certain kind of quasi-religious role in contemporary culture. It is a shared way of understanding ourselves at the deep level of religion, a deep interpretation of ourselves to ourselves, a way of

This gradualism also has its "holy book", the content of which is widely accepted. This "book" is methodological naturalism. The "book" itself is only visible when the actions of scientists are juxtaposed with what creationists aim to accomplish when they seek to accommodate scientific data within their holy books. [68] And man, from the point of view of atheistic evolutionism, is merely "a kind of cosmic accident, just one bauble on the Christmas tree of evolution". [69]

The hallmark of the theistic-naturalistic worldview is revealed in the "skillful reading" [70] of the books of Scripture and nature, which is all about the thought that "our understanding of the Bible [...] has to be updated". [71] The EF of naturalistic theism has, *de facto*, two "holy books": one "more sacred" or "more basic" than the other. It is the book of nature that provides the reference point for a skilful reading of the other, the Scriptures. [72] The Bible, on this approach, has been re-

telling us why we are here, where we come from, and where we are going" (Alvin Plantinga, "Methodological Naturalism?", in: Jitse M. van der Meer (ed.), **Facets of Faith and Science: Volume 1: Historiography and Modes of Interaction**, The Pascal Centre for Advanced Studies in Faith and Science University Press of America, Lanham — New York — London 1996, p. 184 [177–221]). "Darwinian evolution is most unlikely to get even one polypeptide right, let alone the thousands on which living cells depend for their survival. This situation is well-known to genetics and yet nobody seems prepared to blow the whistle decisively on the theory. If Darwinism were not considered socially desirable, and even essential to the peace of mind of the body politic, it would of course be otherwise" (Fred Hoyle and Nalin Chandra Wickramasinghe, **Evolution from Space. A Theory of Cosmic Creationism**, Simon & Schuster, New York 1984, p. 148). "[T]he evolutionary epic is probably the best myth we will ever have" (Edward O. Wilson, **On Human Nature**, Harvard University Press, Cambridge — London 1978, p. 101). "Evolution is the greatest engine of atheism ever invented" (William B. Provine, „Evolution: Free Will and Punishment and Meaning in Life", Second Annual Darwin Day Celebration 1998, Feb. 12, University of Tennessee, Knoxville, slideshow, https://tiny.pl/d4mtx [30.12.2024]).

[68] See Kazimierz Jodkowski, "Uczony w ciemnym budynku. Na marginesie metafory Elżbiety Kałuszyńskiej", in: Józef Dębowski and Ewa Starzyńska-Kościuszko (eds.), **Nauka. Racjonalność. Realizm. Między filozofią przyrody a filozofią nauki i socjologią wiedzy**, Instytut Filozofii Uniwersytetu Warmińsko-Mazurskiego w Olsztynie, Olsztyn 2013, p. 59 [55–67].

[69] Stephen Jay Gould, **Wonderful Life: The Burgess Shale and the Nature of History**, W.W. Norton & Company, New York — London 1990, p. 44.

[70] Wojciech Kotowicz, "Józefa Życińskiego meta-przedmiotowe ujęcie relacji między nauką a religią", *Roczniki Filozoficzne* 2012, Vol. 60, No. 4, p. 254 [249–260], https://tiny.pl/tqfh3 [30.12.2024].

[71] Mark Allfree and Matthew Davies, **The Deception of Theistic Evolution**, Bible Study Publications, Mansfield 2017, p. 10.

[72] Incidentally, this approach is based on an archaic vision of science as an infallible *episteme* – and, therefore, the content of Scripture is adapted to it: "When conflict arises between a literal read-

duced to a set of ethical postulates, speaking only about moral values and the meaning of life. [73]

The EF of artificialism, together with its hard core, furnishes a highly capacious account, as it can be reconciled with both naturalism and anti-naturalism. Therefore, this EF has been referred to as the "neutral option". [74]

Within the framework of artificialism, it is argued that the known empirical evidence from biology and cosmology points to traces of the actions of an intelligent being. This evidence does not make it possible to determine the identity of the latter, as the facts that are supposed to testify in favour of the project do not give us any clues as to this. [75] It is also not difficult to see that amongst the proponents of intelligent design theory are both believers and non-believers.

The spectrum of worldviews presented above provides a good understanding of how the EFs presented here differ. These differences can also be seen through the prism of another problem: the incommensurability of scientific theories.

Proponents of the incommensurability thesis depart from the traditional view that newly formulated theories must be compatible with their predecessors, as

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ing of some Bible text and a truth about the nature of things which has been demonstrated by reliable argument, the Christian must strive to reinterpret the biblical text in a metaphorical way" (Ernan McMullin, "Introduction: Evolution versus Creation", in: Ernan McMullin (ed.), **Evolution versus Creation**, University of Notre Dame Press, Notre Dame 1985, p. 11 [1–58]). With this statement, McMullin was referring to the 21st chapter of Book I of St. Augustine's treatise **De Genesi ad Litteram**. **Libri Duodecim**.

[73] It is worth mentioning here that this moral dimension of the Bible, promoted by "enlightened religion" (see Jerry A. Coyne, **Why Evolution is True**, Oxford University Press, Oxford — New York 2009, p. 11), has already lost its uniqueness in the eyes of some naturalists: "If religion, including the dogmatic secular ideologies, can be systematically analyzed and explained as a product of the brain's evolution, its power as an external source of morality will be gone forever […]" (Wilson, **On Human Nature…**, p. 201). Also: "[M]y Darwinian metaethics says that substantive morality is a kind of illusion, put in place by our genes, in order to make us good social cooperators" (Michael Ruse, "Evolution and Ethics", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 858 [855–864]).

[74] See Andrzej Wiśniewski, "Dlaczego należy czytać Jodkowskiego?", in: Piotr Bylica, Krzysztof J. Kilian, Robert Piotrowski, and Dariusz Sagan (eds.), **Filozofia — nauka — religia. Księga jubileuszowa dedykowana Profesorowi Kazimierzowi Jodkowskiemu z okazji 40-lecia pracy naukowej**, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2015, p. 40 [37–41].

[75] See David K. DeWolf, Stephen C. Meyer, and Mark Edward DeForrest, "Teaching the Origins Controversy: Science, or Religion, or Speech?", *Utah Law Review* 2000, Vol. 39, p. 93 [39–110], https://tiny.pl/tgqg4 [30.12.2024].

those theories dealt in part with the same range of phenomena. They also claim that in the history of science it is possible to observe breaks of continuity in the development of science. [76] The new theories perceive the world differently from their rivals: they are incompatible on the linguistic level, there being no language such that both of them could be fully formulated in it, and which could be used for a step-by-step comparison of their claims, and they admit different standards of scientificality and postulate radically different ontologies. [77]

What is being said here, then, is that certain successive theories are *incommensurable in some sense, and in some ways incomparable*. This does not mean that in no way can they be studied or compared. [78]

[76] See Paul K. Feyerabend, "»Science«. The Myth and Its Role in Society", *Inquiry. An Interdisciplinary Journal of Philosophy* 1975, Vol. 18, No. 2, pp. 169–170 [167–181], https://doi.org/10.1080/00201747508601758; Kuhn, **The Structure...**, pp. 1–2. See also Joseph Agassi, "Continuity and Discontinuity in the History of Science", *Journal of the History of Ideas* 1973, Vol. 34, No. 4, pp. 609–626, https://doi.org/10.2307/2708892.

[77] The fullest articulation of the incommensurability thesis can be found in the writings of Thomas S. Kuhn and Paul K. Feyerabend. However, they did not use the term "incommensurability" perspicuously, leading to a number of misinterpretations of the thesis. The word itself has no sharply defined meaning in the philosophy of science, either. That issue lies far beyond the scope of this paper. For present purposes, I will make use of just one approach, which deals with the problem of the vagueness of this concept in such a way that it distinguishes five levels of incommensurability where scientific theories are concerned: quantitative variability of empirical consequences (this level will not be discussed here, since it applies only to those areas of science in which precisely quantified research results play an important role), observational variability, linguistic variability, variability with respect to scientific problems and evaluation criteria, and ontological variability (see Kazimierz Jodkowski, **Teza o niewspółmierności w ujęciu Thomasa S. Kuhna i Paula K. Feyerabenda**, *Realizm. Racjonalność. Relatywizm*, Vol. 1, Wydawnictwo UMCS, Lublin 1984). In one of Feyerabend's texts one can find clues that allow for just such an interpretation of the thesis of incommensurability (see Paul. K. Feyerabend, "Changing Patterns of Reconstruction", *British Journal for the Philosophy of Science* 1977, Vol. 28, No. 4, pp. 363–365 [351–369], https://doi.org/10.1093/bjps/28.4.351). See also: Krzysztof J. Kilian, "Epistemiczne układy odniesienia a problem interteoretycznej niewspółmierności – część 1", *Filozoficzne Aspekty Genezy* 2017, Vol. 14, pp. 237–280, https://doi.org/10.53763/fag.2017.14.145; Krzysztof J. Kilian, "Epistemiczne układy odniesienia a problem interteoretycznej niewspółmierności – część 2", *Filozoficzne Aspekty Genezy* 2017, Vol. 14, pp. 281–325; https://doi.org/10.53763/fag.2017.14.146.

[78] See Thomas S. Kuhn, "The Road since Structure", *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* 1990, Vol. 2, p. 5 [3–13]; Thomas S. Kuhn, "Theory Change as Structure Change: Comments on the Sneed Formalism", in: Thomas S. Kuhn, **The Road since Structure**, The University of Chicago Press, Chicago — London 2000, p. 189 [176–195]; Paul K. Feyerabend, "More Clothes from the Emperor's Bargain Basement: A Review of Laudan's Progress and its Problems", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 2. Problems of Empiricism**, Cambridge University Press, Cambridge — New York — Port — Chester — Melbourne — Sydney 1981, p. 238

Naturalistic and anti-naturalistic theories amount to incommensurable views. [79] This fact leads to a different understanding of the nature of science in each case. It makes it difficult, but not impossible, for proponents of differing views to communicate, as at least some participants in this debate are aware. [80] For example:

> we [anti-naturalists] have to understand how secularists — in this context, that means those who subscribe to scientific naturalism — think, and what particular words mean in their system of thinking. [81]

Despite the fact that the relationship of incommensurability is most often said to obtain between scientific theories, not all such theories can be incommensurable. Indeed, this possibility holds only for realistically interpreted universal ones. [82]

Universal theories can be characterized in three ways. First, they are top-level theories: that is, theories that are not elements of other theories. The objects they speak of are neither defined independently from these theories, nor are we independently convinced of the existence of these objects. [83] Second, they are theories that apply, at least in some respect or other, to everything that exists. [84] They must provide the researcher with an adequate system of concepts for describing and

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[231–246]; Paul K. Feyerabend, "Third Dialogue", in: Paul K. Feyerabend, **Three Dialogues on Knowledge**, Basil Blackwell Ltd., Oxford — Cambridge 1991, p. 154 [125–160].

[79] See James T. Robinson, "Incommensurability of Evolution and Special Creation", *The American Biology Teacher* 1971, Vol. 33, No. 9, pp. 535–538 and p. 545; Kazimierz Jodkowski, **Metodologiczne aspekty kontrowersji ewolucjonizm-kreacjonizm**, *Realizm. Racjonalność. Relatywizm*, Vol. 35, Wydawnictwo Uniwersytetu Marii Curie Skłodowskiej, Lublin 1998, pp. 204–318.

[80] See Theodore Arabatzis, "Can a Historian of Science Be a Scientific Realist?", *Philosophy of Science* 2001, Vol. 68, No. 3, Supplement, pp. S536–S538 [S531–S541], https://doi.org/10.1086/392934.

[81] Phillip E. Johnson, "Shouting »Heresy« in the Temple of Darwin", *Christianity Today* 1994, October 24, Vol. 38, No. 12, p. 26 [22–26], https://tiny.pl/wrcsx [30.12.2024].

[82] Feyerabend expresses his view thus: "I never said [...] that any two rival theories are incommensurable. What I did say was that certain rival theories, so-called «universal» theories, or «non-instantial» theories, if interpreted in a certain [realistic] way, could not be compared easily. More specifically, I never assumed [unlike Kuhn] that Ptolemy and Copernicus are incommensurable. They are not" (Paul K. Feyerabend, **Against Method. Outline of an Anarchistic Theory of Knowledge**, New Left Books, London 1975, p. 114).

[83] See Paul K. Feyerabend, "Physik und Ontologie", *Wissenschaft und Weltbild: Monatsschrift für alle Gebiete der Forschung* 1954, Issue 7, pp. 472–473 [464–476].

explaining features of the world. They must also be sufficient to completely replace the previously accepted language and ontology. Third, they are theories that are distinguishable from (directly testable) empirical generalizations. Universal theories are themselves tested by deriving empirical generalizations from them and from certain boundary conditions. [85] It is not difficult to see that the theories on which the EFs discussed here are based are, at least in the first two senses, universal theories.

On *the ontological level*, the incommensurability thesis states that when moving from one theory to another, fundamental beliefs about the structure of the world and the structure of each object are changed. Thus, it is claimed that "[i]n a sense [...] the proponents of competing paradigms practice their trades in different worlds", [86] and that "the possibility of choosing a methodology on the basis of cosmological considerations shows that there can be different types of science". [87] So, before we start looking for causes of the phenomena in the world around us, we must first decide where we will look for these causes. For example:

> my practice as a scientist is Atheistic. That is to say, when I set up an experiment, I assume that no god, angel, or devil is going to interfere with its course; and this assumption has been justified by such success as I have achieved in my professional career. I should therefore be intellectually dishonest if I were not also Atheistic in theory, at least to the extent of disbelieving in supernatural interference in the affairs of the world. [88]

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[84] See Feyerabend's statement in "Discussion at the Conference on Correspondence Rules". Herbert Feigl, Paul K. Feyerabend, Norwood R. Hanson, Carl G. Hempel, Mary Hesse, Grover Maxwell, and William Rozeboom, "Discussion at the Conference on Correspondence Rules", in: Michael Radner and Stephen Winokur (eds.), **Analyses of Theories and Methods of Physics and Psychology**, *Minnesota Studies in the Philosophy of Science* 1970, Vol. 4, p. 246 [220–259].

[85] See Feyerabend, "Explanation, Reduction...", p. 28, n. 1; Kazimierz Jodkowski, "Filozofia nauki Paula K. Feyerabenda. Stadium umiarkowane", *Studia Filozoficzne* 1979, No. 11, pp. 63–64 [59–75].

[86] Kuhn, **The Structure...**, p. 150. See also Feyerabend, "Problems of Empiricism...", p. 170.

By writing "in a certain sense", Kuhn was making it clear that the phrase "in different worlds" should not be taken literally. See also Johnson's statement (n. 79) in which he suggested that anti-naturalists could understand naturalists (and, I might add here, vice versa) if merely the former learnt to use the language used by the latter.

[87] Paul K. Feyerabend, "The Methodology of Scientific Research Programmes", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 2. Problems of Empiricism**, Cambridge University Press, Cambridge — New York — Port — Chester — Melbourne — Sydney 1981, p. 212, n. 18 [202–230].

The preconceived structure of the world, and not a different one, therefore forces scientists to adapt certain standards of investigation to it. Here is an example of another perspective:

> we Christians must think about the matter at hand from a Christian perspective; we need Theistic Science. [89]

Such practising of science "in different worlds" is what we encounter, for example, in a statement such as the following, which clearly sets up an "either-or" perspective:

> if you are an orthodox Christian with a high view of the authority of the Bible, you cannot believe in evolution in any form at all. […] If you believe in God, you can't believe in evolution. If you believe in evolution, you can't believe in God. [90]

Beliefs about the structure of the world impose a certain way of interpreting evidence. This is eloquently demonstrated, for example, by such statements explaining the interspecies similarities of organisms differently:

> Why should a rat run, a bat fly, a porpoise swim, and I type this essay with structures built of the same bones unless we all inherited them from a common ancestor? An engineer, starting from scratch, could design better limbs in each case. [91]

> [A] supernatural being who created the cosmos could presumably build intended patterns and structures into the primordial, ultimate, initial conditions of the cosmos, or into the very laws and constants of the cosmos. [92]

Creationists and naturalistic theists also interpret evidence differently. According to the former

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[88] John B.S. Haldane, **Facts and Faith**, Watts & Co., London 1936, p. vi, https://tiny.pl/wwfk7 [30.12.2024].

[89] Alvin Plantinga, "When Faith and Reason Clash: Evolution and the Bible", *Christian Scholar's Review* 1991, Vol. 21, No. 1, p. 30 [8–33], https://tiny.pl/gzln9 [30.12.2024].

[90] Tim Keller, "Creation, Evolution, and Christian Laypeople", *BioLogos* 2012, February 23, p. 1 [1–14], https://tiny.pl/wwfkj [30.12.2024]. See also Richard Dawkins, **The Selfish Gene**, Oxford University Press, Oxford 1976, p. 1.

[91] Stephen Jay Gould, "Evolution as Fact and Theory", in: Stephen Jay Gould, **Hen's Teeth and Horse's Toes**, W.W. Norton & Company, New York — London 1983, p. 258 [253–262].

[92] Ratzsch, **Nature, Design and Science…**, p. 27.

> [n]either the Bible, nor its consistent enemies allow "theistic evolution". [93]

> The reinterpretation of geologic data according to flood geology would include a re-evaluation of all dating methods, including especially a critical review of radiometric dating methods. [94]

The latter, on the other hand, claim that creationists

> have developed their own little "folk conception" of science, one that is totally subservient to their preconceived fundamentalist theology. [...] However, the folk conception of "true" science developed by "scientific" creationists has about as much resemblance to legitimate science as does astrology to astronomy or witchcraft to medicine. [95]

It is also not difficult to see that although creationists and theistic naturalists speak of the God of the Bible, it is neither the same God (a God intervening in the natural order and a God not intervening in such an order) nor the same world (a two-sphere reality — natural and supernatural, the latter interacting in a special way with the former; there is no natural and supernatural realm in the world, so the latter does not intentionally interact with the natural world in any way).

Here is another example. If the existence of baramins is assumed, then all hypothetical family trees showing continuous lines going back from modern organisms to their fossil ancestors must be abandoned, since the inconsistencies between these trees will be a consequence of the fact that the basic phyla of living organisms arose through separate creative acts. [96] Moreover, for proponents of the occurrence of macro-evolution, any theory that does not take into account a holistic view of descent from a common ancestor will lead to an arbitrary interpretation of the tree of life, conflict with empirical evidence, and involve a logically inconsistent theory of origins. [97] The belief in the existence of baramins also leads creationists to the thesis that at least some taxonomic units are objective in

[93] CSSHS Editorial Staff, "Lesson 1. Creation, the Foundation of the Biblical World View", in: CSSHS Editorial Staff, **A Creation Course — In 13 Lessons**, *Creation Social Science and Humanities Society. Quarterly Journal* 1990, Vol. 12, No. 1, p. 2 [2–7], https://tiny.pl/th318 [30.12.2024].

[94] Duane Gish, **Evolution: The Challenge of the Fossil Record**, Creation-Life Publishers, El Cajon 1985, p. 51.

[95] Leon H. Albert, "»Scientific« Creationism as a Pseudoscience", *Creation Evolution Journal* 1986, Vol. 6, No. 2, p. 30 [25–34], https://short-link.me/QnzU [30.12.2024].

[96] See Nancy Pearcey, "Evolution After Darwin – What's Left?", *Bible–Science Newsletter* 1985, August, Vol. 23, No. 8, pp. 7–10; Dean H. Kenyon, "The Creationist View of Biologic Origin", *Nexa Journal* 1984, Spring, pp. 28–35.

nature. [98] By contrast, evolutionists maintain that "any attempt to group all living things, past and present, into sharply defined groups, between which no intermediates exist, is foredoomed to failure". [99]

On *the methodological level* (i.e. that which deals with the variability of scientific problems and criteria of evaluation), the incommensurability thesis states that when moving from one theory to another (or from one paradigm to another, or from one scientific research program to another), standards of scientificality and criteria for evaluating research results are radically altered. This is recognized by both sides of the conflict. We see naturalists acknowledging it:

> A real debate [between proponents and opponents of gradualist evolutionism] is thus impossible for a simple reason: there is no agreement on what mutually acceptable framework it should be held within. [100]

But we also witness anti-naturalists doing so:

> A message, however eloquent it may sound to us [anti-naturalists], is a mere noisy gong or clanging cymbal to those who have a different frame of reference. [101]

It has already been mentioned that the assumptions on which EFs are based are no more than methodological decisions of a certain kind, stipulating how science should or should not be practised. Even so, as was already noted, there is of course no absolute prescription to the effect that we must make these and not other decisions: researchers working within different EFs will make their own choices, such that they are willing to allow certain kinds of causes and not others when seeking to explain phenomena. These are not arbitrary. They are justified by

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[97] See Gert Korthof, "Common Descent: It's All or Nothing", in: Matt Young and Taner Edis (eds.), **Why Intelligent Design Fails: A Scientific Critique of the New Creationism**, Rutgers University Press, New Brunswick 2006, pp. 32–47; Gert Korthof, "Who Created the First Tree of Life? Comparing Trees of Hitchcock, Darwin and Haeckel", *Towards the Third Evolutionary Synthesis* 2017, February 12, https://tiny.pl/tm1m7 [30.12.2024].

[98] See Henry M. Morris, **The Biblical Basis for Modern Science**, Baker Books, Grand Rapids 1984, p. 372.

[99] John Maynard Smith, **The Theory of Evolution**, Cambridge University Press, Cambridge 2000, p. 217.

[100] Jerzy Kowalski-Glikman, "Bezradność postępowego inteligenta", *Świat Nauki* 2008, No. 2 (198), p. 85 [84–85].

[101] Johnson, "Shouting »Heresy«...", p. 26.

means of various arguments. [102] However, at the heart of such choices is a belief, arrived at by a particular community of researchers, in the validity of conducting research in a certain way. [103] Let us quote the following as an example:

> [S]cientific method is based upon an assumed orderliness of the universe open to rational investigation, and this orderliness can be assumed only due to creation by the God of the Bible. [104]

Proponents of different theoretical approaches, at least in part, may also be interested in other problems and evaluate their solutions differently. For example, evolutionists and creationists assign different roles to natural selection. The former see it as the driving force behind all evolutionary processes, while the latter consider it a far less important factor. According to ID, the search for naturalistic explanations for the emergence of irreducibly complex systems is pointless, since these systems did not arise that way.

With the transition from one incommensurable theory to another it is not just that the set of problems considered scientific changes, with some of them being dismissed as pseudo-problems, but also that their importance changes, with some now considered secondary and others still that were initially regarded as marginal becoming essential. For example, for proponents of ID, the proposal to reintroduce intelligent causes into scientific explanations is a radical departure from conventional science, and intelligent design must be considered at least a possible scientific explanation for the origin of biological information. [105] Furthermore, for

[102] See Arminius Mignea, "Methodological Naturalism and Its Creation Story", in: Jonathan Bartlett and Eric Holloway (eds.), **Naturalism and Its Alternatives in Scientific Methodologies: Proceedings of the 2016 Conference on Alternatives to Methodological Naturalism**, Blyth Institute Press, Broken Arrow 2017, p. 130 [129–162]; Martin J.S. Rudwick, "Charles Lyell Speaks in the Lecture Theatre", *The British Journal for the History of Science* 1976, Vol. 9, No. 2, p. 150 [147–155], https://doi.org/10.1017/S0007087400014734; John F.W. Herschel, **Preliminary Discourse on the Study of Natural Philosophy**, Longman, Brown, Green & Longmans, London 1851, p. 144, https://tiny.pl/tr3vw [30.12.2024]; Ernst Mayr, **What Evolution Is**, Phoenix, London 2002, p. 10; Brightman, "An Empirical Approach…", p. 157; David W. Snoke, "Defining Undesign in a Designed Universe", *Perspectives on Science and Christian Faith* 2008, Vol. 60, No. 4, p. 230 [225–232], https://shortlink.me/Qnq8 [30.12.2024].

[103] See Kuhn, **The Structure…**, pp. 176–177.

[104] CSSHS Editorial Staff, "Lesson 7. Man's Creativity: Science", in: CSSHS Editorial Staff, **A Creation Course – In 13 Lessons**, *Creation Social Science and Humanities Society. Quarterly Journal* 1990, Vol. 12, No. 1, p. 36 [33–38], https://tiny.pl/th318 [30.12.2024].

[105] See Stephen C. Meyer, **Signature in the Cell…**, p. 171.

naturalist critics of this view, the artificialist belief – according to which certain features of the living world indicate that they are the result of the interference of an intelligent designer as they could not have arisen naturally – is a pseudo-issue because, by allowing anti-naturalistic explanations, it leads to the sanctioning of ignorance. [106] The variability as regards acceptable explanations, problems, and standards of evaluation restricts us when it comes to choosing between competing theories. Criteria for estimating which theory solves more problems, or solves them more accurately, which is more effectively confirmed, etc., do not apply in this case. For example, for creationists consistency with the Bible is a key value, whilst for naturalists it has no value at all. Conversely, the lack of reference to supernatural causes, a fundamental advantage of the naturalistic system as viewed by naturalists, is a disadvantage in the eyes of creationists. [107] The creationist belief in the objective existence of taxonomic units leads to attempts to empirically determine the ranges of such units. [108] For theistic and atheistic evolutionists, such efforts lead nowhere, since such units are determined conventionally.

The *level of observational variability* engenders different ways of seeing the world. According to this idea (i.e. that of observational variability), proponents of different, incommensurable theories will view the world differently. "What were ducks in the scientist's world before the revolution are rabbits afterwards". [109] However, if all empirical evidence is theorized, then there is no way to verify this evidence independently of theory. The implications of this state of affairs are recognized by some participants in the controversy we are discussing:

> Both schools of thought [naturalists and anti-naturalists] have had a tendency to rely on the same class of evidence [...]. [110]

[106] See Douglas J. Futuyma, "Miracles and Molecules", *Boston Review* 1997, February/March, pp. 29–30.

[107] See Morris, **Scientific Creationism...**, p. 46.

[108] See Marsh, "Fundamental Biology...", p. 505.

[109] Kuhn, **The Structure...**, p. 111.

[110] Kirk Fitzhugh, "Evidence for Evolution Versus Evidence for Intelligent Design: Parallel Confusions", *BMC Evolutionary Biology* 2010, Vol. 37, p. 68 [68–92], https://doi.org/10.1007/s11692-010-9088-1.

> Observational data and logic alone do not force one to accept either of the two positions. [111]

Others, on the other hand, do not seem to recognize this:

> What the Cambrian explosion unambiguously tells us is nothing other than a miracle of creation taking place 530 million years ago, as one did when the Earth was first created. [112]

Still others, meanwhile, are well aware that it is the theory that explains the observations, not the other way around:

> We proposed the theory of punctuated equilibrium largely to provide a different explanation for pervasive trends in the fossil record. [113]

Thus, there is no way to organize facts and explain phenomena free from any theoretical perspective. This is especially true for attempts to compare incommensurable theories. Accepting the thesis of incommensurability leads to the belief that the continuity of the development of science is radically broken. Then the problem of criteria for choosing between incommensurable theories arises. Traditional cumulative approaches, rejecting the incommensurability thesis and accepting the stability thesis, [114] referred to the idea of a crucial experiment.

According to the approach in which competing universal theories are incommensurable, things get incredibly complicated. There has been a fruitless search for ways to compare these theories that would allow for non-arbitrary choices

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[111] Lee M. Spetner, "The Evolution Controversy and Randomness", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, p. 815 [815–830].

[112] Harun Yahya, "Did Life on Earth Begin Suddenly and in Complex Forms?", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, p. 309 [299–319]. See also Evan Shute, **Flaws in the Theory of Evolution**, Tameside Press, London 1961, p. 5.

[113] Gould, "Evolution as Fact and Theory...", p. 260.

[114] The expression "stability thesis" was introduced by Feyerabend to denote the position claiming that the meanings of observational statements do not change when theories change and that the theoretical neutrality of observational language makes it possible to evaluate competing theories. See Paul K. Feyerabend, "An Attempt at a Realistic Interpretation of Experience", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 1. Realism, Rationalism & Scientific Method**, Cambridge University Press, Cambridge — New York — Port Chester — Melbourne — Sydney 1981, p. 31 [17–36].

between them. [115] However, this does not mean that the scientist is helpless in the face of incommensurable theories — "some kind of comparison is always possible": [116]

> It is much more interesting and instructive to examine what kinds of things can be said and what kinds of things cannot be said [...] if the comparison has to take place within a certain specified and historically well-entrenched framework. [117]

Such comparisons are possible, but it is always the assumed EF that will be the basis for making choices between alternative approaches. However, this does not lead to the idea of full observational plasticity, according to which our theoretical acknowledgement of facts will be identical to their being in agreement with our theory. The facts registered by a theory may be inconsistent with the latter, [118] since, as was noted, a theory's predictions depend on both its meaning postulates and its initial conditions, while the meaning of the theory's original terms depends only on the postulates. Thus, it is possible to undermine a theory by means of an experiment that is completely interpreted in its terms. [119]

On *the linguistic level*, the incommensurability thesis boils down to the claim that when moving from one universal theory to another, certain terms change

[115] The most famous attempts to compare incommensurable theories were presented by Feyerabend (see Feyerabend, "Problems of Empiricism...", pp. 214–217; Paul K. Feyerabend, "Reply to Criticism. Comments on Smart, Sellars and Putnam", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 1. Realism, Rationalism & Scientific Method**, Cambridge University Press, Cambridge — New York — Port Chester — Melbourne — Sydney 1981, pp. 115–117 [104–131]). Incidentally, Feyerabend's realization of the problems facing attempts to make an objective choice between incommensurable theories became, for him, one of the main reasons to abandon attempts to build a constructive methodology and turn instead to anarchist positions.

[116] Feyerabend, **Against Method. Outline...**, p. 232.

[117] Feyerabend, **Against Method. Outline...**, pp. 232–233.

[118] Michael Devitt ("Against Incommensurability", *Australasian Journal of Philosophy* 1979, Vol. 57, No. 1, pp. 29–50, https://doi.org/10.1080/00048407912341021) noted that the semantic variant of the incommensurability thesis ("the meaning of an observational statement is determined by the theory from which it is derived", p. 32) is not always distinguished from the epistemic variant ("one's judgement about the truth value of an observation statement is partly dependent on one's belief in various theories which may turn out to be wrong", p. 32). See also Feyerabend, "Explanation, Reduction...", p. 30.

[119] See Paul K. Feyerabend, "Consolations for the Specialist", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 2. Problems of Empiricism**, Cambridge University Press, Cambridge — New York — Port — Chester — Melbourne — Sydney 1981, p. 158 [131–167].

their meaning. In turn, this effectively makes it difficult to achieve accurate translations of the claims of alternative theories. Such theories do not use terms with a common meaning, because the terms of each theory owe their meaning to the fundamental principles of the theory from which they derive. [120]

An example of such meaning-change is furnished by the way in which evolutionists and creationists understand the concept of natural selection. [121] For the former, natural selection is the driving force of evolution, the causal agent of macroevolution – the formation of new species. For the latter, on the other hand, it is considered only a conserving factor, keeping the species healthy and strong by removing weak and deformed individuals. Another example of meaning-change concerns how the concept of evolution is construed. When evolutionists use the term, they mostly have in mind the special and general theories of evolution. The former corresponds to microevolution, the latter to macroevolution. Creationists not only postulate a clear separation of microevolution and macroevolution [122] – they also maintain that the concept of microevolution should be abandoned (replacing it with the term "adaptation" or "fittingness"). The effect of this procedure will be to get rid of the belief, false in their view, according to which microevolution leads to macroevolution. [123]

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[120] See Feyerabend, "Problems of Empiricism...", p. 227, n. 19.

[121] See Edward T. Oakes, "The Enigma of Final Causality. Biological Causality in Aristotle and Neo-Darwinism", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, pp. 35–36 [31–44].

At this point one Reviewer noted: "I don't see how there is a change of meaning here. Both sides mean the same thing by «natural selection». They disagree about its scope." And here is where the problem lies. Both sides of the controversy, while using the same term, are talking about something completely different.

For Darwinists "natural selection" denotes a key mechanism of (micro- and macro-) evolution, the change in the heritable traits characteristic of a population over generations. "[T]he panoply of life results from the action of natural selection and genetic drift acting on random mutations" (Jerry A. Coyne, "Truckling to the Faithful: A Spoonful of Jesus Makes Darwin Go Down", *Why Evolution Is True* 2009, April 22, https://tiny.pl/ttm1d [30.12.2024]). Expressing it yet another way: new races and species arise in nature by means of natural selection. For creationists, on the other hand, "natural selection" denotes a conservation factor, keeping the species healthy and strong by removing weak and deformed individuals.

[122] See Bert Thompson, **Creation Compromises**, Apologetics Press, Montgomery 2000, pp. 37–38.

[123] See Pearcey, "Evolution After Darwin...", p. 9.

Moreover, it happens not only that sentences constructed with the help of a new conceptual system negate claims about the obtaining of states of affairs created with the help of an older one, but also that, in the sentences of the new system, we are unable even to formulate statements expressing such states of affairs, because proponents of alternative approaches "use concepts that cannot be brought into the usual logical relations of inclusion, exclusion, overlap". [124] The creationist taxonomic unit baramin is a model example of this, since it has no clear equivalent among evolutionist units.

The last example of a linguistic shift to be mentioned here is the widespread treatment among both evolutionary biologists and ID proponents of living organisms or their parts as biochemical machines. At first glance, both sides of the dispute seem to be talking about the same thing. [125] Here, for instance, we see naturalists addressing the following question:

> Why do we call the large protein assemblies that underlie cell function protein machines? Precisely because, like the machines invented by humans to deal efficiently with the macroscopic world, these protein assemblies contain highly coordinated moving parts. [126]

Artificialists, on the other hand, maintain that

> life is a molecular phenomenon: All organisms are made of molecules that act as the nuts and bolts, gears and pulleys of biological systems. [...] It was once expected that the basis of life would be exceedingly simple. That expectation has been smashed. Vision, motion, and other biological functions have proven to be no less sophisticated than television cameras and automobiles. [...] The cumulative results show with piercing clarity that life is based on machines — machines made of molecules! [127]

ID proponents use such terms literally, unlike evolutionary biologists, for whom such terms have only a figurative meaning. This is because a literal understanding of such terms leads to the belief that living organisms were designed.

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[124] Feyerabend, "Changing Patterns...", p. 363.

[125] See Erkki Vesa Rope Kojonen, **Intelligent Design: A Theological and Philosophical Analysis**, University of Helsinki Press, Helsinki 2014, pp. 162–163.

[126] Bruce Alberts, "The Cell as a Collection Overview of Protein Machines: Preparing the Next Generation of Molecular Biologists", *Cell* 1998, Vol. 92, p. 291 [291–295], https://tiny.pl/wwf68 [30.12.2024].

[127] Michael J. Behe, **Darwin's Black Box: The Biochemical Challenge to Evolution**, Free Press, New York — London — Toronto — Sydney 2006, p. X and p. 4.

Thus, it turns out that for the latter this is a mere *façon de parler*, intended to provide them with certain heuristically valuable metaphors without which science could not progress. [128]

As a consequence of the differences of view outlined above, accusations are levelled in both directions — of being unscientific, [129] or of disregarding the content of the Bible, [130] or of failing to understand that the Bible is not a textbook for teaching the natural sciences. [131] It has long been noted that at crucial moments in the development of science, disputes between researchers have come to resemble propagandizing rather than honest substantive discussions, with the matter in question very often settled by a straightforward appeal to the authority of one or other of the parties. [132] As we can see below, naturalists use strongly worded language:

> Scientifically Creationism is worthless, philosophically it is confused, and theologically it is blinkered beyond repair. [133]

> So what that we have the right views on everything, if there is a significant group of people who simply won't listen to our views? [134]

Meanwhile, creationists also do not mince their words:

> The notion that the diversity of life arose through random mutation and natural selec-

[128] See Michael Ruse, **Darwin and Design: Does Evolution Have a Purpose?**, Harvard University Press, Cambridge — London 2003, pp. 284–285.

[129] See Michael S. Luciano, "Why Intelligent Design Doesn't Cut It: A Primer", *Talk Reason* 2009, June 30, https://tiny.pl/tt7fv [30.12.2024]; Coyne, **Why Evolution is True...**, p. 148.

[130] See CSSHS Editorial Staff, "Lesson 1...", p. 2.

[131] See John H. Walton, **The Lost World of Genesis One: Ancient Cosmology and the Origins Debate**, InterVarsity Press, Downers Grove 2009, p. 19; Peter M.J. Hess, "How Do I Read the Bible? Let Me Count the Ways", *National Center for Science Education* 2016, January 22, https://tiny.pl/kgdhgn8 [30.12.2024].

[132] See Thomas S. Kuhn, "Reflections on My Critics", in: Thomas S. Kuhn, **The Road since Structure**, The University of Chicago Press, Chicago — London 2000, pp. 123–175.

[133] Michael Ruse, "Creationism", in: Edward N. Zalta (ed.), **The Stanford Encyclopedia of Philosophy**, https://tiny.pl/t9r44 (03.02.2024). See also Adam Łomnicki, "Czy darwinowska teoria ewolucji jest dogmatem współczesnej biologii, czy zmową elit?", *Wszechświat* 2014, Vol. 115, No. 1–3, p. 60 [56–60], http://tiny.pl/gkb4q [30.12.2024].

[134] Kowalski-Glikman, "Bezradność postępowego...", p. 85.

> tion is neither an empirical fact nor a scientific theory, but rather a groundless conjecture based on weak, inferential methods of backward extrapolation through eons of unobserved time over unknown conditions and having known and uncontrollable systematic errors. […] [A]ccepting Darwinian evolution requires a leap of faith that may be more radical and less substantiated than to believe that God created the world in six days and on the seventh day He rested. [135]

Neither, for that matter, do artificialists:

> [F]aith in naturalism is no more "scientific" (i.e. empirically based) than any other kind of faith. [136]

In order to summarize our reflections on these dissimilarities with respect to EF, two points are worth emphasizing: acceptance of a particular theoretical approach renders alternative approaches meaningless, and the authority of a commonly accepted EF can be invoked, as well, to neutralize any difficulty facing a theory that accepts that particular EF. This thesis leaves no room for even token concessions — something that is evidenced not only by the history of the dispute between naturalism and anti-naturalism itself. For it turns out that even if the facts speak against a theory, and there is another alternative theory compatible with them, this is not enough to eliminate the former in cases where it is compatible with the commonly accepted mode of explanation in science, but its rival is not. [137] For example, in **The Republic**, Plato sought to neutralize in this kind of way the results achieved by "craftsmen-astronomers": [138]

> our approach to astronomy will be like our approach to geometry. It will be based on problems. If we want to take part in true astronomy, and make the naturally rational part of the soul useful instead of useless, we shall forget about the heavenly bodies.

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[135] Arnie Gotfryd, "Evolution: Myths and Facts", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, p. 1030 [1023–1031].

[136] Phillip E. Johnson, "Evolution as Dogma: The Establishment of Naturalism", *First Things* 1990, October, https://tiny.pl/thtm9 [30.12.2024].

[137] See Kazimierz Jodkowski, "Eskapizm teologii i filozofii katolickiej w sprawie »nauka a religia«", *Na Początku…* 2005, No. 7–8 (196–197), pp. 273–274 [261–284], https://tiny.pl/gztl8 [30.12.2024].

[138] Larry Laudan, "The Demise of the Demarcation Problem", in: Robert S. Cohen and Larry Laudan (eds.), **Physics, Philosophy and Psychoanalysis**, D. Reidel Publishing Company, Dordrecht 1983, p. 113 [111–127].

> That's a much, much larger task [...] compared with the way astronomy is done at the moment. [139]

4. Epistemic Frameworks as Forms of Making Sense

It is not necessary to justify the thesis that adherence to the principles of methodological naturalism has contributed significantly to the growth of knowledge. [140] Since naturalistic EFs are the most widespread forms of EF, most argu-

[139] Plato, **The Republic**, trans. Tom Griffith, Cambridge University Press, Cambridge 2018, 530 C.

[140] One Reviewer annotated the above sentence with the following comments: "The author grants that MN has been successful. Every theory and (what Ratzsch calls) shaping principle must earn the right to be part of science. But once it does, rival views must first prove their superiority for there to be change. Many naturalists are open to such change provided the evidence is forthcoming. For example, Philip Kitcher: "postulating an unobserved Creator need be no more unscientific than postulating unobserved particles" (Philip Kitcher, **Abusing Science: The Case Against Creationism**, The MIT Press, Cambridge — London 1992, p. 125).

The openness to change which the Reviewer mentions is mostly apparent and generally ends with declarations of the kind the Reviewer cited. Incidentally, there are quite a few such declarations, additionally stipulating under what conditions naturalistic explanations would be abandoned. For example:

> We should be very surprised, for example, to find fossil humans appearing in the record before mammals are supposed to have evolved! If a single, *well-verified* mammal skull were to turn up in 500. million year-old rocks, our whole modern theory of evolution would be utterly destroyed.

Richard Dawkins, **The Blind Watchmaker. Why the Evidence of Evolution Reveals a Universe without Design**, W.W. Norton & Company, New York 1996, p. 225 [italics added]. See also Jerry A. Coyne, "God in the Details", *Nature* 1996, Vol. 383, No. 6597, p. 228 [227–228], https://doi.org/10.1038/383227a0.

It has been noted, however, that this is purely an illusion inherent in the term "well-verified" and its ilk (see statement by Kazimierz Jodkowski, in: Borczyk, Chmielewski, Elżanowski, Jodkowski, Leszczyński, Lukierski, Nysler, and Pawłowski, "Dyskusja...", p. 165). These types of fossils will always be highly questionable, as it is the theory that makes a discovery doubtful or undoubted (see Kazimierz Jodkowski, "W poszukiwaniu twardego jądra ewolucjonizmu", *Filozofia Nauki* 2001, No. 2 (34), p. 14 [7–18]. See also Fitzhugh, „Evidence for Evolution..." p. 69). It is also no coincidence that Karl R. Popper warned against immunization procedures: "empirical refutations could always be avoided. It was always possible to «immunize» any theory against criticism" (Karl R. Popper, "Conjectural Knowledge: My Solution of the Problem of Induction", in: Karl R. Popper, **Objective Knowledge. An Evolutionary Approach. Revised Edition**, Oxford University Press, Oxford 1979, p. 30 [1–31], see also Karl R. Popper, **The Logic of Scientific Discovery**, Routledge Classics, London — New York 2002, pp.

ments have been formulated for or against them. Arguments in favour of naturalistic EFs, it goes almost without saying, are at the same time arguments against anti-naturalism — i.e. supernaturalism or artificialism. And arguments against naturalistic EFs are also at the same time arguments for one or other of the aforementioned anti-naturalistic EFs. It is worth looking into these, because in combination with the remarks in the previous section they show even more clearly that the question of choosing the "right" EF is neither obvious nor unambiguously resolved.

60–62).

It seems that the Reviewer is an advocate of the position that in disputes such as this one, matters can be settled by the abandonment of prejudice, sound argumentation, logic and recourse to evidence independent of theory. (Such a view is indeed shared by many participants in the naturalism–antinaturalism debate.) However, this is not the case, and it is this thesis that I justify in the later parts of this section. It is the accepted EF that forms the basis for deciding whether a given explanation is accurate or not. For example:

> Some future day may yet arrive when all reasonable chemical experiments run to discover a probable origin for life have failed unequivocally. Further, new geological evidence may indicate a sudden appearance of life on the earth. Finally, we may have explored the universe and found no trace of life, or processes leading to life, elsewhere. In such a case, some scientists might choose to turn to religion for an answer. Others, however, myself included, would attempt to sort out the surviving less probable scientific explanations in the hope of selecting one that was still more likely than the remainder.

Robert Shapiro, **Origins. A Skeptic's Guide to the Creation of Life on Earth**, Bantam New Age, Toronto 1987, p. 130.

Incidentally, both sides of the naturalism-anti-naturalism controversy maintain that it is the opposing side that is not willing to break down its prejudices. Here are just two of many examples:

> Whether this argument [the features that appear to have been designed were in fact produced by the purposeless, unintelligent processes of mutation and selection] is supported by evidence when it is considered without prejudice is the fundamental point at issue. Prejudice enters the discussion if, for example, we define "science" as requiring an *a priori* assumption of metaphysical naturalism.

Phillip E. Johnson, "Darwinism's Rules of Reasoning", in: Jon Buell and Virginia Hearn (eds.), **Darwinism, Science or Philosophy? Proceedings of a Symposium Entitled "Darwinism, Scientific Inference or Philosophical Preference?" Held on the Southern Methodist University Campus in Dallas, Texas, March 26-28, 1992**, Foundation for Thought and Ethics, Richardson 1994, p. 17 [6–20].

> I gave them [a group of businessmen in a ritzy suburb of Chicago] a lavishly illustrated lecture about the evidence for evolution, complete with photos of transitional fossils, vestigial organs,

4.1. Arguments in Favour of Methodological Naturalism

I have divided up the arguments in favour of methodological naturalism according to whether or not revisions of methodological naturalism are permissible within their framework. Subsequently, they will also be divided up on the basis of whether they furnish specific conditions for maintaining or abandoning naturalism or not. [141]

Within the approach that does not allow for revisions of this naturalism, the following groups of arguments appear.

(1) *"No, because no!" It makes no sense at all to seek explanations other than naturalistic ones, because the former explanations simply work,* [142] *and any other sort "is just not science"*. [143] Such an argument is very weak, as the recognition that something does or does not work, or that it is a more convincing explanation than another, is bound to be highly dependent on a previously accepted definition of

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and developmental anomalies like the vanishing leg buds of embryonic dolphins. They seemed to appreciate my efforts. But after the talk, one of the attendees approached me, shook my hand, and said, "Dr. Coyne, I found your evidence for evolution very convincing—but I still don't believe it." I was flabbergasted. How could it be that someone found evidence *convincing but was still not convinced*? The answer, of course, was that his religion had immunized him against my evidence.

Jerry A. Coyne, **Faith versus Fact: Why Science and Religion are Incompatible**, Viking, New York 2015, pp. xiv–xv (italics in original).

It is also worth returning at this point to the Kitcher's book cited by the Reviewer to draw attention to the statement that follows the proposition quoted by the Reviewer: "What matters is the character of the proposals and the ways in which they are articulated and defended" (Kitcher, **Abusing Science...**, p. 125) and to ask what criteria determine the legitimacy of the conclusions and their modes of defense. Undoubtedly, such a primary criterion would be the conformity with the generally accepted EF. The absence of this conformity immediately leads to the accusation of unscientificity.

[141] See Krzysztof J. Kilian, "Arguments For Methodological Naturalism and Their Roots in a Particular Metaphysics", *Cosmos & History. The Journal of Natural and Social Philosophy* 2023, Vol. 19, No. 1, pp. 113–157, https://tiny.pl/8_wdv086 [30.12.2024].

[142] See Eugenie C. Scott, "My Favorite Pseudoscience", *Reports of the National Center for Science Education* 2003, Jan-Feb, Vol. 23, No. 1, https://tiny.pl/8rxw_vrw [30.12.2024].

[143] Stephen C. Meyer, "Sauce for the Goose: Intelligent Design, Scientific Methodology, and the Demarcation Problem", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 95 [95–131]. Meyer here cites statements by Robert Pennock and Barbara Carroll Forrest from the Kitzmiller vs Dover trial.

scientificality. Moreover, by the same logic, it can be argued that naturalistic explanations can be rejected when it is recognized that they no longer work. [144]

(2) *One should persist with naturalism, even in the face of potentially devastating failures on the part of naturalistic explanations, in the hope of finding a satisfactory solution to problems that can seem unsolvable*. [145] This is an injunction to proceed in accordance with Feyerabend's *principle of tenacity*. The latter recommends that from amongst multiple theories one should choose the one that has the most attractive features and promises to lead to the most fruitful results, and that one should keep on endorsing it even if it is inconsistent with experience or runs into other significant difficulties. [146]

The disadvantage of this argument is that it does not take into account the counter-principle to that of tenacity — namely, the *principle of proliferation* (which prescribes coming up with alternatives even when the dominant theory is well confirmed and there is no indication that it should be abandoned). [147] The *principle of tenacity* recommended in the context of this line of argument will turn into a dogma if it never allows, in circumstances that cannot be determined in advance, the possibility of accepting an alternative point of view: that is, when it is not supported by the *principle of proliferation*. [148] Methodological decisions taken without regard for the circumstances in play threaten to hinder the development of science. [149]

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[144] See William A. Dembski, "In Defense of Intelligent Design", in: Philip Clayton and Zachary Simpson (eds.), **The Oxford Handbook of Religion and Science**, Oxford University Press, New York 2006, p. 723 [715–731].

[145] See Shapiro, **Origins...**, p. 130; Christian de Duve, "Mysteries of Life: Is There «Something Else»?", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 355 [346–359].

[146] See Feyerabend, "Consolations for the Specialist...", p. 137.

[147] See Feyerabend, "Reply to Criticism...", p. 105.

[148] See Paul K. Feyerabend, "Outline of a Pluralistic Theory of Knowledge and Action", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 3. Knowledge, Science and Relativism**, Cambridge University Press, Cambridge 1999, pp. 107–108 [104–111].

[149] *When* to undertake research on alternative viewpoints is a matter of debate. The novelty of Feyerabend's proliferation principle is not that it merely postulates the invention of alternative viewpoints. What it suggests, which was previously overlooked, is that coming up with alternatives can be fruitful even when there is no indication that the commonly accepted viewpoint has weaknesses.

(3) *Naturalism should be recognized as a defining component of our conception of science.* Various arguments have been made in favour of this thesis. It has been argued that anti-naturalistic explanations are untestable, and therefore naturalistic explanations should not be abandoned. [150] However, there are conceivable tests that could undermine artificialistic explanations (e.g., it is sufficient to point to a natural cause capable of producing irreducible of specified complexity) [151] and supernaturalistic explanations (e.g., the laboratory process of synthesizing life should be considered an argument against supernaturalism). [152] How the proponents of artificialism and supernaturalism would respond when faced with such attempted refutations is a question that can only be settled *post factum*. It cannot be ruled out in advance that their moves would converge with the standard defensive behaviour of other scientific communities whose theories have run into difficulties. [153] An example of such a response is suppression of evidence. This phenomenon, taken in the most general terms, consist in the rejection of those results that are such as to be incompatible with some commonly accepted point of view. It is generally argued that such solutions are based on premises that are false (i.e. *de facto* incompatible with the currently held view). Editors of scientific journals then refuse to publish papers containing theses that are incompatible with the accepted way of explaining things.

[150] See Arthur N. Strahler, **Understanding Science: An Introduction to Concepts and Issues**, Buffalo, New York 1992, p. 3; Robert T. Pennock, **Tower of Babel: The Evidence Against the New Creationism**, MIT Press, Cambridge 1999, pp. 194–196.

[151] See Jonathan Witt and Jay W. Richards, "Intelligent Design is Empirically Testable and Makes Predictions", *Evolution News & Science Today* 2006, January 5, https://tiny.pl/ww5ht [30.12.2024]; U.S. District Court for the Middle District of Pennsylvania, "Kitzmiller et al. v. Dover Area School District et al.", *400 F. Supp. 2d 707*, 20 December 2005, p. 740 [708–766], https://tiny.pl/tm15j [30.12.2024]; Kirk Fitzhugh, "The Mechanics of Testing a Theory: Implications for Intelligent Design", *Research & Collections Branch, Natural History Museum of Los Angeles County*, pp. 4–5 [1–7], https://tiny.pl/w45c5 [30.12.2024]; Kirk Fitzhugh, "Evolutionary Biology versus Intelligent Design: Resolving the Issue", *Research & Collections Branch, Natural History Museum of Los Angeles County*, pp. 9–10 [1–10], https://tiny.pl/w45w5 [30.12.2024].

[152] See Jodkowski, **Metodologiczne aspekty...**, pp. 257–266.

[153] See Thomas S. Kuhn, "The Function of Dogma in Scientific Research", in: Alistair Cameron Crombie (ed.), **Scientific Change: Historical Studies in the Intellectual, Social and Technical Conditions for Scientific Discovery and Technical Invention, from Antiquity to the Present, Symposium on the History of Science, University of Oxford 9-15 July 1961**, Heinemann, London 1963, pp. 348–349 [347–369].

It has also been claimed that naturalism itself constitutes the universally accepted definition of science. [154] The weakness of this argument is revealed by the fact that if anti-naturalistic explanations were dominant in science today, a different, universally accepted definition of science would be adopted on the basis of them. When it comes to what constitutes science "by definition" there have also been, in the era of physicist-theologians, accounts appealing to supernatural explanations. [155] Moreover, a definition of science will say nothing about the truthfulness of rival claims: it only tells us how they should be classified (i.e. whether they are indeed scientific claims, or claims of some other kind, such as philosophical, historical or religious ones). [156]

There is also a belief — which continues to be held by some — to the effect that naturalistic explanations should never be abandoned. [157] The disadvantage of this approach is that it tacitly embraces the assumption described by Feyerabend, of the relative autonomy of facts. According to this assumption, the facts relevant to a given theory are available regardless of whether alternative accounts exist to that of the theory in question. [158] However, as is evidenced by the history of science, some relevant facts can only be discovered by means of an alternative theory to the prevailing one.

It is also sometimes argued that methodological naturalism is the only criterion of scientificality. [159] Nevertheless, there is no normative principle that would require this to be so: as proponents of naturalism themselves also admit, this is an arbitrary restriction — some scientists have just freely opted not to seek

[154] See Eugenie C. Scott, "Darwin Prosecuted: Review of Johnson's **Darwin on Trial**", *Creation/Evolution Journal* 1993, Vol. 13, No. 2, p. 43 [36–47], https://tiny.pl/g28vq [30.12.2024]; de Duve, "Mysteries of Live…", p. 346; Richard Lewontin, "Billions and Billions of Demons", *New York Review of Books* 1997, Vol. 44, No. 1, https://tiny.pl/3dmtny56 [30.12.2024].

[155] A comprehensive overview of these explanations can be found in the work of a member of The Royal Society, William Derham, **Physico-Theology: Or, a Demonstration of the Being and Attributes of God from His Works of Creation**, W. Innys and J. Richardson, London 1754, https://tiny.pl/tmrg4 [30.12.2024].

[156] See Meyer, "Sauce for the Goose…", p. 96.

[157] See Niles Eldredge, **The Monkey Business: A Scientist Looks at Creationism**, Washington Square Press, New York 1982, p. 88; Niles Eldredge, **The Triumph of Evolution and the Failure of Creationism**, W.H. Freeman and Company, New York 2001, p. 137.

[158] See Feyerabend, "Problems of Empiricism…", p. 174–175.

[159] See Eldredge, **The Monkey Business…**, p. 82.

to explain phenomena by invoking supernatural causes. [160] It is worth mentioning here, however, that this freedom of choice is not so free at all:

> Although the new believers had not a particle of evidence to support their statements on the matter, they asserted that the rabbit-producing sludge (called soup to make it sound more palatable) was terrestrially located and that all chemical and biochemical transmogrifications of the sludge were terrestrially inspired. Because there was not a particle of evidence to support this view, new believers had to swallow it as an article of faith, otherwise they could not pass their examinations or secure a job or avoid the ridicule of their colleagues. So, it came about from 1860 onward that new believers became in a sense mentally ill, or, more precisely, either you became mentally ill or you quitted the subject of biology, as I had done in my early teens. The trouble for young biologists was that, with everyone around them ill, it became impossible for them to think they were well unless they were ill, which again is a situation you can read all about in the columns of *Nature*. [161]

According to another argument, science is capable of exploring only observable and measurable phenomena, and allowing anti-naturalistic explanations is at odds with this elementary requirement of scientificality. [162] However, neither supernaturalists nor artificialists postulate the study of a supernatural realm: if, as I mentioned above, either of them do speak of the latter, this is only in the form of conclusions stemming from their research, not that of premises from which conclusions are to be derived.

(4) *Naturalism is supposed to guarantee the scientific community the greatest possible consensus – to ensure the objectivity and neutrality of scientific research.* [163] This thesis is not well argued. If, according to a certain line of argument,

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[160] See Raymond E. Grizzle, "Some Comments on the «Godless» Nature of Darwinian Evolution, and a Plea to the Philosophers Among Us", *Perspectives on Science and Christian Faith* 1992, Vol. 43, pp. 175–177 [175–177], https://tiny.pl/gzj7d [30.12.2024]; Mignea, "Methodological Naturalism...", p. 130.

[161] Fred Hoyle, **The Mathematics of Evolution**, Acorn Enterprises, Memphis 1999, pp. 3–4.

[162] See Luciano, "Why Intelligent Design Doesn't Cut It..."; Pine, "But Some of Them Are Scientists...", pp. 6–18.

[163] See Harry Lee Poe and Chelsea Rose Mytyk, "From Scientific Method to Methodological Naturalism: The Evolution of an Idea", *Perspectives on Science and Christian Faith* 2007, Vol. 59, No. 3, p. 214 [213–218], https://tiny.pl/ww5qq [30.12.2024]; Julian Chela-Flores, "Astrobiological Reflections on Faith and Reason. The Issues of Agnosticism, Relativism and Natural Selection", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, pp. 55–56 [49–62]. I shall revisit the other dimension of the term "neutral-

objectivism dictates that claims must be scientifically justified, then these justifications must be naturalistic, since, as proponents of methodological naturalism maintain, the very basis of the scientific method is the systematic rejection of anti-naturalistic explanations. [164] The argument thus says nothing more than that naturalism prescribes naturalism. And if, in fact, methodological naturalism was such a neutral approach, then the question arises of why the achievements of science force theologies that want to remain in line with the requirements of this naturalism to correct the content of the doctrine of divine creation. [165] No theory that sets itself the goal of explaining how life came to be will avoid either philosophical or theological consequences.

(5) *Naturalism creates an effective tradition for doing science — it "is a practical approach to doing science"*. [166] Here it is claimed that naturalistically practised science is successful. [167] And, in fact, it is impossible to deny the claim that the naturalistic tradition boasts remarkable achievements. On the other hand, though, such categories as success are not neutral in their character. Different traditions of doing science shape, for example, different beliefs and biases on the part of researchers, together with the research methods they embrace and the stand-

ism" when I come to analyse the thesis that naturalism is simply poor philosophy (see next section).

Objectivism, as it pertains to scientific research, can be understood in two ways: one stronger and the other weaker. The stronger construal assumes that there are, independent of the cognizing subjects involved, certain kinds of entities and true claims that science investigates. According to the weaker understanding, scientific objectivity entails presenting and evaluating the results of one's research independently of one's own interests, involvements or worldviews. I will be focusing here on this weaker sense.

[164] See Jacques Monod, **Chance and Necessity: An Essay on the Natural Philosophy of Modern Biology**, Alfred A. Knopf, New York 1971, p. 21.

[165] See Paul A. Zimmerman, **The Doctrine of Creation and the Modern Theories of Evolution**, The Lutheran Church — Missouri Synod, Okoboji 1960, pp. 1–2, https://tiny.pl/ww12f [30.12.2024].

[166] Leonard Brand, "Naturalism: Its Role in Science", *Origins* 2015, No. 64, p. 25 [21–37], https://tiny.pl/ww5q9 [30.12.2024]. See also Patrick McDonald and Nivaldo J. Tro, "In Defense of Methodological Naturalism", *Christian Scholar's Review* 2009, Vol. 38, No. 2, p. 202 [201–229], https://tiny.pl/tm9tg [30.12.2024].

[167] See Phil Stilwell, "The Status of Methodological Naturalism as Justified by Precedent", *Studies in Liberal Arts and Sciences* 2009, No. 41, p. 236 [229–247]; Barbara Carroll Forrest, "The Religious Essence of Intelligent Design", *Cold Spring Harbor Symposia on Quantitative Biology* 2009, Vol. 74, p. 458 [455–462], https://doi.org/10.1101/sqb.2009.74.036.

ards of evaluation in play. Moreover, whether a given explanation can be considered successful or not will depend on previously accepted general points of view that determine specific theoretical perspectives. [168]

It is also argued by some that naturalism is the only effective method of acquiring knowledge. [169] However, the view that the results scientists achieve are the result of strict adherence to certain rules has been challenged, and not only from the anarchist standpoint. [170] It has been shown that cases reflecting an insistence on such rules can hardly be considered more distinguished than those where such rules were not insisted upon, [171] and that the methodological declarations of researchers have little to do with their actual, everyday investigative practices. [172]

According to another argument supporting the above thesis, methodological naturalism has often found solutions to problems that seemed unsolvable within this perspective. [173] It is difficult to disagree with this argument. However, it does

[168] See Wilfrid Sellars, "Empiricism and the Philosophy of Mind", in: Wilfrid Sellars, **Science, Perception and Reality**, Ridgeview Publishing Company, Atascadero 1991, p. 173 [127–196]; James Porter Moreland, "Theistic Evolution, Christian Knowledge and Culture's Plausibility Structure", *Journal of Biblical and Theological Studies* 2017, Vol. 2, No. 1, p. 3 [1–18], https://tiny.pl/t9322 [30.12.2024]; Steve Clarke, "Naturalism, Science and the Supernatural", *Sophia. International Journal of Philosophy and Traditions* 2009, Vol. 48, p. 128 [127–142], https://doi.org/10.1007/s11841-009-0099-2.

[169] See Brand, "Naturalism: Its Role...", p. 25; Keith B. Miller, "The Misguided Attack on Methodological Naturalism", in: Jill S. Schneiderman and Warren D. Allmon (eds.), **For the Rock Record: Geologists on Intelligent Design**, University of California Press, Berkeley — Los Angeles — London 2009, p. 117 [117–140]; Francis J. Beckwith, "How to be an Anti-Intelligent Design Advocate", *University of St. Thomas Journal of Law and Public Policy* 2009, Vol. 4, No. 1, p. 41 [35–65], https://doi.org/10.1017/CBO9781316285671.006.

[170] See Feyerabend, **Against Method. Outline...**, p. 296; Stephan Fuchs and Joseph H. Spear, "The Social Conditions of Cumulation", *The American Sociologist* 1999, Vol. 30, No. 2, p. 24 [1–40], https://doi.org/10.1007/s12108-999-1015-5.

[171] See Paul K. Feyerabend, **Killing Time**, The University of Chicago Press, Chicago — London 1995, pp. 89–91.

[172] See Henri Poincaré, **Science and Hypothesis**, The Walter Scott Publishing Co., New York 1905, pp. XXI–XXII, https://tiny.pl/ww5xw [30.12.2024]; Pierre Duhem, **The Aim and Structure of Physical Theory**, Atheneum, New York 1962, pp. 321–322, https://tiny.pl/ww5xc [30.12.2024].

[173] See John Rennie, "15 Answers to Creationist Nonsense", *Scientific American* 2002, July 1, https://tiny.pl/ww5x4 [30.12.2024]; Jerry A. Coyne, "Science, Religion, and Society: The Problem of Evolution in America", *Evolution. International Journal of Organic Evolution* 2012, Vol. 66, No. 8, p. 2657 [2654–2663], https://doi.org/10.1111/j.1558-5646.2012.01664.x.

not entail the claim that this will be the case in the future, or that anti-naturalistic methodologies are useless. [174]

Still another argument holds that due to what substantive considerations dictate, naturalism is an idealization that involves omitting anti-naturalistic explanations. [175] But talk of idealization makes sense only if factors considered secondary are omitted. And it is difficult to consider as secondary such explanations as are radically different from naturalism, since they allow the occurrence of such states of affairs that naturalism itself excludes. [176]

(6) *Naturalism is a form of Ockham's razor – it implements the principle of parsimony.* According to a stronger formulation of this principle, knowledge of the explanation obtained by the simplest means exempts one from examining more complicated explanations. [177] On this approach, appealing to anti-naturalistic explanations amounts to a needless multiplication of explanations, since with the help of natural causes we are able to explain everything that needs explaining ("supernatural beings are just not necessary to explain the universe"). [178] But not only opponents of naturalism distance themselves from the belief that the

[174] It should not be forgotten that ID is not yet a fully crystallized paradigm – something that furnishes a fundamental reason for the various exploratory weaknesses of the approach. The tradition of puzzle-solving has not been fully formed within its framework. The community of researchers and/or supporters of this approach is also not overly numerous. The same can be said of creationists. The above fact is also emphasized by opponents of ID. See Abby Hafer, "No Data Required: Why Intelligent Design is not Science", *The American Biology Teacher* 2015, Vol. 77, p. 508 [507–513], https://doi.org/10.1525/abt.2015.77.7.5; Denis Alexander, Munawar Anees, Martinez Hewlett, Ronald L. Numbers, Holmes Rolston III, Michael Ruse, and Jeffrey Schloss, "ISSR Statement on the Concept of «Intelligent Design»", *ISSR Statements* 2017, January 6, https://tiny.pl/tt75g [30.12.2024]. Dembski, for example, describes his enterprise as a "scientific research program". The aforementioned author has formulated a number of recommendations that this program should meet. See William A. Dembski, "Becoming a Disciplined Science: Prospects, Pitfalls, and a Reality Check for ID", *Access Research Network*, https://tiny.pl/gzpct [30.12.2024].

[175] See Adam Grobler, "Słabości eksplanacyjne teorii inteligentnego projektu", *Filozoficzne Aspekty Genezy* 2013, Vol. 10, p. 8 [7–16], https://doi.org/10.53763/fag.2013.10.78.

[176] See the comment by Kazimierz Jodkowski in: Piotr Bylica, Kazimierz Jodkowski, Krzysztof J. Kilian, and Dariusz Sagan, "Dyskusja nad artykułem Adama Groblera, »Słabości eksplanacyjne teorii inteligentnego projektu«", *Filozoficzne Aspekty Genezy* 2013, Vol. 10, pp. 17–63, https://doi.org/10.53763/fag.2013.10.79.

[177] See Joachim Metallmann, **Zasada ekonomii myślenia. Jej historia i krytyka**, E. Wende & Co., Warszawa — Kraków 1914, p. 117. The problem of determining how to measure the degree of simplicity will not be addressed here. On this issue see Mario Bunge, **The Myth of Simplicity: Problems of Scientific Philosophy**, Prentice-Hall, Englewood Cliffs 1963, pp. 99–115.

simplest explanation for the origin of life is already known. [179] These doubts are also shared by some naturalists ("we are still nowhere near explaining the origin of life"). [180]

According to a weaker formulation of this principle, the simpler of the possible explanations should be chosen. Naturalism is the most economical approach to explanation of those we know of, since it limits itself to explanations that make a minimum number of ontological assumptions. [181] Undoubtedly, the choice of a simpler explanation, because it contains fewer such assumptions, is more attractive — for example, because it is easier to check and regulate than one containing more assumptions. However, it is difficult to undermine the argument that it is sometimes worthwhile to try out, at least, abandoning a simpler explanation in favour of a more complex one, especially when the latter offers the hope of solving such problems as do not find a satisfactory solution in the context of the former. [182]

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[178] Coyne, "Science, Religion…", p. 2657. See also Peter van Inwagen, "Is God an Unnecessary Hypothesis?", in: Andrew Dole and Andrew Chignell (eds.), **God and the Ethics of Belief: New Essays in Philosophy of Religion**, Cambridge University Press, Cambridge 2005, p. 148 [131–149].

[179] See DeWolf, Meyer, and DeForrest, "Teaching the Origins…", pp. 53–54, 57; Dembski, "In Defense of Intelligent…", p. 6; David Berlinski, "On the Origins of Life", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, pp. 276–277, 283–285 [276–292]; Stephen C. Meyer, "DNA: The Signature in the Cell", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, pp. 310–312 [293–345].

[180] de Duve, "Mysteries of Life…", p. 349. See also Klaus Dose, "The Origin of Life: More Questions than Answers", *Interdisciplinary Science Reviews* 1988, Vol. 13, No. 4, p. 348 [348–356], https://doi.org/10.1179/isr.1988.13.4.348; Gerd B. Müller, "Why an Extended Evolutionary Synthesis is Necessary", *Interface Focus* 2017, Vol. 7, No. 5, p. 4 [1–11], https://doi.org/10.1098/rsfs.2017.0015; Eugene V. Koonin, "Darwinian Evolution in the Light of Genomics", *Nucleic Acids Research* 2009, Vol. 37, No. 4, p. 1014 [1011–1034], https://doi.org/10.1093/nar/gkp089.

[181] See Ronald G. Larson, "Revisiting the God of the Gaps", *Perspectives on Science and Christian Faith* 2009, Vol. 61, No. 1, p. 14 [13–22], https://tiny.pl/ww5gr [30.12.2024].

[182] See Paul K. Feyerabend, "On the Improvement of the Sciences and the Arts and the Possible Identity of the Two", in: Robert S. Cohen and Marx W. Wartofsky (eds.), **Proceedings of the Boston Colloquium for the Philosophy of Science, 1964/1966. In Memory of Norwood Russell Hanson**, *Boston Studies in the Philosophy of Science* Vol. 3, D. Reidel Publishing Company, Dordrecht 1967, pp. 402–405 [387–415]; Paul K. Feyerabend, "Dialectical Materialism and the Quantum Theory", *Slavic Review* 1966, Vol. 25, No. 3, p. 415 [414–417], https://doi.org/10.1017/CBO9781139034197.012.

(7) *Allowing anti-naturalistic explanations has harmful consequences for the practice of science.* In support of this belief, it is argued that there is no plausible alternative to methodological naturalism. [183] However, this immediately raises the question of what the determinant of this credibility might be. After all, there is no universally accepted criterion of demarcation, so the basic condition of the scientificality (or credibility) of an approach is whether it conforms to the commonly accepted EF or not. At the same time, the second determinant of the credibility of beliefs is whether they conform to accepted natural interpretations: i.e. "ideas so closely connected with observations that it needs a special effort to realize their existence and to determine their content". [184] What we are talking about here, then, are beliefs conditioned by a language's built-in ontology, which goes unnoticed as long as no attempt is made to undermine it, while attempts to undermine it lead to fundamental changes in the language in which it is expressed. The ontology presupposed by our language only allows for the formulation of statements about certain kinds of entities. [185]

Moreover, there are no means by which one can demonstrate that the belief that a point of view is unreliable proves that this point of view cannot be developed to the point where it stands on a par with the best-founded theory. It is also impossible to say in advance where future research connected with such

[183] See David M.S. Watson, "Adaptation", in: **Report of British Association for the Advancement of Science: Report of the Ninety-Seventh Meeting (Ninety-Ninth Year. South Africa; July 22nd — August 3rd 1929)**, Office of The British Association, Burlington House, London 1930, p. 88 [88–99], https://tiny.pl/ww5gn [30.12.2024].

[184] Feyerabend, **Against Method: Outline...**, p. 69.

[185] One can illustrate this with the following examples. Creationists maintain that "life was suddenly created" (Duane Gish, "Summary of Scientific Evidence for Creation (Part I & II)", *Acts & Facts* 1981, Vol. 10, No. 5, https://tiny.pl/t9mf5 [30.12.2024]). This allows them to claim that "[o]ne example of the scientific evidence for creation is the sudden appearance of complex fossilized life in the fossil record, and the systematic gaps between fossilized kinds in that record. The most rational inference from this evidence seemingly is that life was created and did not evolve" (Gish, "Summary of Scientific..."; see also Oktar Babuna, "The Origin and Creation of Life", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, p. 344 [327–345]). In contrast, according to evolutionists life emerged from inanimate matter by means of natural processes, where this allows them to claim that "[t]he scientific model of evolution [...] includes the scientific evidence for a gradual emergence of present life kinds over aeons of time, with emergence of complex and diversified kinds of life from simpler kinds and ultimately from non-living matter" (see Gish, "Summary of Scientific...").

a viewpoint will lead, and the fact that some point of view that is not currently credible has been aired without success by its proponents does not definitively prove, either, that it cannot be modified and defended in the future. Nor are inconsistencies with facts, or with background knowledge, definitely evidence against such a point of view. Finally, the scientificality of a point of view is no indicator of its excellence, as what distinguishes a scientist and a charlatan are their attitudes toward future research (e.g., whether they are willing to overcome existing limitations rather than insisting on unsatisfactory solutions, and try to come up with tests that can transform vague ideas into testable theses), not the original content of the theories they adopt. [186]

On another line of argument, allowing material phenomena to be explicated by means of explanations that go beyond the material world represents a departure from the scientific method, which allows only materialistic ones. [187] This argument is circular: the basic component of the scientific method is explanation of one material phenomenon by means of another — i.e. adherence to the principle of methodological naturalism. Thus, naturalism does indeed speak in favour of naturalism. [188]

Still another one argues that naturalism is a regulative principle of science that should not be abandoned, because allowing anti-naturalistic explanations leads to a willing embrace of ignorance. [189] As the history of science shows, the de-

[186] See Paul K. Feyerabend, "Realism and Instrumentalism: Comments on the Logic of Factual Support", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 1. Realism, Rationalism & Scientific Method**, Cambridge University Press, Cambridge — New York — Port Chester — Melbourne — Sydney 1981, p. 199–200 [176–202]; Paul K. Feyerabend, "Linguistic Arguments and Scientific Method", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 2. Problems of Empiricism**, Cambridge University Press, Cambridge — New York — Port — Chester — Melbourne — Sydney 1981, p. 157 [146–160].

[187] See Michał Heller, **Sens życia i sens Wszechświata. Studia z teologii współczesnej**, Biblos, Tarnów 2002, p. 44.

[188] This has also been recognized by Beckwith, who writes that "to exclude non-materialist (or ID) accounts of natural phenomena by merely defining science as requiring MN [methodological naturalism] [...] does not count either as a philosophical argument against ID or an argument for MN; it is, at best, circular reasoning, and at worst, intellectual imperialism". Francis J. Beckwith, "Public Education, Religious Establishment, and the Challenge of Intelligent Design", *Notre Dame Journal of Law, Ethics and Public Policy* 2003, Vol. 17, No. 2, p. 469 [461–520], https://tiny.pl/tmp7d [30.12.2024].

ficiencies in all naturalistic explanations have been filled by widely accepted explanations of this kind.

Of course, there is a strong historical rationale behind this argument – the criticism of the idea of a God-of-the-gaps where knowledge is concerned. However, to fully acknowledge this line of thinking, one must first accept the metaphysical thesis that naturalistic explanations are sufficient for an adequate description of the world. [190] Moreover, the category of adequate description of the world itself is not neutral. As early as the 19th century, it was emphasized that what is referred to in theories is not the world itself, but the world described by a particular theory. [191] What under one EF will be considered an adequate description of the world, under another EF need not have this value.

The weaker version of the above argument — according to which science can only function if it is assumed that God does not intervene in the course of events [192] — is accurate. The exclusion of direct supernatural interference from scientific explanation makes it possible to pursue science, and above all to perform such procedures as prediction and verification.

On another approach to this, if science allows anti-naturalistic explanations, then "anything goes". However, this "rule" on the part of Feyerabend does not have to be interpreted nihilistically [193] — there are also anti-nihilistic interpreta-

[189] See Futuyma, "Miracles and Molecules…", p. 30; Tom Gilson, "Methodological Naturalism, Methodological Theism, and Regularism", in: Jonathan Bartlett and Eric Holloway (eds.), **Naturalism and Its Alternatives in Scientific Methodologies: Proceedings of the 2016 Conference on Alternatives to Methodological Naturalism**, Blyth Institute Press, Broken Arrow 2017, p. 40 [39–46].

[190] See Steven Lloyd, "»God of the Gaps«. A Valid Objection?", *Origins* 2005, Vol. 42, p. 9 [7–10], https://tiny.pl/gzlgr [30.12.2024].

[191] This was also pointed out by Charles Darwin. In his letter to the Scottish botanist and member of The Linnean Society of London John Scott (1836-1880), dated June 6th, 1863, he wrote as follows: "I would suggest to you the advantage at present of being very sparing in introducing theory in your papers (I formerly erred much in geology in that way), let theory guide your observations, but till your reputation is well established be sparing in publishing theory. It makes persons doubt your observations". Letter form Charles Darwin to John Scott, 1863, June 6, *Darwin Correspondence Project*, University of Cambridge, https://tiny.pl/ww5dh [30.12.2024].

[192] See Steven Weinberg, **Dreams of A Final Theory: The Search for The Fundamental Laws of Nature**, Hutchinson Radius, London 1993, p. 198.

[193] "The only rule […] is that there are no rules". Jean Curthoys and Wal Suchting, "Feyerabend's Discourse against Method: A Marxist Critique", *Inquiry* 1977, Vol. 20, No. 2–3, p. 251 [243–397], https://doi.org/10.1080/00201747708601836.

tions of it. [194] According to one of these, formulated by Feyerabend himself, "anything goes" should be understood as an injunction not to restrict one's imagination to just such assumptions as are known to have proven themselves repeatedly in the past. [195]

Furthermore, according to yet another line of argument, anti-naturalistic explanations are

> the explanations of last resort, since [...] they can always be hauled down to "save the day" if every other explanation fails. They are the poor person's explanations, or rather, the explanations of the intellectually poverty-stricken, since they are available for free. [196]

Yet this line is eminently propagandistic in nature — and not just because of the vocabulary used in it. Yes, one can always seek to refer to easier explanations when more difficult ones fail. However, it has been noted that *de facto* this is not the case, and this has also been supported by a convincing example from beyond the naturalism-antinaturalism controversy. Quantum mechanics talks about indeterministic processes. For example, radioactive decay is just subject to statistical regularities: one can only predict the probability that a given atom of such an element will decay in a certain time. If indeterministic explanations have been allowed once in science, there is no reason why such explanations should not be used for every problem that, at any given time, escapes deterministic explanations. Scientists, however, do not do so, and they do not swiftly move to invoke indeterministic explanations when, in certain cases, these would be the simplest option and involve no effort at all. [197]

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[194] For example: "Try anything, see if it goes". Marx W. Wartofsky, "How to Be a Good Realist", in: Gonzalo Munévar (ed.), **Beyond Reason. Essays on the Philosophy of Paul K. Feyerabend**, *Boston Studies in the Philosophy of Science*, Vol. 132, Kluwer Academic Publishers, Dordrecht — Boston — London 1991, p. 28 [25–40].

[195] See Paul K. Feyerabend, **The Tyranny of Science**, Polity Press, Cambridge — Malden 2012, pp. 130–131.

[196] Pennock, **Tower of Babel...**, p. 294.

[197] See Bradley Monton, **Seeking God in Science: An Atheist Defends Intelligent Design**, Broadview Press, Toronto 2009, p. 63.

At this point one Reviewer noted that "[t]his is an important example. Determinism has been a long-held shaping principle in science. Quantum mechanics has proven the need for an exception. This shows that shaping principles can be changed or suspended if the evidence is sufficient. MN can be understood the same way. It can be suspended, but there will have to be sufficient evidence to

To conclude this part of the discussion, it should be noted that none of the approaches discussed above, which do not allow a revision of naturalism, formulate such arguments as would compel us to reject anti-naturalistic explanations.

There are also naturalistic approaches that do permit revisions to naturalism. These fall into two groups, one of which does not furnish specific conditions for abandoning naturalistic explanations, while the other does do so. Within the first of these, it is asserted, in very general terms, that methodological naturalism constitutes a working assumption that should be abandoned when it begins to fail.

On one line of argument here, the restriction of science to naturalistic explanations is only temporary, and is based on the failures of supernaturalistic explanations and the successes of naturalistic ones. [198] This is very weak. For one thing, it is easily reversed: when the situation changes and anti-naturalistic explanations begin to succeed and naturalistic explanations start to fail, the former will have to be allowed. (A long-noted problem also arises here: it is impossible to set a time limit for tolerating the failures of any mode of explanation. There are no means by which it can be ruled in advance that the criticized point of view cannot still be developed to deal with the greatest difficulties.) [199] Above all, this is because, as was mentioned earlier, such categories as *success* are not neutral in nature.

Another approach, similar to the preceding one, urges the abandonment of naturalism when a more convincing explanation is known [200] or when there is a good scientific reason for this. [201] The counter-argument here is the same as with

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the contrary."

The next part of this section examines approaches that allow for a revision of methodological naturalism. However, as I show, none of them, with the exception of Jodkowski's condition, give explicit conditions for departing from MN. Speaking about sufficient evidence sounds convincing until one realises that the fact that a given piece of evidence is conclusive is determined by the EF adopted. I have already written about this elsewhere in this article, see footnote 138.

[198] See Erkki V.R. Kojonen, "Methodological Naturalism and the Truth-Seeking Objection", *International Journal for Philosophy of Religion* 2017, Vol. 81, p. 336 [335–355], https://doi.org/10.1007/s11153-016-9575-0.

[199] See Feyerabend, "Consolations for the Specialist…", pp. 137–138.

[200] See Loren Petrich, "Animal and Extraterrestrial Artifacts: Intelligently Designed?", *The Secular Web* 2003, April 22, https://tiny.pl/ww5dj [30.12.2024].

[201] See Thomas Woodward, **Darwin Strikes Back: Defending the Science of Intelligent Design**, Baker Books, Grand Rapids 2006, p. 34.

the previous argument: neither a more convincing explanation nor a good scientific reason are neutral categories — the recognition of something as an explanation more convincing than another or as a good reason depends on a previously accepted definition of scientificality, which is usually based on a naturalistic understanding of science. [202]

Meanwhile, the second group of arguments permitting revisions in respect of naturalism formulates the conditions for the latter's abandonment. There are at least three such procedures for giving up on it.

The first such procedure appeals to "overwhelming and unmistakable empirical evidence" that would undermine naturalistic explanations. [203] According to this approach, methodological naturalism is "a provisory and empirically grounded commitment to naturalistic causes and explanations, which in principle is revocable by extraordinary empirical evidence". [204] And yet extraordinary evidence, if the term is understood in Kuhnian terms, is nothing more than anomalies. [205] The latter, taken in isolation, will not undermine an accepted research perspective. It was noted long ago that there is no theory that agrees with all observations. [206]

The second procedure from this group is based on four serious methodological decisions. The first is to expand the scope of what is denoted by "science":

> The Latin term "scientia" was broader in its normal coverage than it is today. It referred to all forms of knowledge held at that time to count legitimately as knowledge, and thus was applicable in such areas as metaphysics and theology. Refusing to allow

[202] Compare, on this issue, Nagel's commentary ("Public Education...", pp. 201–202) on the trial of Kitzmiller et al. v. Dover Area School District et al.

[203] Maarten Boudry, Stefaan Blancke, and Johan Braeckman, "How Not to Attack Intelligent Design Creationism: Philosophical Misconceptions about Methodological Naturalism", *Foundations of Science* 2010, Vol. 15, No. 3, p. 241 [227–244], https://doi.org/10.1007/s10699-010-9178-7.

[204] Boudry, Blancke, and Braeckman, "How Not to Attack...", p. 229.

[205] One Reviewer noted at this point: "No, anomalies are problems from the point of view of a given theory." Kuhn was not very precise in many places in his **Structure...**, but he defined anomaly quite clearly: "Discovery commences with the awareness of anomaly, i.e., with the *recognition that nature has somehow violated the paradigm-induced expectations that govern normal science*" (Kuhn, **The Structure...**, pp. 52–53 [italics added]). I see no reason, therefore, why it cannot be argued that extraordinary evidence (e.g. the irreducible complexity of the blood-clotting process) constitutes an anomaly.

[206] See Phillip G. Frank, "The Variety of Reasons for the Acceptance of Scientific Theories", in: Phillip G. Frank, **The Validation of Scientific Theories**, The Beacon Press, Boston 1956, p. 3 [3–28].

> this broader meaning could, by implication, suggest a denial of epistemic legitimacy to these other areas […]. [207]

According to the argument discussed here, if methodological naturalism is not combined with some form of scientism, and in particular with the belief that all theories that refer to theology are irrational, then acceptance of methodological naturalism does not allow for the elimination of such naturalistic explanations as are justified by "*a particular* interpretation of Scripture". [208] However, such an approach amounts to accepting a second methodological decision: namely, endorsement of the principle of inclusivity. According to the latter, explanations invoking direct action on the part of a divine agent can be a component of the natural sciences. [209] Nevertheless, it is not difficult to see that methodological naturalism is based on a different methodological decision, this being the principle of exclusivity, [210] which prohibits any acceptance of such explanations.

Acceptance of the principle of inclusivity, on the other hand, requires two distinctions to be made, and consequently two further methodological decisions to be embraced as well. First, a distinction must be made between so-called "strong methodological naturalism", according to which "the only legitimate way to gain valid knowledge of the real is to follow the methodology of the natural sciences", and so-called "qualified methodological naturalism", [211] where one in turn distinguishes knowledge of nature gained from the natural sciences from knowledge authenticated in other ways (e.g., theologically). Then comes a third methodological decision, recognizing the latter type of knowledge as a component of scientific explanation. [212]

The fourth decision that is made here boils down to distinguishing theistic science [213] — which accepts "premises of distinctively Christian inspiration" [214] and is

[207] McMullin, "Varieties of Methodological…", p. 89.

[208] O'Connor, "Science on Trial…", p. 19 [italics added].

[209] See O'Connor, "Science on Trial…", p. 15.

[210] See O'Connor, "Science on Trial…", p. 16.

[211] McMullin, "Varieties of Methodological…", p. 83.

[212] See McMullin, "Varieties of Methodological…", pp. 86–91.

[213] See Plantinga, "When Faith and Reason…", p. 30.

[214] McMullin, "Varieties of Methodological…", p. 88.

sometimes referred to as "a broader view of science" [215] — from science that does not accept such premises. One can, of course, argue that the result of such treatments will be a pluralism of stances that can contribute to the growth of knowledge. [216] However, if the primary purpose of these methodological decisions (which are unquestionably complicated, and introduce a lot of confusion into reflections on science) is just to allow, in certain situations, for anti-naturalistic explanations, then the issue can be brought to a much simpler resolution, which will now be presented.

The third procedure in this group avoids the above problems. Instead, it proposes a criterion for abandoning naturalistic explanations that is explicit, and at the same time applicable and *a posteriori*. Here I have in mind Jodkowski's condition: i.e. the sort of criterion for deviating from these explanations that is not based on lack of knowledge (and thus avoids the charge of appealing to a God-of-the-gaps), but is justified by currently available knowledge. [217] This condition states that where anti-naturalistic explanations are introduced, a strong argument must first be given for why naturalistic explanations are not possible. [218] This condition, it is worth emphasizing at this point, "*demands not a proof but an argument: i.e. reasoning which, on closer examination, may turn out to be wrong*", [219]

One Reviewer noted at this point: "ID theorists have been working under such premises for thirty years, but most of their research is a list of anomalies for neo-Darwinism. They do not have a worked out, rival *theory* to replace naturalistic evolution." Nowhere in this text do I argue that ID theorists have developed a theory capable of replacing naturalistic evolutionary theory. However, neither the thesis that the list of anomalies is so extensive that it should be taken seriously, nor the other thesis that there is no theory that agrees with all observations (Phillip G. Frank), and, yet another thesis, that there are potential difficulties associated with every theory that can only be discovered by means of other theories (see Feyerabend, "Realism and Instrumentalism...", p. 200), can be denied. Moreover, not all ID theorists have worked under such premises for thirty years, as exemplified by Michael Denton.

[215] John Mark Reynolds, "Intelligent Design and the Contemporary Christian", *The Southern Baptist Journal of Theology* 2007, Vol. 11, No. 1, p. 71 [64–77], https://tiny.pl/tmdc3 [30.12.2024].

[216] See Stephen C. Meyer, "The Use and Abuse of Philosophy of Science: A Response to Moreland", *Perspectives on Science and Christian Faith* 1994, Vol. 46, No. 1, p. 21 [19–21], https://tiny.pl/h2wcm [30.12.2024].

[217] See Jodkowski, "Epistemiczne układy odniesienia...", pp. 118–119.

[218] See Jodkowski, **Metodologiczne aspekty...**, p. 313.

[219] Kazimierz Jodkowski, **Spór ewolucjonizmu z kreacjonizmem. Podstawowe pojęcia i poglądy**, *Biblioteka Filozoficznych Aspektów Genezy*, Vol. 1, Wydawnictwo MEGAS, Warszawa 2007,

where this is not a defect of this condition since, as has been noted, the same may be true of other lines of reasoning such as point to various natural causes. [220]

The condition takes two forms: a weaker version (about whether there are grounds for allowing anti-naturalistic explanations) and a stronger one (regarding whether there are grounds for excluding naturalistic explanations). Here are examples of its implementation, first in its weaker and then in its stronger variant:

> [t]hose who offer empirical evidence for ID do not have to argue that a completely nonpurposive explanation is impossible, only that it is very unlikely, given the evidence available. [221]

> materialists could accept intervention by extra-terrestrials, were there demonstrated to be a case of biological complexity which is inaccessible by Darwinian evolution. [222]

However, it should be noted at this point that it is often also the case that recognizing grounds for rejecting naturalistic explanations in no way leads to a decision to dispense with them. [223] This state of affairs can be explained as follows.

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p. 182 [italics added]. See also Elliott Sober, **Philosophy of Biology**, Westview Press, Boulder — San Francisco 1993, p. 55; Kojonen, **Intelligent Design...**, p. 197.

[220] See Stephen C. Meyer, "DNA and the Origin of Life: Information, Specification, and Explanation", in: John Angus Campbell and Stephen C. Meyer (eds.), **Darwinism, Design and Public Education**, Michigan State University Press, East Lansing 2003, p. 270 [223–285].

[221] Nagel, "Public Education...", pp. 199–200. See also Michael Tooley, "Naturalism, Science and Religion", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, pp. 888–890 [880–900]; Behe, **Darwin's Black Box...**, p. 252; Nathan H. Lents, S. Joshua Swamidass, and Richard E. Lenski, "The End of Evolution? A Biochemist's Crusade to Overturn Evolution Misrepresents Theory and Ignores Evidence", *Science* 2019, Vol. 363, No. 6427, p. 590, https://tiny.pl/ww51f [30.12.2024]; Stephen C. Meyer, "The Difference It Doesn't Make", in: Jay Richards (ed.), **God and Evolution: Protestants, Catholics and Jews Explore Darwin's Challenge to Faith**, Discovery Institute Press, Seattle 2010, p. 162 [147–164].

[222] Richard Thornhill, "The Historical Relationship Between Darwinism and the Biological Design Argument", *Perspectives on Science and Christian Faith* 2002, Vol. 54, No. 4, p. 254 [249–259], https://tiny.pl/ww51l [30.12.2024]. See also Wesley R. Elsberry, "»Dances with Popper«: An Examination of Dembski's Claims on Testability", *Talk Reason* 2005, January 2, https://short-link.me/QnuB [30.12.2024]; Kenneth R. Miller, "Answering the Biochemical Argument from Design", in: Neil A. Manson (ed.), **God and Design: The Teleological Argument and Modern Science**, Routledge, London 2003, p. 291 [291–306].

[223] See De Duve, "Mysteries of Live...", p. 350; Maarten Boudry, Stefaan Blancke, and Johan Braeckman, "Irreducible Incoherence and Intelligent Design: A Look into the Conceptual Toolbox of a Pseudoscience", *Quarterly Review of Biology* 2010, Vol. 85, No. 4, pp. 476–477 [473–482], https://

Philosophers of science long ago relinquished the belief that a theory's incompatibility with facts is enough to reject it. Subsequently, an approach emerged according to which the process of rejection is more complicated, with the correct account of the theory-experiment relationship being held to be of a tripartite kind: namely, *theory — alternative theory — empirical testing*. At the same time, investigation of EFs has since led to the belief that the relationship between theory and experience may be more complicated than established solutions to the problem suggest. Analyses of the creationism-evolutionism controversy have shown that in at least some cases, when dealing with incommensurable approaches, the correct account of the theory-experience relationship is actually a four-part one: *theory — alternative theory — accepted EF — empirical test*. [224] The pressure exerted by the commonly accepted EF can therefore suffice to neutralize any difficulty met with by a theory that embraces this same EF.

To sum up this part of the discussion, it should be said that none of the approaches discussed above formulates such arguments as would compel a rejection of anti-naturalistic explanations. Jodkowski's condition only gives a good *a posteriori* criterion as a basis for leaving naturalistic explanations behind. However, fulfilment of this criterion under specific circumstances does not indicate that the explanation being rejected is worthless. [225]

4.2. Arguments Against Methodological Naturalism

A number of critical theses and arguments have also been formulated against methodological naturalism, such as might be regarded as speaking in favour of the

doi.org/10.1086/656904; Tooley, "Naturalism, Science and Religion…", p. 890.

[224] See Kazimierz Jodkowski, "Filozofia przyrody a nauki przyrodnicze", *Colloquia Communia* 2007, No. 1–2 (82–83), pp. 21–22 [15–22].

[225] Jodkowski's condition is easily reversed. According to this reversed form, where naturalistic explanations are introduced a strong argument must first be made that anti-naturalistic explanations are not possible. However, if we accept his condition thus formulated, then it should be noted that science, treated as a naturalistic enterprise, has in principle long satisfied this condition.

admissibility of anti-naturalistic explanations. [226] I will now present eight such theses, along with the various arguments deployed in support of them.

(1) *Methodological naturalism affects the development of knowledge negatively as it limits scientific research, and therefore should not be considered a prerequisite for the pursuit of science*. [227] Various arguments have been proposed in support of this thesis.

According to one of these, naturalism stands as an obstacle to fruitful dialogue between science and religion, and to the synthesis of knowledge within these fields, because it prevents "scientific discussion" of many important issues, including human freedom, morality, purposefulness in nature, and God. [228] In this form, the argument involves some equivocation. On the one hand, it defines "science" through the prism of the modern understanding of scientificality, as a naturalistic explanation of reality. [229] On the other, it also employs the same term to refer to a broader understanding of what this involves — one no longer in use in English-speaking countries — when talking about the scientific debate over such issues as God or purposefulness in nature. These issues are problems of metaphysics and theology — disciplines that, in the Middle Ages, together with natural science, were called "scientia", while today the former has no place within science. The argument does not postulate that we should return to an older and now abandoned understanding of scientificality [230] (whose acceptance at the present moment would be by no means straightforwardly accomplishable) [231] and see what results issue from doing so. Moreover, contrary to what the argument says, fruitful dialogue between science and religion is not hindered by the impossibility of giving naturalistic explanatory accounts for things such as God or morality — matterst

[226] See Krzysztof J. Kilian, "Arguments Against Methodological Naturalism and Their Roots in Metaphysics", *Cosmos & History. The Journal of Natural and Social Philosophy* 2024, Vol. 20, No. 1, pp. 268–313, https://tiny.pl/pkc7rp2g [30.12.2024].

[227] See Brand, "Naturalism: Its Role in Science…", pp. 34–35.

[228] See Robert A. Delfino, "Replacing Methodological Naturalism", *Metanexus* 2007, May 24, p. 1 [1–14], https://tiny.pl/thmmz [30.12.2024].

[229] See Delfino, "Replacing Methodological…", p. 1.

[230] See McMullin's comments on this issue in "Varieties of Methodological…", p. 89.

[231] See William A. Dembski, "Reinstating Design within Science", in: John Angus Campbell and Stephen C. Meyer (eds.), **Darwinism, Design and Public Education**, Michigan State University Press, East Lansing 2003, pp. 405–406 [403–417].

hat are, after all, themselves actually in receipt of such explanations. [232] In fact, the science-religion conflict will never find a solution, just because miracles are an irreducible component of the real and great monotheistic religions, while modern science excludes their occurrence. Consequently, religion cannot be reconciled with science. [233]

Another line of thinking seeks to convince us that accepting only naturalistic explanations makes it difficult to "follow the evidence wherever it might take us", [234] and that "science should follow the evidence wherever it seems to lead". [235] But the belief that it is possible to be responsive to the data in this kind of way suggests an acceptance of the long-rejected idea, couched in terms of propositions "collected by general induction from phenomena" [236] or "deduced from the observations", [237] according to which there exists some un-theorized data. [238] On the other hand, one cannot but agree with the first part of this argument, to the effect that accepting only naturalistic explanations will make it difficult to follow the empirical data, because insisting on one theoretical perspective effectively makes it difficult to pick out those facts that can only come to light when alternative

[232] See Wilson, **On Human Nature...**, p. 178.

[233] See Kazimierz Jodkowski, "Konflikt nauka-religia a teoria inteligentnego projektu", in: Kazimierz Jodkowski (ed.), **Teoria inteligentnego projektu – nowe rozumienie naukowości?**, *Biblioteka Filozoficznych Aspektów Genezy*, Vol. 2, Wydawnictwo MEGAS, Warszawa 2007, p. 157 [145–180]; Piotr Bylica, "NOMA as the Cure for Conflict Between Science and Religion: Reply to Ludwik Kowalski's Commentary on the NOMA Principle", *Filozoficzne Aspekty Genezy* 2014, Vol. 11, pp. 30–31 [29–34], https://doi.org/10.53763/fag.2014.11.97; Joseph Seckbach and Julian Chela-Flores, "Preface 1. Where Did We Come From?", in: Joseph Seckbach and Richard Gordon (eds.), **Divine Action and Natural Selection. Science, Faith and Evolution**, World Scientific, New Jersey — London — Singapore — Beijing — Shanghai — Hong Kong — Tai Pei — Chennai 2009, p. xxxvi [xxxv–xxxvii].

[234] Delfino, "Replacing Methodological...", p. 9.

[235] Michael J. Behe, "Irreducible Complexity: Obstacle to Darwinian Evolution", in: Michael Ruse and William A. Dembski (eds.), **Debating Design: From Darwin to DNA**, Cambridge University Press, Cambridge 2004, p. 357 [352–370].

[236] Isaac Newton, **The Mathematical Principles of Natural Philosophy**, trans. Andrew Motte, Daniel Adee, New York 1846, p. 385, https://tiny.pl/ww5nf [30.12.2024]. See Duhem's comments on this issue in **The Aim and Structure...**, p. 321.

[237] Newton, **The Mathematical Principles...**, p. 484. "Deduction from evidence" also figures in the work of certain contemporary writers; see William S. Harris and John H. Calvert, "Intelligent Design. The Scientific Alternative to Evolution", *The National Catholic Bioethics Quarterly* 2003, Vol. 3, No. 3, p. 535 [531–561], https://doi.org/10.5840/ncbq20033333.

[238] See Duhem, **The Aim and Structure...**, p. 159.

viewpoints are taken seriously. This part of the argument goes against the assumption of the relative autonomy of facts, according to which facts that can testify in favour of or against a theory are available regardless of whether we know of any alternatives to the latter.

On an argumentative approach very similar to the above, accepting only naturalistic explanations will prevent any unbiased examination of evidence. [239] Yet the impossibility of any such examination of evidence issues from something much more fundamental than simply disallowing anti-naturalistic explanations: no science considers evidence impartially, because it always makes some assumptions.

Still another argument holds that an uncritical acceptance of naturalism can lead to a situation where greater confidence is placed in speculations devoid of proper empirical support than in anti-naturalistic explanations excluded *ex definitione* from the field of science. [240] Admittedly, this may indeed be the case. However, such a line of thought erroneously assumes that it is possible to define a period of time after which naturalism should be abandoned, should it not yield the sort of results originally intended. The problem here is that, as has been repeatedly emphasized, such a procedure cannot be implemented, [241] in that even the most overwhelming difficulties faced by a given approach can be overcome. [242]

Assigning such time limits also faces another difficulty: "if you are permitted to wait, why not wait a little longer?" [243] It has also been noted that "proliferation and tenacity do not belong to successive periods of the history of science, but are always copresent". [244]

We may also consider an approach asserting that naturalism is based on an

[239] See Kojonen, "Methodological Naturalism…", p. 11.

[240] See Dariusz Sagan, "Naturalizm metodologiczny – konieczny warunek naukowości?", *Roczniki Filozoficzne* 2013, Vol. 51, No. 1, p. 83 [73–91].

[241] See Paul K. Feyerabend, "First Dialogue", in: Paul K. Feyerabend, **Three Dialogues on Knowledge**, Basil Blackwell Ltd., Oxford — Cambridge 1991, p. 29 [1–48]; Feyerabend, "Consolations for the Specialist…", pp. 137–139; Paul K. Feyerabend, "Science, Freedom, and the Good Life", *The Philosophical Forum* 1968, Vol. 1, No. 2, pp. 131–132 [127–135].

[242] See Feyerabend, "Outline of a Pluralistic…", p. 108.

[243] Feyerabend, "Consolations for the Specialist…", p. 148.

[244] Feyerabend, "Consolations for the Specialist…", p. 144.

"exclusionary logic". [245] Thus, it represents the adoption of an erroneous attitude, because it excludes anti-naturalistic explanations *a priori*. This argument is very pertinent, and its validity can be seen as manifesting itself on three levels. When seeking explanations for the phenomena under study, all logically possible states of affairs should be taken into account, as the knowledge gained may lead to the conclusion that natural forces alone are insufficient to explain some phenomena. [246] Otherwise, there is a possibility of overlooking the best explanation, [247] resulting in an erroneous picture of the world. [248]

Incidentally, Darwin himself conducted his research under the banner of not overlooking the best explanation:

> I have always looked at this doctrine of natural selection as a hypothesis, which if it explained several large classes of facts would deserve to be ranked as a theory deserving acceptance [...]. [249]
>
> [I]t seems to me, that supposing that such hypothesis was to explain general propositions, we ought, in accordance with the common way of following all sciences, to ad-

[245] Meyer, "DNA and the Origin...", p. 271.

[246] See Paul D. Ackerman and Bob Williams, **Kansas Tornado: The 1999 Science Curriculum Standards Battle**, Institute for Creation Research, El Cajon 1999, p. 43; Bruce L. Gordon and William A. Dembski, "Introduction. The Nature of Nature Confronted", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. xix [xix–xxiv].

[247] See O'Connor, "Science on Trial...", p. 18; Meyer, "The Use and Abuse...", p. 17.

[248] See Del Ratzsch, "Natural Theology, Methodological Naturalism, and »Turtles All the Way Down«", *Faith and Philosophy* 2004, Vol. 21, No. 4, pp. 439–440 [436–455], https://doi.org/10.5840/faithphil200421448.

[249] Letter from Charles Darwin to Joseph Dalton Hooker, 1860, February 14, *Darwin Correspondence Project*, University of Cambridge, https://tiny.pl/tmfj9 [30.12.2024].

One Reviewer noted at this point that "The Darwin quote shows that, even if MN were rejected, that does not mean that creationism or ID would replace evolution. Darwin himself did not need MN and yet won out over the more traditional Christian positions." This and the following citation of the Darwin's statement was only meant to show that the search for the best explanation and the underlying form of inference to the best explanation are very common procedures in science used by both sides of the argument. The issue of why Darwin's theory was so successful in the mid-19th century is a question worth devoting an extensive treatise to. This problem is not addressed in this article. I will only mention the fact that the theory raised high hopes both for the left side of the European political scene (Marx saw in **On the Origin...** the presence of the laws of dialectics) and for the right side of it (the driving force of development are small changes and not great leaps, which in a Europe torn by revolutions could be considered a scientific remedy against revolutions).

mit it, till some better hypothesis be found out. [250]

Of course, it is a well-known fact that the possibility of adopting an erroneous worldview is inherent in all scientific research. However, and this is hard to disagree with, the aprioristic elimination of certain explanations simply because they do not conform to a commonly accepted methodological perspective increases such a probability. It is also hard to disagree with the thesis that naturalism, which works well within certain fields of science (for example, physics), can limit research in others.

According to the last argument examined here, naturalism should not even be considered a provisional principle, as it implies that there is no supernatural realm, which is not at all so certain. [251]

Leaving aside two issues here — these being the theistic-naturalistic interpretation of methodological naturalism and the fact that science had already moved away from certainty as a determinant of scientificality by the turn of the 20th century — it should be noted that the problematic nature of this argument lies primarily in this: that denying the requirement of methodological naturalism the status of even a provisional principle amounts to a gross misunderstanding. It can, after all, be pointed out that following this principle has indubitably had a number of positive effects on science. The problem with this principle, as with all others, as was noted some time ago, arises when it is transformed into an absolute directive that must be applied regardless of circumstances. [252]

(2) *Naturalism impedes competition in science*. On this line of approach, such an impeding of free competition amongst views manifests itself in the fact that naturalism promotes "scientific laziness" and excludes all anti-naturalistic explanations. [253] (There is even a term in play here, "naturalism-of-the-gaps", to denote such a disparaging of the acceptance of explanations other than naturalistic

[250] Letter from Charles Darwin to Asa Gray, 1857, June 20, *Darwin Correspondence Project*, University of Cambridge, https://tiny.pl/ttmhh [30.12.2024].

[251] See Delfino, "Replacing Methodological…", p. 8.

[252] See Feyerabend, **Against Method. Outline...**, p. 23.

[253] See Delfino, "Replacing Methodological…", p. 11. The argument originates from Bacon. He argued that the use of final causes in physics is harmful because it crowds out the search for physical causes. See Francis Bacon, **Of the Proficience and Advancement of Learning**, Bell & Dadly, London 1861, Book II, p. 147, https://short-link.me/NWii [30.12.2024].

ones.) [254] The weakness of this argument is demonstrated by the fact that it is a double-edged sword: proponents of naturalism can level a similar charge against their adversaries. The latter accept anti-naturalistic explanations when naturalistic explanations fail. [255] A ruthlessly adhered to naturalism will hinder competition not because it promotes scientific laziness, but because — as was mentioned during our analysis of the previous argument — it excludes alternative approaches to explanation (i.e. EFs other than that of methodological naturalism) *a priori*.

(3) *Naturalism is part of the Enlightenment tradition, which has been somewhat too hastily absolutized*. In support of this, it is argued that naturalism forms part of the Enlightenment's conception of the relationship between faith and reason. According to that understanding, science makes objective assertions about reality based only on reason and the senses — powers identical for all people. By contrast, faith and religion are expressions of no more than subjective beliefs, which latter cannot themselves be the starting point for science. [256] The line of justification for this thesis also emphasizes that such Enlightenment foundationalism already amounts to an outdated approach ("the classical foundationalism upon which methodological naturalism is based has run aground"), [257] so methodological naturalism should not itself be granted a privileged status in science either.

The argument thus formulated is unsound regardless of whether or not there actually are, construed in either Aristotelian or Cartesian terms, absolute foundations of cognition — in the sense of first principles. This is primarily because it fails to recognize that modern classical foundationalism of the sort ascribed to Descartes [258] has little in common with that advocated by Newton.

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[254] This expression was introduced by Beckwith in 1989. See Beckwith, "Public Education…", p. 468, n. 30. See also Kojonen, **Intelligent Design…**, p. 87.

[255] See Robert Pennock, "Naturalism, Evidence, and Creationism: The Case of Phillip Johnson", in: Robert T. Pennock (ed.), **Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives**, MIT Press, Cambridge 2001, p. 90 [77–97]; Pennock, **Tower of Babel…**, p. 294.

[256] See Plantinga, "Methodological Naturalism…", p. 194.

[257] Plantinga, "Methodological Naturalism…", p. 194.

[258] See Plantinga, "Methodological Naturalism…", p. 194.

Newton's abandonment of a fundamentalism of first principles did not go hand in hand with an acceptance of the view that any subjective beliefs (even those understood in the Cartesian way) can be the starting point of science ("whatever is not deduced from the phenomena is to be called a hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy"). [259] As is well known, he also accepted the idea that considerations relating to God form a part of science ("All that diversity of natural things which we find suited to different times and places could arise from nothing but the ideas and will of a Being necessarily existing. [...] And thus much concerning God; to discourse of whom from the appearances of things, does certainly belong to Natural Philosophy"). [260] And, more importantly, he did not base his theories on first principles, or believe that this disqualified his explanations — which, it has long been assumed, were supposed to possess the character of demonstrably justified, apodictically certain claims about reality. It was not Descartes, or any other classical foundationalist, who imposed on other modern scientists — be they naturalistic or not [261] — this particular sort of fundamentalism in regard to the understanding of science. [262]

(4) *Naturalism is only a provisional principle, not a necessary condition for conducting science*. [263] This stance can be defended by appealing to anarchist positions such as maintain that there is no principle that is to be followed regardless of all and any circumstances. [264] In support of the above, it can also be argued that

[259] Newton, **The Mathematical Principles...**, p. 506.

[260] Newton, **The Mathematical Principles...**, p. 506.

[261] On this question, see the previously cited work by Derham, **Physico-theology; Or, a Demonstration...**

[262] Such a stance has gone down in history under the name of "classical empiricism". Its success is evidenced by the fact that the Royal Society recognized it as its official philosophy. See Feyerabend, "Problems of Empiricism...", pp. 154, 156, 219 (n. 4). In order to distinguish between the foundationalisms of Descartes (and, for example, Aristotle) and of Newton, it seems appropriate to refer to these, respectively, as "ultimatism" (the requirement that we explain things through an appeal to first, i.e. ultimate, principles) and "certism" (the prescription to explain matters through demonstration).

[263] See Delfino, "Replacing Methodological...", p. 6; Dallas Willard, "Naturalism's Incapacity to Capture the Good Will", in: Bruce L. Gordon and William A. Dembski (eds.), **The Nature of Nature. Examining the Role of Naturalism in Science**, ISI Books, Wilmington 2011, p. 869 [865–879].

there is no universally accepted definition of science, so naturalism cannot be the only possible approach to the latter. [265]

On another argumentative approach, methodological naturalism "is based on an inductive generalization derived from 300 to 400 years of scientific experience", [266] but "[i]nductive arguments, however, do not demonstrate their conclusions with certainty; therefore this is not enough to justify its use as a necessary condition of science". [267]

In *de facto* terms, methodological naturalism has only been fully operative since 1859, where this resulted from its imposition on science by Darwin. This sort of naturalism, as was already mentioned in the present discussion, is nothing more than a small set of methodological decisions, and this means that the above argument, thus formulated, involves a category error. When one speaks of methodological decisions, meaning conventions of a certain kind, one evaluates them not in alethic terms (true/certain/probable – false/uncertain/improbable) but in pragmatic ones (effective – ineffective). Hence, such decisions taken in the context of science are neither certain nor uncertain. They are, at most, either effective or ineffective.

(5) *Naturalism is an arbitrary and dogmatic rule, harmful to the practice of science*. In the words of one of the arguments invoked in support of the above thesis:

> [s]cience is not a game in which arbitrary rules are used to decide what explanations are to be permitted. Rather, it is an effort to make true statements about physical reality. [268]

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[264] Far from endorsing methodological anarchism, Plantinga talks about "pursuing science using all that we know" ("Methodological Naturalism...", pp. 213–214), while Brand maintains that "[s]cience has a bright future if all scientists have the freedom to think for themselves, within the worldview they choose, as long as they practice quality scientific work" (Brand, "Naturalism: Its Role in Science...", pp. 28–29).

[265] See Thomas Fowler, "Naturalism and Science", *Metanexus* 2011, September 1, p. 2 [1–17], https://tiny.pl/tmg8x [30.12.2024]; Grizzle, "Some Comments on the »Godless«...", p. 175.

[266] Niall Shanks, **God, the Devil, and Darwin: A Critique of Intelligent Design Theory**, Oxford University Press, New York 2004, p. 141.

[267] Delfino, "Replacing Methodological...", p. 2. In his argument, this author cites the previously quoted statement from Shanks.

[268] Michael J. Behe, "Molecular Machines: Experimental Support for the Design Inference", in: Robert T. Pennock (ed.), **Intelligent Design Creationism and Its Critics: Philosophical, Theolo-**

Viewed from the perspective of scientific realism, however, the thesis that the aim of science is to search for truth is not the only approach that can be taken when it comes to justifying scientific activity in terms of its goals. Moreover, regardless of the approach we endorse in this regard, the first part of the argument (namely, that science is not a game in which arbitrary rules are applied) amounts to a false assertion. That science makes use of arbitrary rules that inform us about what explanations are allowed (or forbidden) has long been known: the role of methodological decisions has been emphasized by philosophers of science of all orientations, from conventionalism to logical empiricism, and from critical rationalism to the historicized philosophy of science. Henry Poincaré, [269] Karl R. Popper, [270] Imre Lakatos [271] and Thomas S. Kuhn [272] — to name but a few — have certainly spoken about it.

On another approach, methodological naturalism "takes a sound methodological premise of natural science and transforms it into a dogmatic statement about the nature of the universe", [273] "[b]ut dogma does not belong in science". [274]

Whether scientific dogmatism should be valued positively (e.g., because it prevents the over-hasty acceptance of poorly justified views) [275] or negatively (e.g., because it prevents the recognition of alternatives) [276] is a question that remains

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gical, and Scientific Perspectives, MIT Press, Cambridge 2001, p. 255 [241–256].

[269] "The rules of the [scientific] game are arbitrary conventions [...]", Henri Poincaré, **The Value of Science**, Dover Publications, New York 1958, p. 114.

[270] See Popper, **The Logic of Scientific Discovery...**, pp. 27–29. Incidentally, Popper would also agree with the theses that in science arbitrary rules are applied and objective truth is sought.

[271] See Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes", in: Imre Lakatos, **Philosophical Papers. Vol. 1. The Methodology of Scientific Research Programmes**, Cambridge University Press, Cambridge — New York — Port Chester — Melbourne — Sydney 1978, pp. 48–49 [8–101].

[272] See Kuhn, **The Structure...**, pp. 39–40.

[273] Johnson, "Evolution as Dogma...".

[274] Delfino, "Replacing Methodological...", p. 2. Delfino, in his argument, cites the previously quoted statement of Johnson.

[275] See Michael Polanyi, "The Republic of Science: Its Political and Economic Theory", *Minerva* 2000, Vol. 38, pp. 8–9 [1–32].

[276] See Feyerabend, "On the Improvement...", pp. 410–411.

controversial. [277] Yet the approach we are considering at this point does not address these problems. It is merely an implausible statement about the mechanisms of science, devoid of reference to the history of the philosophy of science [278] and ignoring the thesis of the "dogmatism of mature science". [279]

There is also a line of argument that seeks to convince us that if some empirical evidence incompatible with methodological naturalism speaks in favour of an explanation possessing some irreducible or specified complexity, then it should be assumed that such naturalism is not a necessary condition for the practising of science. [280] At the heart of this, however, lies the misconception that empirical evidence can, independently of theorizing, determine whether we should come out in favour of or against a given theory. After all,

> the overwhelming appearance of design strongly affects the burden of proof: in the presence of manifest design, the onus of proof is on the one who denies the plain evidence of his eyes. [281]

What the above suggests is that those who maintain the above thesis are not proponents of the thesis of strong (complete) theoreticality where observations are concerned. According to supporters of the latter position, there is no way to verify evidence independent of theory, as there is no neutral observational language through which such validation can be accomplished. [282] Recognizing that an

[277] See Henry H. Bauer, **Dogmatism in Science and Medicine: How Dominant Theories Monopolize Research and Stifle the Search for Truth**, McFarland & Company, Jefferson 2012, pp. 5–12.

[278] "Probably none of us believes that in practice the real-life scientists quite succeed in fulfilling this ideal [...] of the scientist as the uncommitted searcher after truth. He is the explorer of nature – the man who rejects prejudice at the threshold of his laboratory, who collects and examines the bare and objective facts, and whose allegiance is to such facts and to them alone" (Kuhn, "The Function of Dogma...", p. 347).

[279] Kuhn, "The Function of Dogma...", p. 349.

[280] See Beckwith, "Public Education...", p. 469. See also William A. Dembski, "The Act of Creation: Bridging Transcendence and Immanence", in: Mehrdad M. Zarandi (ed.), **Science and the Myth of Progress**, *The Library of Perennial Philosophy*, World Wisdom, Bloomington 2003, p. 289 [269–302].

[281] Behe, **Darwin's Black...**, p. 265.

[282] See Feyerabend, "Reply to Criticism...", pp. 124–127. Furthermore, "research in cognitive neuroscience has already shown that [...] the core of observation is penetrated by expertise in general and by relevant theories in particular as early as 150 ms after stimulus onset [...] and [...] [one] can think of no such [cognitive] process that takes under 150 ms for completion" (Pantazakos, "Problems of Empirical Solutions to the Theory-ladenness...", pp. 12990–12992).

error or oversight was made in the very process of observing a phenomenon is not the only reason for cancelling observational results. Observations can be cancelled independently of this process, under the influence of changes that have taken place in the theoretical part of knowledge. [283]

Moreover, contrary to what the powerfully persuasive language of the cited argument ("the overwhelming appearance of design", "the plain evidence") would have us believe, the *onus probandi* here rests with proponents of ID, as they are the ones defending a thesis that is widely regarded — never mind, whether rightly or not — as less credible. Shifting the burden of proof onto the opponent in an ongoing dispute in this way is therefore nothing more than a mere eristic ploy.

(6) *Naturalism is an irrational approach*. In support of this, the claim has been made that since it is *de facto* impossible to provide naturalistic explanations for all phenomena, insisting on naturalism is tantamount to adopting an irrational approach. [284]

Despite the fact that, for example, Kuhn's view of science confirms the first part of this argument, the argument is unsound because it leads to unacceptable consequences. The long-term effect of routine research within normal science is a progressive increase of the number of anomalies. The latter, in turn, is one of the factors contributing to the spread of the belief that a given paradigm is flawed. Consequently, it can lead to attempts to abandon the paradigm. However, if the determinant of the rationality of scientists' actions were to be the belief that, in the end, a situation might anyway arise where the accepted theoretical approach yields to an excess of anomalies, and that therefore one should not insist on its adoption, then scientists would never be in a position to legitimately adopt any theoretical approach whatsoever. The obvious consequence of the latter would be an inability to conduct scientific research of any kind, since it is the paradigm that provides scientists with the criteria for selecting solvable problems, and from

[283] See Paul K. Feyerabend, "How to Be a Good Empiricist. A Plea for Tolerance in Matters Epistemological", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 3. Knowledge, Science and Relativism**, Cambridge University Press, Cambridge 1981, pp. 98–99 [78–103].

[284] See O'Connor, "Science on Trial…", p. 20. The thesis is attributed by O'Connor to the authors of the articles collected in the book **The Creation Hypothesis: Scientific Evidence for an Intelligent Designer**. See J.P. Moreland (ed.), **The Creation Hypothesis: Scientific Evidence for an Intelligent Designer**, InterVarsity Press, Downers Grove 1994. See also Larson, "Revisiting the God…", p. 15. The latter author talks about "weaknesses [...] of materialistic naturalism" and defends the thesis presented here.

paradigms come the methods, the exemplars of solutions, and even the very issues that, at any given time, the scientific community is prepared to engage with.

According to another more general line of attack, proponents of methodological naturalism can be accused of lapsing into irrationalism, because naturalism excludes belief in the existence of an order transcendentally imposed onto the realm of nature: [285]

> without belief in the existence of such an order, scientific practice would seem little better than reading patterns into tea leaves or chicken entrails. [286]

The argument is weak, primarily because its second part is historically false. [287] It is refuted by the existence of scholars who simultaneously claim on the one hand that "the enormous usefulness of mathematics in the natural sciences is something bordering on the mysterious and that there is no rational explanation for it", [288] and on the other that there is no Transcendence behind this order. [289]

(7) *Naturalism is simply poor philosophy*. In support of this particular thesis it has been argued, on the basis of empirical evidence, that naturalism is not a scientific view; instead, it is merely a philosophical doctrine almost entirely devoid of empirical support. [290] Leaving aside the question of how one might assess the degree of empirical support for Darwinian evolutionism, it should be noted that

[285] See Gordon, "The Rise of Naturalism…", p. 5.

[286] Gordon, "The Rise of Naturalism…", p. 5.

[287] The author of this argument has also chosen to assign their own preferred meaning to the term "rational", inasmuch as the latter, in their opinion, denotes conformity with some supra-historical, universal standards whose validity is guaranteed by the existence of some sort of Transcendence. However, there are many more meanings the term can have, at least some of which can be conjoined with methodological naturalism: (a) rationality is identified with maximization of utility – one acts rationally when one brings about the fulfilment of one's expectations or is someone whose actions, viewed in the light of the knowledge one possesses, ought to accomplish the realization of one's intentions; (b) one acts rationally insofar as one has good reasons for so acting; (c) an action is rational when there are no counter-indications preventing the realization of the goal; (d) to act rationally is to adhere strictly to a predetermined plan; (e) acting rationally means obeying the particular set of methodological rules according to which the development of science is proceeding during a given period of time. The enumeration of these given here does not pretend to be exhaustive.

[288] Eugene Wigner, "The Unreasonable Effectiveness of Mathematics in the Natural Sciences", *Communications in Pure and Applied Mathematics* 1960, Vol. 13, p. 2 [1–14].

[289] See Andrew Szanton, **The Recollections of Eugene P. Wigner**, Plenum Press, New York 1992, p. 60.

this type of argumentation sets forth the false belief that if any scientific approach, such as evolutionism, is supported by philosophy, then it cannot be reliable as science. [291] Moreover, as was already mentioned, there is an even more fundamental issue in play here that was also long ago recognized: that it is impossible to eliminate philosophy from science. And, by extension, the alternatives to evolutionism — namely, scientific creationism and ID — are also based on philosophy and, according to the argument above, are philosophical doctrines to the same extent as evolutionism. One other point worth recapitulating here is that the acceptance or rejection of methodological naturalism is a methodological decision. Like any other methodological decision, its acceptance can hardly be based on empirical evidence, as it is precisely a decision of this kind that makes it possible for something or other to be recognized (or not) as empirical evidence.

In line with what another line of argument encourages us to accept, naturalism is a philosophical belief that cannot be justified by natural science:

> the question of whether methodological naturalism is necessary for natural science is a philosophical claim that must be justified philosophically, it cannot be justified by natural science, if it is alleged to be a presupposition for the practice of natural science. [292]

To be sure, this position is pertinent insofar as each and every EF amounts to a set of such methodological decisions that cannot be scientifically justified without the risk of falling into a vicious circle. However, this is hardly an argument against maintaining methodological naturalism, as it can be extended to all EFs. At the same time, an even more radical approach seeks to persuade us that

> no good philosophical arguments support [...] [methodological naturalism]. Indeed, those arguments [...] are circular, presupposing the very naturalism they are supposed to underwrite. [293]

Such an argument against methodological naturalism, thus formulated, can at first glance seem persuasive. For example:

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[290] See Phillip E. Johnson, “What Is Darwinism?”, in: Michael Bauman (ed.), **Man and Creation. Perspectives on Science and Theology**, Hillsdale College Press, Hillsdale 1993, pp. 177–178 [177–190].

[291] See Jodkowski, “Metafizyczne opowieści…”, p. 80; Miller, “The Misguided Attack…”, p. 120.

[292] Beckwith, “Public Education…”, p. 469.

[293] Dembski, “The Act of Creation…”, p. 289.

> By "scientific methodology" or "attitude" in this case, I mean a commitment to the idea of the world being law-bound — that is, subject to unbroken regularity — and to the belief that there are no powers, seen or unseen, that interfere with or otherwise make inexplicable the normal workings of material objects. [294]

However, the reasoning can easily be turned around and levelled at both artificialism and supernaturalism, since both presuppose anti-naturalism. Moreover, the argument fails to recognize the fact of the irreducible presence of philosophy in science. It perceives the arguments for naturalism as being circular in nature, where this is considered a flaw in these, yet fails to recognize that the arguments for anti-naturalism likewise presuppose anti-naturalism. For example, the same author maintains that

> [m]y strongest argument against the sufficiency of natural causes to account for intelligent agency, however, comes from the complexity-specification criterion. This empirically-based criterion reliably discriminates intelligent agency from natural causes. Moreover, when applied to cosmology and biology, it demonstrates not only the incompleteness of natural causes, but also the presence of transcendent design. [295]

So the author's criterion, of which he is deeply convinced, itself "demonstrates [...] the presence of transcendent design". It was noted long ago, however, that such reasoning is circular in nature:

> [w]hen we collect design and purpose from the arrangements of the universe, we do not arrive at our conclusion by a train of deductive reasoning, but by the conviction which such combinations as we perceive immediately and directly impress upon the mind. "Design must have had a designer." But such a principle can be of no avail to one whom the contemplation or the description of the world does not impress with the perception of design. It is not therefore at the end, but at the beginning of our syllogisms, not among remote conclusions, but among original principles [...]. [296]

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[294] Michael Ruse, "Darwinism: Philosophical Preference, Scientific Inference, and Good Research Strategy", in: John Buell and Virginia Hearn (eds.), **Darwinism: Science or Philosophy. Proceedings of a Symposium Entitled Darwinism: Scientific Inference or Philosophical Preference? Held on the Southern Methodist University campus in Dallas, Texas, USA, March 26-28, 1992**, Foundation for Thought and Ethics, Dallas 1997, p. 21 [21–28].

[295] Dembski, "The Act of Creation...", p. 289.

[296] William Whewell, **Astronomy and General Physics Considered with Reference to Natural Theology**, *Bridgewater Treatises. Treatise III*, William Pickering, London 1833, p. 344, https://tiny.pl/ww5s9 [30.12.2024].

Another approach here is to assert that naturalism leads to a commitment to scientific anti-realism, in the context of which, as in idealism, reality must agree with ideas — something which, in this particular case, means that the interpretation of empirical evidence must conform to the requirements of methodological naturalism:

> Methodological naturalism is closest to the idealist kind of antirealism. This is because in idealism reality must conform to ideas instead of ideas conforming to reality. Methodological naturalism is guilty of idealism because the interpretation of evidence and the construction of theories must conform to a naturalistic framework since supernatural explanations are prohibited. [297]

On the classical view of scientific realism, scientific theories are true (or approximately true) or false, and what a theory is depends on the structure of the world. If a theory is true, then its theoretical terms denote real objects. The latter are causally responsible for the occurrence of the observed phenomena that serve to confirm the theory. We can entertain reasonable beliefs about the truth or falsity of our theories and the existence of theoretical entities. The goal of science is to discover, or get closer to, the truth. Science accomplishes this goal. [298]

The author of the argument presented above accepts those claims. However, the thesis, which, according to how they intend their position to be understood, fundamentally defines scientific realism, could well sound like this: objective reality is given in the sensory data, in that the latter reflect it — or, in other words, there are stark facts ("scientists in their search for truth should follow the evidence wherever it leads"; "[i]f we gather evidence that conflicts with a theory we must modify or abandon that theory"), [299] and the removal of all obstacles (metaphysical superstitions) standing in the way of the subject-object enables the cognitive schema to match reality ("our theories must conform to reality in order to be true"). [300]

This strongly resembles the fundamental thesis of the theory of reflection, according to which

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[297] Delfino, "Replacing Methodological…", p. 4.

[298] See William H. Newton-Smith, "The Underdetermination of Theory by Data", *Proceedings of the Aristotelian Society* 1978, Supplement, Vol. 52, pp. 71–72 [71–91].

[299] Delfino, "Replacing Methodological…", p. 4.

[300] Delfino, "Replacing Methodological…", p. 4.

> objective reality [...] is given to man by his sensations, and [...] is copied, photographed and reflected by our sensations, while existing independently of them. [301]

It is worth noting at this point that the addition of this thesis to the characterization of scientific realism narrows the scope of this conception to just those positions that accept the thesis of the receptive (passive) nature of cognition. Thus, the argument is based on a certain understanding of scientific realism, according to which the latter excludes belief in the theory-ladenness (or theoreticality) of observations, [302] and amounts to an approach that is akin to a theory of reflection.

Such a way of thinking, though, also excludes from the realm of scientific realism the two anti-naturalistic EFs — namely, the creationist and artificialist ones. For within their framework the interpretation of empirical evidence must conform to the patterns shaped by their hard-core commitments too.

Another argument advocates the position that naturalism does not free science from metaphysical ballast — the latter can only be removed by adopting metaphysical neutralism:

> the method of science is not based on naturalism or any other metaphysic. It is based on metaphysical neutralism. [303]

Nevertheless, what metaphysical neutralism exactly is has not been clearly articulated by the proponents of this line of thinking. One may suppose that it is a thesis postulating some form of *epoché* — refraining, when confronting evidence, from making convictions about the way the world exists. Indeed, the only context provided by their statements that would allow one to infer what neutralism amounts to for these authors is as follows:

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[301] Vladimir Ilyich Lenin, **Materialism and Empirio-criticism: Critical Comments on a Reactionary Philosophy**, Progress Publishers, Moscow 1987, p. 114.

[302] If one were to accept such a state of affairs, then Karl Popper, for example – one of the best-known proponents of scientific realism – could hardly be considered a scientific realist. Nevertheless, it should be noted here that acceptance of the thesis that there is no such thing as pure experience shifts the view regarding the theory-ladenness of observation closer to constructivism. "Constructivism", however, is a term that should rather be applied to positions that differ from realist ones in important respects. See Clifford A. Hooker, "Systematic Realism", *Synthese* 1974, Vol. 26, No. 3–4, pp. 420–421 [409–497], https://doi.org/10.1007/BF00883106; Michael Devitt, "Incommensurability and the Priority of Metaphysics", in: Paul Hoyningen-Huene and Howard Sankey (eds.), **Incommensurability and Related Matters**, Kluwer Academics Publishers, Dordrecht 2001, p. 145 [143–157].

[303] Poe and Mytyk, "From Scientific Method to Methodological...", p. 217.

> […] [Lewis Wolpert, a biologist at University College London] concludes, "We have to both respect, if we can, the beliefs of others, and accept the responsibility to try and change them if the evidence for them is weak or scientifically improbable."
>
> This is where the scientific method comes in. If scientists are prepared to state their hypotheses, describe how they tested them, lay out their data, explain how they analyse their data and the conclusions they draw from their analyses — then it should not matter if they pray to Zeus, Jehovah, the Tooth Fairy, or nobody.
>
> Their work will speak for itself. [304]

And, from someone with a similar approach:

> [t]he principle of methodological neutralism states that scientists should simply search for causes without setting any *a priori* conditions on what ontological status those causes must have. […] By not setting any *a priori* conditions with respect to ontological status we can follow the evidence wherever it might take us. [305]

Thus, what this neutralism corresponds to, more or less, is the thought that refraining from entertaining *a priori* beliefs about the way the world is basically serves the purpose of enabling scientists to pursue the facts unimpeded by extraneous considerations. Only the freedom to do so permits one to discover how, genuinely, the world is.

Even so, contrary to the optimistic declarations just quoted it is neither the case that the work of scientists could eventually speak for itself, nor the case that we can pursue the facts freely. On the neutralist approach, the best explanations — be they naturalistic, supernaturalistic, or ones invoking intelligent causes – should be determined by empirical data, not by restrictive *a priori* assumptions about the nature of science. At the same time, according to the moderate stance on the theory-ladenness of observations shared by the advocates of the neutralist approach presented above, it is assumed that it is possible, with more or less difficulty, to separate the empirical data itself from our interpretation of it. Such data, in turn, leaves room for us to make choices about what we consider its best explanation. Yet both of these approaches to theorizing are now held to be obsolete,

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[304] Cornelia Dean, "Faith, Reason, God and Other Imponderables", *The New York Times* 2006, July 25, https://tiny.pl/gsx76 [30.12.2024]. Poe and Mytyk ("From Scientific Method to Methodological...", p. 218) cite only the last two paragraphs of Dean's statement. I have added the first paragraph of her statement here.

[305] Delfino, "Replacing Methodological…", p. 9.

reflecting broad acceptance of the thesis that it is impossible to separate out theoretical concepts from observational ones, and thus also theoretical from observational language. [306]

In short, the belief that it is possible to pursue facts freely — which, in this context, means nothing more than to study such facts in an entirely non-theoretical or non-theory-laden way – is a pernicious myth. In reality, the basis of any scientific method will always be some kind of metaphysics. Any methodology is entangled with cosmological assumptions, [307] and the effect of a change in metaphysics is always a change in methodology. [308] The decision about *epoché* is therefore by no means such a simple matter as the authors of the argument discussed here suggest.

(8) *Naturalism is a view that is adopted uncritically*. In support of the above thesis, the following argument has been set forth. It happens that naturalistic explanations, along with criticism of other types of explanations, are the result of an overly hasty assimilation, presented by authorities in the field, of erroneous arguments. An illustration of the above statement is the situation that arose from the misinterpretation [309] of test results presented in an article analysing the blood-clotting process. [310] Such an interpretation was made by the prominent protein biochemist Russell Doolittle. The problem is not whether Doolittle was right. His arguments were cited by another scientist, the pathologist Neil S. Greenspan, and

[306] Incidentally, separating out such concepts can only be done in a specific way – only conventionally, on the basis of a pragmatic theory of observation. The latter says that the division of the language of science into observational and theoretical aspects is conventional, depending as it does on both the degree of training of the scientist and the knowledge he or she possesses. Expressing the matter slightly differently, concepts should be considered observational or theoretical depending on who is making the observation. See Feyerabend, "Explanation, Reduction…", pp. 36–37; Paul K. Feyerabend, "The Problem of the Existence of Theoretical Entities", in: Paul K. Feyerabend, **Philosophical Papers. Vol. 3. Knowledge, Science and Relativism**, Cambridge University Press, Cambridge 1999, pp. 20–22 [16–49].

[307] See Feyerabend, "The Methodology of Scientific…", p. 215, n. 24.

[308] See Feyerabend, **Against Method. Third Edition…**, p. 233.

[309] See Behe, "Irreducible Complexity…", pp. 361–364.

[310] See T.H. Bugge, K.W. Kombrinck, M.J. Flick, C.C. Daugherty, M.J. Danton, and J.L. Degen, "Loss of Fibrinogen Rescues Mice from the Pleiotropic Effects of Plasminogen Deficiency", *Cell* 1996, Vol. 87, No. 4, pp. 709–719, https://doi.org/10.1016/s0092-8674(00)81390-2.

by the Editor-in-Chief of *Scientific American*, John Rennie. [311] Greenspan argued, based on Doolittle's arguments, that proponents of ID do not understand what irreducibly complex systems are. [312]

This argument is very weak indeed, as it is a double-edged sword — in that reliance on authority is hardly a trait exclusively characterizing naturalists. Design theorists can be subjected to a similar charge. In one of his works, Michael Polanyi maintained that some structures of living organisms appear irreducible to the laws of physics and chemistry. [313] At the same time, Michael J. Behe, William A. Dembski and Charles Thaxton have invoked Polanyi's thinking about this to lend support to their own rationale. [314] Incidentally, Johannes Kepler had earlier levelled the same charge against himself:

> My first error was to take the planet's path as a perfect circle, and this mistake robbed me of the more time, as it was taught on the authority of all philosophers, and consistent in itself with Metaphysics. [315]

Reliance on authority is a consequence of a particular mode of education that cannot be found anywhere outside of the natural sciences. [316] The hallmark of scientific education is the development in adepts of an exceptionally strong commitment to a particular way of seeing the world, shaped by participation in a particular scientific community. And whether the occurrence of such a state of affairs is something that hinders or accelerates the growth of knowledge is, of course, a debatable issue, and one that involves a critique of Kuhn's concept of normal sci-

[311] See Rennie, "15 Answers to Creationist…".

[312] See Behe, "Irreducible Complexity…", p. 364.

[313] "When I say that life transcends physics and chemistry, I mean that biology cannot explain life in our age by the current workings of physical and chemical laws". Michael Polanyi, "Life Transcending Physics and Chemistry", *Chemical and Engineering News* 1967, Vol. 45, No. 21, p. 54 [54–66], https://doi.org/10.1021/cen-v045n035.p054.

[314] See Jonathan Witt, "A Brief History of the Scientific Theory of Intelligent Design", *Discovery Institute* 2007, October 30, https://www.discovery.org/a/3207/ [30.12.2024].

[315] An excerpt cited from A. Rupert Hall, **The Scientific Revolution 1500–1800: The Formation of the Modern Scientific Attitude**, Longmans, Green and Co., London — New York — Toronto 1954, p. 124.

[316] Pedagogy and theology are, according to Kuhn, exceptions to this – being as dogmatic in their training as the natural sciences are (see Kuhn, "The Function of Dogma...", p. 350).

ence. [317]

In conclusion, it should be pointed out that the fundamental issue that arises in the context of the abandonment of naturalistic EFs is this: that they are widely accepted as criteria for scientificality. The abandonment of these EFs can be compared to the intellectual upheaval associated with attempts to abandon geocentrism and replace it with heliocentrism. [318] It was long ago observed that "it is generally difficult to make up one's mind" when it comes to changing one's most basic assumptions, as violating them will radically undermine one's previously accepted points of view. [319]

Such decisions should not be made by any philosopher: these are issues that lie solely within the scope of decisions made by scientists themselves. This can be illustrated by the following story. In 1965, when Paul K. Feyerabend still believed in the sense of arguing for the universal use of certain procedures in science, he delivered, at Carl Friedrich von Weizsäcker's seminar in Hamburg, a speech on the foundations of quantum mechanics. There, he presented his arguments for conducting research on the basis of a conglomerate of mutually incompatible theories. His argument, he claimed, was highly coherent. Faced with Feyerabend's thesis that important alternative theories had been overlooked in the course of work on quantum theory, von Weizsäcker sought to counter this in a peculiar way: in a historical account of the emergence of quantum theory he explained, step by step, what problems had been encountered, how they had been solved,

[317] See John W.N. Watkins, "Against «Normal Science»", in: Imre Lakatos and Alan Musgrave (eds.), **Criticism and the Growth of Knowledge**, Cambridge University Press, Cambridge 1970, pp. 28–29 [25–38]; Karl R. Popper, "Replies to My Critics", in: Paul A. Schilpp (ed.), **The Philosophy of Karl Popper**, *The Library of Living Philosophers*, Vol. 14, Open Court, La Salle 1974, pp. 1144–1148 [961–1197].

[318] See Hoyle and Wickramasinghe, **Evolution from Space...**, pp. 137–138.

[319] See Otto Neurath, "Soziologie im Physikalismus", *Erkenntnis* 1931, Vol. 2, p. 396 [393–431]. Having presented these theses and arguments against naturalism, a certain line of reflection emerges. Anti-naturalists repeatedly refer to modern philosophy of science, which shows that they are familiar with this issue. For some reason, however, they do not seek support from Feyerabend's anarchism, which is very well suited as a tool of defence against an absolute insistence on naturalism. The most likely reason for this is as follows. Feyerabend not only openly endorsed relativism (see Feyerabend, "Third Dialogue...", p. 151), he also spoke positively about thinkers and politicians of the left (see Feyerabend, **Against Method. Outline...**, p. 18, n. 5). A significant number of anti-naturalists are Christians, for whom relativism and leftism count as being far removed from their own worldview. And this is probably why even the most constructive strands of Feyerabend's anarchism are extremely difficult for them to accept.

and what kind of predictions had been confirmed, and why scientists considered this satisfactory. This showed Feyerabend the weakness of his own argumentation — which, while logically correct, nevertheless came from outside the realm of scientific practice. [320] It was then that the latter realized for the first time that

> a person trying to solve a problem whether in science or elsewhere must be given complete freedom and cannot be restricted by any demands, norms, however plausible they may seem to the logician or the philosopher who has thought them out in the privacy of his study. Norms and demands must be checked by research, not by appeal to theories of rationality. [321]

This, however, does not mean that a philosopher cannot speak of various philosophical weaknesses in arguments that go beyond theses that are scientific *par excellence*. Thus, a review of the arguments for methodological naturalism presented above lends credence to the thesis that none of the arguments for methodological naturalism discussed here furnishes grounds for concluding that the decision to reject anti-naturalistic explanations can be unquestionably considered a cornerstone of modern science. [322] The same can be said of the arguments for anti-naturalism: none of them forces one to abandon naturalism. In short, neither known facts nor reasoning provide compelling reasons for or against methodological naturalism. The only argument against an unquestioning insistence on *any* methodological rule was presented by Feyerabend in **Against Method**, and it, too, has received a wave of criticism. It is also well known that those theories that discuss the origin of life are, most of all, theories saturated by worldview-related concerns. *Thus, the choice of the "right" EF becomes the choice of a particular Weltanschauung, as does any other attempt to make sense of evidence*.

Even so, such an outcome need not entail cognitive nihilism. It is no more than a philosophical recognition of the problem of choosing between competing uni-

[320] See Feyerabend, **Killing Time...**, p. 141; Feyerabend's letter to Lakatos, dated 20 Jan. 1972, in: Imre Lakatos and Paul K. Feyerabend, **For and Against Method: Including Lakatos's Lectures on Scientific Method and the Lakatos-Feyerabend Correspondence**, ed. Matteo Mottelini, The University of Chicago Press, Chicago — London 1999, p. 272.

[321] Feyerabend, **Against Method. Third Edition...**, p. 262.

[322] Arguably, this is why it is admitted that "falsification of the naturalist paradigm is indeed possible" (Massimo Pigliucci, **Tales of the Rational: Sceptical Essays about Nature and Science**, Freethought Press, Atlanta 2000, p. 21).

versal theories. Since there are no stark facts, as they are all theoretically implicated, an *experimentum crucis* is not a possibility. One cannot unequivocally argue against Darwinian evolutionism on the basis of the idea that it should bow to the weight of the anomalies confronting it, as there are known cases from the history of science showing that such approaches (e.g., the idea of a moving Earth) have been able to cope with the sheer immensity of the anomalies that arise in connection with them. Nor can one argue unequivocally for ID, for example, simply on the basis of the thought that it explicates phenomena that gradualist evolutionism cannot — at least in the opinion of ID proponents — explain. Whether a given explanation is considered accurate is also hugely influenced by time, as well as the state of current knowledge. [323]

This is why the scheme of Dobzhansky's argumentation presented in the second section of the present article can be easily reversed — providing one is prepared to view the problem of sense from a perspective other than the naturalistic one. For example:

1. If ID is pertinent, we should expect the occurrence of irreducibly complex systems in nature.

2. If the gradualist theory of evolution is pertinent, the occurrence of irreducibly complex systems is unexpected.

3. If, accepting one hypothesis, one expects the occurrence of a phenomenon that is unexpected in the light of some other hypothesis, then the phenomenon makes sense in light of the first hypothesis, but not in light of the second one.

4. Therefore ID, not evolutionism, makes sense of the occurrence of irreducibly complex systems in nature.

5. Recapitulation

The EFs of methodological naturalism — by which we mean certain small sets of methodological decisions — define the modern understanding of scientificality. These decisions, as was shown, depend on a previously accepted *Weltanschauung*,

[323] For example, the apsidal precession of Mercury was explained by postulating the existence of the planet Vulcan, and the fact that the latter could not be observed could, for a long time, be explained in various ways; however, as is well known, the General Theory of Relativity then emerged, rendering the existence of Vulcan explanatorily redundant.

and certain hard-core metaphysical theses about the structure of the world. The arguments that make sense of these decisions are not irrefragable. Nor are the highly persuasive arguments that testify against methodological naturalism. The multileveled relationship of incommensurability that obtains between the three theories that are gradualist evolutionism, ID and scientific creationism makes the situation even worse, as it hinders communication between researchers. If it is the preconceived EFs in play that make sense of the facts, then no amount of evidence will settle the naturalism-antinaturalism controversy. Making sense of biology (or any other science) is therefore not nearly as simple an issue as Dobzhansky presented it as being.

The problem of choosing between competing universal theories thus turns out to be a much more complicated matter than the participants in this variant of the dispute over the rationality of science — currently surely that of the greatest interest — generally suppose. However, these are issues that lie beyond the scope of the tasks undertaken in the present discussion, and ones that call for separate analyses.

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