

IAC-22-E1.9.5

## Space Culture and Space Philosophy

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### Abstract

Contemporary philosophy and art, at least in Europe, is influenced by phenomenology and fundamental ontology, both philosophical schools of thought that are explicitly anti-Copernican and strive for an earthly "re-rooting" of man. It is therefore not surprising that since the 1960s, at least in Europe, cultural studies, social sciences, and the humanities have generally been only marginally concerned with the subject of space travel.

Today's technical spaceflight, on the other hand, is based on a long cultural history of space travel "with the wings of the spirit", which, beginning with Plato's sky chariot, cognitively opened up outer space to humans. The Copernican Revolution in the Renaissance made virtual space flights possible and inspired eminent thinkers to make imaginative trips to the moon. In the art of the time, this new "space revolution" was expressed in planetary perspectives. Later, in classical German philosophy, expanded space consciousness was combined with an evolutionary perspective and with the idea of a natural self-liberation process that would detach humanity from Earth and make them cosmic citizens. Universal anthropology then found expression in the art of Romanticism.

My thesis was and is to counter the widespread new geocentrism in the humanities, a return to the beginnings and long history of space thinking is necessary. When I began building an international collaboration on space and culture in 2004, I realized that in the absence of modern approaches, a return to history was essential to develop a viable modern philosophy of space. In the process, I discovered that in addition to the long literary history, there was also a long philosophical history of spaceflight in classical philosophy since antiquity. This was researched by me and developed for teaching at the University of Braunschweig in the form of transdisciplinary curricula and then used for public education in the form of lecture series and conferences. In 2010, the "Society for Space Culture" was founded, whose statutes state, among other things: "to research, document, reflect, discuss, publish, artistically design, and anchor the diverse interdisciplinary connections between culture and space in education." In this context, also the Space Poetry series was developed and has been praised by national media as a new genre and successful event format.

Since 2021, I have been making my research on the history of the classical philosophy of spaceflight since antiquity available to the group Space Renaissance International in order to establish an academy.

**Keywords:** Space Philosophy, Space Culture, Space Poetry, Renaissance, Romanticism, Giordano Bruno

### 1. Space culture and space philosophy - overview of a project

At the beginning of 2000, a first European Center for space culture was established in Germany, which included philosophy, literature, film, art, extraterrestrial sciences, space technology, and also the space industry, and was thus located "between fantasy and reality" [1]. The motto of this center, which was founded in Braunschweig, was the famous formula of Tsiolkovsky: "At the beginning there are inevitably the thought, the fantasy, the fairy tale; behind them strides the scientific

calculation, and only at the very end does the realization crown the thought." [2] But also the reverse way was shown, because the technically realized space travel inspired also philosophy, literature, film and fine arts. The aim of this center, which called itself "Space Culture", was to anchor technical space flight culturally and thus to promote it. It turned out that there were many scattered lone wolves who were glad to have this center, as it promoted exchange and allowed the presentation of novel ideas, images, stories, and research results that had emerged in the context of spaceflight. University and public lecture series were

organized at the State Museum and the public "House of Science". Art exhibitions were curated, conferences were hosted, books and essays were published. A specific feature was that students could also acquire credits within the public events, which was particularly well received by students of cultural studies.

One example is the art exhibition on 29.10.2008 with works by Charles Wilp, one of the first famous space artists, who was also the first to send his artworks into space with *Spacelab* und *MIR*. The exhibition "Zero G. The Artronaut Charles Wilp" took place in the glass cube of the Braunschweig University of Fine Arts. [3] Representatives of Volkswagen (VW) also came to visit, because Charles Wilp, as an advertising artist, created the famous slogan "He runs and runs and runs ...". The accompanying advertising poster shows a VW Beetle driving into the horizon and "taking off," a symbol probably also for the Woodstock youth in the 1960s who loved the Beetle. As can be seen in the photo below (see Fig. 1, [4]), the exhibition also featured Wilp's sculptures, which he made from real debris from the exploded Ariane 5 that was adventurously delivered to his Düsseldorf home.



Fig. 1. Exhibition opening "Zero G. The ARTronaut Charles Wilp," Oct. 29, 2008

An accompanying lecture on "The significance of art in space travel - Charles Wilp" was given in 2010 by Gerhard Schwehm, Director of Solar System Science Operations Division at ESA/ESAC and head of the Rosetta mission in Madrid, in the Braunschweig lecture series "Culture and Spaceflight." [5]

The transdisciplinary center "Space Culture" had its origins in the Institute of Philosophy at the Technical University of Braunschweig. There I offered seminars on *Space Philosophy* since 2002 and cooperated with the Institute of Geophysics and Extraterrestrial Physics. Our two institutes were then joined by the English Institute, the History Sciences, the Physics Didactics, the University of Fine Arts, the State Museum, the German Aerospace Center (DLR) and some

associations. [6] I became the director of this transdisciplinary center and thus philosophy, my profession, became the core of this initiative. Philosophy reflects the basic principles of the world and the guiding ideas of our actions. Therefore, one of our tasks was to study the different space paradigms. The slogan "Spaceflight for Earth" promoted by the government at that time seemed too provincial and a limited-utilitarian concept. We received support from another philosopher and from Jesco von Puttkamer, who brought in the concept of transutilitarianism. [7]

There was definitely a lack of space philosophy appropriate to the space age at that time. This was mainly due to the fact that in the humanities of the West a deep space skepticism or simply disinterest prevailed. As I could show recently, this was mainly due to two important main currents in philosophy and the humanities: phenomenology and fundamental ontology. [8] [9] So what to do? My idea was in 2002 to explore the history of philosophy to see if there were reference points for the development of a philosophy of space. Since I was specialized in the classical history of philosophy, I began to read the classics since antiquity with a new perspective, namely, through the eyes of space. And I actually found what I was looking for.

I could discover that since antiquity, especially since *Plato*, there is not only a philosophy of space, which is well known, but also a genuine philosophy of space flight "with the wings of the spirit". [10], [11], [12], [13], [14], [15], [16], [17], [18]. I could also find this topos in the Middle Ages. [10], [12] [18] I was particularly pleased to discover that *Giordano Bruno*, on whose philosophy I had previously worked and published [19] [20], [21] had actually written a first anthropology of spaceflight, and had conducted thought experiments on travel to other celestial bodies, for example, to answer the question of what the Earth would look like viewed from the Moon. [10] [12] This question was then taken up two years later by Johannes Kepler and answered in his "*Somnium*" (Dream), which, in addition to a first science fiction story, also contains a first lunar astronomy, i.e., an astronomy from the perspective of a lunar inhabitant. [10] This opening of outer space for humans, who now no longer only looked at the stars but undertook virtual space journeys, had a great impact on the further history of philosophy, literature and also art. [18] Friedrich Wilhelm Joseph *Schelling*, one of the founders of German Idealism and father of Romanticism, wrote his own monograph "Bruno, or On the Divine and Natural Principle of Things" (1802) and, like Bruno, advocated a cosmic, universal humanism. [14] *Romanticism* and the early space pioneers in the 1920s, but also Russian *cosmism*, *suprematism* and the *European avant-garde* were also influenced by this philosophical tradition. [11] [17] The combination of classical philosophy and classical art in

these space areas is particularly interesting. I will throw a few spotlights on this in my paper.

Initially, I used these research results primarily for university teaching and developed corresponding curricula at the Technical University of Braunschweig.

On the basis of this historical research, I have begun to develop a new discipline, which I call **Transterrestrialism®**. I have had this term protected as a word mark. [22] With this term the needed space philosophy shall get a systematic content. Briefly outlined, it is not only expressed that our species can leave the earth, will leave it and should leave it, but it is also formulated that it is about a transgression of our earthly modes of perception and categories of thinking. An example is the Copernican turn, which, as Kant already correctly remarked, implied a completely new mode of thinking. But it also goes beyond that to the limits of our perception and thinking, which evolved evolutionarily within the mesocosmic dimensions of our biosphere and therefore, for example, developed a thingontology oriented to sensory perception, which, however, as the mathematicians of the 19th century and then the physicists of the 20th century already showed, is too limited to be able to imagine what we know theoretically. In space, however, these insights become evident. Furthermore, the philosophy of art and aesthetics play an important role in transcending earthly categories of thinking. It was also here Kant who pointed a direction with his theory of the sublime.

After the historical part of my contribution, I will come back to these systematic questions further below.

First a short mention should be made of the institutional impact of our transdisciplinary initiative "Space Culture". In 2007, a new master's program "Culture of the Technical-Scientific World" was founded in the humanities at the TU Braunschweig on the basis of our initiative. In 2010, we founded the international "Society for Space Culture" in Düsseldorf [23], where we conducted, among other things, the *Space Poetry* series in the "Heine-Haus" [24], which was recognized nationally as a new genre and event-format. [25] In 2015, the Department of Culture and Space at the Space Institute of the Technical University of Braunschweig was created, (and I became its director). In 2020, the Department of Space and Culture was established at the German Aerospace Society. [26]

Last but not least, in 2022 I became "Head of the Space Philosophy Laboratory" at Space Renaissance International [27], where I had presented some papers on the classical history of space philosophy and philosophy of space travel. [15], [16], [18]. As it turned out, Space Renaissance International had previously included philosophy in its program, but there was no reception of classics of the history of philosophy, especially no reception of Giordano Bruno. This has now changed with the new program of the Space

Renaissance Academy. Now the philosophical classics and their chronology have been included in the program. This is in line with the research program I had developed. [28]

My main thesis was and is that it is necessary to go back to the beginning of the tradition of space philosophy and space art in Platonism and the Renaissance era in order to counter the widespread new geocentrism in the humanities.

## 2. Cultural prehistory of space travel

Technical spaceflight is the product of a long cultural process that began with mythology, religion, literature, philosophy, and art. The study and public communication of this tradition is essential for understanding and public discussion. It places our current space activities within a broader humanities horizon. The historical process of humanity was the result of the creative nature of our species and had references to space from the beginning. Already the Bronze Age artifacts of the Nebra Sky Disk (2100-1700 BC) and the Trundholm Sun Chariot (1400 BC) (see Fig. 2, [29])



Fig. 2. Sun chariot of Trundholm, around 1400 BC

show projections of human technology into the sky: the ship and the chariot.

## 3. History of classical philosophy of space flight

As my research has been able to show, space flight is deeply rooted in the history of classical philosophy.

This is not only historically interesting, but allows the whole two-thousand-year tradition to be drawn upon for space philosophy. Just as the Renaissance drew on antiquity, so too can we and should we. And similarly as in the Renaissance something new came out of it, so will it happen this time.

### 3.1 Brief Overview of the History of Space Philosophy

- Antiquity: especially Plato, Platonism and Neoplatonism;
- Middle Ages: neoplatonic currents of thought, scholasticism, angelology;

- Renaissance: Transterrestrialism® from Nicolaus of Cusa, Copernicus over Bruno to Kepler;
- Early modern times: science fiction of the 17th century;
- Enlightenment: especially Kant's Natural History and Theory of Heaven, Kant's Philosophy of the Sublime, Condorcet's philosophy of progress;
- Idealism and Romanticism: especially F.W.J. Schelling's philosophy, romantic natural philosophy and art;
- Russian cosmism, extraterrestrial suprematism and futurism: especially Tsiolkovski and Malevic;
- Philosophical Anthropology of the 1920th: especially Helmuth Plessner and Max Scheler;
- Space Philosophy of the early space pioneers in the Weimar Republic;
- Astronoetics by Hans Blumenberg;
- Günther Anders, The view from the moon (1970) and the sensualization of the Copernican turn [9].

### 3.2 Some Philosophers of Space Philosophy and Cosmic Anthropology

- Plato (428/427 – 348/347 BC)
- Johannes Scottus Eriugena (800 - 877)
- Nikolaus von Kues (1401-1464)
- Pico della Mirandola (1463-1494)
- Giordano Bruno (1548-1600)
- Friedrich W. J. Schelling (1775-1854)
- Konstantin E. Tsiolkovsky (1857-1935)
- Max Scheler (1874-1928)
- Helmuth Plessner (1892-1985)
- Günther Anders (1902-1992)
- Hans Blumenberg (1920-1996)

This paper will focus on Antiquity and the Middle Ages (Plato, Aristotle), the Renaissance (Giordano Bruno) and German Idealism/Romanticism (Schelling). In a further point a summarizing overview of the history also of the classical art of space travel will be given.

### 3.3 Platonism - Aristotelianism

There is a painting by Raphael entitled "The School of Athens" from 1511, which shows many of the most important philosophers, mathematicians and natural scientists of antiquity and is thus a symbol also of how intensively the Italian Renaissance dealt with Greek antiquity and referred back to it, but without imitating it. The world and human view of the Renaissance cannot be discussed in detail here, and I refer in this context to the classical writing of Ernst Cassirer "Individuum und Kosmos". [30]. Here I would like to focus only on a

detail of the Raphael painting, on Plato and Aristotle (see Fig. 3, [31]). It shows very nicely the difference of Plato's and Aristotle's philosophy. Plato points upwards to the heaven of ideas, Aristotle to the sensible earth.



Fig. 3. Detail from Raphael's "School of Athens", 1511

I could find the references to space travel in Plato not primarily in his doctrine of ideas or in his doctrine of state, that is in his *Politeia* or *De Republica*, as one might assume, also not in his cosmogony and natural philosophy, the *Timaeus*, but primarily in his doctrine of the soul.

### 3.4 Plato's sky chariot

For Plato the soul is "the self-moving" and therefore eternal, because without the self-moving the creation ceased to exist. It is as world-soul the primordial ground of the world. Derived movements go out from it, in such a way that the mover and the moved are then separated from each other.

Plato thinks the self-moving not only as world-immanent principle, today one would say as cosmic self-organization, but he thinks it beyond as principle of the original creation of the world. This means according to Plato that if it would be terminated, then also no new world could arise or: "all creation would collapse and stand still, and never again have motion or birth." [32]

This Platonic concept of self-motion was the starting point for a philosophy of nature that persists to this day and found a further climax in the natural philosophy of Friedrich Wilhelm Josef Schelling around 1800, who referred directly to Plato when he linked the principle of self-organization, which is at the core of his own philosophy, to the Platonic "world soul." [33] As a

principle of self-organization, it also found its way into the physics of the 20th century.

For our context of space philosophy, it is now very interesting that Plato associates this primordial ground of the self-moving with weightlessness and flying. What does this mean? My thesis is that it is about the fact that the self-moving is independent of all concrete being, it does not merge into any object. As a generating principle it is indeed primordial ground of everything, but at the same time nothing of everything. It traverses the whole heaven in various manifestations. Therefore, it can fly not only to the edge of the universe, but beyond it, "outside of heaven", or to "the heaven which is above the heavens" [32]. There is nothing objective, i.e. representational any more (thus the beyond of a thing ontology), but "the colourless, formless, intangible essence, visible only to mind, the pilot of the soul". [32, pp. 36.]

For Plato, the wing is the corporeal element that is most akin to the divine. The sky chariot as an allegory of the soul is led by a pair of winged horses and a charioteer. In humans, the pair of winged horses are unequal, one soars upward, the other has the tendency to settle down. This trouble can cause the power of the wings to slacken. The soul may eventually lose its wings and finally settle on solid ground - where it finds a home and receives an earthly frame. Thus, it is only with the loss of the soul's wings that man tends to become sedentary and grounded. This is a serious account of Plato that is still relevant today in assessing earth-bound philosophies such as those of Husserl and Heidegger. [8] [9]

According to Plato, it is art that can strengthen the wings of the human soul. This is also a very important point for space culture.

The whole highly differentiated, Platonic complex of soul, Eros, mania, beauty, poetry and celestial flight cannot be further discussed here.

My general philosophical thesis is that it is not only man's cognitive abilities that have made and will continue to make space travel possible, but above all his libidinous (psychic) energies. They are the driving force that takes us beyond the biosphere. That is why it is so important to address them for a future in space. It must be desired to go into space, it must be inspiring and fascinating. A mere duty ethic is not enough. It is too little to insist only on a material necessity for space travel.

### 3.5 Cosmology and angelology of the Middle Ages

In the scholasticism of the Middle Ages the cosmology of Aristotle and Ptolemy was taken over. Aristotle claimed against Plato that there can be no such thing as a self-moving. In "De caelo" (On Heaven), he constructed the world according to a principle of causality in which there is no "causa sui". He also

distinguishes between the earthly and the heavenly spheres and thus fundamentally blocks man's access to extraterrestrial space right at the beginning. He separated the earthly, "sublunary sphere" from the heavenly, "supralunary sphere". The sublunary sphere is characterized as imperfect, unreliable and transient. It is the dynamic sphere, where there is birth and death, and which is subject to permanent change. It is the earthly vale of tears. The supralunary sphere, on the other hand, is characterized as perfect, eternal, unchanging, ethereal, and sacred. It contains a "quinta essentia" and is the abode of the angels.

Access to this sacred, eternal sphere is completely impossible for humans or other earthly beings. It is barred by the separation of the two spheres (see Fig. 4, [34]).



Fig. 4. Medieval world view of scholasticism, 1377

In the supralunar, sacred sphere only angels can stay and fly. Angels were considered intermediate beings and mediators between the divine and the human (see Fig. 5).



Fig. 5. An angel of the Middle Ages

The extensive and differentiated angelology of the Middle Ages is extremely interesting also with regard to the fact that the boundaries of space and time are explored here. For example, the question is discussed how it can be thought that angels are unlocalized and are everywhere at the same time, but it is possible for them to localize themselves when they turn to a human being. So, it is not only modern physics that deals with the problem of non-localization of entities. On this complex of angelology, a paper of mine will be published soon in the context of the historical foundation of a space philosophy.

### *3.6 Renaissance: Breaking out of the Closed System of the Middle Ages*

The Renaissance as a transitional period from the Middle Ages to modern times was also a time of transterrestrialism® par excellence. With the philosophers Nicolaus of Cusa and Giordano Bruno, the natural scientists Nicolaus Copernicus, Galileo Galilei and Johannes Kepler as well as the first science fiction authors Johannes Kepler, Francis Godwin and John Wilkins the earthly was exceeded, transformed and transcended. Geocentrism was replaced by heliocentrism and extended to cosmocentrism, the centering finally abolished in favor of a centerless and boundless universe, in which countless, self-organizing worlds were assumed, not all of which are visible due to our limited earthly field of vision. This latter concept was conceived by Bruno. In my opinion, he is the actual inventor of the modern "cosmological principle", i.e. the basic principle that no point exists in the universe which is physically distinguished in any special way.

The decentering and pluralization of the universe was accompanied by the imagination of extraterrestrial beings that are "not comparable" to life forms on Earth, according to Nicholas of Cusa, but have different, incompatible characteristics. Rather than populating the universe in imagination with Earth-like forms of life, one thought of diversity, heterogeneity, and multiplicity, worlds that transcended not only what we know but also our imagination. The transterrestrial perspective also led to the overcoming of anthropocentrism in the narrow, physiological sense. The view for new things was developed and more was admitted than what we know.

This pluralization and heterogenization was perceived as enrichment and not as frightening. It always remained related to a primordial intrinsic unity, which was now no longer thought of as a logical unity (as in Aristotelian scholasticism), but as a productive ground. Finally, in Renaissance philosophy, the finite, earthly-object modes of cognition were transformed into infinite ones. Transcendence was drawn into immanence. Henceforth, the earth was no longer, as it had been in the Middle Ages, the center of the world,

towards which all movements and all foundations of meaning were oriented.

The cosmological transterrestrialism® is accompanied by an epistemological transterrestrialism®, i.e., by the transgression of given, earthly systems of knowledge. According to Cusanus' epistemology, individual systems of knowledge are defined similarly to the individual, biological "species regions" and stellar "partial worlds" each by "proportionally" related elements. A knowledge within a system comes about through comparison and finding proportions to what is already known. A transgression of the respective knowledge systems is logically deductive, or discursively not possible. Only by means of hypotheses or conjectures ("coniecturae") new worlds of knowledge can be opened up. With this epistemology Cusanus says goodbye to the logically influenced scholasticism of the Middle Ages.

Around 1600, extraterrestrial space was made virtually accessible to humankind - albeit initially only in cognitive and imaginative terms. The mere visual reference to the heavens from a fixed terrestrial vantage point gave way to a motif of flight and travel into the sky. The view from the safe ground to the stars is no longer the only access to the celestial bodies, but is supplemented by an exploration by means of virtual space travel. This happened not only in an outstanding way in Giordano Bruno's philosophy, especially in his eight-volume work "De Immenso" of 1591, which is written partly in poetry and partly in prose, but also in Johannes Kepler's narrative "Somnium" (Latin for "dream"), which he began to write a little later, in 1593, at the University of Tübingen. In this work, Kepler conceived not only a dreamed lunar voyage, which constitutes the narrative, but above all the much more extensive first lunar astronomy, i.e., astronomy from the fictitious standpoint of the moon. I assume that Bruno's "De Immenso" was the source of inspiration for Kepler's "Somnium", especially since Kepler was also influenced by Bruno in other respects, for example with regard to his doctrine of the minimum [20]. "Somnium" was only published posthumously in 1634.

The opening of space to man was only possible because the Renaissance abolished the medieval separation of sublunary and supralunary, i.e. earthly and heavenly spheres, which was based on Aristotelian cosmology. Space was discovered as a unified, universal entity and as an independent ontological reality.

The discovery of space as an incorporeal, non-representational, universal and delimited entity was followed in the Renaissance by the discovery of the vacuum. Against the Aristotelian "horror vacui" and against the fierce resistance of the scholastic orthodoxy, the hypothesis of empty space was finally also experimentally proven by Otto von Guericke. Bruno,

who for the first time comprehensively carried out and reflected on the delimitation of the universe with all its metaphysical, geometrical, physical, anthropological and ethical consequences, leaves open the question whether empty space is additionally filled with a fine ether or not. Regardless of the question of the ether, space becomes for him something radically non-representational and universal. One cannot cut anything out of the universal space and add anything to it locally.

In this universal, uniform space an unrestricted freedom of movement is possible. This was the essential goal for Bruno: the freedom of movement and the opening of an unlimited field of possibilities. This freedom topos is later adopted by Friedrich Wilhelm Joseph Schelling. Referring to the infinite possibilities of realization in space, he wrote: "(...) this vastness and freedom is space". [35]

Already for Bruno, one world was not enough. He poetized:

"The fearless one divides the infinite space with his wings, rises, and no rumor causes me to bump against circular spheres that error has erected as true from a false beginning, so that the fiction encloses us like a real dungeon, as if everything was surrounded by diamond walls. (...)." [36]

Bruno believed that an infinite number of things could be created in an unlimited space, and wondered why the public thought this world here was enough.

### 3.7 Bruno's space flight "with the wings of the spirit"

At the beginning of 2000 I was able to make a beautiful discovery:

In the Renaissance period, Giordano Bruno, especially in his work "De Immenso" of 1591, outlined what was probably the first philosophy of space travel. "With the wings of the spirit", he undertook journeys to the moon and other celestial bodies, conducted thought experiments on planetary perspective, and questioned the reasons for man's ability to overcome limited horizons. According to him, man's desire to leave the Earth is founded in man's dual nature. Although he has a limited body, he has an unlimited mind. Thus, man is a border crosser between the finite and the infinite and can thus transcend boundaries again and again. Giordano Bruno was a minstrel of the universe, in which he assumed an unlimited number of solar systems with living beings.

Bruno's clearly ties in with Plato's doctrine of the soul, incidentally also in his anthropological writing "De gli heroici furori". In "De Immenso" he has poetized:

"It is the spirit that animates me  
and breathes sensation into my chest,  
that makes my shoulders grow wings  
and in noble order inflames my heart

for the pre-drawn goal." [36]

Bruno conducted detailed thought experiments on space travel "with the wings of the spirit".

"Is it possible to get there with the wings of the spirit, where the feet do not carry us?"

Well then, first of all imagine

- if you don't want to reveal that it is real -.

I also say, imagine that you leave the earth,  
and fly directly to the nearby moon." [36, vol. 3, pp. 12)

In these virtual space flights, he experimented with perspective shifts of the field of view and arrived at a planetary perspective that went beyond the bird's eye view, as the following picture demonstrates (see Fig. 6, [36, vol. 3, pp. 18]).

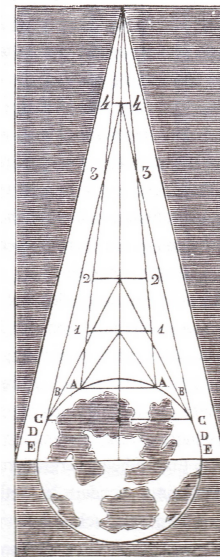


Fig. 6. Graphic from Bruno, De Immenso, 1591

On the basis of this representation, Bruno explores, in parallel with the innovations of his epoch in the field of artistic discovery of perspective and projective geometry, the perceptual shifts that would result from lifting off from the Earth:

"Does not the earth then become  
smaller and smaller with increasing distance,  
so that it soon no longer covers the whole sky?  
Is not now the clearly larger part  
filled by the lights of the sky?  
You don't have to fly much further up,  
until the earth appears like the moon.  
For at a distance of at least six thousand feet  
you no longer see trees or mountains,  
but you see opposite to you only a globe  
or a circle, in which you can distinguish dark spots,

which form colors with the bright rays of the sun.”  
[36, vol. 3, pp. 12-13.]

The space flight to the nearby moon and other celestial bodies "with the wings of the spirit" leads Bruno to insights that go beyond the teachings of Nicolaus Copernicus. Copernicus overcame geocentrism in favor of heliocentrism while maintaining the fixed star sphere as the fixed, enclosing sphere of the universe. In such a universe the sun stands instead of the earth in the center of the universe. This was also still the view of Johannes Kepler. For Bruno, however, the fixed stars are suns, similar to ours, each with its own planets. In the universe, therefore, there is no longer a distinguished center for him. He pluralizes the world and decentralizes it at the same time. Therefore, for him, there is also no excellent top and bottom, right or left in the universe any more. Rather, reference systems can be determined arbitrarily and are no longer ontologically fixed by a centered world order. This finds its expression in a (coordinate-free) space concept, in which there is no fixed measure.

### 3.8 Bruno's anthropology of space flight

Bruno gives in "De Immenso" not only an account of his cosmological philosophy. He also asks for the reasons that lead to question finite and earth-centered concepts. He traces the inner driving forces that always annul limitations. He asks: what leads us to assume an infinite world, even though we can only ever perceive finite objects? What leads us to want to leave the earth at all, even if only in thought? Bruno's reflections on the motives of space travel led us to answers that were far ahead of his time and can still give us ideas for an appropriate philosophy of space travel today. He developed an astonishing anthropology of space travel, which - following Plato, but anthropologically differently founded - made the libidinous, i.e., affective energies of man responsible for the transterrestrial longing.

Thus, for Bruno, it is not utilitarian reasons that inspire and motivate mankind to space travel, nor actually transutilitarian ones (see chap. 1 of my contribution). It is rather intrinsic, inner reasons that have something to do with the essence of man, that lead him again and again beyond all limitations. It is the free flight of the human spirit that ultimately cannot be confined, even if this has been tried politically again and again.

As we have seen, at the beginning of "De Immenso" Bruno sings in verse of the spirit ("mens") that animates him, with which he breaks through the dungeons of the imaginary scholastic celestial spheres and, as a fearless man, shares the infinite space and rises from this world. The sole reference to the spirit would still be quite traditional in the context of Platonic philosophy. In the

following commentary, too, he first differentiates the essence of man quite classically into soul ("animus") and body, but then takes up a thought of Pico della Mirandola that because man is neither the one, i.e., soul, nor the other, i.e., body, completely, he is in a "borderland," in a borderland between eternity and time, between archetype and image, between the intelligible and the sensually perceptible world. Thus, while he participates in the essence of both, he stands between the extremes and is on a "middle line" between the two. This borderline situation leads to the fact that man always strives for the universal, the eternal, but cannot reach it. This results in a longing that cannot be satisfied. Bruno has in his latin work different expressions for this longing: "appetitus", "expetere", "contendere" and "desidere".

Nature itself is already implanted with these driving forces, "so that everything comes into being" [36, pp. 10], but in nature this desire is satisfied by the creation of ever new forms, while man, by standing in the middle of the universal and the individual, the infinite and the finite, feels this infinite desire as an individual being. Thus, the striving of the individual being finds no fulfillment. "It is not satisfied with what has been achieved as long as anything remains to be achieved" [36, pp.10]. The desire to go beyond set limits and not to be satisfied with anything achieved, this ultimately insatiable longing, is a consequence of the dual nature of man as body and soul. As a body, man is always finite and a concrete realization out of the infinite variety of possible realizations. As a soul, however, he strives for the highest good and the universal truth. But the soul cannot reach these with a finite body. Therefore, the soul of man does not come to rest. The motive of travel and journey is the natural consequence.

Bruno's insight that man's yearning for the sky is a consequence of his dual nature of body and mind, or a consequence of his being on the border, finds a continuation some centuries later with Helmuth Plessner's determination of man's eccentric positionality. Bruno and Plessner should, in my opinion, both be considered in order to arrive at an adequate anthropology of space travel. A comparative work is in progress.

From the perspective of the traveler, man himself always remains in the center of a field of view, despite movement. From this Bruno concludes that perception knows no fixed boundaries, for, according to Bruno, "in whatever direction it looks, it sees always and everywhere that it is in the center of the horizon [and not at a boundary of it, M.H.], on the surface of the earth as well as in the all-embracing whole, and it turns to other worlds to be entered and other chosen places." [36, pp. 10]. Consciousness and imagination also know no fixed limits, for they can, for example, go beyond any fixed number and size, beyond any fixed space, and

stop neither at a mathematical nor a physical object. "For," Bruno sums up, "they are children of the infinite." [36, pp. 10]

In conclusion to the anthropological argument Bruno brings a second, natural-philosophical argument into play: If it is the case that an infinite striving and desire is inherent in man, then the universe must also be arranged to sustain this striving. If it were not so, it would be, so to speak, a stingy universe, which would dishonestly curtail the "infinite striving of the individual beings, suppress and disappoint it" [36, pp.11]. It would be a universe inadequate to man. It would be less great than man. This cannot be, according to Bruno. The universe must allow the realization of all possible forms, it must be an inexhaustible universe. Only such a universe is a universe worthy of man.

Bruno thus rejects the pre-Copernican worldview not only for scientific reasons, but primarily for *humanistic* reasons. [10, pp. 67] He represents a special variety of the so-called "anthropic principle".

Bruno's philosophy had a long and intensive history of influence with Spinoza, Leibniz, Lessing, Goethe, Schelling, but also, what is less known, with the early science fiction authors. It was also received, what is even less known, in the time of the early space pioneers and the so-called "rocket fever" in the Germany of the Weimar Republic. It fascinated not only cultural scientists and rocket engineers but also artists, as Fig. 7 shows.



Fig. 7. Woodcut from the 1920<sup>th</sup> showing G. Bruno

### 3.9 Kant's and Schiller's Philosophy of the Sublime

Kant's and Schiller's philosophy of the sublime also leads us to the limit of the sensually tangible and is - according to my thesis - a good starting point to further develop the anthropology of spaceflight and here especially to give a philosophical expression to the astronautical experience. I will outline this concept in

my presentation "Das Sinnlichwerden der kopernikanischen Wende - Überlegungen zu einer Phänomenologie der Raumfahrt" (The Sensualization of the Copernican Turn - Reflections on a Phenomenology of Space Travel) at the annual congress of the German Society for Phenomenological Research at the University of Jena in September 2022.

### 3.10 Schelling's natural philosophy and universal anthropology

Schelling's universal anthropology is the result of a philosophy of natural history that goes beyond Kant. [33] Kant introduced the concept of "self-organization" as a characterization of organic nature. Schelling was the first to extend the concept to inorganic nature, for he applied it to the entire evolution of the universe, from the first beginnings of matter to the origin of life and the human spirit. Kant understood "self-organization" as the reproduction of living beings, both ontogenetically and phylogenetically. Schelling, on the other hand, conceived a philosophy of self-organization that addressed the original emergence of systems far beyond the equilibrium. He therefore had a more modern perspective than Kant. Schelling attempted to go beyond the contemporary mechanistic theory of nature by designing a program for science that would focus on the self-creation of "organizations" - quite in the line of the Platonic philosophy. Of course, he could not fall back upon elaborate scientific theories of self-organization, and at his time even empirical phenomena of self-organization were scarcely known. So, Schelling created a "speculative physics" which was based on philosophical principles and intended to yield a systematic explanation of the history of nature.

In a lecture of 1843/44, he additionally introduced an evolutionary tendency. According to him, the history of nature is a history of increasing self-liberation, which optimizes the "freedom of movement" more and more, especially in organic nature. The human species can then completely detach itself from the earth and live in the universe. Man is distinguished by the fact that, although he originated on earth, he is not an earthling, but a universal being, who should dwell not only on earth, but in the whole universe. According to him, man is not a "local being" but a "universal" one. He should be a cosmic citizen. He wrote:

"We must assume, of course, that the Earth is the origin of man - why, we do not know, it goes back to circumstances that we do not overlook, but man is not specifically a product of the Earth - he is a product of the whole process - not the Earth alone, the whole universe is involved, and if he comes from the Earth, he is, (...) but not exclusively for it, he is for all the stars (...). If he appears as a local being, he is not original, he has been localized: how? This must be shown by the sequence. He is, as said, the universal being, and

therefore should not dwell in a certain point, but in the whole (...): Our abode is in heaven, that is, precisely in the universe (...) free from the shackles of the concrete.” [35, pp. 389-390] For more details and analysis see [14], [13].

Schelling's natural philosophy and universal anthropology were still influencing the early space pioneers in the Weimar Republic in the 1920s. Krafft-Ehrlicke's evolutionary model of self-liberation also seems to have had its source here. [13] [14]

### 3.11 Russian cosmism und extraterrestrial Suprematism

With regard to this topic I can refer here only to my essay on Russian cosmism and extraterrestrial suprematism. [11]

## 4. Space flight in classical art history - Summery

### 4.1 Angels: from Antiquity to European Avant-gardes

### 4.2 Longing for Heaven: especially in Romanticism

### 4.3 Space flight in the European Avantgarde

#### 4.3.1 Extraterrestrial Suprematism and Cosmism [11]

#### 4.3.2 Paintings of the 1920s in Western Europe

#### 4.3.3 Floating angels in modern art

#### 4.3.4 European ZERO-Group

#### 4.3.5 The “Artronaut” Charles Wilp

## 5. Anti-Copernicanism and re-rooting

### 5.1 Husserl's anti-Copernicanism [8]

### 5.2 Heidegger's resentment against space travel [9]

### 5.3 Hannah Arendt's criticism of space travel [8], [9]

## 6. Transterrestrialism®

The exploration of the two-thousand-year history of space philosophy is not only historically motivated. It is about developing a sound and sophisticated philosophy of spaceflight for the present. The systematic term Transterrestrialism® was created by me to bring a new philosophical discipline into being. At this point only some key points can be mentioned.

- Spaceflight “with the wings of the spirit” since Plato;
- Transgression of earthly modes of perception and categories of thought;
- Modes of transgression: Copernican turn (following Hans Blumenberg), the sensualization of the Copernican

turn (phenomenological approach), making sense of the Copernican turn (following Günther Anders);

- Self-organization of nature and natural philosophy of the self-liberation process as legitimation of the space age; [33] [37] [13]
- Philosophy of human history (Hegel's “World Spirit”: History of Man as a Process of Emancipation);
- Anthropology of space travel (free mobility, levitation, soul, mind-body: Plato, Pico della Mirandola, Giordano Bruno, Helmuth Plessner);
- Philosophy of art (Suprematism, et. al.);
- Ontology of the not-yet-being (following Ernst Bloch);
- Metaphysics of Genesis (Alfred North Whitehead);
- Spirituality: Neoplatonism, Russian cosmism;
- Early sacralization of space, de-sacralization of space in modern times, re-sacralization in avant-garde art;
- Quantum physics/relativity theory/mathematical concepts of the 19th century;
- Floating imagination (Kant's KdrV: “schwebende Einbildungskraft”), the philosophy of the sublime (Kant's KdU);
- Current mathematics, physics and cosmology.

## 7. Results

It has been shown that there is a rich history of philosophy of spaceflight since antiquity, which is important in metaphysical, ontological, anthropological, ethical and political terms for the development of a philosophy of spaceflight and philosophy of space art in the present. This historical embedding of space travel provides a good basis for the development of a profound space culture and a broad public education.

## 8. Discussion

The new discipline Transterrestrialism® requires participation of philosophical research groups of different schools of thought. Scientific cooperation will be sought.

## 9. Conclusions

The earth has become too small. Unlimited possibility spaces (Bruno) wait for us in space. A transterrestrial expansion of both the human radius of action and the biosphere as a whole into space is both desired, wanted and necessary. Astronauts are not only representatives of humanity, but also representatives of life in space. Space Philosophy should be discussed more in the media, especially in cultural departments. It should also be included in the curriculum of schools and universities. Private cultural institutions and associations are important to develop, disseminate, and teach new ideas and philosophical perspectives as an avant-garde.

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