ARGUMENTS FOR METHODOLOGICAL NATURALISM AND THEIR ROOTS IN A PARTICULAR METAPHYSICS

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ABSTRACT: The article explains why methodological naturalism is the most general framework for doing science. The paper also focuses on analysing the main arguments for methodological naturalism and shows their roots in a particular metaphysics. A review of the arguments for methodological naturalism presented in this paper 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.

KEYWORDS: methodological naturalism, methodological anti-naturalism, presuppositionalism thesis, epistemic frameworks

1. PRELIMINARY REMARKS

On the Origin of Species is an important work for at least three reasons. Firstly, it is a text that has moved the debate on the origin of life from the theological level to the level of natural sciences. Secondly, it is the first articulation of a scientific paradigm of doing science on the origin of life. Thirdly, with *On the Origin of Species*, methodological naturalism has dominated the practice of modern science. This very last point is what this article will address.

This paper, excluding the present introduction, consists of three paragraphs and a summary.

Paragraph 2 presents and discusses a set of three methodological decisions, which make it possible to understand why methodological naturalism should be

considered the most general framework for doing science. The presentation and discussion of the presuppositionalism thesis as well as the idea of epistemic frameworks constitute the background to these considerations.

Paragraph 3 examines major arguments for methodological naturalism. They have been divided according to whether or not revisions of methodological naturalism are permissible within their framework. Subsequently, they will also be classified on the basis of whether they furnish specific conditions for maintaining or abandoning naturalism or not.

2. METHODOLOGICAL NATURALISM AS THE MOST GENERAL FRAMEWORK FOR DOING SCIENCE

Methodological naturalism has three primary sources: mechanical philosophy of the 18th century, which provided it with the ontology (only matter and motion exist); 19th century positivist philosophy, which provided it with the epistemology (only sentences that speak of matter and motion are meaningful); and theology, which promoted the idea of the unknowability of God.[1]

Francis Bacon was the first to advocate limiting science to naturalistic explanations.[2] He also maintained that recourse to final causes in physics was harmful, "[f]or the handling of final causes […] hath intercepted the severe and diligent inquiry of all real and physical causes, and given men the occasion to stay upon these satisfactory and specious causes, to the great arrest and prejudice of further discovery".[3] This is why it is sometimes claimed that "prior to the 1800s

[1] Cf. on this issue the remarks by 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*, Broken Arrow, Oklahoma, Blyth Institute Press, 2017, pp. 17-19.

[2] See e.g., Michael Ruse, 'The Argument from Design: A Brief History', in William A. Dembski and Michael Ruse (eds.), *Debating Design: From Darwin to DNA*, Cambridge University Press, Cambridge 2004, p. 16; James C. LeMaster, 'The Relationship of Bacon, Teleology, and Analogy to the Doctrine of Methodological Naturalism, in Bartlett and Holloway (eds.), *Naturalism and Its Alternatives*…, p. 68.

[3] Francis Bacon, *Of the Proficience and Advancement of Learning*, London, Bell & Daldy, 1861, Book II, p. 147, https://tiny.pl/ww5kg (accessed Apr. 10, 2023).

it [i.e., methodological naturalism] was primarily connected with physics".[4] However, such a strong linking of methodological naturalism with physics is not correct. Newton and other physico-theologians, as is widely known, allowed for supernaturalistic explanations in physics.[5] Such explanations were not eliminated from physics until Pierre Simon de Laplace at the very beginning of the 19th century.[6] This naturalism became fully operational in science with the publication of **On the Origin of Species**,[7] while the term "methodological naturalism" itself did not appear until 1936:

> Such a universal naturalism [stating that scientific explanations should not invoke external, final causes] – common to idealists and realists, to naturalists and theists alike – may be called scientific or methodological naturalism. But methodological naturalism is sharply to be distinguished from metaphysical naturalism. The latter takes the incomplete descriptions and heuristic methods of the former to be either final truth about reality or at least the limits of present human knowledge. Hardly any naturalist of today would be so rash as to take them as final truth. Certainly, no man of science would do so; and any philosopher, whether naturalist or theist, cuts a sorry figure when he strikes a dogmatic pose. Accordingly, what is usually done by naturalists is to regard naturalistic descriptions and methods as the limits of knowledge.[8]

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[4] Jonathan Bartlett and Eric Holloway, 'Introduction', in Bartlett and Holloway (eds.), *Naturalism and Its Alternatives*…, p. 3. See also e.g., Phil Stilwell, 'The Status of Methodological Naturalism as Justified by Precedent', *Studies in Liberal Arts and Sciences*, no. 41, 2009, pp. 233-234.

[5] See e.g., Isaac Newton, *Four Letters from Sir Isaac Newton to Doctor Bentley Containing Some Arguments in Proof of a Deity*, London, R. and J. Dodsley, 1756, Letter I, p. 3, https://tiny.pl/gzlmz (accessed Apr. 10, 2023); William Derham, *Physico-theology or A Demonstration of The Being and Attributes of God from His Works of Creation*, London, W. Innys and J. Richardson, 1754, https://tiny.pl/tmrg4 (accessed Apr. 10, 2023).

[6] Cf. on this issue the remarks of Walter William Rouse Ball, *A Short Account of the History of Mathematics*, London, Macmillian & Co., 1893, p. 423, https://tiny.pl/w4bb3 (accessed Apr. 10, 2023).

[7] See Julian Huxley, 'The Emergence of Darwinism', in: Sol Tax (ed.), *Evolution after Darwin. The University of Chicago Centennial. Vol. 1. The Evolution of Live*, 3 vols., Chicago, The University of Chicago Press, 1960, pp. 1-21.

[8] Edgar Sheffield Brightman, 'An Empirical Approach to God, *The Philosophical Review*, vol. 46, no. 2, 1937 (The presidential address to the eastern division of the American Philosophical Association at Cambridge, December 29, 1936), pp. 157-158, https://tiny.pl/tr36s (accessed Apr. 10, 2023). See also 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*, Berkeley, Los Angeles, London, University of California Press, 2009, p. 124 [117-140]; Robert A. Larmer, 'The Many Inadequate Justifications of Methodological Naturalism', *Organon F*, vol. 26, no. 1, 2019, p. 6, https://tiny.pl/tm92h (accessed Apr. 10, 2023).

Methodological naturalism consists of three methodological decisions, all of which stem from Charles Darwin. The first prescribes that we accept only naturalistic explanations for facts, processes and phenomena.[9] 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[10] and final causes, respectively.[11] In short, methodological naturalism is a prescription to the effect that scientific inquiry be confined to the natural 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$_2$),[12] for not every intelligent cause is a supernatural cause.[13] The fact that these are sometimes equated[14] does not mean that they are the same. *De facto*, therefore, we are dealing here with two varieties of this naturalism. The first is anti-supernaturalistic naturalism, while the second

[9] See Charles Darwin, *The Origin of Species*, New York, P. Collier & Son, 1909, p. 400, https://tiny.pl/wwfg9 (accessed Apr. 10, 2023).

[10] 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.

[11] 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*, New Delhi, Rupa & Co., 2003, p. 136, https://tiny.pl/wwfgl (accessed Apr. 10, 2023).

[12] Cf. on this issue the remarks of Kazimierz Jodkowski, 'Antynaturalizm teorii inteligentnego projektu', *Roczniki Filozoficzne*, vol. 54, no. 2, 2006, pp. 68-73, https://tiny.pl/tdzjz (accessed Apr. 10, 2023).

[13] See, e.g., Del Ratzsch, *Nature, Design and Science. The Status of Design in Natural Science*, Albany, State University of New York Press, 2001, pp. 17-19.

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

is anti-artificialistic naturalism.[15] 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.[16]

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".[17] The hard core of anti-supernaturalism can be presented in the 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.[18] Meanwhile, the hard core of anti-artificialist naturalism states that the course of events in the universe is not influenced by any intelligent factor.[19]

It is not difficult to see that the postulates of methodological naturalism, presented as a small set of methodological decisions underpinned by certain metaphysical theses about what exists, form the most general framework for doing science. This framework is not scientific in a sense that its acceptance precedes the doing of science. This issue directly links to the very important, long recognized, and universal problem of the relationship between the content of

[15] The term "artificialism" was first used by Brunschvicg in a very 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*, Paris, Felix Alcan, 1922, pp. 155, 159, https://tiny.pl/wwftj [08.03.2023]). However, the term can also be used in a narrower sense. Then 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; Author 2017.

[16] See e.g., Francisco J. Ayala, 'Darwin's Revolution', in John H. Campbell and J.W. Schoff (eds.), *Creative Evolution!?*, New York, Jones and Bartlett, 1994, p. 5.

[17] See Kazimierz Jodkowski, 'Darwinowska teoria ewolucji jako teoria filozoficzna', in Stefan Konstańczak, Tomasz Turowski (eds.), *Filozofia jako mądrość bycia*, Zielona Góra, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, 2009, p. 19, https://tiny.pl/q3m56 (accessed Apr. 10, 2023). Such a basing of methodological decisions on metaphysical assumptions is not only a characteristic of methodological naturalism: "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*, London Verso, 1993, p. 233).

[18] Cf., on this issue, the remarks of Jodkowski ('Darwinowska teoria ewolucji…', p. 19) and Thomas Nagel, 'Public Education and Intelligent Design', *Philosophy & Public Affairs*, vol. 36, no. 2, 2008, p. 205.

[19] See Charles Thaxton, 'A New Design Argument', *Discovery.org*, https://tiny.pl/wwf9d (accessed Apr. 10, 2023).

scientific claims and "non-scientific" beliefs.[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. It states that before anyone begins to practise science, he or she must *a priori* determine what this practising of science consists in. According to the approach presented here, the philosophical *presuppositions of science are such propositions (or beliefs) that are assumed even before the scientific research is undertaken*. These are, above all, beliefs concerning: the nature of the reality under investigation (Popper's idea of metaphysical research programmes is an excellent example of this)[23] and the acceptable ways of investigating it. For example:

> If – at least provisionally – we agree to call everything that can be reached by the mathematical-empirical method *the universe*, then [...] the [basic] methodological principle takes the form of a postulate which demands that the universe be explained by the universe itself. In this sense, scientific explanations

[20] 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*, transl. and ed. by Clemens Dutt, New York, International Publishers, 1940, pp. 183-184, https://tiny.pl/wwdk3 [accessed Apr. 10, 2023]), 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* vol. 11, no. 10, March 5, 2019, p. 3948, https://tiny.pl/wwd2t (accessed Apr. 10, 2023).

[21] See Author 2017.

[22] See Kazimierz Jodkowski, '*Curriculum Vitae*', https://tiny.pl/wwd24 (accessed Apr. 10, 2023); Kazimierz Jodkowski, 'Racjonalność Kopernika i Darwina. Polemika z drem Eugeniuszem Moczydłowskim', *Na Początku…*, no. 11-12A (174-175), 2003, p. 435, https://tiny.pl/trs79 (accessed Apr. 10, 2023); Kazimierz Jodkowski, 'Nienaukowy fundament nauki', in Zbigniew Pietrzak (ed.), *Granice nauki*, *Lectiones & Acroases Philosophicae*, vol. 6, no. 1, 2013, p. 105, https://tiny.pl/q3m1q (accessed Apr. 10, 2023); Kazimierz Jodkowski, 'Metafizyczne opowieści nauki jako fundament pluralizmu naukowego', in Phillip E. Johnson, *Wielka metafizyczna opowieść nauki (z posłowiem Kazimierza Jodkowskiego)*, Warsaw, Polskie Towarzystwo Kreacjonistyczne, 2003, pp. 80-81, https://tiny.pl/q3m5p (accessed Apr. 10, 2023).

[23] See Karl R. Popper, *Quantum Theory and the Schism in Physics: From the Postscript to the Logic of Scientific Discovery*, ed. W.W. Bartley III, New Jersey, Rowman and Littlefield, Totowa, 1982, pp. 159-211.

> are "definitive" because, within the framework of the method, they do not allow for any other explanations.[24]

According to the second component, within any given science there is the possibility of revising its basic assumptions. This thesis has gone unchallenged since the times of Charles Sanders Peirce. According to the third component, 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,[25] 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.[26] 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 or moral nature also play an important role, allowing the scientist to persist with his or her chosen path of research.[27]

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

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[24] Michał Heller, *Ostateczne wyjaśnienia wszechświata*, Krakow, Universitas, 2008, s. 15. Italics added.

[25] See, e.g., Keith B. Miller, 'Countering Public Misconceptions about the Nature of Evolutionary Science', *Georgia Journal of Science*, vol. 63, no. 3, 2005, p. 178, https://tiny.pl/tqw12 (accessed Apr. 10, 2023).
My attention here is focused only on the theses and arguments, not the persons defending or criticizing the claims I am examining. *It may be, like in this case, that the author in question is only responsible for having explicitly formulated a given thesis or argument.*

[26] See, e.g., 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 N.J., 1965, p. 227; Thomas S. Kuhn, *The Structure of Scientific Revolutions*, The University of Chicago Press, Chicago 1970, p. 4.

[27] See, e.g., Paul K. Feyerabend, 'Explanation, Reduction and Empiricism', in Herbert Feigl, Grover Maxwell (eds.), *Scientific Explanation, Space and Time, Minnesota Studies in the Philosophy of Science*, vol. III, Minneapolis, University of Minnesota Press, 1962, pp. 48-49; George V. Coyne, Michael [Michał] Heller, *A Comprehensible Universe. The Interplay of Science and Theology*, New York, Springer-Verlag, 2008, pp. 3-9; Karl R. Popper, *The Open Society and Its Enemies. Vol. II. The High Tide of Prophecy: Hegel, Marx, and the Aftermath*, 2. vols., London Routledge & Kegan Paul, 1974, pp. 230-231.

observation statements have no "observational core")[28] is in principle widely accepted today. 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),[29] where this term denotes "a set of the most general assumptions about how science can and cannot be done".[30] They express the greatest possible difference in scientific views.[31] 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.[32]

The assumptions (methodological decisions) on which EFs are based cannot be scientifically justified without falling into a vicious circle,[33] as all research that

[28] See Paul K. Feyerabend, 'Introduction to the Volumes 1 and 2', in Paul K. Feyerabend, *Philosophical Papers. Vol. 1. Realism, Rationalism & Scientific Method*, 3 vols., Cambridge – New York – Port Chester – Melbourne – Sydney, Cambridge University Press 1981, p. x, n. 3.

[29] 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*, Warsaw, Wydawnictwo Uniwersytetu Kardynała Stefana Wyszyńskiego, 2008, p. 115, https://tiny.pl/q3m5s [accessed Apr. 10, 2023]). See also Author 2021.

[30] See Jodkowski, 'Nienaukowy fundament…', p. 96.

[31] See Kazimierz Jodkowski, 'Kreacjoniści przed sądem. Aspekty filozoficzne «małpich procesów»', in Jakub Michalczenia, Jadwiga Mizińska, Katarzyna Ossowska (eds.), *Poszukiwania filozoficzne. Tom I: Nauka, Prawda. Panu Profesorowi Józefowi Dębowskiemu w darze*, Olsztyn, Instytut Filozofii Uniwersytetu Warmińsko-Mazurskiego w Olsztynie, 2014, p. 177, https://tiny.pl/xhz82 (accessed Apr. 10, 2023); Author 2017.

[32] It is worth mentioning at this point that the very idea of EFs is already a distinguishable 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". Nagel, 'Public Education…', p. 205. See also e.g., Bartlett, 'Philosophical Shortcomings…', pp. 32-33; Eric Holloway, Problems With Non-Naturalistic Theories of Science, in Bartlett and Holloway (eds.), *Naturalism and Its Alternatives*…, p. 163; Stephen C. Meyer, 'Scientific Tenets of Faith', *Journal of the American Scientific Affiliation*, vol. 38, no. 1, 1986, pp. 41-42, https://tiny.pl/wwfqv (accessed Apr. 10, 2023); J.P. Moreland, *Scientism and Secularism: Learning to Respond to a Dangerous Ideology*, Wheaton Ill., Crossway, 2018, p. 32; Andrzej Zybertowicz et al., *Samobójstwo Oświecenia?*, Wydawnictwo Kasper, Krakow 2015, p. 21.

[33] 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

counts as scientific already presumes them.[34] 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.[35]

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.

The only EF that is widely known and well described in modern philosophy of science is (consisting of the three decisions mentioned above, grounded in a particular metaphysics) methodological naturalism. However, there are other, anti-naturalistic EFs that operate on the fringes of science.

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".[36] The hard core of the supernaturalist

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that the supernatural account of the world's seeming design was a superfluity" (David R. Oldroyd, *Darwinian Impacts: An Introduction to the Darwinian Revolution*, Atlantic Highlands, New Jersey, Humanities Press, 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.

[34] See Jodkowski, 'Epistemiczne układy odniesienia…', p. 115. See also Robert A. Larmer, 'Is Methodological Naturalism Question-Begging?', *Philosophia Christi*, vol. 5, no. 1, 2003, pp. 117-118, 130, https://tiny.pl/g2sgc (accessed Apr. 10, 2023). Larmer has formulated his argument only for methodological naturalism.

[35] See Kazimierz Jodkowski, 'Dlaczego kreacjonizm jest pseudonauką?', in Józef Zon (ed.), *Pogranicza nauki. Protonauka — paranauka — pseudonauka*, Lublin, Wydawnictwo KUL, 2009, p. 322, https://tiny.pl/q3m5b (accessed Apr. 10, 2023). 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*, Wilmington, Delaware, ISI Books, 2011, p. 82.

[36] Robert C. O'Connor, 'Science on Trial: Exploring the Rationality of Methodological Naturalism', *Perspectives on Science and Christian Faith*, vol. 49, no. 1, 1997, p. 15, https://tiny.pl/wwf95 (accessed Apr. 10, 2023).

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

EF can be expressed like this: God exists and acts in nature in a direct way, while life is the unique work of the creation period. Creation took place by virtue of unique processes that no longer occur nowadays.[37]

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.[38] 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.[39]

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.

The aforementioned naturalistic and anti-naturalistic EFs are intended to form the most general cognitive framework for the pursuit of science. Meanwhile, naturalistic theism also seeks to create such a framework, and, at the same time, gives rise to another, *sui generis* worldview framework for scientific practice, which is supposed to be oriented towards defending Christian civilization against attempts to turn the latter into something post-Christian. Of course, at the heart of the previously discussed EFs there are also to be found certain worldviews that give meaning to some human actions while denying it to

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. See e.g., Ronald H. Pine, 'But Some of Them Are Scientists, Aren't They?', *Creation/Evolution Journal*, vol. 4, no. 4, 1984, p. 10, https://tiny.pl/g2vxk (accessed Apr. 10, 2023); Stephen C. Meyer, *Signature in the Cell: DNA and the Evidence for Intelligent Design*, Harper One, New York 2009, p. 171.

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

[38] See e.g., William A. Dembski, 'Intelligent Design: A Brief Introduction', *4Truth.NetScience* February 5, 2008, https://tiny.pl/tmkvf (accessed Apr. 10, 2023).

[39] See e.g., David K. DeWolf, Stephen C. Meyer, Mark Edward DeForrest, 'Teaching the Origins Controversy: Science, or Religion, or Speech?', *Utah Law Review*, vol. 39, 2000, p. 93, https://tiny.pl/tgqg4 (accessed Apr. 10, 2023).

others.[40] However, such theism is primarily stated as a worldview.[41]

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",[42] 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".)[43] 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".[44] 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 does not stand in opposition to creation, but together with it provides a

[40] See e.g., Fred Hoyle and Nalin Chandra Wickramasinghe, *Evolution from Space. A Theory of Cosmic Creationism*, New York, Simon & Schuster, Inc., 1984, p. 148; Michael Ruse, *Darwinism Defended: A Guide to the Evolution Controversies*, Addison-Wesley, Reading, Massachusetts 1982, p. 280; Alvin Plantinga, 'Methodological Naturalism?', in Jitse M. van der Meer (ed.), *Facets of Faith and Science. Vol. 1. Historiography and Models of Interaction*, 4 vols., The Pascal Centre for Advanced Studies in Faith and Science, University Press of America, Inc., Lanham, New York, London 1996, pp. 179-192; Nick Bostrom, *Anthropic Bias: Observation Selection Effects in Science and Philosophy*, New York, Routledge, 2010, pp. 11-12; Jason Rosenhouse and Glenn Branch, 'Media Coverage of «Intelligent Design»', *BioScience*, vol. 56, iss. 3, 2006, pp. 247-252, https://tiny.pl/tmd7t (accessed Apr. 10, 2023).

[41] See e.g., Howard J. Van Till, 'Cosmic Evolution, Naturalism, and Divine Creativity, or Who Owns the Robust Formational Economy Principle?', in Gordon and Dembski (eds.), *The Nature of Nature*…, p. 540.

[42] Piotr Bylica, 'Główne założenia i problemy teizmu naturalistycznego w sprawie relacji sfery nadprzyrodzonej i świata przyrodniczego', in Wiesław Dyk (ed.), *Sozologia systemowa. Vol. 4. Biosfera. Człowiek i jego środowisko w aspekcie przyrodniczym, filozoficznym i teologicznym*, 9 vols., Szczecin, Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, 2012, p. 88, https://tiny.pl/q3m1d (accessed Apr. 10, 2023).

[43] See George V. Coyne SJ, 'Evolution and Intelligent Design. Who Needs God?', in Seckbach, Gordon (eds.), *Divine Action and Natural Selection*…, p. 24.

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

synthetic picture of the world.[45]

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").[46] 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.

The hard cores of naturalistic and anti-naturalistic EFs indicate how these EFs differ on the metaphysical level. This leads directly to the thesis stating that they also differ on the methodological level. However, the dispute over the scientific status of the theories behind these different EFs is not about what methods these theories apply, but about *what kind of explanations they allow for*.[47] This state of affairs is not always recognised,[48] and, consequently, the nature of the explanations allowed is not always seen as a key determinant of scientificity.

It is not necessary to justify the thesis that adherence to the principles of methodological naturalism has contributed significantly to the growth of knowledge. (These principles are also considered necessary conditions for doing science, and "the standard view of the proper discourse and practice of contemporary science").[49] Since naturalistic EFs are the most widespread forms

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

[46] Coyne SJ, 'Evolution and Intelligent…', p. 18. See also, e.g., 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*, 10 vols., Washington DC, The National Academies Press, 2007, p. 20, https://tiny.pl/tx8s2 (accessed Apr. 10, 2023).

[47] See e.g., Michael J. BEHE, 'Irreducible Complexity: Obstacle to Darwinian Evolution', in Ruse and Dembski (eds.), *Debating Design*…, p. 355.

[48] See e.g., William S. Harris, and John H. Calvert, 'Intelligent Design. The Scientific Alternative to Evolution', *The National Catholic Bioethics Quarterly*, vol. 3, no. 3, 2003, pp. 546-547, https://tiny.pl/wngpt (accessed Apr. 10, 2023); John Mark Reynolds, 'Intelligent Design and the Contemporary Christian', *The Southern Baptist Journal of Theology*, vol. 11, no. 1, 2007, p. 74, https://tiny.pl/tmdc3 (accessed Apr. 10, 2023).

[49] 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*, vol. 3, no. 1, 2013, p. 20 [20-58], https://tiny.pl/tr3v9 (09.03.2023). See also e.g., Stephen Dilley, 'Philosophical Naturalism and Methodological Naturalism Strange Bedfellows?', *Philosophia Christi*, vol. 12, no. 1, 2011, p. 118,

of EF, most arguments 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.[50] It is worth looking into these, because in combination with the remarks in this section they show even more clearly that the question of choosing the "right" EF is neither obvious nor unambiguously resolved.

3. ARGUMENTS FOR 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.[51]

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*,[52] *and any other sort* "*is just not science*".[53] So, "as a matter of principle",[54] scholars should reject anti-naturalistic explanations.

Such an argument is very weak, as the recognition that something does or

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https://tiny.pl/tm9lr (09.05.2019); Eugenie C. Scott, *Evolution vs. Creationism. An Introduction. Second Edition*, Westport, Connecticut, London, Greenwood Press, 2009, p. 56; Robert Wright, *Three Scientists and Their Gods: Looking for Meaning in an Age of Information*, New York, Times Books, 1988, pp. 71-72; Scott F. Aikin, Michael Harbour, and Robert B. Talisse, 'Nagel on Public Education and Intelligent Design', *Journal of Philosophical Research*, vol. 35, 2010, p. 211, https://tiny.pl/gkfh3 (accessed Apr. 10, 2023); Tor Egil Førland, *Values, Objectivity, and Explanation in Historiography*, New York, Routledge, 2017, p. 160; Brad S. Gregory, 'No Room for God?: History, Science, Metaphysics, and the Study of Religion', *History and Theory*, vol. 47, no. 4, 2008, p. 497, https://tiny.pl/w4zxv (accessed Apr. 10, 2023); Coyne SJ, „Evolution and Intelligent…", p. 18.

[50] And arguments against naturalistic EFs are also at the same time arguments for one or other of the aforementioned anti-naturalistic EFs.

[51] See Author 2018.

[52] See Eugenie C. Scott, 'My Favorite Pseudoscience', *Reports of the National Center for Science Education* Jan-Feb, vol. 23, no. 1, 2003, https://tiny.pl/tmgvt (accessed Apr. 10, 2023).

[53] See Stephen C. Meyer, 'Sauce for the Goose: Intelligent Design, Scientific Methodology, and the Demarcation Problem', in: Gordon and Dembski (eds.), *The Nature of Nature…*, p. 95. Meyer here cites statements by Robert Pennock and Barbara Carroll Forrest from the Kitzmiller vs Dover trial.

[54] Franklin M. Harold, *The Way of the Cell: Molecules, Organisms, and the Order of Life*, Oxford, Oxford University Press, 2001, p. 205.

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 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.[55]

(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.*[56] 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.[57]

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).[58] 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*.[59] Methodological decisions taken without regard for the circumstances in play threaten to hinder the development of science.[60]

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

[56] See Robert Shapiro, *Origins: A Skeptic's Guide to the Creation of Life on Earth*, Toronto, Bantam New Age, 1987, p. 130; Christian de Duve, 'Mysteries of Life: Is There «Something Else»?', in Gordon and Dembski (eds.), *The Nature of Nature*…, p. 355.

[57] See Paul K. Feyerabend, 'Consolations for the Specialist', in Paul K. Feyerabend, *Philosophical Papers. Vol. 2. Problems of Empiricism*, 3 vols., Cambridge – New York – Port Chester – Melbourne – Sydney, Cambridge University Press, 1981, p. 137.

[58] See Paul K. Feyerabend, 'Reply to Criticism. Comments on Smart, Sellars and Putnam', in Feyerabend, *Philosophical Papers. Vol. 1*…, p. 105.

[59] 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*, 3 vols., Cambridge, Cambridge University Press, 1999, pp. 107-108.

[60] *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,

(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.[61] 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 or specified complexity)[62] and supernaturalistic explanations (e.g., the laboratory process of synthesizing life should be considered an argument against supernaturalism).[63] 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.[64] 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

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.

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

[62] See Jonathan Witt, 'Intelligent Design is Empirically Testable and Makes Predictions', *Evolution News & Science Today*, January 5, 2006, https://tiny.pl/ww5ht (accessed Apr. 10, 2023); 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, https://tiny.pl/tm15j (accessed Apr. 10, 2023); 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, https://tiny.pl/w45c5 (accessed Apr. 10, 2023); Kirk Fitzhugh, 'Evolutionary Biology versus Intelligent Design: Resolving the Issue', *Research & Collections Branch, Natural History Museum of Los Angeles County*, pp. 9-10, https://tiny.pl/w45w5 (accessed Apr. 10, 2023).

[63] See Kazimierz Jodkowski, *Metodologiczne aspekty kontrowersji ewolucjonizm-kreacjonizm*, "Realizm. Racjonalność. Relatywizm", vol. 35, Lublin, Wydawnictwo Uniwersytetu Marii Curie Skłodowskiej, 1998, pp. 257-266.

[64] See e.g., 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*, London, Heinemann, 1963, pp. 348-349.

incompatible with the accepted way of explaining things.

It has also been claimed that naturalism itself constitutes the universally accepted definition of science.[65] 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 physico-theologians accounts appealing to supernatural explanations.[66] 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).[67]

There is also a belief – which continues to be held by some – to the effect that naturalistic explanations should never be abandoned.[68] 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.[69] 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.[70] 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

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[65] See e.g., Eugenie C. Scott, 'Darwin Prosecuted: Review of Johnson's *Darwin on Trial*', *Creation/Evolution Journal*, vol. 13, no. 2, 1993, p. 43, https://tiny.pl/g28vq (accessed Apr. 10, 2023); de Duve, 'Mysteries of Life…', p. 346; Richard Lewontin, 'Billions and Billions of Demons', *New York Review of Books*, vol. 44, no. 1, 1997, https://tiny.pl/gz1b9 (accessed Apr. 10, 2023).

[66] A comprehensive overview of these explanations can be found in the work of a member of The Royal Society, William Derham, *Physico-Theology*… .

[67] See Meyer, 'Sauce for the Goose…', p. 96.

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

[69] See FEYERABEND, 'Problems of Empiricism…', p. 174-175.

[70] See e.g., Eldredge, *The Monkey Business*…, p. 82.

to explain phenomena by invoking supernatural causes.[71] 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*.[72]

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.[73] 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.*[74] This thesis is not

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[71] See, e.g., 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*, vol. 43, 1992, pp. 175-177, https://tiny.pl/gzj7d (accessed Apr. 10, 2023); Arminius Mignea, 'Methodological Naturalism and Its Creation Story', in Bartlett and Holloway (eds.), *Naturalism and Its Alternatives*..., p. 130.

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

[73] See, e.g., Michael S. Luciano, 'Why Intelligent Design Doesn't Cut It: A Primer', *Talk Reason* June 30th, 2009, https://tiny.pl/tt7fv (accessed Apr. 10, 2023); Pine, 'But Some of Them…', pp. 6-18.

[74] See, e.g., Harry Lee Poe and Chelsea Rose Mytyk, 'From Scientific Method to Methodological Naturalism: The Evolution of an Idea', *Perspectives on Science and Christian Faith*, vol. 59, no. 3, September 2007, p. 214, https://tiny.pl/ww5qq (accessed Apr. 10, 2023); Julian Chela-Flores, 'Astrobiological Reflections on Faith and Reason. The Issues of Agnosticism, Relativism and Natural Selection', in Seckbach, Gordon (eds.), *Divine Action and Natural Selection*…, pp. 55-56.

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,

well argued. If, according to a certain line of argument, 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.[75] The argument thus says nothing more than that naturalism prescribes naturalism. And if, in fact, methodological naturalism were 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.[76] 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".*[77] Here it is claimed that naturalistically practised science is successful.[78] 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 standards of evaluation in play. Moreover, whether a given explanation can be considered successful or not will depend on previously accepted general points of view (or EFs) that determine specific theoretical perspectives.[79]

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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.

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

[76] See, e.g., Paul A. Zimmerman, *The Doctrine of Creation and the Modern Theories of Evolution*, Okoboji, The Lutheran Church – Missouri Synod, 1960, pp. 1-2, https://tiny.pl/ww12f (accessed Apr. 10, 2023).

[77] Leonard Brand, 'Naturalism: Its Role in Science', *Origins*, no. 64, 2015, p. 25, https://tiny.pl/ww5q9 (accessed Apr. 10, 2023). See also, e.g., Patrick McDonald and Nivaldo J. Tro, 'In Defense of Methodological Naturalism', *Christian Scholar's Review*, vol. 38, no. 2, 2009, p. 202, https://tiny.pl/tmgtg (accessed Apr. 10, 2023).

[78] See, e.g., Stilwell, 'The Status of Methodological Naturalism…', p. 236; Barbara Carroll Forrest, 'The Religious Essence of Intelligent Design', *Cold Spring Harbor Symposia on Quantitative Biology*, vol. 74, 2009, p. 458, https://tiny.pl/tmc97 (accessed Apr. 10, 2023).

[79] See, e.g., Wilfrid Sellars, 'Empiricism and the Philosophy of Mind', in Wilfrid Sellars, *Science, Perception and Reality*, Atascadero, California, Ridgeview Publishing Company, 1991, p. 173; James Porter Moreland, 'Theistic Evolution, Christian Knowledge and Culture's Plausibility Structure', *Journal of Biblical and Theological Studies*, vol. 2, no. 1, 2017, p. 3, https://tiny.pl/t9322 (accessed Apr. 10, 2023); Steve Clarke,

It is also argued by some that naturalism is the only effective method of acquiring knowledge.[80] 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.[81] 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,[82] and that the methodological declarations of researchers have little to do with their actual, everyday investigative practices.[83]

According to another argument supporting the above thesis, methodological naturalism has often found solutions to problems that seemed unsolvable within this perspective.[84] It is difficult to disagree with this argument. However, it does not entail the claim that this will be the case in the future, or that anti-naturalistic methodologies are useless.[85]

'Naturalism, Science and the Supernatural', *Sophia. International Journal of Philosophy and Traditions*, vol. 48, 2009, p. 128.

[80] See, e.g., Brand, 'Naturalism: Its Role…', p. 25; Miller, 'The Misguided Attack…', p. 117; Francis J. Beckwith, 'How to be an Anti-Intelligent Design Advocate', *University of St. Thomas Journal of Law and Public Policy*, vol. 4, no. 1, 2009, p. 41, https://tiny.pl/tmdr1 (accessed Apr. 10, 2023).

[81] See, e.g., Paul K. Feyerabend, *Against Method. Outline of an Anarchistic Theory of Knowledge*, London, New Left Books, 1975, p. 296; Stephan Fuchs and Joseph H. Spear, 'The Social Conditions of Cumulation', *The American Sociologist*, vol. 30, no. 2, 1999, p. 24.

[82] See, e.g., Paul K. Feyerabend, *Killing Time*, Chicago and London, The University of Chicago Press, 1995, pp. 89-91.

[83] See, e.g., Henri Poincaré, *Science and Hypothesis*, The Walter Scott Publishing Co., New York, 1905, pp. XXI-XXII, https://tiny.pl/ww5xw (accessed Apr. 10, 2023); Pierre Duhem, *The Aim and Structure of Physical Theory*, New York, Atheneum, 1962, pp. 321-322, https://tiny.pl/ww5xc (accessed Apr. 10, 2023).

[84] See, e.g., John Rennie, '15 Answers to Creationist Nonsense', *Scientific American* July 1st, 2002, https://tiny.pl/ww5x4 (accessed Apr. 10, 2023); Jerry A. Coyne, 'Science, Religion, and Society: The Problem of Evolution in America', *Evolution. International Journal of Organic Evolution*, vol. 66, no. 8, 2012, p. 2657, https://tiny.pl/thtdt (accessed Apr. 10, 2023).

[85] 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, e.g., Abby Hafer, 'No Data Required: Why Intelligent Design is not Science', *The American Biology Teacher*, Vol. 77, 2015, p. 508, https://tiny.pl/tmdtp (accessed Apr. 10, 2023); Denis Alexander, Munawar Anees, Martinez Hewlett, Ronald L. Numbers, Holmes Rolston III, Michael Ruse, Jeffrey Schloss, 'ISSR Statement on the Concept of «Intelligent Design»', *ISSR Statements* January 6, 2017, https://tiny.pl/tt75g (accessed Apr. 10, 2023). Dembski, for example, describes his enterprise as a "scientific research program". The aforementioned author has formulated a number of recommendations

Still another argument holds that due to what substantive considerations dictate, naturalism is an idealization that involves omitting anti-naturalistic explanations.[86] 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.[87]

(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.[88] 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").[89] But not only opponents of naturalism distance themselves from the belief that the simplest explanation for the origin of life is already known.[90] These doubts are also shared by some naturalists ("we are still nowhere near explaining the origin of life").[91]

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that this program should meet; see William A. Dembski, 'Becoming a Disciplined Science: Prospects, Pitfalls, and a Reality Check for ID', *Access Research Network* 10.30.2002, https://tiny.pl/gzpct (accessed Apr. 10, 2023).

[86] See Adam Grobler, 'Słabości eksplanacyjne teorii inteligentnego projektu', *Filozoficzne Aspekty Genezy*, vol. 10, 2013, p. 8, https://tiny.pl/xh8ls (accessed Apr. 10, 2023).

[87] Cf. 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*, vol. 10, 2013, pp. 17-63, https://tiny.pl/q3m1m (accessed Apr. 10, 2023).

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

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

[90] See, e.g., DeWolf, Meyer, DeForrest, 'Teaching the Origins…', pp. 53-54, 57; Dembski, 'In Defense of Intelligent…', p. 6; David Berlinski, 'On the Origins of Life', in Gordon and Dembski (eds.), *The Nature of Nature…*, pp. 276-277, 283-285; Stephen C. Meyer, 'DNA: The Signature in the Cell', in Gordon and Dembski (eds.), *The Nature of Nature…*, pp. 310-312.

[91] de Duve, 'Mysteries of Life…', p. 349. See also, e.g., Klaus Dose, 'The Origin of Life: More Questions than Answers', *Interdisciplinary Science Reviews*, vol. 13, no. 4, 1988, p. 348; Gerd B. Müller, 'Why an Extended Evolutionary Synthesis is Necessary', *Interface Focus*, vol. 7, no. 5, 2017, p. 4, https://tiny.pl/ww5m1 (accessed Apr. 10, 2023); Eugene V. Koonin, 'Darwinian Evolution in the Light of Genomics', *Nucleic Acids Research*, vol. 37, no. 4, 2009, p. 1014, https://tiny.pl/ww5mk (accessed Apr. 10, 2023).

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.[92] 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.[93]

(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.[94] 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".[95] 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

[92] See Ronald G. Larson, 'Revisiting the God of the Gaps', *Perspectives on Science and Christian Faith*, vol. 61, no. 1, 2009, p. 14, https://tiny.pl/ww5gr (accessed Apr. 10, 2023).

[93] See, e.g., 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, Dordrecht, D. Reidel Publishing Company, 1967, pp. 402-405; Paul K. Feyerabend, 'Dialectical Materialism and the Quantum Theory', *Slavic Review*, vol. 25, no. 3, 1966, p. 415.

[94] See, e.g., 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)*, London, Office of The British Association, Burlington House, 1930, p. 88, https://tiny.pl/ww5gn (accessed Apr. 10, 2023).

[95] Feyerabend, *Against Method. Outline…*, p. 69.

presupposed by our language only allows for the formulation of statements about certain kinds of entities.[96]

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 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.[97]

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.[98] 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

[96] 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*, vol. 10, no. 5, 1981, https://tiny.pl/tgmf5 [accessed Apr. 10, 2023]). 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, e.g., Oktar Babuna, 'The Origin and Creation of Life', in Seckbach and Gordon (eds.), *Divine Action and Natural Selection*…, p. 344). 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…').

[97] See Paul K. Feyerabend, 'Realism and Instrumentalism: Comments on the Logic of Factual Support', in Feyerabend, *Philosophical Papers. Vol. 2*…, p. 199-200; Paul K. Feyerabend, 'Linguistic Arguments and Scientific Method', in Feyerabend, *Philosophical Papers. Vol. 2*…, p. 157.

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

principle of methodological naturalism. Thus, naturalism does indeed speak in favour of naturalism.[99]

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.[100] As the history of science shows, the deficiencies 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.[101] 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.[102] 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[103]

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[99] 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*, vol. 17, no. 2, 2003, p. 469, https://tiny.pl/tmp7d (accessed Apr. 10, 2023).

[100] See, e.g., Douglas J. Futuyma, 'Miracles and Molecules', *Boston Review*, February/March 1997, p. 30; Tom Gilson, 'Methodological Naturalism, Methodological Theism, and Regularism', in: Bartlett and Holloway (eds.), *Naturalism and Its Alternatives*…, p. 40.

[101] See, e.g., Steven Lloyd, '«God of the Gaps». A Valid Objection?', *Origins*, vol. 42, 2005, p. 9, https://tiny.pl/gzlgr (accessed Apr. 10, 2023).

[102] 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". DCP-LETT-4206, https://tiny.pl/ww5dh, in James A. Secord (dir.), *Darwin Correspondence Project*, Cambridge University Library and the Department for the History and Philosophy of Science, https://tiny.pl/tmfqw (accessed Apr. 10, 2023).

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

– 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" developed by Feyerabend does not have to be interpreted nihilistically[104] – there are also anti-nihilistic interpretations of it.[105] 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.[106]

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.[107]

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

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[104] "The only rule […] is that there are no rules". Jean Curthoys and Wal Suchting, 'Feyerabend's Discourse against Method: A Marxist Critique', *Inquiry*, vol. 20, no. 2-3, 1977, p. 251.

[105] 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, Dordrecht–Boston–London, Kluwer Academic Publishers, 1991, p. 28.

[106] See Paul K. Feyerabend, *The Tyranny of Science*, Cambridge UK — Malden USA, Polity Press, 2012, pp. 130-131.

[107] Pennock, *Tower of Babel*…, p. 294.

simplest option and involve no effort at all.[108]

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 outrightly 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.[109] 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.)[110] 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[111] or when there is a good scientific reason for this.[112] The counter-argument here is the same as with the previous argument: neither a more convincing explanation nor a good

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

[109] See Erkki V.R. Kojonen, 'Methodological Naturalism and the Truth-Seeking Objection', *International Journal for Philosophy of Religion*, vol. 81, 2017, p. 336.

110 See Feyerabend, 'Consolations for the Specialist…', pp. 137-138.

[111] See Loren Petrich, 'Animal and Extraterrestrial Artifacts: Intelligently Designed?', *The Secular Web* April 22nd, 2003, https://tiny.pl/ww5dj (accessed Apr. 10, 2023).

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

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.[113]

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.[114] 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".[115] And yet extraordinary evidence, if the term is understood in Kuhnian terms, is nothing more than anomalies. 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.[116]

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 this broader meaning could, by implication, suggest a denial of epistemic legitimacy to these other areas […].[117]

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

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[113] 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.

[114] See Maarten Boudry, Stefaan Blancke, and Johan Braeckman, 'How Not to Attack Intelligent Design Creationism: Philosophical Misconceptions about Methodological Naturalism', *Foundations of Science*, vol. 15, vo. 3, 2010, p. 241.

[115] Boudry, Blancke, Braeckman, 'How Not to Attack…', p. 229.

[116] 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.

[117] McMullin, 'Varieties of Methodological…', p. 89.

explanations as are justified by "*a particular* interpretation of Scripture".[118] 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.[119] Nevertheless, it is not difficult to see that methodological naturalism is based on a different methodological decision, this being the principle of exclusivity,[120] 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",[121] 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.[122]

The fourth decision that is made here boils down to distinguishing theistic science[123] – which accepts "premises of distinctively Christian inspiration"[124] and is sometimes referred to as "a broader view of science"[125] – 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.[126] However, if the primary purpose of these methodological decisions

[118] See O'Connor, 'Science on Trial…', p. 19, italics added.
[119] See O'Connor, 'Science on Trial…', p. 15.
[120] See O'Connor, 'Science on Trial…', p. 16.
[121] See McMullin, 'Varieties of Methodological…', p. 83.
[122] See McMullin, 'Varieties of Methodological…', pp. 86-91.
[123] See Alvin Plantinga, 'When Faith and Reason Clash: Evolution and the Bible', *Christian Scholar's Review*, vol. 21, no. 1, 1991, p. 30, https://tiny.pl/gzln9 (accessed Apr. 10, 2023).
[124] See McMullin, 'Varieties of Methodological…', p. 88.
[125] See Reynolds, 'Intelligent Design and…', p. 71.
[126] See, e.g., Stephen C. Meyer, 'The Use and Abuse of Philosophy of Science: A Response to Moreland', *Perspectives on Science and Christian Faith*, vol. 46, no. 1, 1994, p. 17, https://tiny.pl/w28q5 (accessed Apr. 10, 2023).

(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.[127] This condition states that where anti-naturalistic explanations are introduced, a strong argument must first be given for why naturalistic explanations are not possible.[128] 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",[129] 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.[130]

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.[131]

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[127] See Jodkowski, 'Epistemiczne układy odniesienia…', pp. 118-119.

[128] See Jodkowski, *Metodologiczne aspekty*…, p. 313.

[129] Kazimierz Jodkowski, *Spór ewolucjonizmu z kreacjonizmem. Podstawowe pojęcia i poglądy*, Warsaw, Wydawnictwo MEGAS, 2007, p. 182, https://tiny.pl/qzq8j (accessed Apr. 10, 2023). See also, e.g., Elliott Sober, *Philosophy of Biology*, Boulder, San Francisco, Westview Press, 1993, p. 55; Erkki Vesa Rope Kojonen, *Intelligent Design: A Theological and Philosophical Analysis*, Helsinki, University of Helsinki Press, 2014, p. 197, https://tiny.pl/tmc7b (accessed Apr. 10, 2023).

[130] See, e.g., 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*, East Lansing, Michigan State University Press, 2003, p. 270.

[131] Nagel, 'Public Education…', pp. 199-200. See also, e.g., Michael Tooley, 'Naturalism, Science and Religion', in Gordon and Dembski (eds.), *The Nature of Nature*…, pp. 888-890; Michael J. Behe, *Darwin's Black Box. The Biochemical Challenge to Evolution*, New York, London, Toronto, Sydney, Free Press, 2006, p. 252; Nathan H. Lents, S. Joshua Swamidass, Richard E. Lenski, 'The End of Evolution? A Biochemist's Crusade

> materialists could accept intervention by extra-terrestrials, were there demonstrated to be a case of biological complexity which is inaccessible by Darwinian evolution.[132]

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.[133] This state of affairs can be explained as follows. 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.*[134] 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

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to Overturn Evolution Misrepresents Theory and Ignores Evidence', vol. 363, iss. 6427, *Science* 8 February 2019, p. 590, https://tiny.pl/ww51f (accessed Apr. 10, 2023); 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*, Seattle, WA, Discovery Institute Press, 2010, p. 162.

[132] Richard Thornhill, 'The Historical Relationship Between Darwinism and the Biological Design Argument', *Perspectives on Science and Christian Faith*, vol. 54, no. 4, 2002, p. 254, https://tiny.pl/ww51l (accessed Apr. 10, 2023). See also, e.g., Wesley R. Elsberry, '«Dances with Popper»: An Examination of Dembski's Claims on Testability', *Talk Reason*, 2 January 2005, https://tiny.pl/ww51n (accessed Apr. 10, 2023); Kenneth R. Miller, 'Answering the Biochemical Argument from Design', in Neil A. Manson (ed.), *God and Design: The Teleological Argument and Modern Science*, London, Routledge, 2003, p. 291.

[133] See, e.g., De Duve, 'Mysteries of Life…', p. 350; Maarten Boudry, Stefaan Blancke, Johan Braeckman, 'Irreducible Incoherence and Intelligent Design: A Look into the Conceptual Toolbox of a Pseudoscience', *Quarterly Review of Biology*, vol. 85, no. 4, 2010, pp. 476-477; Tooley, 'Naturalism, Science…', p. 890.

[134] See Kazimierz Jodkowski, 'Filozofia przyrody a nauki przyrodnicze', *Colloquia Communia*, vols. 1-2 (82-83), 2007, pp. 21-22, https://tiny.pl/tlkgz (accessed Apr. 10, 2023). See also William Whewell, *Astronomy and General Physics Considered with Reference to Natural Theology. Bridgewater Treatises. Treatise III*, London, William Pickering, 1833, p. 344, https://tiny.pl/ww5s9 (accessed Apr. 10, 2023).

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.[135]

5. CONCLUDING REMARKS

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.[136] 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.[137]

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, and what kind of predictions had been confirmed, and why scientists considered this satisfactory. This showed Feyerabend the weakness of his own

[135] 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.

[136] See, e.g., Hoyle and Wickramasinghe, *Evolution from Space*…, pp. 137-138.

[137] See Otto Neurath, 'Soziologie im Physikalismus', *Erkenntnis*, vol. 2, 1931, p. 396.

argumentation – which, while logically correct, nevertheless came from outside the realm of scientific practice.[138] 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.[139]

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.[140] 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.*

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 universal 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

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

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

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

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.

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