Cosmic Enthusiasm and Loss of Perspective: Cosmology and Generalized Feelings around 1900

Paul Ziche

Abstract In the course of the nineteenth century, 'cosmic feelings' became somewhat of a technical term, but with a twist: these feelings, i.e. the feelings that the experience of the cosmos, its vastness, and its orderly beauty, kindle in man are highly ambivalent in character, both elevating and crushing. By studying the difficulty to express cosmic experiences in the works of Camille Flammarion and Adalbert Stifter, looking at the particular importance accorded to cosmic nebulae and at the surprising variations that organic metaphors undergo in the writings of the brothers von Humboldt, this paper tries to drive home an observation that is characteristic of discourses about the cosmos in the nineteenth century, but also far beyond this subject area: namely that in this period, feelings tend to be treated as highly general and highly abstract, and yet remain fully emotional experiences.

Keywords cosmic feelings; nebulae, abstraction; general feelings; Camille Flammarion; Adalbert Stifter; Alexander von Humboldt; Wilhelm von Humboldt

1 'Cosmic Feelings': Polar Emotions Vis-à-Vis the Cosmos

The 'cosmos' is both the name for an object-domain that provides the label for the scientific discipline that studies this domain,[1] *and* a fixed epithet for a particular dimension of human feelings: 'cosmic feelings.' These feelings themselves can have the

1 While Christian Wolff claims that the term 'cosmos' has not yet been used "in Scholis" (Wolff 1737, praefatio), its history can be traced back far beyond Wolff; Fabricius, 1752, §XXXXV, 370

Ziche, Paul. 2023. "Cosmic Enthusiasm and Loss of Perspective: Cosmology and Generalized Feelings around 1900." In *Kosmos. Vom Umgang mit der Welt zwischen Ausdruck und Ordnung*, edited by Peter König and Oliver Schlaudt, 351–380. Heidelberg: Heidelberg University Publishing. https://doi.org/10.17885/heiup.857.c15263

cosmos as their object, in the sense of being excited by the experience of the cosmos in its ordered vastness or desolate emptiness, but they can also be called cosmic, profound, and universal in their linking up the totality of the natural world with the domain of religion. This is stated explicitly in Rudolf Eisler's (the prominent Kantian and prolific producer of important dictionaries) entry from 1904: "*Cosmic feeling*: Feeling for the universe, the totality of the world, the order of the world. *Cosmic feeling of life* is the religious feeling."[2] This double function sets the cosmos apart from other discipline identifiers in the natural sciences; there is no 'physical' or 'chemical' feeling, at least not in as straightforward a sense as there is a 'cosmic' feeling. (The dictionary quote from 1904 already states that the most interesting rival notion for universal integration, that of 'life' or "*Lebensgefühl*"—a typical term in 1900s life philosophy— and the 'cosmic feeling' itself can be integrated into a homogenized concept of a "*kosmisches Lebensgefühl*." Section 3 will discuss metaphors in which the cosmic and the organic come together, beyond the traditional association of 'cosmos' with 'order'.)[3]

Cosmic feelings, that is, cosmos-inspired and cosmos-directed feelings, have always been characterized by an entire range of complex double connotations which can coexist at the same time: horrific *and* consoling; man as lost in the universe *and* at home in it; man's fascination with the universe is merged with the glamourous attraction of cutting-edge technoscience, and both are again merged with the mystical, religious, aesthetic, and moral sources of fascination with the depths of the cosmos.

Take, as a very recent emblematic symbol of this multiple coding of cosmic experiences, the homepage of Oxford University's Philosophy of Cosmology group (see **Fig. 1**):[4] a huge funnel-shaped coordinate system that depicts the temporal development of the physical universe, starting with a finely pointed origin on the left, like a hyper-fine glass chalice, with a mysterious spark of light that makes the coordinate funnel glow with many sorts of illumnation; the funnel both produces and includes splendid galaxies and stars, and opens up towards an unknown future, all against the background of an inky black night sky. Scientific illustration and the traditional iconography of the (religious) sublime are merged to perfection in this image, with Oxford's University seal—standing for academic credibility and a long tradition—in the God's eye's position in the top left corner.

has references to texts from as early as 1603 (Nicolaus Taurellus/Öchslin); at least as early, the term 'uranologia' is also used.

2 "*Kosmisches Gefühl*: Gefühl für das All, das Weltganze, die Weltordnung. *Kosmisches Lebensgefühl* ist das religiöse Gefühl;" Eisler 1904, 562, s.v. "kosmisch." The phrase about the "religious feeling" refers to texts by Harald Höffding.

3 On related terms around 1900, cf., e.g., Wille 1905, with the key notion of "Herzenslogik" (see also Ziche 2019) or notions such as "Wahrheitsgefühl" and "Gefühlsgewißheit" (see Albrecht 2015; Ziche 2015).

4 http://philosophy-of-cosmology.ox.ac.uk/cosmos.html.

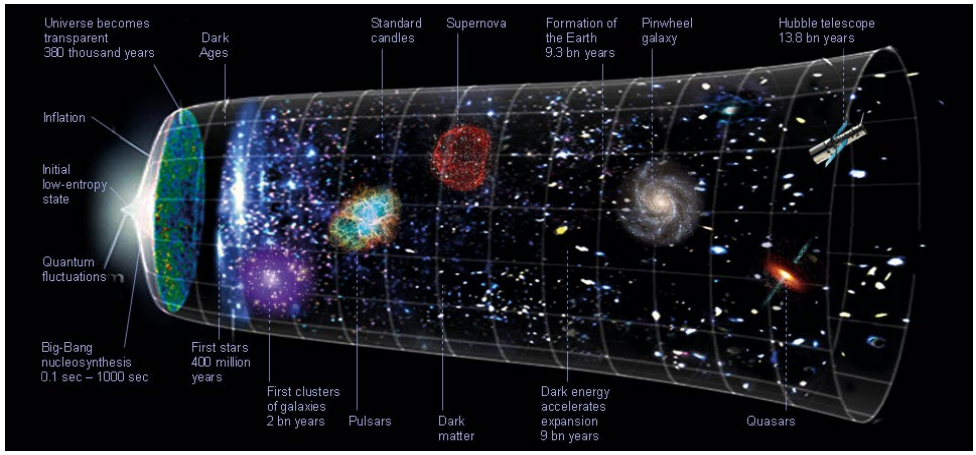


Figure 1 Homepage of the University of Oxford's "Philosophy of Cosmology" group.

All of the just-mentioned oscillatory duplicities are to be found in this picture. The religious, the aesthetic sublime, the technicistic sparkle of advanced science all work together here; they relate cosmology to other, yet broader human concerns, such as religious convictions or ideas concerning man's place in the universe. They also refer to the successes of human science in understanding the universe, in penetrating into its very depths, and in zooming out to such an extent that the iconography of a God's-eye view becomes feasible.

The complexities and deep ambiguities—which themselves can be experienced as both elevating or depressing—of this dual structure are built in into some of the great staple quotes in the history of philosophy. Kant's famous "starry sky" phrase from the conclusion of the *Critique of Practical Reason* ("Two things fill the mind with ever new and increasing admiration and reverence, the more often and more steadily one reflects on them: *the starry heavens above me and the moral law within me*"[5]) points beyond man (as a finite being) and shows that within man himself we can find the very resources for reaching beyond our finitude—the enormity of the cosmos finds its match in (and only in) the enormity of man's autonomous capacity of reason. Friedrich Schleiermacher's just as famous passages on religion as an "intuition of the universe," as a "sense and taste for the infinite,"[6] combined with a "feeling of dependence," follow a similar pattern, albeit in a way that ascribes to man a more modest position in the universe. The concluding section of Kant's *Critique of Practical Reason* provides another *locus classicus* for the ambivalence of these feelings as terrifying *and* elating,

5 Kant 1913, 161; translation: Kant 1996, 269.
6 Schleiermacher 1999, 212–213.

reassuring *and* unsettling, destructive *and* intensifying at the same moment: seeing a "countless multitude of worlds" (note the plural here!) "annihilates, as it were, my importance as an *animal creature.*"[7] Note also that, in the very same passage, Kant gives yet another argument that combines the destructive processes in nature with a consolatory point of view: understanding that our animal matter needs to be returned to the planet that we inhabit can give us a rather humiliating experience. However, this—at first sight rather destructive—experience is directly described as filling our mind with admiration and awe, i.e. even without the "moral law within me" we can gain insight into structures of the universe and of our place in the universe that transcend our animal limitations.

Further examples of the close link between cosmology and feeling-related issues, and of the complex and tension-filled structure of these feelings, can be easily found. One example: Lord Byron's *Childe Harold's Pilgrimage* (in turn quoted in Camille Flammarion's *The Wonders of the Heavens*, a text by an author who contributed crucially to a popular cosmic image in the nineteenth century, see section 2). In the first canto of his epic poem, published between 1812 and 1818, Byron gives a description of the feeling that the noiseless heavens excite in us, and despite the stillness of the heavens and the lack of immediately perceptible motion, looking at the night sky kindles a feeling in us akin to the most intense kind of emotion that we can experience—so intense that Byron can only address it in the most abstract way imaginable, without any further specification as to what this feeling is about or with which specific form of experience it could be compared: "All heaven and earth are still—though not in sleep,/But breathless, as we grow when feeling most" (stanza LXXXIX). The paradoxical character of a dramatic experience in absolute stillness is echoed later in stanza XC of *Childe Harold* as a paradoxical description of man's experience of being "least alone" in a profound cosmic solitude that manifests itself as an "infinite" feeling (where "infinite" may be understood as describing both the intensity of this feeling or of its effect, and its object): "Then stirs the feeling infinite, so felt,/In solitude, where we are least alone"[8]—there is quite a bit of drama here, but drama that is addressed in a surprisingly abstract fashion.

There is a strong methodological reason for addressing the cosmos in terms of feelings. In the man–cosmos relation, we need to relate what is close to home, what we are intimately acquainted with, to the very distant regions out there in space; to

7 Kant 1913, 162; Kant *1996*, 269.

8 The motive of cosmic stillness is used in a Nietzsche fragment from autumn 1881 (Nietzsche 1988, vol. 9, 624): "Nachts, bei bestirntem Himmel regt sich wohl ein Gefühl, wie armselig unsere Fähigkeit zum Hören ist. Oh dieser todtenstille Lärm!" ("At night, under a starry sky, there rises a feeling as to how poor our ability to hear actually is. O this deadly silent noise!"), also quoted in Groddeck 1989, 497. The motive of stillness is also explored, with reference to Nietzsche, in the opening section of Blumenberg 1997, 13–15.

reach out, from our home world, into the depths of the universe (interestingly, we consistently talk about 'depths' here—and that not only in English—rather than about 'heights;' again, 'depths' are more easily associated with dimensions of feeling than are 'heights.' Nietzsche is one of the few authors who comment explicitly on this issue[9]). This can be transformed into the time-hallowed strategy of approaching the cosmos in terms of microcosmos–macrocosmos analogies, and at the same time, it is reflected in many of the emotion-laden narratives and images we form when reaching out into the cosmos. We can try to understand the entire universe in our home terms, make us at home everywhere in the universe, while still playing with an experience of alienation. The science fiction genre is illuminating here: it populates the deep recesses of cosmic space with alien, but almost invariably still anthropomorphic beings, sufficiently alien to be different in interesting respects, but sufficiently close so that we can we engage with them in terms that we can understand. The dimension of alienation is also amply documented, in particular in the more sophisticated products of the SF genre (Tarkowski's *Solaris* or Kubrick's *2001: A Space Odyssey* come to mind as some of the great classics), and in many cases, SF movies combine these divergent motives, for instance in combining the archaic with the futuristic, the over-populated city with the desert, lush islands with dystopian industrialization. One further association can help us to round off this brief phenomenological introduction to our topic. These polar strategies co-vary with other polar opposites, e.g. that of city and countryside—the (mega-)city around 1900 is frequently described as a place of disenchanted alienation, to the extent that we might say that living in a mega-city can be likened to being expelled into outer space,[10] and the iconography of SF films frequently confirms this point.

If we go beyond the typical SF plot (which brings the space traveler back home to the safety of his home planet[11]), we arrive at a challenging philosophical-phenomenological task, namely to go beyond the dualist oppositions sketched above, and to readjust our attitudes with respect to 'feeling embedded' and 'feeling alienated.'

9 See the *Zarathustra* quote in Groddeck 1989, 500 (Nietzsche 1988, 4:207): "Oh Himmel über mir, du Reiner! Tiefer! Du Licht-Abgrund! Dich schauend schaudere ich vor göttlichen Begierden. / In deine Höhe mich zu werfen—das ist *meine* Tiefe! In deine Reinheit mich zu bergen—das ist *meine* Unschuld" (Nietzsche 1961, 184): "O sky above me! O pure, deep sky! You abyss of light! Gazing into you, I tremble with divine desires. To cast myself into your height—that is my depth! To hide myself in your purity—that is *my* innocence!"). Cf. also the famous aphorism on "Sternen-Freundschaft" in Nietzsche's *Gay Science* (book 4, § 279; Nietzsche 1988, 3:523–524), which also directly refers to Kant's moral law and man's cosmic experience.

10 One example of bringing together the city and modern physics in an ambitious artistic context: Hugo Ball's lecture on Kandinsky in 1917; Mößer 1977, 690.

11 H. G. Wells' "time traveler" is beautifully refined in the final twist of the plot; the traveler returns, from the brink of a cosmos at entropic collapse, to the safe haven of his Victorian fireplace, but only to leave again towards a completely unspecified temporal location.

This can take a number of forms, and the Byron quotes already point some of the way in their combination of high emotional intensity with an equally high degree of abstraction. This is a typical 1900s project, namely to develop a framework that allows one to account for *general feelings or abstract feelings*—while this sounds like a contradiction in terms, it is an apt phrase for the trends that can be reconstructed in pursuing the motive of 'cosmic feelings' throughout the nineteenth century.[12] In this process, the homely environment of everyday life may lose its coziness, while the remote foreign worlds may indeed come closer to us, or we to them, literally or in our emotional interaction (Blumenberg uses the dense term *Heimweh* to label our longing for cosmic unity[13]). It is no coincidence that Eisler explicitly refers to cosmic feelings in his widely used dictionary and that he links this term to the terminology of the philosophy of life. For a fleeting moment in intellectual history, 'cosmic feelings' here do indeed acquire the status of a technical term—other occurrences of this term, or of related terms, in Adlerian psychology, in Einstein's "cosmic religion," in Freud's "oceanic feeling" or in esotericist contexts (or as the title of pop songs) never quite made it to that status.[14]

The following discussion will first look into a particularly prominent nineteenth century author, as far as promoting a popular image of science and of the cosmos is concerned, Camille Flammarion. In particular, it will trace some of Flammarion's key strategies in making man complexly and ambiguously at home in the universe back to some earlier and equally important authors that combine typically Romanticist ideas with typically mid-and-later-nineteenth-century attitudes, namely the brothers von Humboldt. The step towards promoting general feelings will be made via the characteristic trend of this period to capture the familiar and the absolutely transcendent within one and the same framework—fogs and cosmic nebulae, Kantian starry skies and garden weeds come together in this story to make the general, the alien, the cosmic into a concrete experience, or, again, vice versa: man is given sufficient emotional reasons to become intrinsically fascinated by the ultimately general.

12 For a general reflection on the notion of generality, with some focus on the nineteenth century, see Hagner and Laubichler 2006.

13 Blumenberg 1997, 272.

14 Einstein 1959, 15–18, strongly emphasizes "feelings," but not under the label of 'cosmic feelings;' however, he does strongly promote the rather abstract idea of a "kosmische Religiosität." The English translation (https://archive.org/stream/EinsteinOnCosmicReligion/cosmic-religion-einstein_djvu.txt) features the more catchy title of "cosmic religion," and translates "kosmische Religiosität," with more emphasis on the emotional aspects of this form of religion, as "cosmic religious sense" or "cosmic religious experience." Alfred Adler uses the term "cosmic feelings" explicitly, again linked up with a key term from the nineteenth century's reflection on the humanities and the philosophy of life when he describes empathetic understanding as, essentially, a "cosmic feeling, a reflection of the connection of all the cosmic dimensions [alles Kosmischen] that lives in us;" Adler (1927) 2015, 66. On the "oceanic feeling," see Freud 2004, 31.

2 Domesticate the Cosmic Terror: Camille Flammarion on the Wonders of Reality and the Reality of Wonders

One of the most iconic artworks from the period around 1900 depicts the terrifying potential of the cosmos and shows how close cosmic terror can come to an individual's experience. A lithograph version of Edvard Munch's *The Scream* from 1895 is titled, by Munch himself, with the abstracting German noun *Geschrei* (thus, "screaming" rather than "the scream") and carries the inscription "I felt the great scream through nature" (**Fig. 2**).[15] This caption comes from a poem by Munch himself that is inscribed onto the frame of one of the pastel versions of *The Scream:* "I was walking along the road with two friends—the sun was setting—suddenly the sky turned blood red—I paused, feeling exhausted, and leaned on the fence—there was blood and tongues of fire above the blue-black fjord and the city—my friends walked on, and I stood there trembling with anxiety—and I sensed an infinite scream passing through nature."[16] The dramatic depression that the main figure in "The Scream" expresses is a cosmic depression. Munch depicts a depersonalized cry, a cry that cannot be heard but only felt, a state of the universe, not the cry of a person in psychological distress.

Another, equally iconic, picture from the same period taps into related experiences: the iconic wood engraving in one of Camille Flammarion's highly popular works,[17] showing a person, identified as a missionary, breaking through the heavenly dome that demarcates the familiar world of everyday experience from the chilly, geometrically abstract, crystalline and harsh worlds of the heavens (note how any ekphrasis of what is going on here continues to use ambivalent descriptions) (**Fig. 3**). This illustration can teach us a lot, in particular if we do not focus so much on its (mis-)reading as an illustration of the Copernican vs. the Ptolemaic system (which is not what Flammarion uses it for!). It precisely illustrates the option that had been adumbrated at the end of the previous section: we need to come to love the barren outside world, which looks hostile enough, but where it is not beyond imaginable that we may acquire a taste for this kind of crystalline landscape. Yet again, there is an interesting further option: the homely inside world might also become assimilated to the outside realm—which is precisely what, for instance, an atomistic analysis of reality is doing. The terrifying and alluring insight into the depths of space might be counterbalanced, precisely and symmetrically, by zooming in into the depths of the

15 Note that "through" is ambiguous here: nature may be the agent or medium that makes me feel this scream, or I may experience this scream as (metaphorically) a terrifying sound experience that pervades nature in her totality.

16 Quoted in Zuzanna Stanska, "The Mysterious Road From Edward Munch's The Scream," https://www.dailyartmagazine.com/the-mysterious-road-of-the-scream-by-edvard-munch/.

17 The illustration is to be found in Camille Flammarion, *L'atmosphère. Météorologie populaire* (Paris: Hachette, 1888), 163.

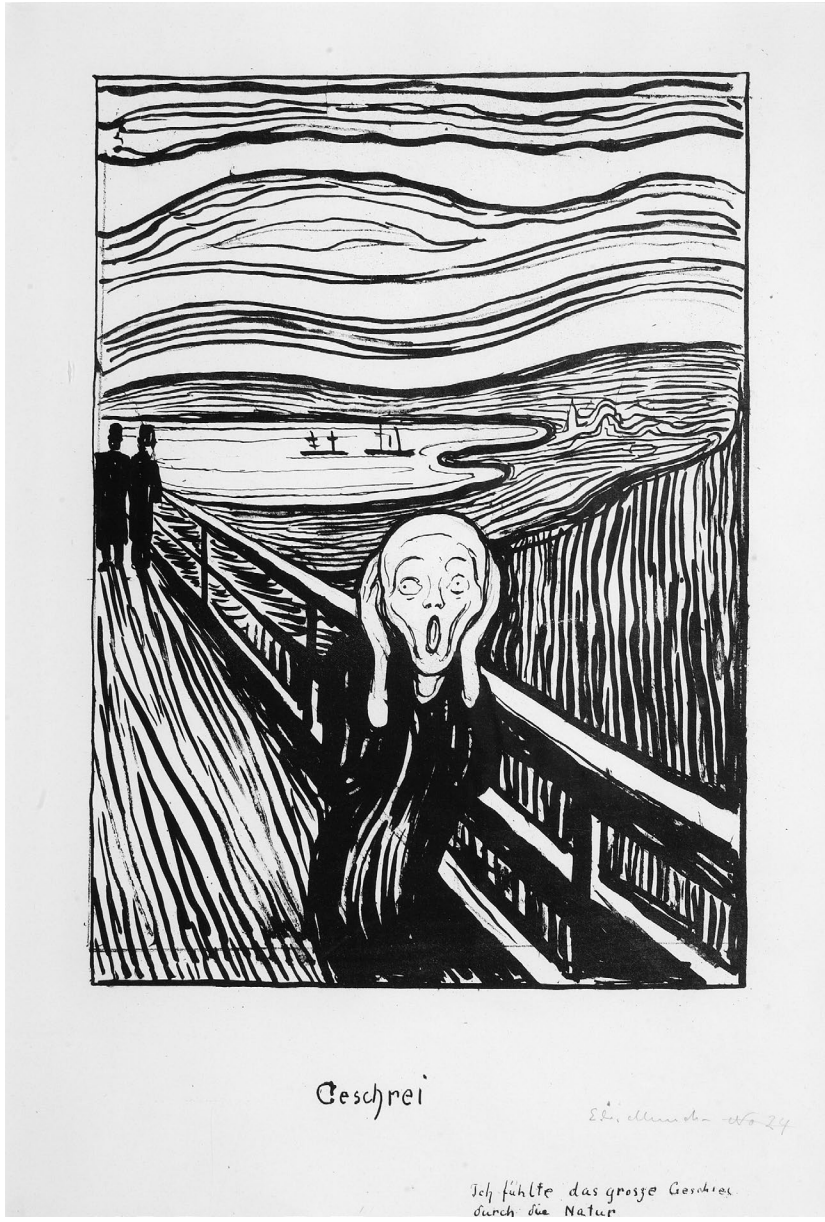


Figure 2 Edvard Munch, *Geschrei*, 1895.

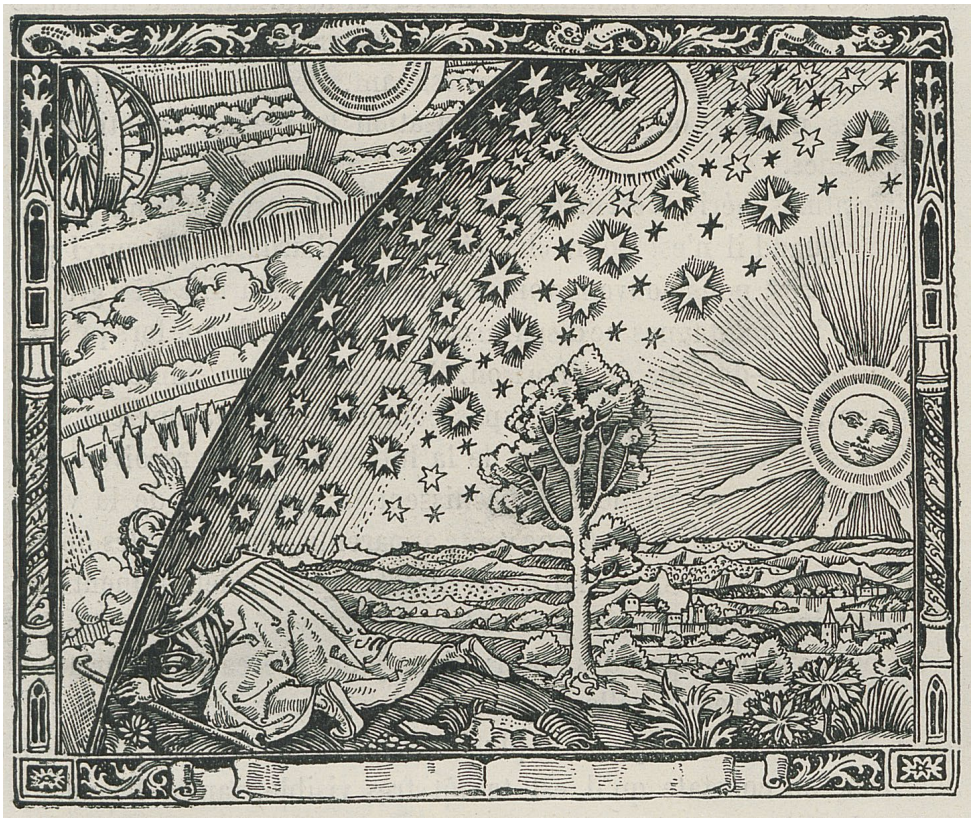
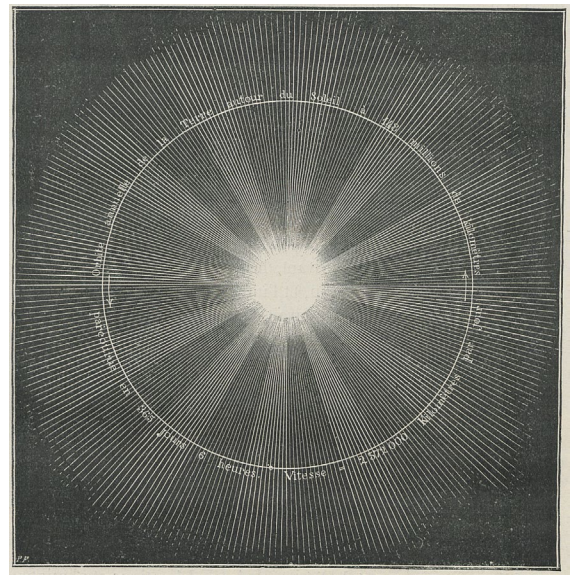


Figure 3 A medieval missionary, finding the spot where sky and earth touch each other–Illustration from Camille Flammarion, *L'atmosphère*, 1888.

material world (again, it is illuminating to look at the SF genre: zoom movements are a standard strategy in all sorts of science and SF movies, both zooming out into the cosmos and zooming in into brains, cells, or atoms), where we, for instance, discover nothing but whirling particles.

Flammarion (1842–1925), trained as an engraver, employed at the Bureau des Longitudes, involved in spiritist societies and with psychic research, autodidact with a big observatory, extremely prolific and successful author,[18] inserts this picture in a book that is not about cosmology or about astronomy, but gives a popular and extremely comprehensive discussion of the atmosphere—the paradigm of a structure that is homely and all-encompassing. On the surface level, the woodcut is intended as

18 For a short biography, see Chalamont 2004.



Figures 4 and 5 Illustrations from Flammarion 1888.

a caricature, depicting a "naïf missionaire du moyen age",[19] a "naive missionary from the middle ages", who claimed to have discovered the point where the earth and the sky touch one another, and who even seems to have found a loophole where earth and sky are not seamlessly linked and that thus allows him to penetrate into outer space. More precisely, and beyond the caricature, Flammarion's point is that the apparently solid vault of the heavens does not exist in the way in which our imagination (at least our naive imagination) conceives of it—he wants to teach us an important lesson about the role of the atmosphere: atmospheric structures reach out far beyond what look like precisely defined surfaces somewhere around the earth, and they embed man on earth into a comprehensive context that reaches out into the very depths of the cosmos.[20]Within the rich imagistic program that Flammarion devised for his book, this illustration is emblematic of a strategy that Flammarion uses throughout. He consistently combines all-too-concrete illustrations with highly abstracted ones: a plate depicting a couple strolling through an orchard stands next to highly abstract geometric constructions (**Fig. 4** and **5**).[21] Flammarion seems to relish the apparent

19 Flammarion *1888*, 162. It is, therefore, doubly ironic that this picture became one of the most prominent symbols of the achievements of the scientific revolution.

20 Atmospheric phenomena have received quite a lot of attention lately, in particular in the field of aesthetics, and in relation to the notion of "Stimmung"/"mood;" see Griffero 2019); Thomas 2010; see also Coen 2018.

21 The illustrations in Flammarion 1888, 9, 15.

break in styles of representation in his illustrations—and, of course, he thereby also makes the point that this break is only apparent, thus confirming the atmosphere's universally integrative power.

It is the peculiar nature of the *atmosphere* that links these dimensions together. The atmosphere is a feature of our world that is both immediately close to us *and* all-encompassing; Flammarion's question on the first page of his book is rhetorical: "De tous les sujets qui peuvent solliciter notre attention studieuse, serait-il possible d'en trouver un qui fût d'un intérêt plus direct, plus perpétuel, plus important, que celui dont nous allons nous occuper?"[22]—"Of all the topics that could attract our assiduous attention, could one be found that is of more immediate interest, more perpetual, more important, than the topic with which we intend to deal here?" The atmospheric phenomena, in his text, participate in the dimensions of the cosmic: enormous and familiar at the same time, offering infinite material for further research and being accessible in the mode of the most everyday experience.

Flammarion himself elaborates upon this link in another of his popular books, *The Wonders of the Heavens*, a contribution to the remarkable (remarkable for its scope and diversity, and for the combination between rather trivially touristy and far more profoundly scientific topics) series *Illustrated Library of Wonders* (**Fig. 6**).[23] Not surprisingly, given what has already been said above, in this book too Flammarion discusses atmospheric phenomena extensively, even if it is not clear how these phenomena can be individuated into individual 'wonders.' Atmospheric phenomena have a cosmic dimension, and they are, consequently, given a place in the chapter entitled "General Arrangement of the Universe."[24] Here, the link between atmospheric and cosmic phenomena is made explicit: Flammarion gives enormous importance to the phenomenon of *nebulae*, clusters of stars that "are distributed in space in every direction, in every sense, following every imaginable course, and themselves invested with every possible form."[25] There is a number of reasons why nebulae become so important in his text (and not only in in his text, as we shall see in a moment). The discovery and study of nebulae, pioneered by the Herschels in the eighteenth century,[26] was closely related to the development of ever more advanced instruments;[27] thus, nebulae are already attractive due to their very novelty and technology-mediated sheen. They become attractive, moreover, and particularly so in the context of popular representations,

22 Flammarion 1888, 1.

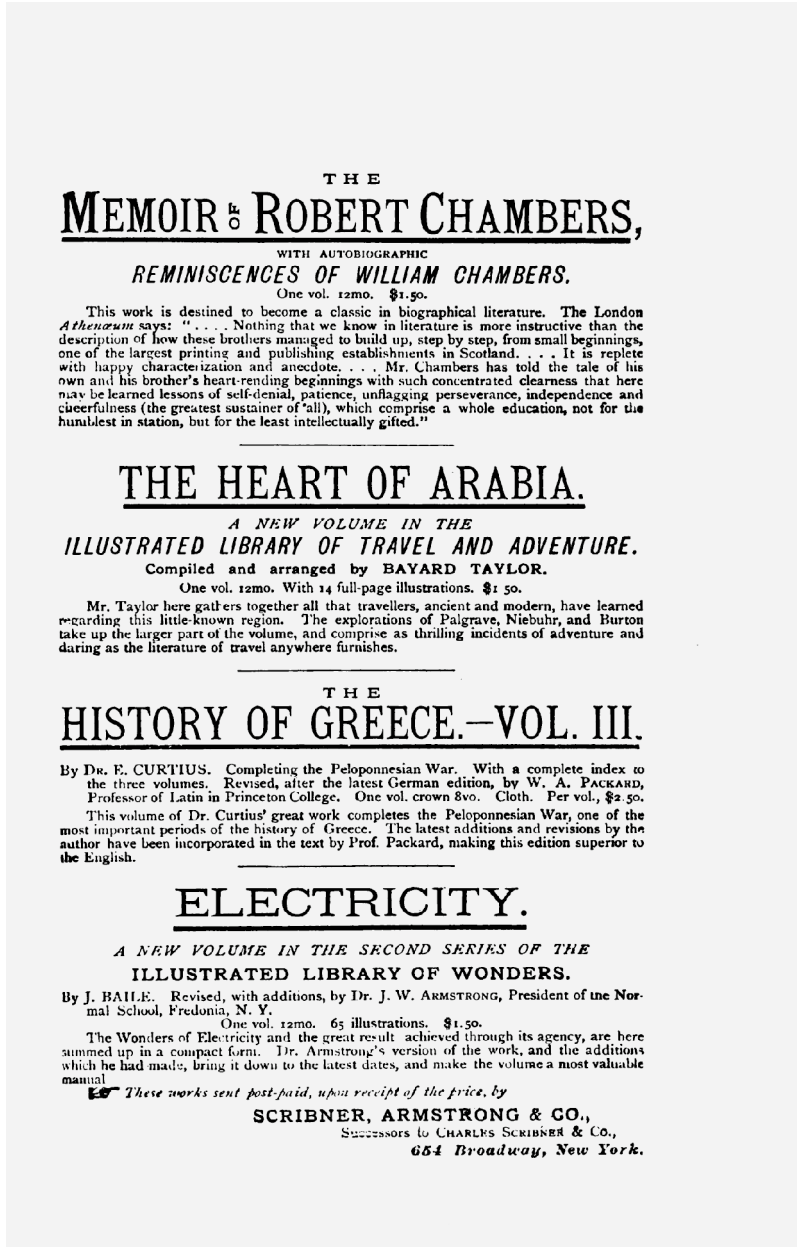
23 The advertisement presented in the illustration can be found in the back matter of another volume in this series, Richardson 1873.

24 Flammarion 1871, 19–28, continued under the new chapter title "Clusters and nebulae," 29–42.

25 Flammarion 1871, 21.

26 Crowe 1994. See also: Schaffer 1980; Schaffer 1980; on Herschel and atmospheric phenomena see Anderson 2003.

27 Flammarion 1871, 34, 37.



THE

MEMOIR OF ROBERT CHAMBERS,

WITH AUTOBIOGRAPHIC

REMINISCENCES OF WILLIAM CHAMBERS.

One vol. 12mo. $1.50.

This work is destined to become a classic in biographical literature. The London *Athenæum* says: ". . . . Nothing that we know in literature is more instructive than the description of how these brothers managed to build up, step by step, from small beginnings, one of the largest printing and publishing establishments in Scotland. . . . It is replete with happy characterization and anecdote. . . . Mr. Chambers has told the tale of his own and his brother's heart-rending beginnings with such concentrated clearness that here may be learned lessons of self-denial, patience, unflagging perseverance, independence and cheerfulness (the greatest sustainer of all), which comprise a whole education, not for the humblest in station, but for the least intellectually gifted."

THE HEART OF ARABIA.

A NEW VOLUME IN THE

ILLUSTRATED LIBRARY OF TRAVEL AND ADVENTURE.

Compiled and arranged by BAYARD TAYLOR.

One vol. 12mo. With 14 full-page illustrations. $1 50.

Mr. Taylor here gathers together all that travellers, ancient and modern, have learned regarding this little-known region. The explorations of Palgrave, Niebuhr, and Burton take up the larger part of the volume, and comprise as thrilling incidents of adventure and daring as the literature of travel anywhere furnishes.

THE

HISTORY OF GREECE.—VOL. III.

By DR. E. CURTIUS. Completing the Peloponnesian War. With a complete index to the three volumes. Revised, after the latest German edition, by W. A. PACKARD, Professor of Latin in Princeton College. One vol. crown 8vo. Cloth. Per vol., $2.50.

This volume of Dr. Curtius' great work completes the Peloponnesian War, one of the most important periods of the history of Greece. The latest additions and revisions by the author have been incorporated in the text by Prof. Packard, making this edition superior to the English.

ELECTRICITY.

A NEW VOLUME IN THE SECOND SERIES OF THE

ILLUSTRATED LIBRARY OF WONDERS.

By J. BAILE. Revised, with additions, by Dr. J. W. ARMSTRONG, President of the Normal School, Fredonia, N. Y.

One vol. 12mo. 65 illustrations. $1.50.

The Wonders of Electricity and the great result achieved through its agency, are here summed up in a compact form. Dr. Armstrong's version of the work, and the additions which he had made, bring it down to the latest dates, and make the volume a most valuable manual

☞ *These works sent post-paid, upon receipt of the price, by*

SCRIBNER, ARMSTRONG & CO.,

Successors to CHARLES SCRIBNER & CO.,

654 Broadway, New York.

Figure 6 Back matter from the series *Illustrated Library of Wonders*.

because of their eerie beauty, and the evasive and highly artistic renderings of these objects in illustrations.[28] Nebulae extend the universe in its spatial extension, being clusters of stars (which was clear at least for some of the nebulae) at the very verge of distinct visibility: nebulae are candidates for entire cosmic worlds within the cosmos. At the same time, they introduce an important element of temporality and of dynamics since they seem to provide evidence of movement and change in the depths of the universe, or, on an even larger scale, they offer evidence of the processes that have been and still are at work in the very formation of the universe. Cosmology and cosmogony start to fit together effortlessly in the observation of nebulae. Even today, nebulae are still depicted with all the epithets of celestial beauty, and are described in metaphorical terms of human procreation as a "stellar nursery."[29]

Flammarion's description of the emotional impact that observing nebulae has upon us is framed in the familiar (and in this quote almost Kierkegaardian) language of double-sided emotions: "the soul feels itself attracted, as at the edge of those abysses whose unknown depth produces giddiness."[30] Nebulae are the limit objects that indicate the very limits of what we can perceive, and thus offer liminal experiences—but no longer in the sense of a hard boundary as in Flammarion's wood engraving: it is atmospheric phenomena that indicate the typical experiences of cosmic enormity and complexity.

Flammarion's text is interspersed throughout with quotes from poems, and the chapter on nebulae ends with a lengthy section from Byron's *Childe Harold,* containing the quote already given in section 1. This poetic reference is no coincidence. Flammarion has to work very hard to describe our experiences in viewing nebulae, and—a rare event in his writings—struggles to come up with fitting terms: "It is difficult to describe the impression which the sight of these distant universes makes on the mind when one sees them through the wonderful telescopes of modern times" (note that, in a book on wonders, the instruments are called 'wonderful' in this quote!).[31] Since we are operating here at the very margins of visibility,[32] the only way of getting hold of these phenomena is one of feeling: "One feels, in spite of the unfathomable distance which separates our abode from these far-off dwellings, there are there luminous foci and centres of movement." Precisely because we need to access these foci in the mode of feeling, we cannot positively characterize them as contents of knowledge; what we can say remains limited to "it is not a void, it is not a desert; it is 'something'" (the

28 Nineteenth-century representations of nebulae have been discussed in great detail by Omar Nasim in the context of the practices of visual representation that entered into the depictions of these phenomena: Nasim 2013; Nasim 2011; Nasim 2010.

29 E.g. European Space Agency 2021.

30 Flammarion 1871, 40.

31 Flammarion 1871, 34.

32 Nasim 2013, 5.

scare quotes are Flammarion's!). He himself reflects on the barrenness of the only description he can come up with in a sentence ridden with negative terms (including, again, the stillness of the heavens) that, in their accumulation, still convey an experience of grandeur: "An indefinable impression is communicated to us by the stellar rays which descend silently from unexplored abysses; one feels it without analysing it, and the traces of it remain ineffaceable."[33] Flammarion takes great trouble, clearly, to find adequate words for these experiences; addressing them in terms of feelings offers him a way out of this difficulty. A highly interesting and, at first sight, profoundly different strategy, in the face of the same problem, is chosen by one of the great writers of the nineteenth century, Adalbert Stifter. Stifter described specific celestial phenomena in their interaction with human experience in his *Studie* "Der Condor" from 1840 and in his description of the solar eclipse of July 8, 1842. It is a genuinely striking experience to see a writer, with his absolute command of the expressive powers of language, at a loss for words when encountering these phenomena. He finds a way out that has already been foreshadowed in the quotes from Byron: adopting the most general words imaginable, terms that sound almost empty, but precisely for this reason transport the essence of the cosmic experience.

The abstract terms that he uses are the more surprising given his insistence on the insufficiency of theoretical knowledge to account for these experiences; feelings and theory are contrasted in the very first sentence of the text: we think to know the phenomenon, that is, in theory; "and then you are astonished by the graveness and terror [*Schrecklichkeit*] of its content."[34] In what follows, Stifter has two linguistic devices to capture the evasiveness of these experiences. First, he addresses the phenomenon by the most general word that the German language has to offer, "thing" (*Ding*).[35] Secondly, he reiterates an equally general phrase for the dynamics of this event, a phrase that, despite its generality and vagueness, becomes loaded with biblical dimensions: "es kommt." The eclipse is referred to as a "thing" in the very first sentence; and Stifter makes clear that he is fully aware of the lack of detail that this word carries: "it was such a simple thing," "es war ein so einfach Ding"[36]—but he also uses the very same word to describe the complex surprise that he experiences in the conflict between theoretical knowledge and emotional encounter: "completely different things have

33 All quotes: Flammarion 1871, 34.

34 Stifter 1959, 584.

35 Cf. also Coen 2018; Schiffermüller 2017. The term "Ding" is used prominently in Wilhelm Ostwald's move towards a generalized logic-plus-philosophy of science around 1900; see Ziche 2009. 'Abstraction' continues to be an apt term for Stifter's writing, and this abstraction in style, motives, plot, etc., if anything, only gets the more intense in the course of Stifter's career. This cannot be explored here.

36 Stifter 1959, 585.

been happening,"[37] "things" beyond our imagination, even beyond our dreams, and thus the "thing" now comes to be called "the wonder" (note: not "a," but "the" wonder, a generic paradigm of the wonderful). What makes it into a wonder is precisely this combination of the simple and the complex, which Stifter more or less identifies with this phenomenon having moral power: "ein solcher Komplex von Erscheinungen ist mit diesem einfachen Dinge verbunden, eine solche moralische Gewalt ist in seinen einfachen Hergang gelegt"[38]—"such a complex range of phenomena is connected with this simple thing, such a moral power is placed into its simple course."

Precisely at the moment of transition where our expectations, based upon our theoretical knowledge that paints this phenomenon as simple, and the concrete experience of the phenomenon itself come together, he uses an equally abstract verb that he elevates into the biblical register: "und siehe: es *kommt*"[39]—"and lo and behold, it *comes*". The ominous "es *kommt*" phrase can simply be repeated as if nothing had happened, with profoundly significant hyphens and an iteration of the motive of stillness: "—es *kommt*, stille wächst es weiter", "—it *comes*, silently it grows ever further." As in Flammarion's text, it is only the "*heart*" that can grasp this phenomenon in its complexity and its complex significance. Also, for Stifter, it is the heart that makes human beings human by giving them access to this phenomenon in a way that transcends what human understanding could calculate about it and by making him adore in place of only (animally) feeling fear (note that Stifter again finds the most depersonalized phrase here: "der Mensch hat angebetet,"[40] without any reference to an object of adoration). The emptiness of the thing—and the "it comes" vocabulary—is taken up when Stifter positions the factuality of the world against our calculations: the phenomenon "is there because it is there," and "despite all calculations"[41]—again, what looks like a trivial tautology is given profound meaning and importance. To take a concrete example of this strategy: in the experience of the eclipse, "*the light,*" "*das Licht,*"[42] italicized, makes itself felt; this is an experience in which we can experience something that normally remains abstract, and that in the case of light itself is invisible in normal circumstances—and, of course and fully consistent with this, light is called a "thing" in this sentence (in a characteristic semantic inversion, opening the sentence by referring to a "thing" that is described with the most enormous epithets, as "holy, un-understandable, terrible," and only then does this "thing" become concretized into the concrete-*and*-abstract phenomenon of light). On the very same page, Stifter, too, is referring to Byron—"Byron war viel zu klein," Byronic emotions fall short in the face

37 Stifter 1959, 585.
38 Stifter 1959, 585.
39 Stifter 1959, 585.
40 Stifter 1959, 586.
41 Stifter 1959, 588.
42 Stifter 1959, 591.

of cosmic experiences, and it is only the sober, telegram-like biblical account of the celestial phenomena accompanying Christ's death that can stand up to this experience.

In Flammarion, just as in Stifter, the experience of a loss of speech, the inadequacy of our expressive domains leads to what looks like a completely detached mode of talking—but a detachment that is rich with novel forms of emotions in which not only the perceived phenomena themselves but also their embeddedness in scientific and epistemic practices is to be addressed. This marks an important step in thinking about the integration of feelings into man's cognitive set-up. One of the strongest and most classical quotes on the difficulty of finding words for feelings opens up a stark contrast between feelings and the realm of words: Goethe's Faust does not have "names" for "happiness/bliss," "heart," "love," or "God," and thus falls back upon viewing these as feelings; "Gefühl ist alles;/Name ist Schall und Rauch,/Umnebelend Himmelsglut," "Feeling is all in all:/The Name is sound and smoke,/Obscuring Heaven's clear glow" (note that in the German original, names are described in terms of *nebulous* obfuscations!)[43]—in Stifter's and Flammarion's contexts, this contrasting move is overcome towards a far more integrative account, but there still is a price to be paid, namely, the price of having to talk about feelings in a hugely abstract way. Clearly, this also opens up enormous possibilities, but still, the integration of feelings and a rational worldview does not come easily.

3 Romanticist Heritages: Cosmic Fogs and Interstellar Meadows

Nebulae allow and require us to extend an emotional way of relating to reality throughout the universe. In addition, they require us to introduce a novel, abstract object category ('something') that is dynamic, in motion, hardly visible, but precisely for all these reasons only the more important for understanding and emotionally appreciating the cosmos. In the very passage where he describes the miracles of nebulae, Flammarion refers to Alexander von Humboldt. This extends the scope of discussions still further. Not only does Humboldt give what continues to be one of the most extensive histories of the study of nebulae in the third volume of his (aptly titled, of course) *Kosmos* from 1850,[44] his discussion of nebulae in his *Kosmos* also directly links late-nineteenth-century popular astronomy with Romanticist ideas; nebulae were an important topic—and for precisely the reasons already stated in the context of Flammarion's writings—in Schelling's philosophy of nature and figure in Kant's

43 Goethe 1986, verses 3456–3458. Translation: Goethe 1871.

44 In the third volume of *Kosmos*, Humoldt gives a very extensive treatment of nebulae, and of the history of their discovery (von Humboldt 2014, 504–525).

cosmogonic writings in the form of the 'nebular hypothesis.'[45] Humboldt explicitly inverts the traditional sequence of ordered descriptions of nature, from the familiar to the distant,[46] and claims to give in his *Kosmos* a "most general observation/consideration of the cosmos"—and it is, very close to what we have seen in Flammarion, precisely this most general perspective that leads him directly to a discussion of nebulae. In Humboldt's "uranological" depiction of nature it is, indeed, the nebulae as the most general patterns of distributing matter in space that form (together with comets) the predominant part of his presentation of the structures of the heavens. Again, too, it is the genetic aspect of the cosmos that becomes of paramount importance in these phenomena: terms like "genetische Entwicklung," "genetic development" and "perpetuirliche Fortbildung," "perpetual forming"[47] refer to the fact that, in looking at the nebulae, we can see the processes that brought about the large-scale structures of the universe as still being actively at work today; nebulae open up a window into the early moments of an eternally dynamic universe.

From here, various directions of further argument are pursued by Humboldt. Let me state three of them; points two and three, at least, display interesting inherent tensions.

1. Humboldt's interest in genetic processes in the cosmos, and in the overall genesis of the cosmos, leads to a specific interest in Kant's early 1755 text on the *Allgemeine Naturgeschichte* and the cosmogonic ideas that Kant presents in this text. Humboldt's cosmological Kantianism left its traces; Ernst Haeckel, for instance, comments explicitly on Humboldt's re-discovery of Kant's cosmology.[48]

45 Cf. Schelling 2001, 320, on nebulae (autograph note in Schelling's own copy of this text), and Schelling 2019, 231–232 on Herschel. On Romanticist contexts, see Weber 2017.

46 Cf. Humboldt *2014*, 40, 398.

47 Humboldt 2014, 41. In the historical context of Humboldt's own writings, see also Chambers 1994, 6–8, 18–26 on nebular hypothesis in cosmology, with emphasis on the dynamics and ongoing creative processes within nebulae. The same analysis is given in Ludwig Büchner's *Kraft und Stoff,* where Büchner refers to nebulae as dynamic structures that show us "verschiedene Stufen des Entwicklungsganges unseres eigenen Sonnensystems"/"different stadia of the developmental process of our own solar system" still at work (Büchner, 1867, 55). With Chambers, Humboldt, and Büchner, the most prominent broad accounts of integrated worldviews in this period coincide in their analysis of nebulae. See also Schaffer 1980, 101: already Herschel discusses nebulae as a "consequence of a natural history of the heavens," "becoming ever more closely associated with questions of geology and the 'life of planets.'" "These clusters may be the *Laboratories* of the universe" (87).

48 Haeckel 1924, 246. Haeckel also illustrates how the notion of "cosmos" figures in arriving at ever higher levels of generalization; in his popular *Welträtsel*, he argues that the two fundamental conservation laws, the "law of the conservation of substance" (or matter; "Stoff") and that of the conservation of energy belong together since both refer to one ultimately general and

2. Humboldt uses a botanical comparison in order to describe the complex interaction of genetic growth principles on the one hand, and the distribution, throughout the entire universe, of identical structures that can be modelled upon organic processes, on the other hand: stars are distributed throughout the universe, and grow and develop like trees in a forest or in a "large *cosmic garden,*" a "großen *Weltgarten.*"[49] Interestingly, the tree comparison is used in a highly unusual way here, not as the picture of a forest or garden full of life, but of a monoculture in which one and the same sort of organic being can be observed in different states of development: the structures of matter are identical throughout the universe; seeing both stable, individuated stars together with dynamic nebulae is similar to having full grown trees next to saplings or germinating sprouts. Still, a monocultural cosmic garden both builds upon traditional organicist imagery and profoundly modifies this image towards a more abstract structural-processual description.

3. Humboldt links his discussion of nebulae to key terms from (idealist) philosophy. Nebulae are extended patterns that defy the operation of simply cataloguing their elements (as can be done with individuated stars). Humboldt presents this as an explicit contrast between an "enumeration of spatial relations," "Aufzählung räumlicher Verhältnisse" and that which can only be grasped as an "object of intellectual intuition," a "Gegenstand intellektueller Anschauung,"[50] or, in different terms, as an "inner, causally understood concatenation," "innerer, ursächlich ergründeter Verkettung." Humboldt thus finds in the nebulae a paradigmatic illustration of how the highly controversial idealist idea of an 'intellectual intuition' can be seen at work—intellectual intuition not as a quasi-mystical faculty that is used in conflict with more traditional elements of scientific methodology, but as a faculty that fully comes into its own in its application to nebulae. In a prominent place, though, he also seems to be carried away by his philosophical terminology: the last sentence of the chapter that he devotes to the fixed stars, star clusters and the Milky Way (in which he also discusses nebulae) remains grammatically incomplete, but still manages to remain in the high tone of philosophical transcendence: "Wo, der eigenthümlichen Natur gewisser Probleme

comprehensive object, the "'cosmos,'" put into quotation marks by Haeckel himself (Haeckel 1924, 221).

49 Humboldt 2014, 41. An interesting parallel passage in Schelling 1861, 8: "jeder Theil der Materie [sey] ähnlich [...] einem Garten voll organischer Gewächse, ähnlich einer See voll lebender Geschöpfe", "every part of matter is similar to a garden full of organic growths, similar to a sea full of living beings."

50 Humboldt 2014, 74–75.

> nach, Messungen und unmittelbare sinnliche Wahrnehmungen fehlen, ruht nur wie ein Dämmerlicht auf Resultaten, zu welchen, ahndungsvoll getrieben, die geistige Anschauung sich erhebt".[51] Rife with Romanticist terminology ("ahndungsvoll," the "Dämmerlicht") and at the same time referring to insufficiencies in the traditional scientific method, this sentence reads like a Freudian slip in its grammatical deficiency, as an uncommitted oscillation between two perspectives that are kept together in the perception of nebulae.

One of the important metaphorical continuities in referring to the cosmos lies in the prominence of organic imagery. Alexander von Humboldt uses Kant's very paradigm of an organicism-centered critique of Newton's mechanism, the blade of grass that, in Kant's famous phrase, escaped even Newton's scientific acumen in its teleological structure. Humboldt takes up the metaphor of grass and meadows in his *Kosmos* in two highly significant passages, and thus goes beyond Kant's demarcation between mechanical physics and teleological judgments. In one passage, he uses the growth of grass as a microscopic counterpart to the large-scale developmental processes in the cosmos as they are revealed by the use of ever more refined technology. We can see grass growing if we look at it with a telescope:[52] what Humboldt does here is provide a foundation for the microcosmos–macrocosmos analogy by employing the very same instrument, the telescope, to explore both the enormously large and the ultimately small processes in nature. In a very compact phrase, he goes to and fro, all the way and back again, from concrete atmospheric comparisons ("Nebelflecke wie kosmische Gewölke," "nebular spots like cosmic clouds") to highly abstract total statements about nature that he in the very same sentence compares to the realm of plants upon earth ("*Bewegung* [waltet] eben so in jedem Punkt des Himmelsgewölbes […], wie auf der Oberfläche der Erde in den keimenden, blättertreibenden, Blüthen entfaltenden Organismen der Pflanzendecke," "*Movement* is actively present in every point of the celestial firmament just as on the surface of the earth in the germinating, leaf-producing, flower-generating organisms of the plant cover"). Even more remarkable is a passage a couple of pages later, at the very end of the uranological part of his text, where he quotes a sonnet by his brother Wilhelm with the very Kantian title "Freiheit und Gesetz," "freedom and law."[53] The sonnet is worth quoting in full:

51 Humboldt, 2014, 465: "Where, according to the specific nature of certain problems, measurements and direct sense perceptions are lacking, there lies [here, the sentence in the original is incomplete qua grammar], like the light of dawn/dusk, on the results, to which, driven by presentiments, the spiritual/intellectual intuition elevates itself."

52 Humboldt 2014, 76.

53 Humboldt 2014, 78.

Freiheit und Gesetz

Die Menschen der Natur die Form gern geben,
In der sich regt ihr enges geistges Leben,
Und ihre Blicke sich im Stillen freuen
An schöngepflanzter Bäume langen Reihen.

Doch der Natur aufwuchernd üppges Leben
Ist ein verwirrtes Durcheinanderweben;
Wie Wind und Zufall blind den Saamen streuen,
So Wies' und Feld den bunten Schmuck erneuen.

Denn selbst was kreist nach ewigen Gesetzen,
Die keiner Freiheit Willkür kann verletzen,
Des Himmels ungezählte Sternenmenge,

Scheint nur ein fröhlich luftges Glanzgedränge,
Wo in den tief von Licht durchstralten Räumen,
Wie Gras der Nacht, Myriaden Welten keimen.[54]

This sonnet, starting in what sounds like a rather amateurish register,[55] then takes a dramatic turn, and the metaphor in the final line—that Alexander von Humboldt quotes—is enormous in all respects, poetical as well as theoretical. What Wilhelm von Humboldt argues for here is the role of chance, of arbitrariness even in the structure of the very paradigms of regularity, the stars. This, too, is a homogenization of the universe, but then not via an ideal of order: the universe is governed everywhere by chance; stars crop up just like weeds in one's garden, or wildflowers in an unkempt meadow. The organic metaphors and comparisons can be read in two ways. Either they may be seen as holding together an ordered cosmos even in the face of apparently unruly, creatively emerging threshold experiences, thus displaying a trust in the

54 Humboldt 1853, 177. A basic prose translation could be: "Humans like to impose form upon nature in which [ambiguous: can refer to "form" and to "nature"] the narrow spiritual life of humans unfolds, and in which they are delighted, silently, by looking at the long, beautifully arranged rows of trees. // But nature's life, lushly proliferating, is a confused, chaotic interweaving; just as wind and chance blindly sow seeds, so the meadows and fields renew their colourful beauty. // Because even that which circles around, according to eternal laws that no arbitrary freedom can violate, that is, the uncountable multitude of stars in the heavens // appears to be nothing but a cheerful, lofty, shining jostling, where in the light-perfused depths, as grass of the night, myriads of worlds are germinating."

55 Humboldt's dilettante status as a poet is emphasized throughout in the literature; some examples: Schultz 1929, 670; Osterkamp 2012, 67. On Humboldt's sonnets, see also Maurer 2019.

power of the organicist imagery that ranges beyond traditional forms of order and implicitly defines higher forms of order. Or the very same imagery can be used as a way of subverting traditional notions of orderedness, and as opening up the traditional paradigms of order and structure for a more dynamic view of reality. The Kantian motive of a yet higher, cosmology-transcending tier of order and lawfulness is hinted at in the title of Humboldt's sonnet. Still, the last two lines of this poem manage to keep the poem precisely on the razor-sharp threshold between undesirable chaos and sublime profundity, and they do so with a poetical-metaphorical power worthy of the masters of absolute metaphor—the last line is worthy of a Celan.[56] On this threshold, the ambiguities and ambivalences inherent in cosmic feelings come together, or from here they begin to be differentiated.

The last line of Humboldt's poem can also establish a link to yet other traditions. Joseph Ennemoser (1787–1854), trained as a medical doctor and working for some time as Professor of Medicine at Bonn, involved in the philosophy of nature-based medicine and in Mesmerism, but also in writing about the history of magic and related topics, quotes this last line in his treatise *Der Geist des Menschen in der Natur* from 1849, and he even does so twice, without, however, ever naming Wilhelm von Humboldt. Ennemoser's text navigates the line of demarcation between established forms of looking at nature on the one hand, and what we would think of as being fringe issues on the other. The program of presenting an integrated account of "Gott und die Welt"[57] is fairly standard, as is his celebration of God's "Urkraft" that keeps

56 Contrastive micro-macro correspondences pervade Humboldt's sonnets; to what extent this is due to the particular reflective structure of the classical sonnet remains to be explored. In quite a few cases, these correspondences explicitly involve cosmic references (two examples out of many: "Die Sterne," in Humboldt 1853, 69, with death/the grave as the link between the spatial regimes of being beneath the surface of the earth and being in the depths of the heavens; "Lea," in Humboldt 1853, 204, linking the "Ich" and the "All"). When Osterkamp 2012 analyzes the interaction between abstract and concrete elements in Humboldt's sonnets, he probably still underestimates the complexity of the reflective structures that Humboldt erects by one-sidedly highlighting the de-individualizing and universalizing steps that Humbold takes in his sonnets. The same applies when Schultz 1929, 670, finds a "platonische[s] 'Zweiweltengefühl'", a "platonic 'feeling of two worlds'", in Humboldt. Alexander von Humboldt's introduction to his edition of the sonnets emphasizes that his brother's poems make the reader experience "den erhabenen Einklang der Natur"/"the sublime harmony of nature" (Humboldt 1853, iii) and, at the same time, die "Ruhe und milde Stimmung des Gemüths am Ende einer Laufbahn in vielbewegter Zeit"/"the calmness and mild mood at the end of a career in tumultuous times." Wilhelm's inner state and his view of the cosmos come to coincide in the reader's experience, as in the "realen Eigenheit und Individualität"/"the real individuality" of the poet that becomes interwoven ("verweben") with "ideas" (Humboldt 1853, vi). In this introduction, Alexander von Humboldt also publishes a fragment of his brother's on the "relationship of religion and poetry to moral Bildung" (Humboldt 1853, ix–xv) that emphasizes the importance to bringing moral principles ("Grundsätze") and feelings into intimate interaction.

57 Ennemoser 1849, iii.

together the infinite richness of the world. References to Humboldt operate in his text in the same context; Ennemoser refers to Humboldt in the context of nebulae and their dynamics, and then he uses Alexander's quote from his brother's sonnet to indicate that man can elevate himself to a "sincere and higher view of natural forms"[58] and to state that the cosmos is governed by principles that range beyond "Maß und Zahl," beyond quantitative measures.[59] On the level of his illustrations, however, the very title illustration of his book shows that yet more is going in in his book (**Fig. 7** and 5): he integrates complex symbolic ciphers into his "schematic" title illustration, and there is quite a bit of mysticism in his book—still, the iconographic power of the radiation image links his texts into the discourses presented so far, and transcends the boundaries between established (even if they are innovative, as in the case of Humboldt) and fringe perspectives on reality.

4 'Cosmic Feelings' and Enriching Abstractions

The narrative presented here both reveals strong continuities throughout the nineteenth century, and also strong continuities between what look like separate discourses—religious, philosophical, scientific, mystical, aesthetic. Multiple examples of ways in which the very same imagery of nebulae, organic structures, and radiation is used in a broad range of contexts around 1900 can easily be found. To take two instances from the world of art and reflection on art: Kandinsky juxtaposes photos of star clusters with images of chemical phenomena to illustrate his ideas on elementary geometric structures in art[60] (**Fig. 8**; Kandinsky also provides yet another example of a protagonist who goes beyond the art–science–parascience demarcations); around the same time, Paul Klee produces a series of paintings that bring together the cosmic and the world of plants (e.g. his painting *Kosmische Flora* from 1917, **Fig. 9**; a number of further paintings with the epithet "cosmic" in the title date from the same period).

Wilhelm von Humboldt's poem can indeed be taken as symbol of a pivotal point in our thinking about man's relation to the cosmos. Traditional motives, arguments, stylistic features weave through in his text, even where they lead to, or are now employed for expressing, radically novel ideas such as the untidy chaos of cosmic weeds. The tenor of the last few lines in his poem combines the diction of the sublime with the organic and the chaotic; in addition, very clearly and with an unusual metaphor, the microcosmos–macrocosmos analogy remains at work, and the Kantian-inspired title creates a background expectation that is close to Kant's "starry sky" phrase. What

58 Ennemoser *1849*, 25, 28.
59 Ennemoser 1849, 55.
60 Kandinsky 1973, 40.

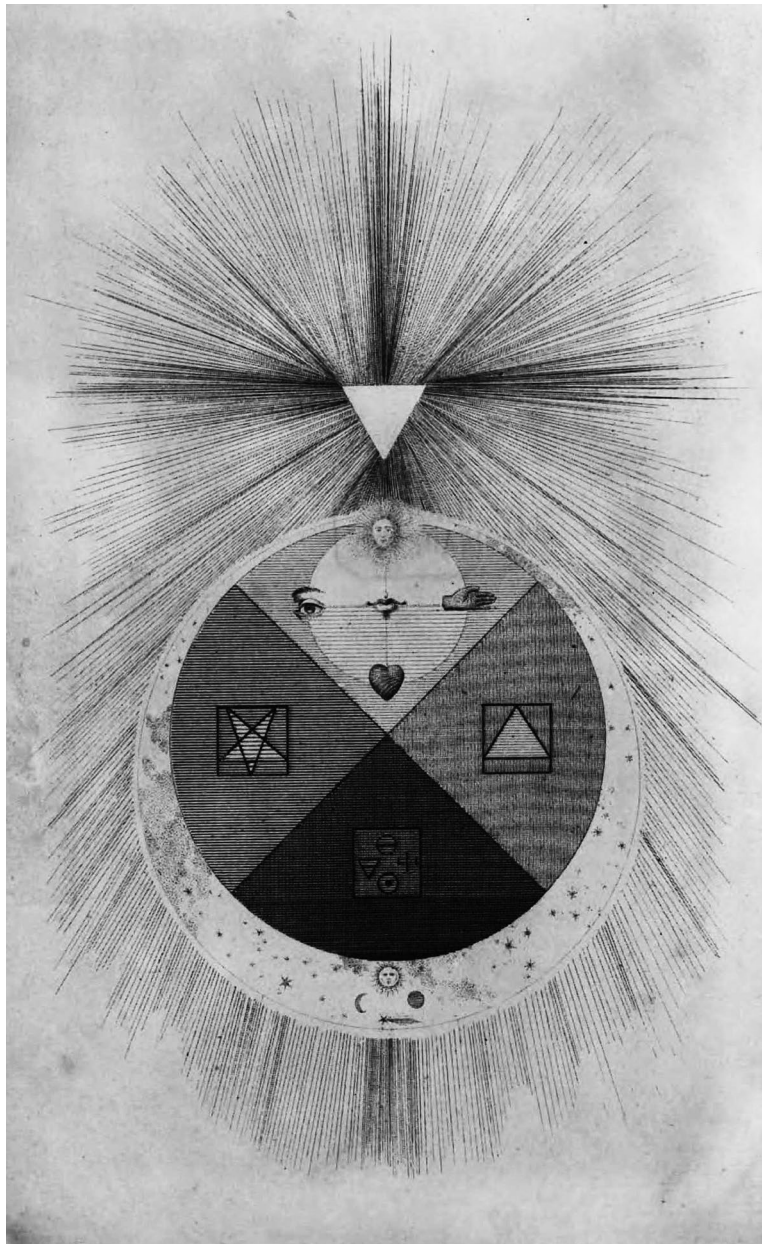


Figure 7 Title illustration of Ennemoser, *Geist des Menschen in der Natur*; it is instructive to compare this picture with the illustration from Flammarion's *L'atmosphère* that is presented in Figure 5—in visual terms, both illustrations resemble each other quite closely.

Figure 8 Illustration from Kandinsky, *Punkt und Linie zu Fläche*.

this poem does, in all its awkward poetical and philosophical brilliance, is to pose an old question in a new form: how are we to link the familiar—all-too-familiar—to the abstract, universal, general? Can we find ways of thinking about this link in ways that can bring together the dimensions of feeling-at-home and feeling lost, of feeling elated and threatened by the cosmos? In posing this question, Humboldt's strategy, as well as the strategies of the other texts discussed so far, are both highly time-specific and timeless. The most significant time-specific motive consists in the combination of the experience of speechlessness with high expressive powers, or in the combination of ever higher levels of generalization and abstraction with the necessity to make them objects of concrete experiences.

A particularly eloquent version of this speechlessness is celebrated in Thomas Mann's *Felix Krull.*[61] Krull reacts to the broad natural history narratives of Professor Kuckuck by hearing in them an expression of his early orgasmic experiences that now, in Kuckuck's limitless narration, are turned from a "secret formula" into something that still is intoxicating and fascinating, and hardly any more precisely stated than his youthful state of "innocence":

> [ich] sage es wieder, daß ich außerordentlich erregt war, und zwar durch eine meine Natur fast überspannende Ausdehnung des Gefühls die das Erzeugnis der Reden meines Tischgenossen über das Sein, das Leben, den Menschen war. Möge es so sonderbar klingen, wie es will, aber diese mächtige Ausdehnung hatte nahe zu tun mit dem, oder eigentlich, sie war nichts anderes als das, was ich als Kind, oder als halbes Kind, mit dem Traumwort ‚Die große Freude' bezeichnet hatte, einer Geheimformel meiner Unschuld, mit

61 Again, Blumenberg *1997*, 274, is an excellent guide to this text's cosmological reflections.

Figure 9 Klee, *Kosmische Flora*, 1917.

> der zunächst etwas auf andere Weise nicht nennbares Spezielles bezeichnet werden sollte, der aber von früh an eine berauschende Weitdeutigkeit eigen gewesen war.[62]

More systematically, there are two characteristic steps taken towards the end of the nineteenth century (without, probably, it being possible to pin them down more precisely in time). One step consists in a re-evaluation of *abstraction* and *generalization* into ways of arriving not at impoverished, but at richer or deeper ways of approaching and appreciating reality. Here, Oswald Spengler's *Untergang des Abendlands* is an informative text in that it shows that precisely this move is a fruitful interpretament of the culture of his time. In a chapter on "Das Kosmische und der Mikrokosmos"

62 Mann 1954, Buch 3, Kap. 5. English translation in: Mann n.d., 294: "I have said, and I say again, that I was extremely excited, thanks to a feeling of expansion that almost burst the limits of my nature and was the result of my companion's conversation about Being, Life, and Man. Strange as it may sound, this vast expansiveness was closely related to, or rather was identical with, what as a child or half a child I had described in the dream-like phrase 'The Great Joy,' a secret formula of my innocence used at first to denote something special, not otherwise namable, but soon endowed with an intoxicating breadth of significance."

that opens the second volume of his book, Spengler employs cosmological imagery, in particular the radiative structure of light that we have already encountered as a pictorial device in a number of contexts, to show how an "impoverishment on the level of the sensible," a "Verarmung des Sinnlichen" can also be a "unermeßliche Vertiefung," a way in which man's position in the universe, and his experience of this position, becomes deeper in an unmeasurable way.[63] The metaphor of light is used by Spengler to emphasize that even the fully abstract terms in our language still have a value, a "Lichtwert," that enriches them beyond merely being abstract.[64] Within philosophy and philosophy-related fields, this strategy can be traced in a number of areas: in Cassirer's (and others') functionalism, in phenomenology's search for pure experience, and in many other fields.[65] In a related vein, abstract art in the beginning of the twentieth century is introduced to enrich, and not to reductively restrict our experiential world.

The second step that these discourses take consists in also including an explicit reflection on the epistemological status of the various ways of studying and describing the cosmos. In many cases, not only do the ambivalences in our feelings and in the combination of the orderly and the chaotic in our perception of the cosmos come under discussion and become embedded in ever more comprehensive contexts, but so too does the demarcation between science and fringe science. Here, all the ideas discussed so far come together: the allure of the cosmos, and in particular that of the successes of the sciences in studying the cosmos (in bringing it close to us and at the same time making it ever larger and difficult to grasp), is so powerful that it opens up a new and indeed ultimately open field for studying the cosmos. Where traditional approaches such as micro–macro analogies find it difficult to get rid of hierarchical modes of thinking, we now get a level playing field—but, as has been emphasized earlier, at the cost of having to find ways of accepting the emotional appeal of highly general structures. It is easy to see that these generalizing steps also set the notion of the cosmic free from its traditional usage. To take a prominent example of these conceptual options: in one of the most important texts on the position of man in the cosmos in early twentieth century, Max Scheler's *Die Stellung des Menschen im Kosmos* from 1927, the notion of "*Kosmos*" is featured in the title, but not in the text itself. Scheler approaches man's position in the entirety of the universe from within; he presents a surprisingly dis-cosmic way of locating man in the rest of the universe[66]—as in

63 Spengler 1997, 564.

64 Spengler 1997, 565. See also Spengler 1997, 227, on the moderns' "deepest feeling" according to which "'the world'" is nothing but a "sublimely empty" space in which the systems of fixed stars get lost—Spengler is, in his very own way, clearly also struggling with the ambiguities of and tensions in man's emotional-cum-rational interaction with the cosmos.

65 See also the references in note 3.

66 Scheler *(1927)* 1998.

Spengler, clear focus, profound depth, and cosmic scope become free to go together. The evaluation of man's position continues to oscillate between Spenglerian experiences of being lost in the universe and a Schelerian (and Plessnerian, etc.) elevation of man above the rest of the universe. In this way, the long-standing story of man's ambivalent relationship to the cosmos becomes a story of yet more ambivalence that now includes a more extensive reflection on the various scientific ways of cognizing reality, and that describes the man–cosmos relationship in novel ways by including integrative, generalizing, and abstractive attitudes into this relationship.

Figures

Fig. 1 http://philosophy-of-cosmology.ox.ac.uk/cosmos.html

Fig. 2 Wikimedia Commons, Public Domain

Fig. 3, 4, 5 Flammarion 1888. ETH-Bibliothek Zürich, Rar 24595, https://doi.org/10.3931/e-rara-74739. Public Domain Mark

Fig. 6 Private copy

Fig. 7 Bayerische Staatsbibliothek München, Ph.sp. 241 m, Scan 6, urn:nbn:de:bvb:12-bsb10043115-1

Fig. 8 Kandinsky 1973

Fig. 9 Paul Klee: *Kosmische Flora*, 1917, Kunstmuseum Solothurn

References

Adler, Alfred. *(1927)* **2015.** *Menschenkenntnis,* ed. by Jürg Rüedi. Göttingen: Vandenhoeck & Ruprecht

Albrecht, Andrea. 2015. "'Wahrheitsgefühle': Zur Konstitution, Funktion und Kritik 'epistemischer Gefühle' und Intuitionen bei Leonard Nelson." In *Ethos und Pathos der Geisteswissenschaften: Konfigurationen der wissenschaftlichen Persona seit 1750*, ed. by Ralf Klausnitzer, Carlos Spoerhase, and Dirk Werle, 191–213. Berlin: de Gruyter.

Anderson, Katharine. 2003. "Looking at the sky: The visual context of Victorian meteorology." *The British Journal for the History of Science* 36: 301–332.

Blumenberg, Hans. 1997. *Die Vollzähligkeit der Sterne*. Frankfurt am Main: Suhrkamp.

Büchner, Ludwig. 1867. *Kraft und Stoff:. Empirisch-naturphilosophische Studien in allgemein-verständlicher Darstellung*. 9th ed. Leipzig: Theodor Thomas.

Chalamont, Alix. 2004. "Camille Flammarion: la passion des étoiles à la portée de tous." http://www.savoirs.essonne.fr/thematiques/le-patrimoine/histoire-des-sciences/camille-flammarion-la-passion-des-etoiles-a-la-portee-de-tous/.

Chambers, Robert. 1994. *Vestiges of the Natural History of Creation and Other Evolutionary Writings,* ed. by James A. Secord. Chicago: Chicago University Press.

Coen, Deborah. 2018. *Climate in Motion. Science, Empire, and the Problem of Scale.* Chicago; London: University of Chicago Press.

Crowe, Michael J. 1994. *Modern Theories of the Universe from Herschel to Hubble*. New York: Dover.

Einstein, Albert. 1959. "Religion und Wissenschaft." In *Mein Weltbild*, ed. by Carl Seelig. Berlin: Ullstein.

Eisler, Rudolf. 1904. *Wörterbuch der philosophischen Begriffe historisch-quellenmäßig bearbeitet*. 2nd ed. Berlin: Siegfried Mittler und Sohn.

Ennemoser, Joseph. 1849. *Der Geist des Menschen in der Natur, oder die Psychologie in Uebereinstimmung mit der Naturkunde*. Stuttgart: Cotta.

European Space Agency. 2021. "Hubble Peers into a Dusty Stellar Nursery." https://www.nasa.gov/image-feature/goddard/2021/hubble-peers-into-a-dusty-stellar-nursery.

Fabricius, Johann Andreas. 1752. *Abriß einer allgemeinen Historie der Gelehrsamkeit.* Vol. 1. Leipzig: Weidmann.

Flammarion, Camille. 1888. *L'atmosphère : Météorologie populaire*. Paris: Hachette.

———. 1871. *The Wonders of the Heavens*. Trans. by Mrs. Norman Lookyer. Illustrated Library of Wonders. New York: Scribner, Armstrong and Company.

Freud, Sigmund. 2004. *Das Unbehagen in der Kultur und andere kulturtheoretische Schriften*. Frankfurt am Main: Fischer.

Goethe, Johann Wolfgang von. 1986. *Faust,* ed. by Erich Trunz. Munich: C.H. Beck.

———. 1871. *Faust*. Trans. by Bayard Taylor. London: Strakan & Co.

Griffero, Tonino. 2019. "In a neo-phenomenological mood: Stimmungen or atmospheres?" *Studi di estetica* 47: 121–151.

Groddeck, Wolfram. 1989. "'Oh Himmel über mir': Zur kosmischen Wendung in Nietzsches Poetologie." *Nietzsche-Studien* 18: 490–508.

Haeckel, Ernst. 1924. *Die Welträtsel*. Vol. 3 of *Gemeinverständliche Werke*, ed. by Heinrich Schmidt. Leipzig: Kröner and Henschel.

Hagner, Michael, and Manfred Laubichler, eds. 2006. *Der Hochsitz des Wissens: Das Allgemeine als wissenschaftlicher Wert*. Zürich: diaphanes.

Humboldt, Alexander von. 2014. *Kosmos: Entwurf einer physischen Weltbeschreibung,* ed. by Ottmar Ette and Oliver Lubrich. Frankfurt am Main: Eichborn.

Humboldt, Wilhelm von. 1853. *Sonette*, ed. by Alexander von Humboldt. Berlin: Reimer.

Kandinsky, Wassily. 1973. *Punkt und Linie zur Fläche: Beitrag zur Analyse der malerischen Elemente*. 7th ed., with an introduction by Max Bill. Bern-Bümpliz: Benteli-Verlag.

Kant, Immanuel. 1913. *Kritik der praktischen Vernunft*. Vol. 5 of *Akademie-Ausgabe*. Berlin: Reimer.

———. 1996. *Practical Philosophy*. Trans. by Mary J. Gregor. Cambridge: Cambridge University Press.

Mann, Thomas. 1954. Bekenntnisse des Hochstaplers Felix Krull. Der Memoiren erster Teil. Frankfurt am Main: Fischer.

———. n.d. *Confessions of Felix Krull confidence man: Memoirs Part I*. Trans. by Denver Lindley. London: Secker & Warburg.

Maurer, Michael. 2019. "Einsamkeit und Freiheit: Die Alterssonette Wilhelm von Humboldts." In *Sonett-Gemeinschaften: Die soziale Referentialität des Sonetts*, ed. by Mario Gotterbarm, Stefan Knödler, and Dietmar Till, 125–144. Paderborn: Schöningh.

Mößer, Andeheinz. 1977. "Hugo Balls Vortrag über Wassily Kandinsky in der Galerie Dada in Zürich am 7.4.1917." *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* 51: 676–704.

Nasim, Omar W. 2010. "Observation, working images and procedure: the 'Great Spiral' in Lord Rosse's astronomical record books and beyond." *The British Journal for the History of Science* 43: 353–389.

———. 2013. *Observing by hand: Sketching the nebulae in the nineteenth century*. Chicago: Chicago University Press.

———. 2011. "The 'Landmark' and 'Groundwork' of Stars: John Herschel, photography and the drawing of nebulae." *Studies in History and Philosophy of Science* 42: 67–84.

Nietzsche, Friedrich. 1961. *Thus Spoke Zarathustra*. Trans. by R. J. Hollingdale. London: Penguin.

——. **1988.** *Kritische Studienausgabe*. 2nd ed. Vol. 3. Berlin: de Gruyter.

——. **1988.** *Kritische Studienausgabe*. 2nd ed. Vol. 4. Berlin: de Gruyter.

——. **1988.** *Kritische Studienausgabe*. 2nd ed. Vol. 9. Berlin: de Gruyter.

——. **1988.** *Kritische Studienausgabe*. 2nd ed. Vol. 15. Berlin: de Gruyter.

Osterkamp, Ernst. 2012. "Individualität und Universalität in Wilhelm von Humboldts Sonetten." In *Wilhelm von Humboldt: Universalität und Individualität*, ed. by Ute Tintemann and Jürgen Trabant, 67–79. Munich: Fink.

Richardson, James. 1873. *Wonders of the Yellowstone*. Illustrated Library of Wonders. New York: Scribner, Armstrong and Company.

Schaffer, Simon. 1980. "Herschel in Bedlam: Natural History and Stellar Astronomy." *The British Journal for the History of Science* 13: 211–239.

——. **1980.** "'The great laboratories of the universe': William Herschel on matter theory and planetary life." *Journal for the History of Astronomy* 9: 81–110.

Scheler, Max. (1927) 1998. *Die Stellung des Menschen im Kosmos,* ed. by Manfred S. Frings. Bonn: Bouvier.

Schelling, Friedrich Wilhelm Joseph. *(1799)* **2001.** *Erster Entwurf eines Systems der Naturphilosophie*. In *Historisch-kritische Ausgabe*, Reihe 1, Bd. 7. Stuttgart-Bad Cannstatt: frommann-holzboog.

——. **(1802) 2019.** "Fernere Darstellungen aus dem System der Philosophie." In *Historisch-kritische Ausgabe*, Reihe 1, Bd. 12, Teilband 1. Stuttgart-Bad Cannstatt: frommann-holzboog.

——. **(1812/13) 1861.** "Ueber das Wesen deutscher Wissenschaft. Fragment." In *Sämmtliche Werke*, ed. by Karl Friedrich August Schelling, Reihe I, Bd. 8, 3–18, Stuttgart; Augsburg: Cotta.

Schiffermüller, Isolde. 2017. "'jenes Ding … das Licht': Zum Glanz in der Prosa von Adalbert Stifter." In *Fleck, Glanz, Finsternis. Zur Poetik der Oberfläche bei Adalbert Stifter*, ed. by Thomas Gann and Marianne Schuller, 15–33. Munich: Fink.

Schleiermacher, Friedrich. *(1799)* **1999.** *Über die Religion: Reden an die Gebildeten unter ihren Verächtern*. In Kritische Friedrich-Schleiermacher-Ausgabe, Abt. 1, Bd. 2. Berlin: de Gruyter.

Schultz, Werner. 1929. "Das Erlebnis der Individualität bei Wilhelm v. Humboldt." *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* 7: 654–681.

Spengler, Oswald. (1923) 1997. *Der Untergang des Abendlandes. Umrisse einer Morphologie der Weltgeschichte. 33rd–47th ed.* Munich: dtv.

Stanska, Zuzanna. 2021. "The Mysterious Road From Edward Munch's The Scream." *Daily Art Magazine* https://www.dailyartmagazine.com/the-mysterious-road-of-the-scream-by-edvard-munch/.

Stifter, Adalbert. 1959. "Die Sonnenfinsternis am 8. Juli 1842." In *Gesammelte Werke*, 6: 584–595. Wiesbaden: Insel.

Thomas, Kerstin, ed. 2010. *Stimmung. Ästhetische Kategorie und künstlerische Praxis*. Berlin: Deutscher Kunstverlag.

Weber, Philipp. 2017. *Kosmos und Subjektivität in der Frühromantik*. Paderborn: Fink.

Wille, Bruno. 1905. *Das lebendige All: Idealistische Weltanschauung auf naturwissenschaftlicher Grundlage im Sinne Fechners*. Hamburg: Leopold Voß.

Wolff, Christian. 1737. *Cosmologia generalis, methodo scientifica pertractata, qua ad solidam, inprimis dei atque naturae, cognitionem via sternitur*. Editio nova priori emendatior. Frankfurt am Main: Renger.

Ziche, Paul. 2009. "Wilhelm Ostwald als Begründer der modernen Logik. Logik und künstliche Sprachen bei Ostwald und Louis Couturat." In *Ein Netz der Wissenschaften? Wilhelm Ostwalds "Annalen der Naturphilosophie" und die Durchsetzung wissenschaftlicher Paradigmen*, ed. by Pirmin Stekeler-Weithofer, Heiner Kaden, and Nikolaos Psarros, 46–66. Leipzig: Sächsische Akademie der Wissenschaften.

——. **2015.** "'Gefühlsgewissheit' und 'logischer Takt'. Neue Erfahrungsmodalitäten und offene Wissenschaftsbegründung um 1900". *Scientia Poetica* 19: 322–341.

——. **2019.** "'In'/'über'/'unter'/'zwischen'— Alfred Döblins Naturphilosophie und Modelle horizontaler Offenheit um 1900." In *Empirisierung des Transzendentalen: Erkenntnisbedingungen in Wissenschaft und Kunst 1850–1920*, ed. by Philip Ajouri and Benjamin Specht, 281–308. Göttingen: Wallstein.