The Despotic Eye?

Romantic Scientification of the Vision of Nature (Słowacki–Bacon, Mickiewicz–Kepler)

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Describing his trip through France to the Alps in July 1790 in book six of the *Prelude*, William Wordsworth explains how his view of the highest mountain in Europe changed when he saw it with his own eyes:

> From a bare ridge we also first beheld
> Unveiled the summit of Mont Blanc, and grieved
> To have a soulless image on the eye
> Which had usurped upon a living thought
> That never more could be.(VI, 525-529) [1]

The summit of Mont Blanc is "unveiled" to the travelers, but this moment of revelation comes as a disappointment, as the image perceived by the senses is "soulless." The eye registers only external reality (Wordsworth is not concerned with the brain which interprets the image, and, as we know today, it is the brain that processes visual stimuli). In book twelve, the poet writes

[1] William Wordsworth, "The Prelude", in: *The Poems of William Wordsworth*, ed. Jared Curtis, vol. III (Penrith: Humanities-Ebook, 2009), 231. PDF.

that it is "the most despotic of our senses" (XII, 129).[2] Unmediated, uninformed by cultural filters, the eye shows the radical otherness of the mountain landscape, as independent of the human mind and "soulless." The "real" image has replaced preconceived ideas, turning into a "usurper." "Real" nature is thus seen as an intruder in the world of the mind and imagination.

In John Maxwell Coetzee's novel *Disgrace*, Professor David Lurie also gives a university class on book six of the *Prelude*, perhaps anticipating how reality unmediated by cultural matrices (especially literary, and in particular Romantic, models) shall dramatically change his private life, destroying previous illusions, including those concerning the relationship between man and nature which he shaped under the influence of Wordsworth's poetry. Lurie sees in this fragment of the *Prelude* the need to combine the sensuous, banal, and clear image of the world reflected by the retina with archetypes of imagination, that is, invisible ideas. What is unsettling about Lurie's class, however, is that in his interpretation of Wordsworth's poetry, he tries to send a message to one of his students, Melanie, whom he had seduced and with whom he is having an affair. He establishes a connection between his immoral actions and Wordsworth's romantic poetry, seeking to redeem himself. Indeed, he thus presents his actions not as purely physical and sensuous but as rooted in greater ideas and archetypes. Lurie uses Romantic literature (such as Byron) to disguise shameful reality, applying a distorting cognitive filter. In the postcolonial context present in the novel, Lurie seems to use Western European traditions, including archetypes from Romantic poetry, to justify his actions, distorting reality and extenuating his relationship with a black South African student.

Coetzee in *Disgrace* critiques false post-Romantic consciousness which (perhaps even cynically?) makes use of archetypes-turned-clichés and thus distorts the image of reality. Respectively, in the *Prelude*, Wordsworth openly shows the authentic cognitive dissonance between "bare reality," between nature that may be experienced through the senses, and imagination and cultural matrices. The lyrical I stages a genuine confrontation, which will later aid him in developing a new approach towards nature.

In this text, I shall examine how the image of nature in Romanticism was filtered through cultural matrices – especially those formulated in connection with the development of natural sciences, most often considered in terms of purely "material" cognition provided by the senses. This notwithstanding, contrary to popular belief, it was not dismissed.[3] I shall discuss the works of two Polish Romantic poets, Mickiewicz and Słowacki, demonstrating how the image of nature is mediated through scientific cognition, i.e., a cognitive matrix imposed by culture.

[2] Wordsworth, 322.

[3] See, for example, the following critical works on Polish Romanticism: Ewa Kochanowska, *Romantyczna literatura wobec nauki. Henryk Ofterdingen Novalisa i Genezis z Ducha Słowackiego* [Romantic literature and science: Novalis's *Heinrich von Ofterdingen* and Słowacki's *Genesis from the Spirit*] (Wrocław: Oficyna Wydawnicza ATUT – Wrocławskie Wydawnictwo Oświatowe, 2002), Agnieszka Czajkowska, *"Poeci uczeni". Związki nauki i literatury w twórczości romantyków* ["Poets scholars:" Science and literature in the works of Polish Romantic poets] (Częstochowa: Wydawnictwo im. S. Podobińskiego Akademii im. Jana Długosza w Częstochowie, 2016); Marek Dybizbański, *Romantyczna futurologia* [Romantic futurology] (Kraków: Towarzystwo Przyjaciół Polonistyki Krakowskiej, 2005); *Poezja i astronomia* [Poetry and Astronomy], ed. Bogdan Burdziej and Grażyna Halkiewicz-Sojak (Toruń: Wydawnictwo Uniwersytetu Mikołaja Kopernika, 2006); Juliusz Gromadzki, "*Genezis z Ducha* a teorie ewolucji przyrodniczej" [*Genesis from the Spirit* and theories of evolution], *Przegląd Humanistyczny*, no. 1/2 (2000);

I aim to demonstrate that Romantic poets did not necessarily hide the fact that they explored nature indirectly, often with the help of cultural matrices (and science). Although Romantic poetry was somewhat consumed by the anxiety of influence, the anxiety of being influenced by the external world, it did not always defend itself against cultural and scientific models which could undermine its authentic and direct contact with a given phenomenon. Such influences and models were not necessarily seen as distorting reality. The Romantic turn to the outside world (and not only towards the "I") involved both the senses and the mind – the image of nature was thus co-created by the eye and ideas, mimeticism and constructionism.

Nature in Romanticism, as Maria Janion observes, was "exceptionally conditioned by human, historical ways of seeing, perceiving and understanding it,"[4] including scientific and empirical perception. It should be emphasized, however, that such dependencies and cultural models were not so much deconstructed as, more often, naturalized. Poets created the illusion that they communed with nature, exploring it spontaneously and directly.

Nature in this article, as in Romanticism, will be defined very broadly, as the entire natural world, including the cosmos, i.e., the entire physical reality (man was considered a part of nature, although his status was complicated because he also created culture and changed nature[5]). The Vilnius *Dictionary of the Polish Language* from 1861 defines nature as "the entire material or physical world, in the broadest sense; all universes perceived by the senses in space and time (planets, suns, etc.); and forces acting in them (gravity, coherence, electricity, etc.)."[6] Maria Janion further notes that "Cosmos [...] has become the nature of Romantic poets."[7] It is not surprising considering that in Greek nature or "*physis* could [...] refer to the entire cosmos."[8]

In the present text, culture, including science, will not be examined in opposition to nature. Indeed, the "nature-culture" dichotomy has been questioned before.[9] Ecocriticism deconstructs such binary divisions and questions outdated concepts of nature, as demonstrated by, for example, Julia Fiedorczuk in *Cyborg w ogrodzie* [Cyborg in the garden]: "The most endur-

[4] Maria Janion, "Kuźnia natury" [Forge of Nature], in: *Prace wybrane* [Selected works], vol. 1: "Gorączka romantyczna" [Romantic fever] (Kraków: Universitas, 2000), 276.

[5] See: Julia Fiedorczuk, *Cyborg w ogrodzie. Wprowadzenie do ekokrytyki* [Cyborg in the garden: Introduction to ecocriticism] (Gdańsk: Wydawnictwo Naukowe Katedra, 2015), 43-45.

[6] Quote after: Antonina Bartoszewicz, "Natura" [Nature], entry in *Słownik literatury polskiej XIX wieku* [Dictionary of Polish literature of the nineteenth century], ed. Józef Bachórz and Alina Kowalczykowa (Wrocław: Zakład Narodowy im. Ossolińskich, 1991), 596.

[7] Janion, "Kuźnia natury", 279. Julia Fiedorczuk, in turn, points out that one of the meanings of "nature" distinguished by Raynold Williams "appears with the advent of the Renaissance and the birth of modern science. Nature is then defined as an object of research, a set of laws, and, over time, a synonym for logic and order. Such a definition of nature refers to what was not created or processed by man and is gradually turning into an antithesis of culture, in the sense of 'wildlife'" (Fiedorczuk, *Cyborg w ogrodzie*, 40-41).

[8] Alina Nowicka-Jeżowa, Elwira Buszewicz, Justyna Dąbkowska-Kujko, "Twórcy doby wczesno nowożytnej w poszukiwaniu natury" [The artists of the early modern era in search of nature], in: *Obraz natury w kulturze intelektualnej, literackiej i artystycznej doby staropolskiej* [The image of nature in the intellectual, literary and artistic culture in Old Polish literature], ed. Alina Nowicka-Jeżowa, Elwira Buszewicz, Justyna Dąbkowska-Kujko, Aleksandra Jakóbczyk-Gola (Warsaw: Wydawnictwa Uniwersytetu Warszawskiego, 2021), 16.

[9] See, for example, Bruno Latour, *We Have Never Been Modern* (Cambridge: Harvard University Press, 1993), 13 (Latour has also coined the hybrid concept of "nature-culture"); James J. Bono, "Science Studies as Cultural Studies", in: *The Cambridge Companion to Literature and Science*, ed. Steven Meyer (Cambridge: Cambridge University Press, 2018) 158.

ing element of Western thought about the place of man in the physical world is the binary division into and between «nature» and «culture».”[10] Nature and culture are interdependent, and science influences the poetics of nature. Traditionally, however, scientific knowledge was perceived as a product of nature and not culture; it was independent of scientists, nature itself was its source and science was only its spokesman.[11] Galileo defined science in such terms; he believed that scientists should read the Book of Nature, unmediated and unaffected by human interpretation.[12] Questioning Kant's great division between nature and culture, Bruno Latour and Michel Callon changed the perception of science, arguing that scientific knowledge is not produced by nature but by society.[13] These examples demonstrate that science may be defined as either “closer” to nature or culture. Romantic poets knew that science was closer to culture, that it was produced by man who was, after all, culturally conditioned and his cognitive horizons were defined by specific cultural paradigms (e.g., Enlightenment realism and materialism).

Many critics tend to focus on and emphasize the fact that nature and metaphysics are united in Romanticism, as we move from the mechanistic to organicist vision of nature that can be read through “signs” (nature is a “book” that can be read by exceptional individuals). It should be noted that critics focus on the antinomy between nature and culture, sometimes emphasized in Romanticism (dating back to J.J. Rousseau and F. Schiller), and the belief that the book of nature cannot be read through cultural codes (especially not through science, not through “the looking glass and the eye of the wise man”) but through imagination or feeling (“feeling and faith”). Romantic poets aimed to read the book of nature “not, as it was in the past, by referring to the rational and unchanging laws of nature, but by relying on intuition, inspiration, and genius to explore its secret forces.”[14] Alternatively, and perhaps in opposition to such observations, it should be noted that also in Romanticism, the scientific approach to natural phenomena became an inspiration for poets,[15] influencing their view of nature, which was not “natural” at all. The illusion of spontaneous and direct contact with nature and its representation becomes apparent when one examines the cultural (and scientific) influences involved in creating the images of nature. Nature in Romanticism was therefore not “natural,” and Romantic expressivism (also, as we will see, in such manifestos of Romantic individualism as the Great Improvisation in Part III of *Forefathers' Eve*) was embedded in a complex web of scientific and poetic ideas about nature and the cosmos.

It should be noted that, of course, the “eye” of science (or, indeed, “the looking glass and the eye of the wise man”) is not a purely mechanical instrument, uninformed by social and cultural relations, showing the image of the external world without any filters or diffractions. Science is culturally conditioned and shapes our view of surrounding nature in correlation

[10]Fiedorczuk, *Cyborg w ogrodzie*, 34.

[11]Andrew Pickering, “From Science as Knowledge to Science as Practice”, in: *Science as Practice and Culture*, ed. Andrew Pickering (Chicago: University of Chicago Press, 1992), 20.

[12]Bono, “Science Studies as Cultural Studies”, 159.

[13]Pickering, “From Science as Knowledge to Science as Practice”, 21.

[14]Antonina Bartoszewicz, “Natura”, 594.

[15]See also, among others, Ewa Kochanowska's and Agnieszka Czajkowska's studies mentioned in footnote 3.

with cultural values, assumptions, and worldviews.[16]A clear example of this in relation to the scientific perception of the natural world is the image of nature as a woman formulated by Francis Bacon (to which Juliusz Słowacki referred) and analyzed by Evelyn Fox Keller.[17] Keller looks at this allegedly objective and scientific image of nature from a feminist perspective, emphasizing the relationship between the knowing mind and known nature. For Bacon, scientific knowledge is associated with power, control, and domination over the natural world. Mediated through social models and structures, nature is a bride who needs to be tamed, shaped, and subordinated by and to the scientific mind. In *Temporis Partus Masculus* (The Masculine Birth of Time") from 1603, subtitled "The great instauration of the dominion of man over the universe," Bacon shows how to find the way to the bride's hidden chambers. He rejects the metaphor of rape and violence, introducing a complex and subtle metaphor of sexual dialectics. One can only master nature by obeying its laws. The philosopher locates the concept of nature in gender power relations, pointing out that the metaphor of seduction fails. Male and active science may only triumph when the mind also becomes female, i.e., obedient, clean, receptive, and open. Dominion over nature may be achieved only when one obeys its laws. However, the ultimate goal (in accordance with the laws of nature itself!) is to reduce nature to an inferior subservient role.

Naturally, Bacon's theory of nature is based on the assumptions about nature itself, which are, implicitly, revealed in the role assigned to the (male) scientific mind. Socially constructed gender roles affect the way nature is presented in the scientific discourse that aspires to objective truth. Nature becomes a cultural construct. Bacon himself, paradoxically, postulated that the mind should be cleared of pre-assumptions and idols in order to accept the thing in itself. However, he seemed to pay attention above all to earlier quasi-scientific concepts, failing to notice how the image of the natural world is distorted by social factors. He criticized Plato, who, as he believed, created the illusion that truth "lives" in our minds and is not derived from the world outside the I. Assuming that the mind could be self-sufficient was a mistake because the universe (including the natural world) would be then created by the human mind, endowed with god-like prerogatives. Thus, similarly to Wordsworth in the *Prelude*, Bacon examines how *a priori* notions influence the perception and description of nature. Wordsworth could not accept the "bare reality" of nature, a reality that was not filtered through the prism of cultural archetypes and imaginations, while Bacon rejected all *a priori* cognitive models which distort the image of nature (as it turns out, however, he was unconsciously conditioned by them as well).

Juliusz Słowacki commented on the philosophical concepts of Francis Bacon in his *raptularius* [*Notes for the planned study*]. The poet wished to use his notes to write a philosophical study (he only managed to write a plan and a draft). It should be noted that although critics and scholars

[16]See: Bożena Płonka-Syroka, "Imputacje kulturowe w kształtowaniu się obrazu natury w myśli europejskiej od XVI do końca XIX wieku. Zarys zagadnienia" [Cultural imputations in shaping the image of nature in European thought from the 16th to the end of the 19th century], in: *Człowiek wobec natury – humanizm wobec nauk przyrodniczych* [Man versus nature: Humanism versus natural sciences], ed. Jacek Sokolski (Warsaw: Wydawnictwo Neriton, 2010). Płonka-Syroka refers to "cultural imputation" in science, drawing on: Wojciech Wrzosek, *Historia – Kultura – Metafora. Powstanie nieklasycznej historiografii* [History – Culture – Metaphor. The rise of non-classical historiography] (Wrocław: Wydawnictwo Uniwersytetu Wrocławskiego, 2010).

[17]See also: the view of science as socially and culturally determined – Bruno Latour, Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton: Princeton University Press, 1986).

have pointed out that Słowacki studied Bacon, the poet in fact read Joseph de Maistre's *Examen de la philosophie de Bacon, ou l'on traite différentes questions de philosophie rationnelle* (Paris 1836, vol. 1-2), which is a very critical overview of Bacon's philosophy.[18] Maistre emphasized the role of *a priori* ideas and principles that influence our perception of external reality. Bacon, naturally, was an empirical scholar. Maistre rejected the idea that our senses and experiences could be the source of all our knowledge of the outside world and nature. He also criticized Bacon for "*organum novum*" and his inductive method (which he treated as a syllogism) and Słowacki paid attention to this. Słowacki used Bacon's inductive method, i.e., the investigative method which involves moving from observation of details (known and recognized facts) to general conclusions, in his notes on "natural sciences." The poet wrote that "forms should be discovered through inductive reasoning,"[19] and starts his description of different species of plants with describing the climate and the struggle between spirit and nature, which he considers an axiom and *a priori* knowledge.[20] The poet starts his description of leaves (of a weed, an oak, a rose) with identifying the spirit (great or strong) and its path, which, in turn, allows him to describe the leaf. It is surprising that Słowacki moves from the invisible (and *a priori*) to the visible, to the direct observation of the natural world, as if his goal was to show in depth what is visible to everyone. While Maistre criticized Bacon for materialism, for not looking beyond nature itself and for eliminating metaphysics from science, Słowacki wanted to use Bacon's method to show, paradoxically, the spiritual in the natural world. Słowacki employed Bacon's method, rejecting the conclusions – this is how we can explain Słowacki's unexpected interest in Bacon's materialistic philosophy. On the other hand, the poet did not abandon his belief in *a priori* knowledge, especially as regards the role of the spirit, which does not result from scientific experiments, but is acquired in a different way, through intuition or revelation.

In his description of atoms and the world of nature, Bacon referred to the ancient myth of Cupid, who, before he became a chubby child with a bow and arrows, was one of the oldest gods. He came into existence asexually, at the same time as Chaos, with whom he created all the other gods and all that exists. In a different version of the myth, Cupid hatched out an egg laid by the Night. Słowacki quotes this story after Bacon, observing that "Bacon has misinterpreted this theogonic myth about Cupid written by poets," but he does not explain why and how exactly. Drawing on Maister, Słowacki adds that, according to Bacon, Cupid is only matter, and looking for Cupid's ancestors could be detrimental to philosophy. If the poet agreed with Maistre's arguments, his basic objection against Bacon was the belief in the eternity of

[18] Jarosław Ławski in his excellent book points out that these were notes from Bacon's *Silva Silvarum* (Jarosław Ławski, *Ironia i mistyka. Doświadczenia graniczne wyobraźni poetyckiej Juliusza Słowackiego* [Irony and Mysticism: Borderline Experiences in Juliusz Słowacki's Poetic Imagination] (Białystok: Wydawnictwo Uniwersytetu w Białymstoku 2005), 529). Słowacki, however, noted only the title of this work, and copied only fragments from the two-page *Magnalia naturae* directly from Bacon. *Magnalia naturae* may be found in Bacon's works after the unfinished novel *New Atlantis* (unexpectedly published together with *Silva Silvarum*). We know this because at the end of his handwritten notes in French from Maistre's book, Słowacki quotes *Magnalia* in English, and Maistre made a very biased and scornful translation of the fragment quoted by Słowacki). Ławski also quotes Henryk Biegeleisen who points to the fact that Słowacki did not rely on Maistre in this case: "Extensive excerpts from Bacon and Hegel testify to the fact that the poet was thinking independently; because he often argues with both philosophers and refutes their statements" (Ławski, 425). Still, Słowacki directly quoted excerpts from Maistre's book, criticizing Bacon.

[19] Juliusz Słowacki, *Dzieła wszystkie* [Collected works], ed. Juliusz Kleiner (Wrocław: Zakład im. Ossolińskich, 1955), vol. XV, 435.

[20] Słowacki, 433-434.

matter, which has no cause (apart from God itself), and seeking God (the father of matter, i.e., Cupid) should not be the subject of scientific research. It all boiled down to a mechanical, inescapable, and blind law of nature. Modern science should "bracket" metaphysical entities in its examination of the world of nature – Bacon did it literally, writing in brackets (which Maistre called absurd) "(for we always except God)," because there can be no cause in nature.[21] The principle of describing the world without resorting to non-physical causes later became the basis of methodological positivism and was adopted by both science and theology. Słowacki examines how the world of nature may be described without referring to supernatural forces, which may nevertheless be found in "this theogonic myth (...) written by poets." Indeed, the myth draws on ancient cultural codes, addressing the questions of cosmogony, the paradigm of modern science and its approach to the study of nature. Moreover, the poet in his mystical works intended to use this paradigm of materialistic modern science, which supposedly rejected the study of the spiritual. This is indicated in *Notes for the planned study,* in which Słowacki refers to Bacon a number of times, providing page numbers from his *raptularius* (42-43) which contain excerpts from Maistre's book: "The beginning of the Spirit. 42 Spiraculum;" "The beginning of matter 42, (hylé) 43;" "Cosmogony 1. 42-43 Bacon objection of disorder;" "Final causes. 43 Bacon. The relationship of this philosophy with religion;" "Philosophy 42." Why did Słowacki study Maistre and Bacon, *the* materialistic experimental philosopher, in his "Genesis from the Spirit" period when he believed that nature and history were essentially animated by the Spirit? It should be added that we do not see Maistre's critical (often scornful) approach to Bacon (Maistre makes only one neutral comment: "Bacon does not explain this well [...]"[22]) in Słowacki's notes. What is more, Słowacki, without comments, but clearly intrigued, also quotes those fragments from Bacon's study that Maistre critically or scornfully called absurd, e.g., regarding anthropomorphism, endowing God with a human form, or identifying Cupid with matter and not looking for his ancestors (he also ignores the comments about Bacon being godless and about not referring to a Higher Power in the study of origins of the natural world which Maistre deemed important). Clearly, however, on the basis of this empirical and inductive philosophy, Słowacki wants to construct his own model of interpreting reality (above all, however, of spiritual reality). It can only be presumed that the poet intends to transgress Bacon's philosophy, nevertheless building his spiritual vision of the world on it.

A similar approach towards scientific discoveries, which should be studied in more depth in relation with the Spirit, can be seen, for example, in Słowacki's comments on the scientific experiments on the forces operating in nature published in the press:

> 26. Jan. 1846. Constitutionel – Revue scientifique Faraday's discovery – electricity and magnetic force and light – even the transformation of electromagnetic forces into light – the Frenchman concludes that it may be used to study magnetism – what a fool! it will help you discover the spirit – and tell you what you are[23]

[21]Quote after: Joseph de Maistre, *An Examination of the Philosophy of Bacon Wherein Different Questions of rational Philosophy are Treated*, trans. Richard A. Lebrun (Montreal, Kingston, London and Buffalo: McGill-Queen's University Press, 1998), 210.

[22]Słowacki, *Dzieła*, 431.

[23]Juliusz Słowacki, *Raptularz 1843-1849* [*Raptularius* 1843-1849] ed. Marek Troszyński (Warsaw: Topos, 1996), 99.

In a letter to Zygmunt Krasiński, written in Paris on February 19, 1846, Juliusz Słowacki comments on the Paris scientific experiment with magnets and their influence on polarized light, admitting that it filled him with "the most terrible fear."[24] He feared that the experiment would confirm the existence of a law, which he himself had been preparing to announce for the past four years. He was relieved, however, when the French scientists finally announced that the results of the experiment would help them discover the laws of electromagnetism. Słowacki observed that the French scientists did not recognize the spiritual implications of their discovery and, like barbarians, lacked the form that could show its true meaning and move the audience. They lacked the form that Słowacki was trying to design in his poetry.

In *Dialog troisty* [Three dialogues], Słowacki emphasizes that modern science is detached from the Spirit and ignores the metaphysical perspective:

> Helion
> Chemistry prides itself on inventing atoms … yet it sees no connection with the spirit in them … indeed, its discoveries challenge the spiritualism of the world and allow philosophers to argue against it …
> The philosopher
> An atom, i.e., a small unit of matter or gas, is only the seventh child in the process in which the Spirit is born …[25]

Francis Bacon opposed spiritualism. The philosopher in Słowacki's text explains that he knows how the spirit is born, and that he made this discovery "in a flash of genius, almost unintentionally."[26] Real knowledge of the laws governing nature does not have to be rooted in science, although it can be seen that Słowacki, contrary to the findings of empirical sciences, tries to use them, and not oppose or ignore them, to discover the rules governing the natural world (as seen in *Notes for the planned study*). The spiritual image of nature may also be created with the help of science, even if its conclusions seem to oppose Słowacki's vision of reality.

Słowacki also copied Maistre's comments about Bacon's "cosmogony" in his notes. The poet might have been fascinated by the vision of the universe based on the cleansing nature of fire – whose nature is purified the farther it moves away from the Earth (on the moon, then on other planets, and finally on the Sun). Astronomy as a science based on observation but not on experiments (it has only recently gained the status of an experimental field) was particularly susceptible to quasi-scientific speculation. Bacon's philosophy in this respect, of which Maistre approved, was not materialistic but poetic and could illustrate the evolution (the genesis) of the Spirit:

[24] *Korespondencja Juliusza Słowackiego* [Juliusz Słowacki's letters] ed. Eugeniusz Sawrymowicz, vol. II (Wrocław: Zakład Narodowy im. Ossolińskich, 1963), 122.

[25] Juliusz Słowacki, [*Dialog troisty z Helionem, Helois i przeciwnikami*] [Three dialogues between Helion, Helois and their opponents] in: *Dzieła wszystkie* [Collected works], ed. Juliusz Kleiner (Wrocław: Zakład imienia Ossolińskich, 1954), vol. XIV, 234. Translated by M. Olsza

[26] Słowacki.

> Cosmogony – fire on the earth – its cleansing nature increases the higher it moves – and so the Moon is a pale flame – Mercury is more vivid and alive – Venus is on fire – the Sun is completely pure and free. Jupiter is everlasting and peaceful by itself. Saturn is absorbed by stars.[27]

In poetry, astronomical discoveries were often inextricably linked with cultural codes, astronomical *topoi*, and the poetic appeal of stars and planets. Sometimes outdated, yet still popular, astronomical observations "co-existed" with newer discoveries, or even proved more popular. For example, Adam Mickiewicz in the Great Improvisation in Part III of *Forefathers' Eve* refers to various models of the cosmos. Słowacki seriously considered Bacon's cosmogony, which, of course, could not gain universal recognition (it would be unimaginable not only in the 19th century, but also earlier, to think that the Moon is not the satellite of the Earth but a fireball), and Mickiewicz also referred to outdated ideas about the cosmos, which, however, had survived much longer in culture than in science due to their aesthetic appeal – as such, they constitute a cultural code that was used to construct a certain image of the universe which also communicated the values inherent to it. Additionally, as we will see, Mickiewicz referred to more contemporary astronomical concepts of Johannes Kepler, confronting two orders of the cosmos and two axiological systems.

Numerous critics have discussed the question of the cosmos in Mickiewicz's works, also in the Great Improvisation, in detail.[28] However, no one asked the fundamental question: why did Mickiewicz refer to an archaic vision of the cosmos that no one believed in anymore? Why did "the discarded image" (discussed by C.S. Lewis) provide a cosmological frame for the Great Improvisation?[29] Consequently, isn't it then possible to read the Great Improvisation "in brackets" and associate it more with the realm of the imagination, since it was located in a cosmos made of outdated assumptions? Such a reading would help explain and "disarm," for example, the feeling that some readers, including Adam Ważyk, seem to have about the artificiality of the represented world and the cosmic scale of the protagonist.[30] Placing the Great Improvisation on the mythical and symbolic cultural plane changes the perception of the protagonist, "visibly growing in space" until he reaches the "cosmic size" of Conrad.[31] The space of myth and symbol generates meanings related to the structure and order of the cosmos. This could be another reason behind Mickiewicz's interest in old cosmic topoi, especially since in

[27]Słowacki, *Dzieła wszystkie*, vol. XV, 430. Translated by M. Olsza.

[28]See, for example: Marta Piwińska, "Mickiewicza jazdy gwiazd" [Mickiewicz's star motions], in: *Romantyzm – Poezja – Historia. Prace ofiarowane Zofii Stefanowskiej* [Romanticism – Poetry – History: Works honoring Zofia Stefanowska], ed. Maria Prussak and Zofia Trojanowiczowa (Warsaw: Instytut Badań Literackich PAN, 2002); Włodzimierz Szturc, "Kosmos w *Dziadach* Adama Mickiewicza" [Cosmos in Adam Mickiewicz's *Forefathers' Eve*], in: *Mickiewicz. W 190-lecie urodzin* [Mickiewicz: Celebrating the 190th anniversary of his birth], ed. Halina Krukowska (Białystok: Dział Wydawnictw Filii UW, 1993); Mirosław Strzyżewski, "Wokół harmonii sfer w *Wielkiej Improwizacji* Adama Mickiewicza" [Musica universalis in Adam Mickiewicz's Great Improvisation], in: *Romantyczne sfery muzykalne. Literackie konteksty idei musica instrumentalis* [Romantic Musical Spheres: Literary contexts of musica instrumentalis] (Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, 2010); Bolesław Oleksowicz, "Kładę me dłonie na [...] szklanych harmoniki kręgach" [I lay my hands upon [...] the crystal wheels of the harmonica], in: *Dziady, historia, romantyzm. Studia i szkice* [*Forefathers' Eve*, history, romanticism: Studies and sketches] (Gdańsk: słowo/obraz terytoria, 2008).

[29]Clive Staples Lewis, *The Discarded Image: An Introduction to Medieval and Renaissance Literature* (Cambridge: Cambridge University Press, 1964).

[30]Adam Ważyk, *Cudowny kantorek* [Wonderful cabinet] (Warsaw: Państwowy Instytut Wydawniczy, 1979).

[31]Ważyk, 44, 66. According to Ważyk, the image of Conrad in space would break "all the rules of the poetic hyperbole" (Ważyk, 44).

Part III of *Forefathers' Eve* and other texts he criticized modern astronomy for ignoring the meanings which he found important, for ignoring the metaphysical aspects of life (in this respect he was similar to Słowacki, though the visions of spirituality created by both poets varied), for stopping short of asking about the source and purpose of the cosmos.[32]

Mickiewicz writes about the cosmos through the prism of culture and science, referring to ancient images, poetic cosmological conventions, and cosmic topoi. The traditional poetic images and symbols are not "staffage" but help the poet interpret the cosmic order, man's place in it, and his relationship with the transcendent. Mickiewicz, however, does not stop there – he adds new metaphors and images (harmonica) to the cosmic tradition, without compromising its integrity. Additionally, he refers to more contemporary astronomical discoveries that challenge the old order of the universe. They are associated with the romantic rebel Conrad:

> A Master, I reach out my hands to the sky,
> To the very heavens, and touch the stars on high –
> Upon those glassy stops I lay my hands:
> With my soul's free, sudden play
> I spin the stars my way (Scene II)[33]

> I came armed in the whole might of thought,
> That thought, Thy thunderbolts to earth which tore,
> Opened Thy deep seas and the planets' lore! (Scene II)[34]

Analyzing the vision of the cosmos in the Great Improvisation, critics have primarily referred to the ancient model of the cosmos, especially the Pythagorean model, and compared it with the Newtonian model. The harmony and order of the cosmos, in keeping with the concept

[32]Part Three of *Forefathers' Eve*, "Prologue, Lithuania:"
"The sun has set," astronomers can see
From towers, and cry-but wherefore, none can say.
Shadows conceal the earth, and people sleep:
But why they sleep, to seek out no one dares;
Unconscious as they sleep, unconsciously
They wake; nor wonder at the Sun's most strange
But daily Face: for Light and Darkness keep
Their watch-but where the Chiefs who bid them
change?
(Adam Mickiewicz, *Forefathers' Eve*, trans. by Count Potocki (London: The Polish Cultural Foundation, 1968), 131).
Pan Tadeusz (Book Eight):
Now the astronomers regard planets and comets
just as plain citizens do a coach;
they know whether it is drawing up before the king's palace,
or whether it is starting abroad from the city gates;
but who was riding in it, and why, of what he talked with the king,
and whether the king dismissed the ambassador with peace or war
—of all that they do not even inquire.
(Adam Mickiewicz, *Pan Tadeusz*, trans. by George Rapall Noyes (New York: E. P. Dutton & Co., 1917).

[33]Adam Mickiewicz, *Forefathers' Eve*, 167.

[34]Mickiewicz, 169-170.

of *musica universalis*, were emphasized – much in contrast with the rebellious individual.[35] I would like to expand on these original findings by referring to a different tradition in modern astronomy (Johannes Kepler, with whose theory Mickiewicz could have been familiar, having read Jan Śniadecki's works).

Mickiewicz referred the old model of the universe, which was attractive in poetical terms, confronting it with newer scientific discoveries, which better corresponded to the internal conflict experienced by the Romantic protagonist. Modern scientific discoveries influenced the Romantic poetics of images of nature and the cosmos, pointing to how dynamic, chaotic, and disharmonious it was. The ancient visions of the universe ignored anomalies in orbital motions because they would challenge belief in a perfect world and the perfection of its Creator. Stars and planets were to move in perfectly circular orbits, which reflected the perfect harmony of the universe.

Contrasting different models of the cosmos, demonstrating the discrepancies between poetic, beautiful, and yet outdated ideas about the universe and modern science, points to the discrepancy between Romanticism and earlier visions of man and reality, the discrepancy between different visions of the cosmos, nature and God. Mickiewicz studied the works of Śniadecki and referred to "stars' and planets' axle-tree."[36] He must have known that modern astronomy investigated the anomalies in planetary orbits. The study of the "imperfections" questioned the alleged harmony and perfection of the cosmos, and thus its Creator. The distortion of the ideal vision of the universe is also visible in Conrad's actions. As a Romantic individual, he introduces an unpredictable rhythm, breaking out of the limitations and order of the world.

Adopting the old cosmic model, Mickiewicz takes into account changes related to the irregular motion of planets and stars. Conrad speeds up and slows down the motion of stars: "With my soul's free, sudden play/ I spin the stars my way."[37] Indeed, Mickiewicz could have referred to both stars and planets, since planets were also called stars at the time. Conrad would thus disturb the cosmic order, changing the rhythm of the day and night, disturbing the order on Earth and creating chaos. This vision only corresponds to the Ptolemaic model, with a stationary Earth at the center and stars moving on the canopy of the sky (Conrad does not interfere with the movement of the Earth, which Mickiewicz wanted to do in *Ode to Youth* – then, the apparent movement of stars in the sky would change). Respectively, when Mickiewicz writes about "stars," he may actually mean planets. Samuel Bogumił Linde observes that "stars, or celestial bodies, are divided into static bodies and planets."[38] Similarly, Karol Wyrwicz argues in *Geografia powszechna* [Geography] from 1773: "some stars are motionless [,] there also stars that move which we call Planets."[39] Jan Śniadecki also distinguishes between two types of stars,

[35]Strzyżewski, *Romantyczne sfery muzykalne*, 80. See also: Szturc, "Kosmos w *Dziadach*" and Piwińska, "Mickiewicza jazdy gwiazd".

[36]Mickiewicz, *Dziady*, 157.

[37]Mickiewicz, *Dziady*, 159.

[38]Samuel Bogumił Linde, *Słownik języka polskiego* [Dictionary of the Polish Language], vol. I, part II (Warsaw: Bogumił Linde, 1808), 808.

[39]Karol Wyrwicz, *Geografia powszechna czasów teraźniejszych* [Contemporary Geography] (Warsaw: Drukarnia I.K.Mci i Rzeczypospolitej in Collegio Soc. Jesu, 1773), 606.

calling planets and comets wandering stars: "The stars that shine, which seem to us static, are called fixed or stationary stars (*Stellae fixae*, *étoiles fixes*) […] Stars that do not shine […] and move, changing their position in the sky, are called wandering stars, planets or comets ."[40]

If, therefore, Mickiewicz referred to planets (or planets and stars in the contemporary sense of the word), whose motions were fascinating for astronomers, then the Great Improvisation could be read in the context of newer astronomical discoveries. The Copernican revolution, questioning earlier speculations, left us with one very important question: what sets planets in motion? It was only with the help of Newton's revolutionary new physics that the divine "first cause" propelling the celestial spheres could be replaced. When Conrad assumes the role of *primum movens*, he considers himself to be God's equal – they both rule over the physical world (and because Conrad controls the physical world, he should also rule over human souls). However, before Conrad can sing his "disharmonious" song, he upsets the motions of celestial bodies, accelerating and slowing down their course. Aristotle and Ptolemy could not explain the physical causes behind irregular planetary motions, concentrating solely on the movement towards the west in relation to the center. Their cosmological models were expanded into complex systems with many epicycles and eccentrics intended to explain, among others, the apparent retrograde motion of planets. It was Johannes Kepler who used physical analysis to simplify these complex models, introducing elliptical orbits (instead of circular orbits, which symbolized perfection) and unnatural, or enforced, motion. He explained changes in speed and the direction and trajectory of orbiting planets. At the same time, he looked at the extraterrestrial world from the perspective of the laws governing the human world and combined earthly and cosmic laws, abolishing the division into the earthly and the "celestial." As such, he put an end to the earlier separation of astronomy from physics and philosophy of nature (and such an approach is reminiscent of the Romantic portrayal of nature as "one Life"). Respectively, Kepler did not try to justify the discrepancies between theory (the perfect harmonious cosmos as a reflection of the perfect nature of its Creator) and actual astronomical observations. He showed that the observable eccentricities in planetary motions result from the fact that they slow down at the apocenter of the orbit and speed up at the pericenter. He published his observations in 1609 in *Astronomia Nova*; however, Kepler's laws of planetary motion were universally accepted only in the 1680s and the 1690s.[41] As a Neoplatonist, he continued to search for the mathematical harmony of the universe and nature, and though the sun was placed at the center of his cosmos as the seat of God, he based his research on observational data.

In the Great Improvisation, Conrad interferes with the movement of the stars (or planets), reducing and increasing their speed. Modern science, including, for example, Kepler's findings,[42] modified old notions about the unchanging and harmonious order of the cosmos which often

[40] Jan Śniadecki, *Jeografia, czyli opisanie matematyczne i fizyczne ziemi* [Geography: Mathematical and physical description of the earth] (Wilno: Józef Zawadzki, 1818), 5-6.

[41] Thomas S. Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (Cambridge and London: Harvard University Press, 1985), 225.

[42] Jan Śniadecki had a very good opinion of Kepler (if Mickiewicz knew about Kepler's findings, then perhaps he read about them in Śniadecki's study), for example: "Eliminating prejudices about uniform and circular planetary motions which Copernicus took from Ptolemy made Kepler truly great, as he finally sealed the decline and fall of ancient science"(Jan Śniadecki, "O Koperniku" [About Copernicus], in: *Dzieła Jana Śniadeckiego* [The works of Jan Śniadecki], edited by Michał Baliński, vol. II (Warsaw: August Emmanuel Glücksberg, 1839), 138).

ignored astronomical facts that contradicted the ideal model, such as comets or meteors (previously explained as sublunary phenomena). In the Great Improvisation, the Romantic soul and modern science (which still refers to the old world) unexpectedly meet. The ancient image of the universe, preserved in culture, is confronted with modern scientific achievements and the Romantic worldview. The new image of the cosmos corresponds to new Romantic sensitivity, and perhaps it also influenced it.

Agnieszka Czajkowska wrote about planetary motion in Mickiewicz's works in relation to the aphorism *Ruch mądry* [Wise movement] ("Mędrcy prawdziwie wielcy, jak niebieskie ciała, / Zdają się stać, gdy każde z nich leci i działa" [Truly great wise men, like celestial bodies / seem to stand still when in fact they are moving and working][43]). The apparent motion and immobility of celestial bodies are of great importance in the interpretation of the ideological and cultural meanings of the image of the cosmos – also in the context of modern astronomy and Kepler's findings – therefore I should start by commenting on Czajkowska's observations about the "common belief in the immobility of planets" and "popular and false notions" about the "fixed position of planets in the sky, as seen with the naked eye."[44] Planets are called planets because they are celestial bodies in motion (as opposed to stars which appear to remain in the same position as compared to other stars). The Greek expression πλανήτες αστέρες means "wandering stars," because they were discovered to move in relation to the so-called fixed stars (απλανείς αστέρες, i.e., *stellae fixae*). Their motions at a given moment may only be registered through the telescope, but it is easy to see changes in their position in the sky over time. In *Ruch Mądry*, Mickiewicz did not refer to the opposition between popular and scientific knowledge, but to the opposition between appearances and truth, emphasizing that true wisdom is not always seen by everyone. The poet draws an analogy between the image of the cosmos (endowing it with a purpose, since the celestial bodies are "working") and earthly reality.

We can find many more such cosmic analogies in Mickiewicz's (and Słowacki's) Romantic works – and they are not only poetic ornaments, which contribute to the poetics of the text, but universal cosmological principles. In *Pan Tadeusz*, we can see Zosia, around whom hens and ducks gather in a circle, which brings to mind the model of the cosmos.[45] *Pan Tadeusz* also playfully engages with the cosmic harmonica found in the Great Improvisation. *Musica universalis*, however, appears to be different:

> In the air an immense cloud of insects gathered and whirled about,
> playing like the music of the spheres;
> Zosia's ear distinguished amid the thousand noises
> the accord of the flies and the false half-tone of the mosquitoes. (Book Eight)[46]

The analogy between the circle formed by insects and that of celestial orbits is not, in the light of other analogies of astronomical provenance, purely ornamental. It points to the unity of

[43]Czajkowska, 84.
[44]Czajkowska.
[45]See: Czajkowska, 89.
[46]Mickiewicz, *Pan Tadeusz*, 182.

and deeper connections in the cosmos.[47] Modern astronomy discovered that the same laws (especially the universal law of gravity) operated in the sublunar and lunar world. The solar system has its counterparts not only in Jupiter and its system of moons (this discovery effectively challenged the belief in the unique status of the Earth), but also in everyday life, which runs its harmonious course in Mickiewicz's poem. Thus, it should be argued that from the point of view of poetics, the motif of the harmonica is not only a simile or a metaphor but almost a metonymy – it is synecdoche *pars pro toto*. It is not a distant association based on similarities but on actual connections – based on the same universal laws that govern the cosmos as a whole. The vision of infinity in Romanticism, explored through modern science, could be marked by fear, but also, as we can see, it could lead to its explorations with a view to challenging the indifference of the cosmos (Conrad commented on this indifference and silence in Part III of *Forefathers' Eve*). Literature, and culture as such, provided different readings of scientific facts, as evidenced not only by the different visions of the cosmos in the Great Improvisation and in *Pan Tadeusz*, but also in Słowacki's reading of Bacon.

The images of nature or the cosmos were sometimes shaped and mediated in Romanticism by scientific theories, and their reception in culture. At the same time, they influenced culture and society and the ways in which these images functioned. The (micro) models of the solar system in *Pan Tadeusz* were supposed to strengthen the sense of social order (e.g., the seating of guests at a table) and universal harmony (the comet-Napoleon destroyed this cosmic order, but it also points to the analogies between the earth and the sky). In the *Paris Lectures*, Mickiewicz talks about the convergence of European politics and the evolution of the universe:

> Scholars and astrologers claim that the planets closest to the sun are destined to take its place someday. The Slavs have always gravitated and still do (!) towards the West. […] Perhaps we now the least about the morality and mentality of these peoples. The European spirit keeps them, so to speak, at a distance and excludes them from the Christian community.[48]

We can also see analogies between the scientific models of the cosmos and the social, political, and economic reality in Słowacki's works. In a letter to Józef Komierowski dated September 30, 1848, Słowacki writes:

> Alas, you are not far away from this tower in Toruń, where one man once conceived in himself – the synthesis of physical knowledge of the entire world – and provided a foundation for everything we know today – because even contemporary industry is based on gravity, one national center tries to make the biggest possible impact – because even the Prussian Zollverein – and Italian unification we are witnessing – are rooted in the knowledge of the solar system and the laws of physics – and take Copernicus as their progenitor.[49]

[47]Critics refer the harmonica in *Pan Tadeusz* but this motif is not important in itself – it is mentioned in the discussion of Part III of *Forefathers' Eve*.

[48]Adam Mickiewicz, *Wykład I* [Lecture One], in: *Dzieła, wydanie rocznicowe* [Collected works: Anniversary edition] (Warsaw: Czytelnik, 1997), vol. VIII, 15-16.

[49]*Korespondencja* [Letters], II, 221. Alexander von Humboldt wrote about the role of gravity in the works of Copernicus in his monumental study *Cosmos*, which Słowacki read. See also: Jan Tuczyński, "Kopernikanizm Słowackiego" [The Copernican Revolution in Słowacki's works], *Zeszyty Naukowe Wydziału Humanistycznego Uniwersytetu Gdańskiego*, no. 10-11 (1986), 311-319.

The analogy points to the hidden reality and invisible forces operating in the world (gravity, electricity, magnetism) – they operate both in physical reality, in nature, and in human reality. Astronomical theories can be used to discover the fundamental unity of all aspects of reality, be it spiritual, moral, social, political (Italian unification) or economic (Zollverein, i.e., the Prussian customs union). Indeed, such an approach was popular in Romanticism and Polish Romantic poets were not the only ones to trying to explain the world with the help of astronomy – the solar system was supposedly also the inspiration behind the system of checks and balances in the American constitution.[50]

The analysis of the relationship between the scientifically constructed image of nature and literature in Romanticism reveals a unique feedback. Science, rooted in culture and society, often constructed models of the cosmos and nature determined by the dominant values, stereotypes and cognitive patterns at a given time in a given culture. Such models, in turn, were meant to legitimize and justify the social order from which they originated – they could also be used to shape the future, pointing to changes brought about by the fundamental forces of nature (as we saw in the *Paris Lectures*, they were a source of hope for nations deprived of independence and sovereignty).

In Romanticism, especially in its first phase, the lesson drawn from nature was also strongly associated with folklore. Nature was a source of moral laws, and access to it was provided to those individuals whose lives were not corrupted by civilization. *Rusalki* and ghosts, metamorphoses in nature, folk fantasy stories – these were no longer, as in the Enlightenment, superstitions but supernatural stories that helped one understand the world in a way that did not conform to the rationalist vision of reality (these folk beliefs were sometimes animistic in nature and had little to do with Christian religion.) It was the people who were able to discover the spiritual side of nature, its mysterious hidden life. It seems that Romanticism (especially in its later phases, as indicated by Słowacki) tried to discover the mystery of nature not only through the folk "feeling and faith" but also in a different way – referring to, for example, science that could correspond to the spiritual dimension of the world. It turned out that one could learn about the unity of the world from various sources, from the beliefs held by the people who were in direct contact with nature and from scientific observations, interpreted in the right way.

Oftentimes, before Romantic poets managed to discover the unity of the world in contact with nature, they felt it was separate from them and autonomous (it did not conform to archetypes, patterns, ideas), and tried to overcome it, just like Wordsworth's in his vision of Mount Blanc in the *Prelude*, quoted at the beginning. What is external to us requires a re-

[50]Kuhn, 263. In British culture, astronomy had an even more practical dimension related to navigation, thus giving rise to imperialism and colonialism. (see: Dometa Wiegand Brothers, *The Romantic Imagination and Astronomy. On All Sides Infinity* (Basingstoke: Palgrave Macmillan, 2015)). In his *Paris Lectures*, Adam Mickiewicz also quoted Kazimierz Brodziński, who claimed that the Polish nation was "the Copernicus of the moral world," because "Copernicus destroyed old superstitions, pointing to the sun as a common focus for the planets; the Polish nation pushed its homeland towards the center of a great whole, and just like Copernicus was a philosopher, the Polish nation was the 'Copernicus in the moral world'" (Mickiewicz, *Dzieła*, vol. VIII, 23). Jarosław Ławski calls such an approach "planetary historiosophy" (Jarosław Ławski, *Mickiewicz. Mit – historia. Studia* [Mickiewicz. Myth – history. Studies] (Białystok: Wydawnictwo Uniwersyteckie Trans Humana, 2010), 242).

sponse of the senses, a cognitive response of the mind, and finding the right means of expression.[51] The despotic eye, the inevitability of discovering the world through the senses (often equated with scientific cognition), troubled Romantic poets, but ultimately it was tamed by culture with its archetypes, ideas, and perceptions. Even scientific cognition itself, which was sometimes identified with a purely material perception of only the physical side of reality, was rooted in culture and society. Moreover, it then provided material for a new poetics of nature and new cultural codes. Thus, old astronomical theories (attractive in terms of poetics and aesthetics, though widely rejected) co-existed in poetry alongside newer discoveries (Kepler). It was possible to combine modern empiricism and materialism with spiritualism using the same method (inductive reasoning). Indeed, the most important poets of Polish Romanticism, Adam Mickiewicz and Juliusz Słowacki, in the fundamental works of the canon of Polish Romantic poetry (Part III of *Forefathers' Eve*, planned works on genesis, *Genezis z Ducha* [Genesis from the Spirit]), strongly emphasized that the images of nature they presented were indirect (Słowacki even studied scientific treatises), which was a breakthrough in the expressivist vision of Romantic poetry, based on the spontaneous overflow of powerful feeling (Wordsworth), naturalness, and directness. Two scholars who were the contemporaries of William Shakespeare (1564-1616), Johannes Kepler (1571-1630) and Francis Bacon (1561-1626), significantly influenced the formation of the Romantic imagination and the visions of nature in Mickiewicz's and Słowacki's works.

translated by Małgorzata Olsza

[51] See: Stephen Gaukroger, "The Discovery and Consolidation of a Scientific Culture in the West in the Modern Era", *Historically Speaking* 4, no. 2 (2013), 18-20.

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KEYWORDS

Adam Mickiewicz

Francis Bacon

Juliusz Słowacki

Johannes Kepler

Abstract:
The article discusses and deconstructs the nature-culture dichotomy, examining how the image of nature in Romanticism was filtered through cultural matrices, especially in connection with the development of natural sciences, and the concept of cognition, which was most often perceived as based on the senses. Science, rooted in culture and society, and various cultural codes influenced a new poetics of nature. The analysis of the works by Mickiewicz and Słowacki demonstrates that old astronomical theories (attractive in terms of poetics and aesthetics, though widely rejected) co-existed in poetry alongside newer discoveries (Kepler), ultimately allowing poets to combine modern empiricism and materialism with spiritualism using the same method (inductive reasoning).

literature and science

ASTRONOMY

NATURE AND CULTURE

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