

Spirale (Spiral)

BRYAN KLAUSMEYER

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Spirale (Spiral)

The lexeme *Spirale* (spiral) serves as an important symbol and figure of thought in Goethe’s oeuvre that cuts across numerous discourses and disciplines, ranging from aesthetics and art history to mineralogy and geology, from botany and cosmology to anthropology and sexuality. Early on in Goethe’s life it plays a rather marginal role in his thought; yet by the year of his death in 1832, it becomes a pivotal, if contradictory, figure imbued with scientific, literary, and even metaphysical significance. Associated with such archetypal polarities as systole/diastole, male/female, and life/death, the spiral ultimately emerges in Goethe’s conceptual lexicon as a type of motion within opposing force fields whose ever greater intensification also suspends them, thereby inhibiting a higher synthesis or conceptual resolution. In brief, Goethe’s concept of the spiral works to overstep boundaries, transgress binaries, and resist stasis and closure.

From Spiral Vessels to Spiral Tendency

Goethe’s earliest and most sustained engagement with the spiral can be found in his botanical studies, which constituted a lifelong pursuit. Starting with his first Italian journey (1786–88) he undertook an extensive study of plants by observing their patterns of growth and development.¹ On the basis of these studies he began to contemplate the possibility of an ideal archetype of plants, which he referred to as the *Urpflanze* (primordial plant). While his journal entries occasionally imply that the *Urpflanze* can in fact be empirically observed in nature,² he more often characterizes it as a “Modell” (model) or “Gesetz” (law) of plant development.³

Two years after his journey to Italy he published his essay *Versuch eine Metamorphose der Pflanzen zu erklären* (1790; *Essay to Explain the Metamorphosis of Plants*). In his essay, however, no mention is made of the *Urpflanze*, which had once eluded his gaze in the Palermo Botanical Gardens. Instead, Goethe offers a systematic account of plant metamorphosis, which now conceptualizes the inherent interrelation among the different parts of a plant as outward manifestations of “ein und dasselbe Organ” (FA 1.24:110; one and the same organ).⁴ In addition to articulating a comprehensive theory of plant development, the essay distinguishes itself through Goethe’s unique way of seeing simultaneously with the “Augen des Leibes” (eyes of the body) and the “Geistes-Augen” (FA 1.24:432; eyes of the mind), which—with reference to Kant and Spinoza—he calls “anschauende Urteilskraft” (FA 1.24:448; intuitive

judgment).⁵ His theory of metamorphosis thus depends on a particular kind of double vision capable of oscillating between the empirical phenomenon, in all its heterogeneity, and the *Urphänomen* (primordial phenomenon): the attentive observer must carefully and completely follow the transitions of the natural process completely from beginning to end, while simultaneously holding its constitutive parts together and viewing their sequence as a whole (Förster, “Goethe and the ‘Auge des Geistes,’” 93-94).

Especially significant for Goethe’s theory is the distinction it draws between three kinds of metamorphosis: *regelmäßig* (regular), *unregelmäßig* (irregular), and *zufällig*

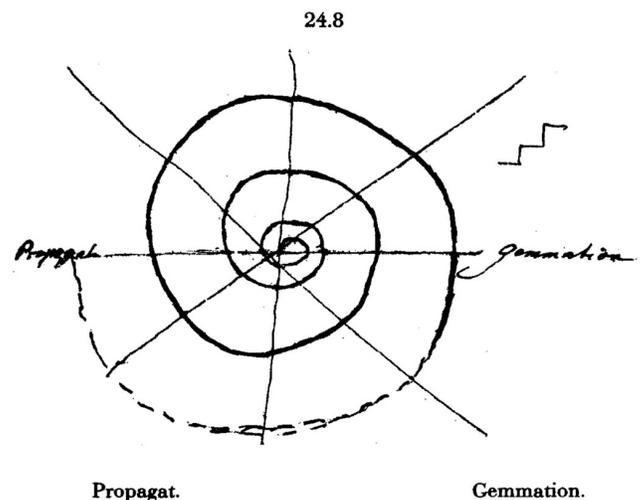


Fig. 1. Johann Wolfgang Goethe: Propagat. Gemmation. [Zeichnung zur Spiraltendenz der Vegetation] (1829), LA II 10B.1, 116 [24.8].

(accidental). According to Goethe, the first (and, in certain cases, second) kind of metamorphosis is the actual subject of his study, since only it corresponds to the ideal order of development, which progresses in a six-step process of *Ausdehnung* (expansion) and *Zusammenziehung* (contraction) from the first seed leaves to the last formation of the fruit and finally ascends “gleichsam auf einer geistigen Leiter, zu jenem Gipfel der Natur, der Fortpflanzung durch zwei Geschlechter” (FA 1.24:110; as if upon a spiritual ladder, to the pinnacle of nature: reproduction through two genders). By contrast, those phenomena deemed “accidental,” which exhibit changes brought about externally (for example, by insect pollination or inclement weather), are excluded from his account of metamorphosis, since these “monströsen [...] Auswüchsen” (FA 1.24:111; monstrous [...] excrescences) make the “ewiges Werk der Fortpflanzung” (FA 1.24:133; eternal work of reproduction) less discernible.

Goethe first speaks of the spiral in his account of plant reproduction when addressing the role of the stamens. Drawing on the observations of microscopists and other botanists, in particular, Johannes Hedwig, the director of the Leipzig Botanical Gardens,⁶ he asserts that the *Spiralgefäße* (spiral vessels)—certain screw-shaped organs that are said to lie amid the sap bundles—are responsible for bringing forth the plant’s reproductive organs. Yet, despite their apparent prominence in plant development, Goethe’s essay only briefly addresses their role (§§60–61, 69), subordinating them instead to a broader “Argument für die innere Identität der verschiedenen Pflanzenteile” (FA 1.24:128; argument for the inner identity of all the various organs of the plant).

Nearly forty years later, however, new botanical theories compelled Goethe to return to the discipline and reconsider his earlier work. In particular, a visit in October 1828 by the botanist Karl Friedrich Philipp von Martius, with whom he had been in regular contact by letter since 1823,⁷ prompted him to reevaluate his previous account of the spiral vessels in plant development. During Martius’s visit to Weimar the two botanists discussed Martius’s new discovery of a so-called *Spiraltendenz* (spiral tendency) in plants and exchanged several sketches depicting the spiral arrangement of plant leaves around a stem. In conversations recorded by Johann Peter Eckermann, Goethe enthusiastically declares the spiral tendency to be a “neues Aperçu” (new *aperçu*), one that is, furthermore, “meiner Metamorphosenlehre durchaus gemäß” (thoroughly compatible with my doctrine of metamorphosis).⁸

24.2

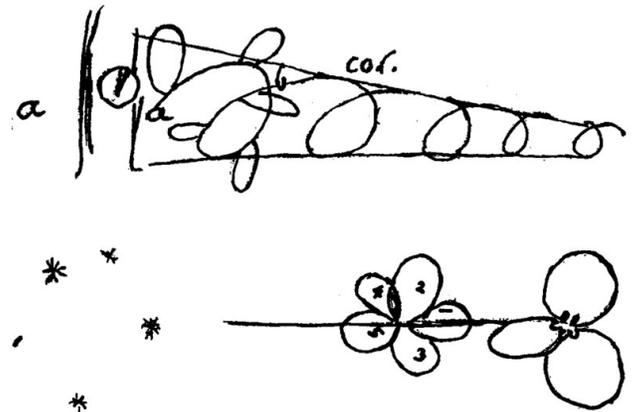


Fig. 2. Johann Wolfgang Goethe (co-author: Karl Friedrich Philipp Martius): Zeichnungen zur Erläuterung der Spiraltendenz der Vegetation (1828), LA II 10B.1, 111 [24.2].

According to Martius’s theory, which he first presented in lectures delivered in 1828 to the Isis Society in Berlin and Munich,⁹ the microscopic spiral vessels are said to belong to a larger tendency that causes the various organs of the plant to develop in a spiral around a vertical axis. That Goethe clearly recognized the influence of his own doctrine of metamorphosis on Martius’s theory is no coincidence: citing Goethe by name in his lecture, Martius ascribes a mathematical order and regularity to Goethe’s notion of metamorphosis, designating the organic movements around the leaves that form the blossom as “Spiralumläufe” (spiral rotations) and ordering them according to their number and size (FA 1.24:776f.).¹⁰

Soon thereafter, Goethe attempted to integrate Martius’s theory of the spiral tendency into his own botanical doctrine. Thus, in some notes on the spiral tendency, he argues that the spiral vessels are the smallest elements that permeate the entire plant and animate its movement (FA 1.24:789), likening them to Anaxagoras’s atomistic conception of *homoiomeries* (FA 1.24:786).¹¹ Based on new findings by botanists such as Martius, David Don, and Henri Dutrochet, and with reference to case studies of the plant species *Vallisneria spiralis* (FA 1.24:802ff.), the genus *Calla* (FA 1.24:789), as well as the group of angiosperms known as cotyledons (FA 1.24:796), Goethe insists that a universal spiral tendency in plants must exist which, together with a corresponding “vertical tendency,” is responsible for the growth and formation of all its organs. Three years later, this research culminated in the publication of Goethe’s last

botanical treatise, “Über die Spiral-Tendenz der Vegetation” (1828/31; On the Spiral Tendency in Vegetation). In that essay he declares, “Wir mußten annehmen: es walte in der Vegetation eine allgemeine Spiraltendenz, wodurch, in Verbindung mit dem vertikalen Streben, aller Bau, jede Bildung der Pflanzen, nach dem Gesetze der Metamorphose vollbracht wird” (FA 1.24:777; We must assume that a universal spiral tendency presides in vegetation through which, in connection with vertical striving, every structure, every formation of plants, is achieved according to the law of metamorphosis).

Gender Difference, Reproduction, and Death

As both Martius’s lectures and Goethe’s essay on the spiral tendency make clear, the new proposition of a universal spiral tendency in plants was intended to buttress and

conform to the doctrine of metamorphosis first laid out by Goethe in 1790. This correspondence can be seen most readily in Goethe’s attempt to retain the idea of gender complementarity that played such a pivotal role in his earlier account of plant growth and reproduction. Now, however, he situates the spiral tendency under the aspect of the feminine and the vertical tendency, in turn, under that of the masculine, contending that the plant as a whole is “androgyn” (FA 1.24:805; androgynous). Specifically, whereas the vertical tendency is “das männlich stützende Prinzip” (FA 1.24:778; the masculine supporting principle) and—as “das Gewährende” (FA 1.24:804; that which provides)—bestows, the spiral tendency—as “das Fortbildende, das Vermehrende [...] das Nährende” (FA 1.24:787; that which develops, reproduces [...] nourishes)—is regarded as the feminine principle and the ground of the plant’s vitality. Accordingly, Goethe refers to it as “das eigentlich produzierende Lebensprinzip” (FA 1.24:778; the actually

Gender Conflict in Goethe’s “Amyntas.” This far more ambivalent depiction of the feminine in Goethe’s writings on the spiral tendency may be said to mark a return to a conflictual model of gender relations. One significant precursor in this regard is Goethe’s elegy “Amyntas,” composed during his third journey to Switzerland in 1797. In stark contrast to the ideal of gender complementarity, “Amyntas” presents the striking image of a tree that has been parasitically entwined by ivy.ⁱ The address of the ill Amyntas, who refuses to follow the advice of the poem’s addressee—the surgeon Nikias—forms the poem’s frame, and Amyntas’s rejection of Nikias’s offer to remove the strangling ivy with a knife is justified on the basis of a nature parable about a dying tree whose lament narratively unfolds in the poem’s center. At stake in the poem is the tree’s unquestioned love of the ivy, which is also the very cause of its illness:

Runzle die Stirne nicht tiefer, mein Freund! Und höre, gefällig,
Was mich gestern ein Baum, dort an dem Bache gelehrt.
Wenig Äpfel trägt er mir nur, der sonst so beladne,
Sieh der Efeu ist schuld, der ihn gewaltig umgibt.
Und ich faßte das Messer, das krummgebogene, scharfe,
Trennte schneidend und riß Ranke nach Ranken herab;
Aber ich schauderte gleich, als, tief erseufzend und kläglich,
Aus den Wipfeln, zu mir, lispelnde Klage sich goß.
O! verletze mich nicht! Den treuen Gartengenossen,
[...]
Soll ich nicht lieben die Pflanze, die, meiner einzig bedürftig,
Still, mit begieriger Kraft, mir um die Seite sich schlingt?
Tausend Ranken wurzelten an, mit tausend und tausend
Fasern, senket sie, fest, mir in das Leben sich ein. (FA 1.1:632)

Furrow your brow no deeper, my friend! And listen, complaisantly, / What I was taught by a tree, yesterday, down by the brook. / Few apples it bears for me now, that was once so fecund, / See, the ivy is to blame, so mightily entwined around it. / And I seized the knife, curved and sharp, / Cut deeply and tore down tendril after tendril; / But

I shuttered just as, deeply sighing and rueful, / A lisp ing lament flowed, to me, from atop the tree. / "Oh! Harm me not, your faithful garden companion, / [...] Shall I not love the plant that, in need of me alone, / Silently, with passionate force, entwines around my side? / A thousand tendrils took root, with thousands and thousands / Of fibers, they sink into me, firmly, into my very life.

Through its anthropomorphic depiction of plants, the poem captures allegorically the destructive side of love, emphasizing the parasitic and even sadomasochistic dimensions of the relationship between the sexes, which contrasts with the traditional image of love as mutually beneficial and harmonious. Moreover, the fact that both "tree" (*der Baum*) and "ivy" (*der Efeu*) have masculine pronouns further complicates the idea of love as one of balance or symmetry, specifically with respect to the two-sex model of male/female. Finally, based on the language of parasitism and destructiveness, as well as the poem's numerous figurations of spirality connoted by the use of the prefix "um-" (such as *umrankend*, *umschlingend*, *umgeben*), Goethe scholars have frequently pointed to strong resonances between the depiction of the poetic pair of the tree and ivy in "Amyntas" and that of the vertical and spiral tendencies.ⁱⁱ

i. Biographical readings of the poem often point to a thinly veiled depiction of Goethe's relationship with Christiane Vulpius, who was also the recipient of his earlier didactic poem *Die Metamorphose der Pflanzen* ("The Metamorphosis of Plants," 1790). See Robert Stockhammer, "Amyntas," in *Goethe-Handbuch*, ed. Regine Otto and Bernd Witte (Stuttgart/Weimar: J. B. Metzler, 2004), 250-53.

ii. See Alexander Košenina, "Lust und Leid durch tausend Ranken der Liebe. Goethes Amyntas und ein literarisch-emblematisches Zitat," *Jahrbuch der deutschen Schiller-Gesellschaft* 33 (1989): 240-60; Stockhammer, "Amyntas"; and Tantillo, *The Will to Create*.

producing life-principle) and associates its life-giving power with the act of reproduction. The spiral tendency, as he concludes, can thereby effect "das Wunder [...], daß eine einzelne Pflanze zuletzt befähigt wird, eine unendliche Vermehrung aus sich selbst herauszuschöpfen" (FA 1.24:779; the marvel [...] that enables a single plant to derive an infinite reproductivity from itself).¹²

At the same time, however, Goethe's characterization of the "feminine" attributes of the spiral tendency, as well as his insistence on the complementarity of the two tendencies, is far more ambiguous than it might at first appear. In his notes, for instance, he describes the spiral tendency contrastingly as "im Übermaß fortwirkend" (FA 1.24:787; operating in excess) and as "das Bedürftige" (FA 1.24:804; that which takes), which directly contradicts his description of it as nourishing and life-producing. Furthermore, despite his repeated insistence that the two tendencies must be viewed as complementary, his observations and descriptions point to a decidedly antagonistic relationship, as when he writes that one presides ("waltet") over the other or is itself in turn overpowered ("überwältigt") (FA 1.24:778) by the other.¹³ Thus, when he turns to cases in which the spiral tendency is said to be empirically observable, no sign of eternal congruity ("ewige Kongruenz") (FA 1.24:802) can be detected. Instead, recalling his earlier description of accidental

metamorphosis from 1790, he encounters only monstrosities ("Monstrositäten") in which the vertical tendency appears weakened ("geschwächt") and destroyed ("vernichtet") (FA 1.24:788).

In order to overcome the discrepancy between scientific observation, in which the two systems are "im offenkundigen Gegensatz" (FA 1.24:805; in apparent opposition), and the "inneres Anschauen" (FA 1.24:798; inner intuition), in which they are said to be unified "in einem höhern Sinne" (FA 1.24:805; in a higher sense), Goethe resorts to a discursive strategy that steps beyond the frame of natural science. Specifically, in his essay on the spiral tendency, he turns to the genus *Convolvulus*, or bindweed, as yet another instance where the spiral tendency is at work. Yet there he encounters no sign of harmony between the two tendencies, but "das Übergewicht der Spiraltendenz" (FA 1.24:798; the predominance of the spiral tendency). In order to illustrate their cooperation, he then cites a "sinnliches Beispiel und Gleichnis" (FA 1.24:798; sensuous example and parable) involving a garden stake and bindweed. Later in the essay, he returns to this parable, but now he insists that we must proceed

[...] einen Schritt weiter und vergegenwärtigen uns die Rebe, die sich um den Ulmbaum schlingt, so sehen wir das Weibliche und das Männliche,

das Bedürftige, das Gewährende, neben einander in vertikaler und spiraler Richtung, von der Natur unsern Betrachtungen empfohlen. (FA 1.24:804)

[...] one step further and envision the vine wrapped around the elm tree; thus, we see here the feminine and the masculine, the indigent and the nourishing, next to one another in vertical and spiral directions, suggested to our considerations by nature.

However, as Hans A. Froebe has observed, this pairing of the vine and the elm tree has no empirical counterpart in Goethe's essay. That is, it appears to have been suggested not by nature itself, as Goethe claims, but rather by one of the emblems featured in Andrea Alciati's widely-circulated collection of emblems, which similarly depicts a vine (*uitus*) wrapped around an elm tree (*ulmus*) along with the motto (*inscriptio*) "friendship lasts even after death" (*Amicitia etiam post mortem durans*) in order to signify the endurance of companionship (Fig. 3).¹⁴ Additional references to other emblems featuring spiral iconography that were widespread in the "Gutenberg Galaxy"¹⁵ include a fish entwined around a spear (Fig. 5) with the enigmatic motto "make haste slowly" (*festina lente*), which symbolizes dynamic equilibrium and the reconciliation of opposites; the Rod of Asclepius, a well-known symbol of health and well-being since antiquity; as well as the caduceus or staff of

Mercury, which in the alchemical tradition and Masonic symbology stood for worldly wisdom, enlightenment, immortality, and healing (Fig. 6).¹⁶ In brief, Goethe's attempt to render intuitive the harmony of the spiral and vertical tendencies draws less on scientific sources, which typically point to a decidedly antagonist relationship, than on an older emblematic tradition, in which the pairing of the staff and spiral widely represented the harmonization of opposing forces.

Yet, such leaps into the parable and emblem reveal a tension underlying Goethe's morphological method. For while he insists that the proposition of a universal spiral tendency ought to be seen as conforming to and extending his theory of metamorphosis, his letters, notes, and journal entries attest to his ongoing struggle to adapt Martius's discovery to his earlier botanical theory.¹⁷ Thus, in a letter from March 15, 1832, only a week before his death, he still speaks of the "große Schwierigkeit jenes Zusammenwirkens der in Eins verbundenen und verschlungenen Vertikalität und Spiralität dem Anschauen lebendig zu erhalten" (WA 4.49:446; great challenge of keeping vividly within the intuition verticality and spirality, bound and absorbed into one), and in another letter from January 5 of the same year he refers to it as a "gordischen Knoten" (LA II.10B:745; Gordian Knot). This problem emerges because, as an intellectual intuition, Goethe regards spiral tendency as a principle of fecundity and reproduction. However, as an empirical observation, it manifests itself as a pa-

Amicitia etiam post mortem durans. XII.



Arentem senio nudam quoq; frondibus ulmum,
Complexa est viridi uitus opaca coma.
Agnoscatq; uitas naturae, & grata parentis
Officij reddit mutua iura suo.
Exemploq; monet, tales nos querere amicos,
Quos neque disjungat foedere summa dies.

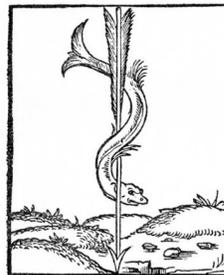
Amor coniugalis.



Vxor laetitiae consors simul atque doloris,
Tesine me feriant tela cruenta uelim.
Tesine me rapiant optem crudelia fata,
Et mea mors soluat membra repente necans.
Vt, quae iunxit amor communi foedere lecti,
Vna etiam iungat corpora bina leuis,
Ossaque tumba olim uenerandi testis amoris
Iuncta eadem simili conditione tegat.

110 AND. ALC. EMBLEM. LIB.

Metarandum. LII.



Maturare iubent properare & cunctari omnes,
Ne nimium praecipis, seu mora longa uisus.
Hoc tibi declares conuexum & cheni de ulum,
Hæc arda est, uoluntati spualia missa manu.

II. Figur.



Fig. 3. Alciati, 40 [Emblem XII]. Fig. 4. Holtzwardt, Emblem XXXV.
Fig. 5. Alciati, 120 [Emblem LII]. Fig. 6. Stoltzenberg, II. Figur. (left to right)

thology in nature that only becomes apparent at the end of the plant's life cycle (FA 1.24:778). Thus, in the essay on the spiral tendency, Goethe describes the spiral tendency as “abschließend, den Abschluß befördernd” (FA 1.24:799; concluding, hastening the conclusion), and in the paralipomena that accompany the essay he links it to senescence, decay, and death: “Beispiele der pathologischen Manifestationen der Spiral-Tendenz. Alter, Absterben, Vollendung seines organischen Laufes” (WA 2.13:94; Examples of pathological manifestations of the spiral-tendency. Age, mortification, completion of its organic course).

In short, Goethe repeatedly emphasizes that “eternal congruity” ought to prevail in the relation of spirality to verticality, contending that “[k]eins der beiden Systeme kann allein gedacht werden, sie sind immer und ewig beisammen aber im völligen Gleichgewicht bringen sie das Vollkommenste der Vegetation hervor” (FA 1.24:787; neither of the two systems can be thought alone; they are always and eternally together, but in complete harmony they bring forth the most perfect of vegetation). Yet, by situating the feminine simultaneously under two contradictory aspects, that is to say, by conceptualizing it as at once life-giving and life-taking, Goethe's later revision to his doctrine of metamorphosis ultimately calls into question not only the “harmony” of this inseparable pair (“unzertrennlichen Paares”) (FA 1.24:778), but also—as Jocelyn Holland has argued—the viability of his morphological method insofar as it depends on the ability to separate the accidental from the essential (FA 1.25:125f.) as well as unite the empirical and primordial phenomenon.¹⁸ By ascribing to the spiral tendency those characteristics he had once associated with “accidental” metamorphosis, Goethe's final botanical treatise suggests that the lawful pattern of plant development might not occur. In this respect, the increasingly apparent contradiction between the rhetoric of eternity that Goethe associates with the “inner intuition” of the complementary pair and the reality of the observed phenomenon appears to betray his growing appreciation for finitude in nature.

Linear Perspective, Aesthetics, and *Figura Serpentinata*

Although Martius was responsible for introducing to Goethe the hypothesis of a universal spiral tendency in plants, Goethe's interest in the spiral as a figure of

thought has significant precursors that predate the later revisions to his theory of metamorphosis. In the introduction to the historical section of *Zur Farbenlehre* (1810; Theory of Colors), for example, he ascribes a “Spiralbewegung” (MA 10:475; spiral movement) to the trajectory of mankind, while in his studies on mineralogy and geognosy, spiral motion serves as a mechanical explanation for the formation of minerals. And in *Versuch einer Witterungslehre* (1825; Essay on Meteorology), he describes the motion of the earth itself “als lebendige Spirale, als belebte Schraube ohne Ende” (FA 1.25:295f.; as a living spiral, as an animated screw without end). Finally and more generally, throughout his scientific studies Goethe regards the spiral as the type of motion that is driven by the twin concepts of *Polarität* (polarity) and *Steigerung* (intensification).¹⁹

The prehistory of the spiral in Goethe's oeuvre, then, draws attention to its symbolically and epistemologically overdetermined significance as a figure of thought beyond the realm of botany, which may account for his enthusiasm for Martius's discovery. For this reason, it is also worth considering the role of the spiral in some earlier morphological writings as a crucial precursor to his botanical theories. One such text is “Fossiler Stier” (1822; Fossilized Bull), which uses language strikingly similar to that found in the essay on the spiral tendency to describe the growth patterns of a prehistoric bull's horns:²⁰

[D]as Lebendige wenn es ausläuft, so daß es wo nicht abgestorben doch abgeschlossen erscheint, pflegt sich zu krümmen [...]. Krümmt nun und wendet sich schlängelnd zugleich, so entsteht daraus das Anmutige, das Schöne. (FA 1.24:558)

[W]hen a living thing has run its course, such that it does not appear so much mortified as concluded, it tends to curve [...]. If it now curves and also turns in a serpentine manner, then the graceful, the beautiful, emerges.

Just as in the essay on the spiral tendency, the essay on the fossilized bull draws a parallel between the possibility of an *Abschluss* (conclusion) in nature and the emergence of spiral figures. Where these essays differ, however, is in the aesthetic valorization of the coincidence between spirality and death, which produces “das Anmutige, das Schöne.” The implicit references here are to Friedrich Schiller's *Kalliasbriefe* (1793; Kallias Letters) and “Ue-

ber Anmuth und Würde” (1793; On Grace and Dignity), where Schiller defines grace, in relation to beauty, as movable rather than fixed.²¹ By contrast, Goethe asserts in “Fossiler Stier” that the spiral formations of the prehistoric bulls horn are simultaneously fixed and mobile (FA 1.24:558), and while Schiller limits grace to humans, Goethe expands its range to encompass other living forms in nature as well.

In addition to Schiller, “Fossilized Bull” also explicitly refers to William Hogarth (1697–1764) and his concept of the “Schönheitslinie” (line of beauty), hypothesizing that Hogarth might have arrived at his abstract notion of beauty after encountering the serpentine bull’s horn in artworks and relics of classical antiquity (FA 1.24:558). This reference draws attention to an art-historical tradition that plays an important role in Goethe’s conception of the spiral. Specifically, what Hogarth calls the “line of beauty” had, at least since the late Renaissance, been linked to the mannerist concept of the *figura serpentinata*, a term coined by the art theorist—and pupil of Michelangelo—Giovanni Paolo Lomazzo (1538–1592), who in his treatise on the arts in 1584 described the *figura serpentinata* as a figure of motion and vitality, comparing it to the “form of a flame of fire” (*forma de la fiamma del foco*) and a “living snake” (*serpe viua*).²² Lomazzo’s innovation went on to influence later Baroque and Enlightenment aesthetics, including the aesthetic theory of Hogarth, whose influential *The Analysis of Beauty* (1753) proposed that the surfaces of all objects should be viewed as combinatorial permutations of straight and circular lines rather than as solid bodies. Criticizing Albrecht Dürer’s static renderings of three-dimensional objects and his adherence to the “impracticable rules of proportion,”²³ Hogarth extended Lomazzo’s conception of the serpentine line as the “line of beauty” in order to translate movement into

ornamental figures on the surfaces of objects: “Whether at rest, or in motion, [such figures] give movement to this imaginary ray” (Hogarth, *The Analysis of Beauty*, 26). For Hogarth, as for Lomazzo, the waving line, by virtue of its undulating, S-shaped curve, is capable of expressing the highest degree of vitality and motion and may, therefore, be viewed as the ultimate expression of grace and beauty in both art and nature.

While Goethe had once derided Hogarth and his epigones as “Undulisten” (undulists) and “Schlängler” (FA 1.18:690; line fanatics), his treatise on the fossilized bull suggests a newfound appreciation for Hogarth’s aesthetics and, consequently, hints at an important shift in his own thinking about the relationship between beauty in art and nature, which he had examined decades earlier in “Inwiefern die Idee: Schönheit sei Vollkommenheit mit Freiheit, auf organische Naturen angewendet werden könnte” (1794; The extent to which the idea ‘beauty is perfection with freedom’ may be applied to organic nature) (FA 1.24:219–22). In this essay—composed as a letter to Schiller in response to “On Grace and Dignity”—Goethe writes with reference to the linear-perspectival tradition from Brunelleschi and Alberti up to Dürer and Hogarth:

Ein organisches Wesen ist so vielseitig an seinem Äußern, in seinem Innern so mannigfaltig und unerschöpflich, daß man nicht genug Standpunkte wählen kann es zu beschauen, nicht genug Organe an sich selbst ausbilden kann, um es zu zergliedern, ohne es zu töten. (FA 1.24:219)

An organic entity is so multifaceted in its exterior, so diverse and inexhaustible in its interior, that one cannot choose enough standpoints from which to behold it; cannot train ones organs enough to analyze it without killing it.

However, in contrast to linear perspective and its focus on proportion and symmetry, Goethe contends that beauty cannot be established on the basis of the “Proportion von Zahl oder Maß” (FA 1.24:220; proportion of number or measure) alone, but must find expression instead in “geistigern Formeln” (more intellectual formulas) so as to coincide “mit dem Verfahren der größten Künstler” (with the method of the greatest artists), whose works of art—like those of organic nature—are said to be uniquely “lebendig” (FA 1.24:221; vivid, vital). In this respect,



Fig. 7. The line of beauty. Frontispiece to William Hogarth, *The Analysis of Beauty* (1753)

Goethe's method of intuitive judgment and the related concept of the *Urphänomen* can be regarded as extensions of the geometric principles underlying linear-perspectival image construction. According to these principles, the changes and movements of all objects derive from the modification of five basic geometric elements, or *corpora regularia*. Working with perspectival geometry is thus akin to bringing new bodies into existence. This 'geometric myth,' which extends as far back as Plato's *Timaeus*, appears in Goethe's essay on metamorphosis from 1790, which applies the geometric concepts of expansion and contraction in order to demonstrate that all plant organs are in fact anamorphic permutations of one and the same body. Accordingly, and in a morphological variant of perspectival transformation, Goethe equates the emergence of new life, or the act of reproduction, with the self-materialization of linear perspective, which he calls *intellectual anastomosis*.²⁴

When Goethe contends some thirty years later that the microscopic spiral vessels permeate the whole of the plant and animate its movement, we have a further extension of linear-perspectival techniques, which now encompass the "kleinsten Teile" (FA 1.24:789; smallest parts) of the plant and, as morphological incarnations of the "line of beauty," exhibit the true beauty of movement.²⁵ In this respect, his conception of the spiral tendency represents a decisive step beyond Martius's mathematical model, since in contrast to Martius, who presents the phenomenon solely "nach Zahl und Maß" (FA 1.24: 776; according to number and measure), Goethe goes to great lengths to bring his predecessor's discovery "zum geistigen Ausdruck" (FA 1.24:220; to intellectual expression). To be sure, he does not use the term "beauty" anywhere in his writings on the spiral tendency, yet significant resonances between his early essay on beauty in art and nature and his late essay on the spiral tendency can still be detected. Thus, according to the earlier aesthetic discussion, all living things are perfect (*vollkommen*) by exercising their normal functions; only those organisms possessing harmony and balance (*Gleichgewicht*), however, may be deemed beautiful. By contrast, imbalance (*Übergewicht*) in living nature, although still perfect, is regarded as ugly (FA 1.24:219). Balance and imbalance will continue to play a prominent role in Goethe's writings on the spiral tendency, which consider the tension between its empirical observation (imbalance) and inner intuition (balance). Nonetheless, Goethe emphasizes throughout his essay

the proximity of the moment of *Abschluss* in nature and the perfection of the organism, as when he asserts, "wir sind zugleich von einer spiralen Tendenz gewiß, wodurch die Pflanze ihren Lebensgang vollführt und zum Abschluß und Vollkommenheit gelangt" (FA 1.24:786; we are at the same time certain of a spiral tendency through which the plant completes its life course and attains closure and perfection).

This 'aesthetic turn' in Goethe's late morphological writings, where a close association emerges between the moment of *Abschluss*, on the one hand, and perfection and beauty, on the other, leads to two important conclusions. First, this 'turn' draws attention to the lingering influence of the linear-perspectival tradition on Goethe's morphological thinking, especially his theory of metamorphosis, which reconfigures the geometric myth of perspectival manipulation as a (divine) act of creation into an intellectual intuition. From this perspective, the presence of the spiral in Goethe's reflections marks a shift in the prioritization of ornamental figures over Platonic solids within the linear-perspectival tradition, as in Lomazzo's *figura serpentinata* and Hogarth's 'line of beauty,' that signify graceful motion and movement and stimulate the eye with their striking vitality. Yet we can also discern at least one crucial modification that Goethe makes to this tradition: By defining perfection and beauty in terms of the completion of the organism's lifecycle, and hence with the moment of death and—as in his writings on the spiral tendency—that of rebirth and reproduction, Goethe's late morphological writings bear witness to the crucial aspect of time with respect to his conception of nature.²⁶ Moreover, by paradoxically linking beauty to a phenomenon that he repeatedly characterizes as "monstrous," his conception of the spiral surpasses the normative concept of beauty as timeless and anchored in morality, as was the case for the selection of natural types (or "archetypes") in the eighteenth century.²⁷ Instead, with his heterodox conception of the spiral, Goethe also expands the definition of beauty beyond a narrowly anthropocentric teleology to encompass a process of development that can also yield "monstrous" results.

Second, Goethe's elevation of the spiral to an *Urphänomen* and "aperçu" near the end of his life also importantly reinforces the programmatic declaration in his essay "Über Martius Palmenwerk" (1823; On Martius's Study of Palm Tree), "daß um sich zu vollenden die Wissenschaft wieder zu Bildern zurückkehren müsse" (MA

13.2:309; that in order to complete itself science must again return to images). Far from an uncritical return to images from words, Goethe pleads here for the kind of complex interplay of image and description that he sees in Martius's study of palm trees. Like his own *Urphänomen*, which seeks to overcome the fixity and stasis of the scientific archetype, his predecessor's images are corporeal ("leibhaft") and possessed of a loving plasticity ("liebenden Bildsamkeit") (MA 13.2:310).²⁸ All this suggests that Goethe's morphology is part of a complex media history of the natural sciences that includes scientific sketches and illustrations, Baroque emblems and iconography, and aesthetic theories of lines, shapes, and perspective. Viewed in this light, the spiral manifests itself in Goethe's oeuvre as a kind of natural hieroglyph²⁹—an undulating letter 'S'—that imbues the intuited phenomenon with dynamism and vitality, but also points to the necessity of its finitude and completion, now valorized as an expression of perfection and beauty.³⁰

Alchemy, Cosmogony, and the Novel of the Universe

In addition to Goethe's late scientific writings, scattered references to spirals and similarly shaped figures can also be found throughout his literary works. These include the spiral twirling of Mephisto while disguised as a poodle in *Faust I* (1808) and the motif of the *Locke* (lock of hair) in *West-östlicher Divan* (1819/27). But we can find the most explicit and, arguably, the most significant occurrence in the second edition of his final novel, *Wilhelm Meisters Wanderjahre, oder die Entsagenden* (1829; Wilhelm Meister's Journeyman Years, or The Renunciants). There a mysterious figure called Makarie is said to possess not only extensive astronomical knowledge but also a peculiar relationship to the solar system. In one of the most famous passages from the novel, the narrator relates the contents of a letter that portrays Makarie as a celestial entity who orbits the sun in a spiral motion:

Makarie befindet sich zu unserm Sonnensystem in einem Verhältnis, welches man auszusprechen kaum wagen darf. Im Geiste, der Seele, der Einbildungskraft hegt sie, schaut sie es nicht nur, sondern sie macht gleichsam einen Teil desselben; sie sieht sich in jenen himmlischen Kreisen mit fortgezogen, aber auf eine ganz eigene Art; sie wan-

delt seit ihrer Kindheit um die Sonne, und zwar, wie nun entdeckt ist, *in einer Spirale*, sich immer mehr vom Mittelpunkt entfernend und nach den äußeren Regionen hinkreisend. (FA 1.10:484; my emphasis)

Makarie stands in a relationship to our solar system that one hardly dares to express. Not only does she harbor it, and see it in her mind, in her soul, in her imagination; she constitutes a part of it, as it were. She sees herself drawn along in those heavenly circles, but in a very peculiar way; since childhood she has moved around the sun, and, to be specific, as has now become clear, *in a spiral course*, moving ever farther from the center and circling toward the outer regions. (CW 10:409–10; my emphasis)

At numerous points in the *Wanderjahre*, information about Makarie's relationship to the cosmos is at times divulged and at other times withheld from the reader, thereby generating the central mystery of her existence. The conditions ("Verhältnisse") of the solar system are said to be an innate part of her (FA 1.10:358; eingeboren), for example, and she is called an "entelechy" (FA 1.10:541; Entelechie) and living armillary sphere (FA 1.10:451; lebendige Armillarsphäre). At a basic level, such passages foreground Goethe's preoccupation with cosmological themes, which had interested him from as early as the 1780s, when he began to sketch out plans for a novel of the universe (*Roman über das Weltall*).³¹ Especially in the wake of Copernicus, the question of the human being's place in the cosmos became a defining hallmark of the discourse of modernity. With advances in optical technologies and new astronomical knowledge, the central place of the individual subject and its privileged proximity to the divine was increasingly challenged.³² Thus, after ascending a spiral staircase to reach the observatory atop Makarie's castle, the novel's protagonist, Wilhelm, peers out through a telescope to entertain a tremendous vision of the night's sky—one that threatens to overwhelm him—and desperately asks himself: "Was bin ich denn gegen das All? [...] wie kann ich ihm gegenüber, wie kann ich in seiner Mitte stehen?" (FA 1.10:351; What am I in the face of the universe? [...] How can I stand before it, stand in its very midst? [CW 10:177]).

Far from providing a clear answer to Wilhelm's existential self-questioning *qua contemplator caeli* in the face of a decentered universe, Goethe's *Wanderjahre* offers an ambivalent meditation on the tension between the pre-modern, anthropocentric worldview, on the one hand, in which knowledge of self and the universe could still be incorporated into a cosmic nexus, and the modern world of science and technology, on the other hand. Makarie—and, with her, the motif of the spiral—embodies this ambivalent tension in the novel. As scholars like Hartmut Böhme and Hannelore Schlaffer have argued, Makarie thus appears to embody the esoteric idea of the unity of man and cosmos that links her to the hermetic-alchemical doctrine of correspondence between macrocosm and microcosm.³³ From this perspective, the description of her celestial movements as spiral-like recalls the metaphysical and cosmogenic theories of esoteric thinkers such as Jakob Böhme (1575–1624), Emanuel Swedenborg (1688–1772), and Friedrich Christoph Oetinger (1702–1782). In *Swedenborgs und anderer Irrdische und Himmlische Philosophie* (1765; Swedenborg's and Others' Earthly and Heavenly Philosophy), for example, Oetinger discerns “[w]irbelförmige Bewegung” (vortex-like movement) in everything and speaks of a “Spiral-Bewegung” (spiral-movement) inhering in both the human soul and God, a view that he attributes both to Böhme's and Swedenborg's *principia*.³⁴

Others, however, have underscored the ambiguities in Makarie's depictions as a celestial being. Thus, the novel establishes a dichotomy between the “blühender Gesundheit [ihres] Geistes” (FA 1.10:62; blossoming health of [her] spirit) and the sickness of her body: in addition to using a wheelchair (FA 1.10:115), she is said to suffer from headaches, although it remains unclear whether they are real or feigned in order to hide her celestial “Anschauungen” (intuitions) from her family (FA 1.10:450). Furthermore, a secretive atmosphere surrounds Makarie: not only is she isolated from the rest of her family but, as the “schweigsamsten aller Frauen” (FA 1.10:493; most taciturn of all women), all information about her is medi-

ated by texts and images from other figures in the novel. And in some cases, such second-hand information is of dubious authenticity, as for instance the report of Makarie's relationship to the solar system, which the narrator claims is “nicht [...] für ganz authentisch anzusehen” (FA 1.10:449; not [...] to be regarded as entirely authentic). Taking these and other examples of narrative irony and medial perspectivism into account, scholars have also interpreted Makarie less as an allegory of early modernity than a narrative device intended to thwart any coherent interpretation.³⁵

While Wilhelm's Copernican crisis foregrounds his way of life as one characterized by the search for an elusive “midpoint,” then, Makarie, by contrast—as the “geistigsten” (most spiritual) of all entities—embodies a force that is perpetually oriented toward the periphery (*vis centrifuga*) (FA 1.10:449).³⁶ In this respect, while she evokes a meaningfully ordered cosmos with decidedly premodern traits, she also embodies numerous contradictory features and positions—at once body and spirit, sickness and health, human and divine, microcosm and macrocosm—that relativize her position within the novel and, thereby, suggest that the old alchemical doctrine of correspondence between microcosm and macrocosm is neither possible nor meaningful in modernity. In this context, the figure of the spiral—and the corresponding movement outward toward the periphery that Makarie embodies—are emblematic of the central question of the novel: can human beings, God, and nature still be meaningfully united as a whole? Is the spiral a mythical ‘hieroglyph’ of nature that effectively binds together man and cosmos? Or is this hope chimeric in the face of modernity and its powerful reconceptualization of the world, such that the spiral emerges, rather, as an elusive figure of dispersion, decentering, and finitude?

Bryan Klausmeyer
Virginia Tech

Notes

- ¹ Unless stated otherwise, all translations are my own.
- ² See, for instance, Goethe's journal entry from Palermo on April 17, 1787. FA 1.15.1:286.
- ³ See Goethe's letter to Herder on May 17, 1787. FA 1.15.1:346.
- ⁴ For more on Goethe's theory of metamorphosis, see Eckart Förster, "Goethe and the 'Auge des Geistes.'" *Deutsche Vierteljahrschrift für Literaturwissenschaft und Geistesgeschichte* 75, no. 1 (2001): 87–101.
- ⁵ For more on Goethe's concept of intuitive judgment, see Förster, "Goethe and the 'Auge des Geistes.'"
- ⁶ See Johannes Hedwig, *Sammlung seiner zerstreuten Abhandlungen und Beobachtungen über botanisch-ökonomische Gegenstände*, (Leipzig 1793), 1:65ff.
- ⁷ For more on the exchange between Martius and Goethe, see Michael Bies, "Leibhafte Bilder, klassische Tropen. Zu Goethes Auseinandersetzung mit Carl Friedrich Philipp von Martius in den Jahren 1823 und 1824," *Goethe-Jahrbuch* 129 (2012): 30–39.
- ⁸ Johann Peter Eckermann, *Gespräche mit Goethe in den letzten Jahren seines Lebens*, 1823–1832, (Berlin: Deutscher Klassiker Verlag, 2019), 671.
- ⁹ See Karl Friedrich Philipp von Martius, "Über die Architektur der Blüten," *Isis* 21 (1828): 522–29; "Über die Architektur der Blumen," *Isis* 22 (1829):333–41.
- ¹⁰ See Martius, "Über die Architektur der Blumen," 334; Jocelyn Holland, *German Romanticism and Science: The Procreative Poetics of Goethe, Novalis, and Ritter* (New York/London: Routledge, 2009).
- ¹¹ For more on Anaxagoras's notion of *homoioimeries*, see P. Leon, "The *Homoioimeries* of Anaxagoras," *The Classical Quarterly* 21, no. 3 (1927): 133–41.
- ¹² For more on the rhetoric of procreation in Goethe's natural-scientific writings and poetry, see Holland, *German Romanticism and Science*, 19–55. For more on the discourse and rhetoric of "marvel" or "wonder" (*Wunder*) in the natural sciences from the medieval period to the Enlightenment, see Daston and Park, *Wonders and the Order of Nature, 1150–1750* (New York: Zone Books, 1998).
- ¹³ For a reading of the spiral tendency as a possible symbol of female empowerment, see Astrida Orle Tantillo, *The Will to Create: Goethe's Philosophy of Nature* (Pittsburgh: U of Pittsburgh P, 2002), 152–187.
- ¹⁴ See Hans A. Froebe, "'Ulmbaum und Rebe.' Naturwissenschaft, Alchymie und Emblematis in Goethes Aufsatz 'Über die Spiraltendenz' (1830–31)," *Jahrbuch des Freien Deutschen Hochstifts* (1969) 164–93.
- ¹⁵ See Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: U of Toronto P, 2011).
- ¹⁶ For more on depictions of climbing plants (*rankende Gewächse*) and their symbology in the emblematic tradition, see Arthur Henkel and Albrecht Schöne, *Emblemata: Handbuch zur Simbildekunst des XVI. Und XVII. Jahrhunderts* (Stuttgart: J. B. Metzler, 1967), 259–82; McLuhan, *The Gutenberg Galaxy*.
- ¹⁷ See Jocelyn Holland, "'Eine Art Wahnsinn.' Intellektuelle Anschauung und Goethes Schriften zur Metamorphose," in "*Intellektuelle Anschauung:*" *Figurationen von Evidenz zwischen Kunst und Wissen*, ed. Sibylle Peters and Martin Jörg Schäfer (Bielefeld: transcript, 2006), 79–92.
- ¹⁸ See *ibid.*
- ¹⁹ See Dieter Borchmeyer, "Lebensfluten-Tatensturm.' Goethe – der bewegte Bewegter," *Goethe-Jahrbuch* 129 (Göttingen: Wallstein Verlag, 2012), 49–64.
- ²⁰ For a close reading of this text, see Dorothea von Mücke, *Practices of Enlightenment: Aesthetics, Authorship, and the Public* (New York: Columbia UP, 2015), 45–49.
- ²¹ See Friedrich Schiller, "Ueber Anmuth und Würde," in *Nationalausgabe der Werke Schillers*, ed. Benno von Wiese (Weimar: Böhlau, 1962), 20:251–308.
- ²² Giovanni Paolo Lomazzo, *Trattato dell'arte della pittura, sculture ed architettura* (Milan: Paolo Gottardo Pontio, 1584), 23.
- ²³ William Hogarth, *The Analysis of Beauty: Written with a view of fixing the fluctuating Ideas of Taste* (London: Reeves, 1753), ix.
- ²⁴ For more on the importance of linear perspective to Goethe's morphology, see Gerhard Graevnitz, *Das Ornament des Blicks: Über die Grundlagen des neuzeitlichen Sehens, die Poetik der Arabeske und Goethes "West-östlichen Divan"*, (Stuttgart: J. B. Metzler, 1994), 37–67; For more on the relation of the printing press to single point of view (i.e., linear perspective), see McLuhan, *The Gutenberg Galaxy*, esp. 128–31, 144–46, as well as Bernhard Siegert, *Cultural Techniques: Grids, Filters, Doors, and Other Articulations of the Real*, trans. Geoffrey Winthrop-Young (New York: Fordham UP, 2015)..
- ²⁵ Whether this hints at a more fundamental shift in Goethe's thinking on aesthetics from neoclassicism back to Rococo, and with it the signifying status of the ornament, remains an open question. For more on this issue, see Alfred Anger, "Goethe im Spätrokoko," in *Anakreontische Aufklärung*, ed. Manfred Beetz et al. (Tübingen: Max Niemeyer Verlag, 2005), 297–320; Graevnitz, *Das Ornament des Blicks*; Rainer Nägele, *Reading After Freud: Essays on Goethe. Hölderlin, Habermas, Nietzsche, Brecht, Celan, and Freud* (New York: Columbia UP, 1987), 23–46.
- ²⁶ For more on the importance of time in Goethe's morphology, see Dorothea von Mücke, "Goethe's Metamorphosis: Changing Forms in Nature, the Life Sciences, and Authorship," *Representations* 95, no. 1 (2006): 31–36, as well as Amanda Jo Goldstein, "Obsolescent Life: Goethe's Journals on Morphology," *European Romantic Review* 22, no. 3 (2011): 405–14.
- ²⁷ For more on this point, see Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007), 63–83.
- ²⁸ See Bies, "Leibhafte Bilder, klassische Tropen." For more on Goethe's morphology as a theory of images, see Johannes Grave, "'Beweglich und bildsam.' Morphologie als implizite Bildtheorie?" in *Morphologie und Moderne: Goethes 'anschauliches Denken' in den Geistes- und Kulturwissenschaften seit 1800*, ed. Jonas Maatsch (Berlin/Boston: de Gruyter, 2014), 57–74.

²⁹In his essay on Martius's study of palm trees, Goethe explicitly references the hieroglyphs of the Egyptians in order to demonstrate that the study of nature "in den ältesten Zeiten" (in the most ancient times) had its jumping-off point "durch Bilder ohne Schrift" (MA 13.2:309; through images without text). As Friedrich A. Kittler notes in his commentary on E.T.A. Hoffmann's *Der goldene Topf* (*The Golden Pot*, 1814), the *figura serpentinata* can also be understood as a kind of hieroglyphic writing to the extent that it functions as a transcendental signified within the "discourse network of 1800"—that is, as a mythopoetic building block of all the letters of the alphabet, which is said to flow directly from nature itself to the written word. For more on this point, see Friedrich Kittler, *Aufschreibesysteme 1800/1900* (Munich: Wilhelm Fink Verlag, 1995), 134ff.

³⁰Bryan Klausmeyer, "Abschlussbewegungen: Goethe, Freud, and Spectral Forms of Life," *Goethe Yearbook* 26 (2019): 163–78.

³¹Aeka Ishihara, *Makarie und das Weltall: Astronomie in Goethes 'Wanderjahren'* (Cologne: Böhlau Verlag, 1998), 34.

³²Hans Blumenberg, *Die Genesis der kopernikanischen Welt* (Frankfurt a.M.: Suhrkamp, 1981).

³³Hartmut Böhme, "Lebendige Natur: Wissenschaftskritik, Naturforschung und allegorische Hermetik bei Goethe," in *Natur und Subjekt* (Frankfurt a.M.: Suhrkamp, 1988), 145–78; Hannelore Schläpfer, *Wilhelm Meister: Das Ende der Kunst und die Wiederkehr des Mythos* (Stuttgart: J. B. Metzler, 1980).

³⁴Friedrich Christoph Oetinger, *Swedenborgs und anderer Irrdische und Himmlische Philosophie, zur Prüfung des Besten, ans Licht gestellt* (Frankfurt/Leipzig 1765), 1–14.

³⁵Ehrhard Bahr, *Die Ironie im Spätwerk Goethes* (Berlin: Erich Schmidt Verlag, 1972), 127ff.

³⁶See Ishihara, *Makarie und das Weltall*, 235ff.

Related Entries in the GLPC

Androgyn (androgynous), *Anschauen* (intuition), *Aperçu* (aperçu), *Bild* (image), *Bildung* (formation), *Figur* (figure), *Form* (form), *Fortpflanzung* (reproduction), *Geschlecht* (gender), *Kraft* (force), *Kunst* (art), *Leben* (life), *Metamorphose* (metamorphosis), *Monstrosität* (monstrosity), *Natur* (nature), *Peripherie* (periphery), *Perspektive* (perspective), *Polarität und Steigerung* (polarity and intensification), *Schönheit* (beauty), *Symbol* (symbol), *Urpflanze* (primordial plant), *Urpheänomen* (primordial phenomenon), *Welt* (world), *Zufall/Kontingenz* (contingency), *Zusammenhang* (nexus)

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