

# “In the vortex of the spiral tendency” - questions of aesthetics, literature and natural sciences in the work of Goethe

SABINE MAINBERGER

ON JUNE 21, 1831, Goethe wrote to the botanist E. H. F. Meyer saying that he was “absorbed by the vortex of the spiral tendency”.<sup>1</sup> Frédéric Soret, who translated into French the doctrine of metamorphoses [Metamorphosenlehre], comments on a conversation with Goethe on July 11, 1831: “He is more than ever obsessed by the spiral tendency”, and Soret promptly expresses his skepticism: “[...] it seems a very uncertain and hypothetical thing to me”.<sup>2</sup> A letter written a few days earlier suggests the reason why Goethe - who especially in his old age did not give in easily to passions - had become so susceptible to a problem of the natural sciences. On June 30, 1831, he wrote to Kaspar von Sternberg: “We rejoice when, in our elder years, we have the opportunity to deal with an issue that develops from our earlier/older reflections and fully coincides with them.”<sup>3</sup> The issue of the spiral tendency arises, therefore, as something that has a long history and as something in which the new and the past converge in an extraordinary and joyful way. I do not know exactly what the “oldest reflections” that Goethe alludes to in his letter to the Duke of Sternberg would be; but in his writings Goethe refers quite often to spiraled forms and other related forms, and his interest in them began at a very early time in his life.

In the second half of the eighteenth century, the wavy line and the serpentine line, or simply the wavering line, became an object virtually omnipresent within aesthetic reflections; this line is present in the considerations of artists, scholars, popularizing philosophers [*Popularphilosophen*], ballet masters and others. The hype of this kind of line began with the essay *Analysis of Beauty* (Figure 1) of 1753, written by the English painter and copper engraver William Hogarth. The author proclaims, among other things, the existence of a standard smoothly curved line that can be found everywhere (Figure 2): in the exemplary

works of art of ancient times (Venus de Medici, Apollo Belvedere, Laocoön, Torso, Hercules Farnese); on objects of Nature (parsley leaves, flower buds, muscles); and also in everyday objects (corsets, chair legs and even the common jack). As abstract models, the line forms, once again, are grouped didactically (Figure 2, no. 25 and 26): the waving line or the line of beauty and the three-dimensional serpentine line or the line of grace. In body posture, gestures and movement, these lines are also present, or rather should be present, when what is at stake are beauty and grace, and this is especially the case in dance (Figure 3). Here, again, examples in nature also apply: horns and bones (Figure 3, no. 57-62).

This essay has been very successful, especially in continental Europe, France and Germany. It is a decisive reference text for the “fashion of lines” of that period. But obviously it is not the only one. Equally important are the writings of the ancient scholar and founder of modern art history Johann Joachim Winckelmann (*Gedanken zur Nachahmung der Griechischen Werke* [Thoughts on the Imitation of Greek Works of Art] of 1755, and *Geschichte der Kunst des Alterthums* [History of Ancient Art] of 1764). Winckelmann produced programmatic descriptions and interpretations of the best known Greek statues that had an extraordinary impact. In these texts, which from the point of view of literature and art history are central, he often evoked the waving lines, especially those of the Apollo Belvedere (Figure 4); this statue arises as a paradigm of ideal beauty. The smooth lines of its contours are at the same time the embodiment of grace. These texts also had an impact on Goethe, who traveled through Italy following Winckelmann’s ideas and deeply reflecting on them.

Like all his contemporaries, Goethe embraced the Hogarthian aesthetic of the lines, first in a positive way and then quite critically, but somehow the interest in wavering lines remained throughout his work. I try to follow his statements about these forms from the 1770s to the late works on the natural sciences. The wavering line in its different configurations, in which the spiral emerges in a particularly striking way, is a kind of point of intersection between the author’s aesthetic and scientific interests. It is like a palimpsest of references and memories, or in Goethe’s words, an “archive”, because it refers to all kinds of things: the vitality of youth, eroticism, dance (think of the ball scene in *Werther*), the silhouette fashion (silhouettes were then a very common type of portrait), *physiognomy* – let us remember here that Johann Caspar Lavater had explained his doctrine of human characters *Die Physiognomischen Fragmente* [*Physiognomic fragments*], with the help of a large collection of silhouetted face profiles – the waving forms and waving metaphors are the core of neoclassical aesthetic, associated with Winckelmann’s legacy; the wavering line belongs also to the sphere of the beauty of natural images, but as a spiral, it is also linked to the ancient tradition of emblems and to the arcane-hermetic knowledge from pre-modern times. Elements of this tradition came through the spiral form to

the new *episteme* of life that arises in the transition from the eighteenth to the nineteenth century. So far we have provided only a few aspects; the list of meanings and references could go on.

In 1775 young Goethe characterizes the line of beauty as a the “line of love”,<sup>4</sup> and to some extent it remains as such until the end; because in his later work, more precisely from 1828, the serpentine line occurs as the “spiral tendency of vegetation”; it emerges in phenomena of spiral forms/growth of plants, and when this form binds to a vertical form, the resulting whole is associated with both sexes: the spiraled tendency acquires a feminine connotation and the vertical tendency a masculine connotation.<sup>5</sup> Both phenomena comprise one unit and together result in the growth and self-reproduction of plants. In this context, the late texts will again evoke images of embracement [*Umarmung*], which refer to the emblems of the Renaissance and the Baroque and to Goethe’s own poetry.

The text I am referring to is the poem “Amyntas” of 1797, on which I offer some considerations. It will not be possible to interpret it as a whole, but I would like to outline its topic and emphasize the idea of the form it presents. I cannot go into details about the work of poetic composition, although this is obviously problematic in the field of poetry.<sup>6</sup>

The poem is an elegy: it is composed in elegiac couplets, i.e., each hexameter is followed by a pentameter. The measure and genre of the verse are classical. We deal, as can be seen, with the classicism of Weimar, the highlight of neoclassical German culture that updates ancient times from the modern “sentimental” perspective; this means an effort to revive the ancient culture, which was seen as ideal, but this finally occurs with the melancholic realization that this culture belongs to an irrevocable past and that the ideal has been lost. The construction guided by ancient times occurs under the aegis of paradox, of impossibility, and this links classicism to its opponent, which it fights so hard - romanticism. And the poem “Amyntas” itself is paradoxical, excessive, hybrid - in this sense one could say romantic - although it presents itself as entirely classical. The central motif of the image originates from Greek poetry, the names and the situation imagined are ancient: a young man named Amyntas is madly in love; he sees a doctor, Nikias, but ends up not undergo the proposed therapy, although he realizes that the doctor is right: the cause of suffering should be extirpated with a knife. There are no rational arguments against the measure, and therefore Amyntas justifies his refusal of the treatment in a metaphorical and poetic speech. According to his words, the teaching of Nature is different from medical-surgical teaching: Nature, or, more precisely an apple tree surrounded by ivy, had taught Amyntas that there are stronger laws than those enacted by human thought and that he himself, in his illness, was subjected to the superior power of nature. The “dangerous guest, the most beloved” (v.35) removes its sap from the tree. The ivy surrounds it, chokes it in a spiraled way, like the orna-

ment around a stick. It becomes an ornament of the tree, but this ornament is a deadly prop (v.42). The tree suffers and yet does not want to be released from the fatal involvement of “thousands of tendrils” (v.39). Rather, it wants to enjoy even further the “bondage” (v. 41). And so behaves the passionate Amyntas, who “in his fervent desire voluntarily submits and consumes himself” (v.44).<sup>7</sup> Love here is a life-threatening disease; eroticism is lethal eroticism. The situation is tragic; there is no solution to the dilemma, as the tree would die if the knife removed the tendrils from it; it would therefore take its life; and the tree will actually die if the tendrils are not cut out – in the embrace that sucks it. Love and self-destruction grow together like the stem and the tendrils. And this irrational and uneconomical behavior, this “waste” of life itself is the most “beautiful of all wastes” (v. 45). In the novel *Wahlverwandtschaften* [*Elective Affinities*], this self-destructive love appears actually as the perfect type of love – it is one of the major themes of this work, in which Goethe harshly criticizes romanticism and its excesses. In the poem “Amyntas”, however, self-destructive love is presented as belonging to classical Ancient times, i.e., as a principle inherent in nature.

The structural model of such an involvement<sup>8</sup> will later on take center stage in Goethe’s scientific text about the spiral tendency: here it is not about apple tree and ivy, but about elm and vine and stick and creeper (*Convolvulaceae*). As an abstract principle, it arises in the relationship of the masculine vertical tendency and the feminine spiral tendency. At first glance, however, nothing remains from that almost romantic lethal eroticism in the context of the natural sciences; involvement seems to be a purely formal principle. However, a closer analysis will show that in these considerations an element of danger will not have disappeared altogether.

In the 1790s Goethe concerned himself among other things with the doctrine of metamorphoses. The famous didactic poem *Die Metamorphose der Pflanzen* [*The Metamorphosis of Plants*], written in 1798 - also a classical elegy - appears at the same time and in the same place as “Amyntas”: both in the 1799 edition of Schiller’s *Musen Almanach* [*Almanac of the Muses*]. I’m not going to explore the known poem here; instead, I will limit myself to a few selected aspects of the doctrine of metamorphoses through the texts in *prose* about this theme.

In the essay on the metamorphosis of plants (1st version: 1790),<sup>9</sup> the so-called spiral vessels play a decisive role: they are in fact conducting vessels in plants and are so named because of the characteristic screw shape. They are considered the element that produces *all* plant parts, including reproductive parts, i.e. the parts of flowers; they thus guarantee identity to the many distinct parts. They emerge “as elastic springs” and, reaching “their fullest potential,”<sup>10</sup> they provide *contraction* [Kontraktion]. The sap vessels, on the other hand, provide the reverse process, i.e., *extension*. Here, therefore, there are two types of vessels playing complementary roles. The alternation of these two roles or functions:

distension and contraction, generates - from the seed, passing through the flower and then getting to the fruit - all moments of a bisexual plant reproduction . In all the different elements of the plant, however, we find one and the same organ. This organ that undergoes metamorphoses,<sup>11</sup> is called 'leaf'. Peduncle, sepal, petal, stamen, etc.: all are metamorphoses of the same. And that which forms these different leaf configurations is what will be later called "spiral tendency". Goethe then includes under this heading all possible forms of thread and spiral: the aforementioned conducting vessels, the arrangement of leaves on the stem, the direction of growth, spiraled formations in the sprouts, as occurs in the tendrils of vine etc. Spiral vessels have been known since long and had already been identified in microscopic observation. Research at that time ascribes them an 'autonomous life', i.e., "the power to move by themselves and take a certain direction." According to this interpretation, live beings - plant and animal - have the need to "trace a crooked line"; this principle is called "vital incurvation".<sup>12</sup> (The idea was not originally conceived by Goethe, but by the French physiologist René Joachim Henri Dutrochet in 1824, and Goethe appropriated it). For Goethe, the spiral vessels represent the smallest parts, which totally equal to the whole (so-called *Homoioimerien*), that is, for him they represent the whole concentrated in the detail. Another discovery should be added to the knowledge and conception of spiral vessels: the discovery of the spiral arrangement of leaves around a common axis. Here we see the interest expressed by Goethe in Brazil, in his research into the natural sciences. The discoverer of these phenomena is the botanist Carl Friedrich Philipp von Martius, who is known primarily for his work on the Brazilian flora. Between 1817 and 1820, Martius traveled across the country, and the scientific work on the material then found was his life's work. In October 1828 he spent a few days in Weimar and talked with Goethe, who had read the researcher's publications with great interest, such as his great work on palm trees (1823), and explicitly refers to essays from 1828 and 1829.<sup>13</sup> Goethe took the findings of the young botanist on the arrangement of leaves and combined them with his own reflections on the subject. Martius' works lead Goethe to adopt the idea of a spiral *tendency* in vegetation. The spiral *vessels*, which are details with a defined and bounded role, now are considered the best known manifestation of this tendency.

We have a literally visual result of the conversations between Goethe and Martius (Figure 5): The two schematic sketches are on the front and back of a sheet of paper; they show the arrangement of the leaves of a plant around its stem: as seen, they are arranged in a spiral pattern. The sketches are diagrams, visual working tools that are present in the development of the previously mentioned thought on spiraling [*Spiralität*] in nature. Martius also sent Goethe a three-dimensional model of the spiral growth of leaves: made of wire, fabric, leather, cardboard and paper; it enables reproducing several variants of the order of leaves (Figure 6).

For Goethe, Martius' findings are, as already said, of greatest importance; they both conversed with enthusiasm, but it must be said: they agree not completely. Martius described the spiral order of leaves, and especially of flowers, but he would not have inferred from that a spiral *tendency*. In addition, what interested him in the finding was the question of regular, that is, mathematical relationship. Goethe, however, in this context and in his studies of nature in general, was *not* interested in this kind of regularity. (Another aspect of their disagreement will be explained later.)

According to Goethe's reflections, the vegetable kingdom is determined by two systems that work always together: the vertical and the spiral system. The vertical system impels the plant to develop from its germ and operates by strengthening the fibers; through the production of nodes, this system promotes and enhances life and ensures the continuity of the whole. The vertical tendency is particularly striking in the flower, in which it is realized as "stick and support." The vertical tendency operates as the "masculine principle of support",<sup>14</sup> as a "spiritual stick"<sup>15</sup> giving origin to the plant and maintaining it over long periods of time. The spiral tendency, on the contrary, is the proper "vital producing principle", acting mainly in the 'periphery', in the ends, i.e., "at each position of the flower and the fruit, interlacing its midpoint a thousand times where it causes the miracle that a single plant is able to create autonomously infinite reproduction".<sup>16</sup> The spiral system is the "factor that feeds", that provides that "which improves, reproduces and, as such, is ephemeral"; the vertical system, on the contrary, provides that which is "permanent".<sup>17</sup>

In these reflections, the spiral system is a novelty. For Goethe, it derives directly from the metamorphosis, but - and this is decisive in a natural science whose essential instrument is the human eye - in Martius' works this system is *observed*. There are multiple spiraled phenomena: various types of algae, contorted "hundred-year-olds chestnut trees", small tendrils on the vine, the fern, the stalk of the dandelion which, when opened with a knife, "hangs like a contorted and spirally pointy curl," etc. These various manifestations of nature remind, in Goethe's conception, the "eternal congruence", and allow the observer to approach "the deepest secret of nature." Further references include: the so-called *Vallisneria* (an aquatic plant; in English: eelgrass) is thoroughly commented, the "stick and convolvulus", i.e., a creeper that grows around a stick serves as comparison; the old symbolic combination of the elm and the vine is remembered: it is traditionally associated with the harmonization of opposites; it can be related to the symbol of Mercury: a tree that is enveloped can be a variant of the caduceus, the staff of the god.<sup>18</sup> But Goethe probably chose the combination for another reason as well: in the stick and convolvulus connection, one of the elements is something dead; elm and vine, on the contrary, are both living beings. And grammatically they have - unlike the apple and the ivy, which in German are masculine words - the appropriate genders to embody

both tendencies; the vertical and masculine elm is ensnared by the feminine and spiraled vine. With these relationships, Goethe proceeds with his reasoning and “returns to the most general.” The superlative is to be taken literally; it is not possible to go back further than that: the reflections lead to the thesis of the secret primeval androgyny of plants, of the differentiation of the sexes and of a new union “in a higher sense.” The structural scheme of the bondage, its eroticism, and its broad and speculative meanings around nature converge, in these passages, with botanical observation; the two tendencies need no longer to be illustrated in the abstract model (the diagram) or the comparison (stick and convolvulus) or in poetic image (the entwined tree). Rather, as Goethe says, they have in the eelgrass a “happy example”.<sup>19</sup> Both tendencies are offered here directly to the sensitive eye, as also offered is the opening to that which is essential. Nature itself seems to ‘recommend’ the whole over this sort of observations. But the ‘happiness’ of this example is obviously not a gift, nor is it based on a condescendence of nature; it is really a *prepared* happiness: it stems from the fact that here many very distinct components intertwine in an insurmountably suggestive node.

Before commenting on this expansion of the scientific research on nature, I would like to briefly return to another text by Goethe, in which the spiral form plays a key role: it is the essay “Fossiler Stier” [“Fossile Bull”] of 1822, which originated from the discovery of a petrified bull. Here, too, there is an explicit reference to Hogarth’s *The Analysis of Beauty*:

[...] the living being curves in the parts where it seems, if not exactly dead, then at least completed, as we can usually see in horns, claws, teeth. From the action of curving and at the same time curling like the snake emerges grace, beauty. This fixed movement, although it seems still mobile, is most pleasing to the eye. While seeking the simplest lines of beauty Hogarth could not avoid to arrive at these forms. And we all know the advantages that this image offered the ancients [the artists of Ancient times, N.A.] by using the cornucopia in works of art. [ ... ] How charmingly the cornucopia surrounds the arm in a beneficent goddess. Hogarth had followed the beauty to this degree of abstraction, and so, nothing is more natural than the fact that abstraction should surprise with a pleasant impression when it actually manifests itself to the eye.<sup>20</sup>

The notes mentioned are aesthetic-formal, but have another function as well: they deal with a dead bull, from prehistoric times, and with a petrifying process. Goethe, however, does not concern himself with curved forms as a sign of the extinct, the dead but, as he says, as a sign of completion; he speaks thus euphemistically.

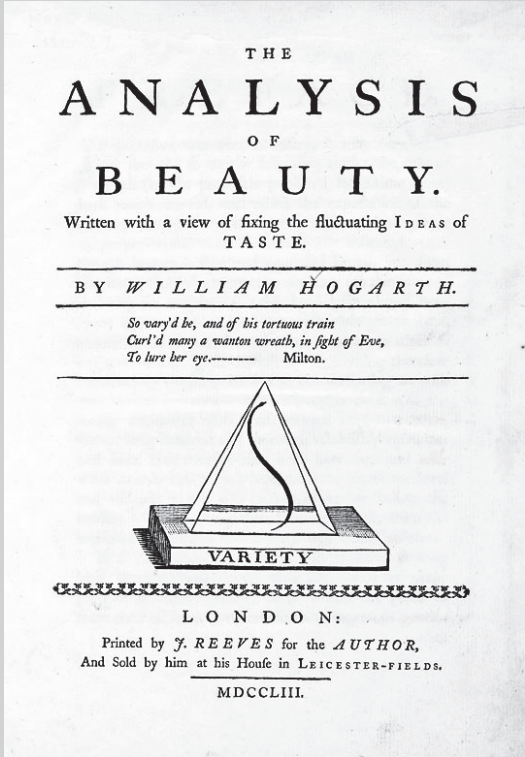


Figure 1

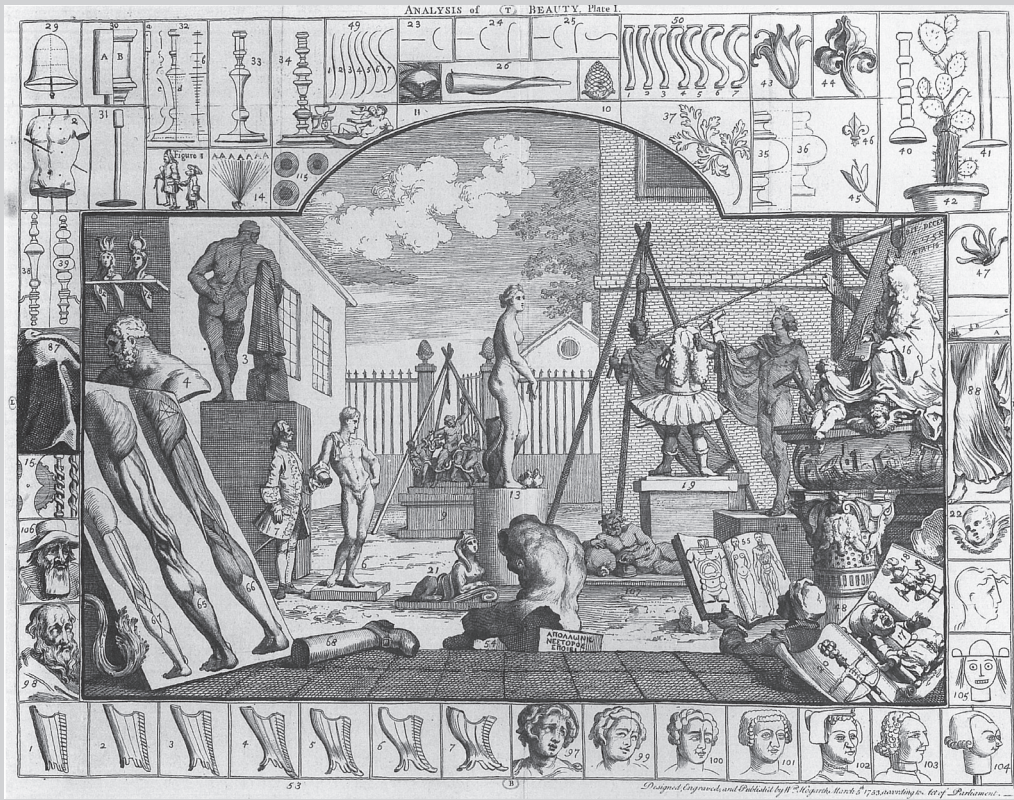


Figure 2





Figure 3



Figure 4

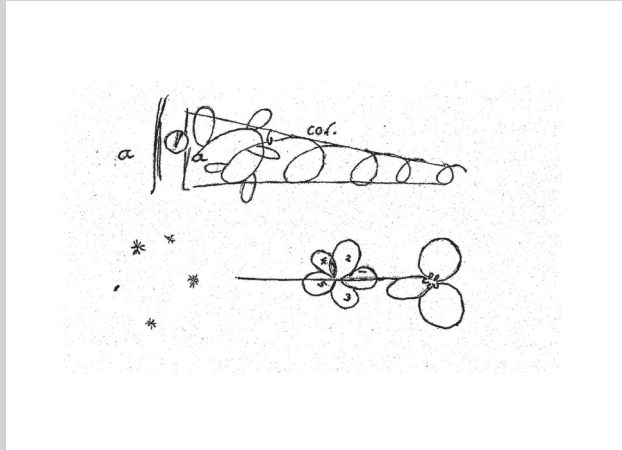


Figure 5

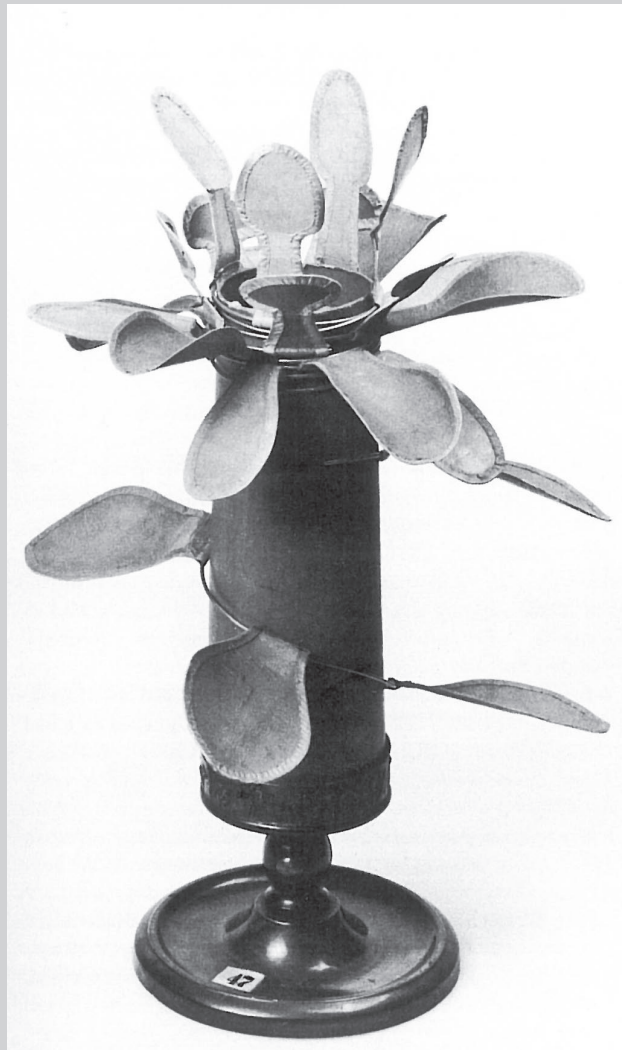


Figure 6

According to this idea, the curvatures are the *limit* of animal life. They also belong to life and represent a *passage*. Thus, the horns without the bull are conceived as ornaments - like the human bones in Hogarth's figures. Also, the contorted horn appears in the thought about the ancient art as a symbol of abundance and lavish wealth and a prop for a female deity. Here we already know the formal arrangement: a spiraled object involves another object that extends vertically, in this case the arm of the goddess. In this combination, the dead horn has again a living bearer and moreover one of a higher value than the animal.. That is to say: the context of being dead and buried could not be neglected in a more decided way, and the opposite semantic sphere could not be sought with greater endeavor. Goethe begins with the consideration of a fossil to reach the celebration of life! At the same time, the text hints at Schiller, as he appropriated the serpentine line by theorizing about it in the « Letters to Kallias»<sup>21</sup> of 1793, making it a constitutive element of its aesthetics and literature. Goethe's homage to the kind of beauty that comes from the frontier between life and death, is thus a discreet homage to the friend who died in 1805.<sup>22</sup>

Goethe did not announce his reflections on the spiral tendency as a doctrine. He was aware that the many individual studies he had performed did not make a whole, and especially there was no formulation of these observations in the form of law. He expected others to do it; he placed his hopes mainly on Martius, whose discovery of the spiraled disposition of the leaves he deemed extremely important. What he had inferred in the doctrine of metamorphoses, Martius' works should confirm empirically. He speaks of Martius' "*aperçu*"<sup>23</sup> of the spiral tendency", and '*aperçu*' here means not a simple idea [*Einfall*] or an ingenious observation, but a maximum degree knowledge. He wanted Martius to "assume with decided dare the primeval phenomenon [*Urphänomen*] that he [Martius] had discovered, and that he had the courage to express as a law that which was a fact".<sup>24</sup> Was Martius aware of this desire? We can assume that Goethe asked of the researcher more that he [Martius] could accept as reasonable in the parameters of scientific thought. However, Goethe himself approached his expansions with caution; they are found much more in his drafts than in his published texts.

But what does it mean, after all, to say that the spiral tendency is a "primeval phenomenon"? I would not like to delve here into the difficult question around the meaning of "primeval phenomenon". I will only say the following: Goethe's "primeval phenomena" are not archetypes or eternal truths, but sensible phenomena; they belong to experience, but enjoy in the scientific work a particular *methodical* status. They are decisive in the formation of morphological series, that is, they are phenomena from which many others derive. However, such a derivation is, in principle, possible only within the framework of a theoretical explanation, i.e., within a particular theoretical framework that enables ordering isolated manifestations to which others will be added. Regardless of how it works, the

following should be pointed out: primeval phenomena are not something that scientific research, literature, aesthetics or art can lead to as a quietive; they are neither solutions to problems nor answers to questions addressed to nature. Quite the contrary: the perception of a 'primeval phenomenon' entails, according to Goethe, feelings such as phobia, fear, vertigo. When he claimed to have discovered something like that with the spiral tendency that did not mean that he had achieved a tangible result and a happy ending in his studies. Much more than that, he believed that he was "on the brink of the unthinkable".<sup>25</sup>

From this point on, let us return once again to other texts on spiral manifestations in nature. In the poem "Amyntas", entwinement is something dangerous and threatening; in scientific reflections it seems initially a mere formal principle, but one can see that here, too, there is a moment that leads to fear. According to Goethe, nature clearly reveals its secret in the 'primeval phenomenon'. This is one side of the question, but - and this is the other side - it simultaneously renews the puzzle. In a letter from that time, we read the following: the "reflections on spiraling" were "more a Gordian knot than an affectionate tangle".<sup>26</sup> The discourse about the 'primeval phenomenon' does not suggest with this the knowledge that we can 'have', and it is neither a privileged experience nor the last step to an understanding that progresses continuously. The discourse about the 'primeval phenomenon' denotes much more a problem than a solution. When the spiral tendency is designated as a 'primeval phenomenon', that does not mean that it clarifies the many manifestations it entails. And the fact that the spiral tendency does not clarify them does not mean it is something mysterious or simply a metaphor. The important thing is that the explanation lies eminently in the serial gathering of the phenomena, in their ordering. They are explained when placed in a convincing series. The central task of the Goethean morphology is to form series like that. And when the formation of a series is achieved, it *is* the explanation: it is an ordered synopsis and nothing else. The epistemic work, the understanding, is then complete. Anyone, however, who wishes to go beyond will be behaving, according to Goethe, "like children who, having looked into a mirror, turn it around to see what is on the other side".<sup>27</sup>

Goethe's investigations on the spiral form did not reach the point outlined above, as they failed to achieve a clear ordering of the different spiral manifestations. Nevertheless, the attention given to the spiral was productive as an intellectual process and as a way of thinking outside the limits imposed by discipline. Walter Benjamin, Aby Warburg and Paul Valéry would, in the twentieth century, each in their own way, undertake a comparable attempt. Finally, I would note that in Goethe's statements the preferred form of the spiral also appears on a meta level. When he claims to be "absorbed by the vortex of the spiral tendency",<sup>28</sup> the form is evoked twice, because the "vortex" is already a kind of spiraled movement. The old Goethe was assaulted by an enhanced force: the spiral's spiral.

## Notes

- 1 WA IV.48/228, quotation on p.250. [WA is the abbreviation of *Weimarer Ausgabe* (Weimar edition), published between 1887 and 1919 in 143 volumes (55 for literary works, 13 writings about natural sciences, 15 for journals, 50 for correspondence and 10 for notes on conversations). Roman numerals refer to the sections into which the Weimar edition is divided (the other acronyms correspond to the subdivisions of the edition). (TN).] For the abbreviations, see References.
- 2 LA II 10 B / 1, quote on p.695. [LA is the abbreviation of *Leopoldina-Ausgabe*, which gathers Goethe's on natural science (*Die Schriften zur Naturwissenschaft*). Roman numerals refer to the two sections of this edition (1947-), under the auspices of the German Academy of Naturalists (Leopoldina), by Dorothea Kuhn and Wolf von Engelhardt (TN)]
- 3 WA IV. 48/239, p.263 f; see also LA II. 10B/2, p.1005 ff.
- 4 Letter to Johann Kaspar Lavater, 24.7.1775. WA IV.2/347, p.281.
- 5 Other studies on the spiral tendency, LA I. 10, p.344. A short essay, *Über die Spiraltendenz* [*On the spiral tendency*] (LA I. 10, p.339-342) was completed in 1831 and translated for the Franco-German edition of the *Versuch über die Metamorphose* [*Essay on Metamorphosis*].
- 6 A detailed interpretation of this poem (as well as other bibliographic references) can be found in Stockhammer1993.
- 7 HA 1, p.196. [HA is the abbreviation of *Hamburger Ausgabe* (Hamburg edition), published in 14 volumes by Erich Trunz in 1947 (and thereafter updated at each new edition). (TN)]
- 8 *Involvement* here refers to the action of the ivy that binds to the apple tree. (TN)
- 9 The *Versuch die Metamorphose der zu Pflanzen erklären* [*Essay clarifying the metamorphosis of plants*] was published during Goethe's lifetime first in 1790, then in 1817 in *Morphologische Hefte* [*Morphological books*], I. 1 (*Die Metamorphose der Pflanzen*), and a third time in 1831, in the Franco-German edition of the botanical writings (*Versuch über die Metamorphose der Pflanzen/ Essaisur la Métamorphose des Plantes*, translated into French by Frédéric Soret). My quotes follow the text of the 1817 edition: LA I. 9, p.23-61.
- 10 § 61, LA I. 9, p.40.
- 11 Cf. § 120, LA I. 9, p.60.
- 12 LA I. 10, 340, 351, p.356.
- 13 Published in the journal *Isis*, edited by Lorenz Oken between 1816 and 1848.
- 14 LA I. 10, p.341.
- 15 LA I. 10, p.344.
- 16 LA I. 10, p.341ff.
- 17 LA I. 10, p.345.
- 18 In this respect, see Froebe1969/1978, and Košenina 1989.
- 19 Allquotes in: LA I. 10, p.358-62.
- 20 LA I. 9, p.258 ff.

- 21 Brazilian edition: Schiller (2002). (N.T.)
- 22 In this respect see: LA II., 10 A, p.869. See also Mainberger 2005 .
- 23 Goethe uses the French Word *aperçu*: seen, perceived, discovered. (TN)
- 24 Both quotes taken from the conversation dated 27 Jan. 1830 (Eckermann: *Gespräche*, p.659). [Brazilian edition: Eckermann (2004). (TN)]
- 25 Concept contained in a letter to Eckermann dated 26 Oct. 1830 (but which seems to have never been delivered): apud LA II, 10 B/1, p.602.
- 26 Letter to Varnhagen von Ense dated 5 Jan. 1832: WA IV. 49/143, p.194.V
- 27 Cf. Eckermann (2004) conversation registered under the date 18 Feb.1829, p.298.
- 28 See note 1.

#### References

- ECKERMANN, J. P. *Gespräche mit Goethe in den letzten Jahren seines Lebens*. Frankfurt a. M.: Fritz Bergemann, 1981.
- \_\_\_\_\_. *Conversações com Goethe*. Belo Horizonte: Itatiaia, 2004.
- FROEBE, H. A. Ulmbaum und Rebe. Naturwissenschaft, Alchymie und Emblematik in Goethes Aufsatz, 'Über die Spiraltendenz' (1830-1831). In: *Jahrbuch des Freien Deutschen Hochstifts*, 1969, 164-93.
- \_\_\_\_\_. Ulmbaum und Rebe. Naturwissenschaft, Alchymie und Emblematik in Goethes Aufsatz, 'Über die Spiraltendenz' (1830-1831). In: PENKERR, S. (ed.) *Emblem und Emblematikrezeption*. Vergleichende Studien zur Wirkungsgeschichte vom 16. bis 20. Jahrhundert. Darmstadt, 1978. p.386-413.
- GOETHE, J. W. von. Briefe. In: . *Goethes Werke*. Edition published under the auspices of the Great-Duchess Sophie von Sachsen-Weimar, sections I-IV. Weimar, 1887-1919 (WA). vol.IV..
- \_\_\_\_\_. Fossiler Stier. In: . *Die Schriften zur Naturwissenschaft. Vollständige mit Erläuterungen versehene Ausgabe im Auftrage der Deutschen Akademie der Naturforscher Leopoldina*[*Leopoldina-Ausgabe*]. ed. Dorothea Kuhn and Wolf von Engelhardt. Weimar, 1947- (LA), I, 9, p.254-60.
- GOETHE, J. W. von. Die Metamorphose der Pflanzen (1817). In: . *Die Schriften zur Naturwissenschaft. Vollständige mit Erläuterungen versehene Ausgabe im Auftrage der Deutschen Akademie der Naturforscher Leopoldina*[*Leopoldina-Ausgabe*]. ed. Dorothea Kuhn and Wolf von Engelhardt. Weimar, 1947-. (LA)I, 9, p.23-61.
- \_\_\_\_\_. Über die Spiraltendenz. In: \_\_\_\_\_. *Die Schriften zur Naturwissenschaft. Vollständige mit Erläuterungen versehene Ausgabe im Auftrage der Deutschen Akademie der Naturforscher Leopoldina* [*Leopoldina-Ausgabe*]. Weimar, 1947- (LA) I, 10, p.339-42.
- \_\_\_\_\_. Weitere Studien zur Spiraltendenz. In: . *Die Schriften zur Naturwissenschaft. Vollständige mit Erläuterungen versehene Ausgabe im Auftrage der Deutschen Akademie der Naturforscher Leopoldina*[*Leopoldina-Ausgabe*]. Weimar, 1947- (LA), I, 10, p.343-65.

- \_\_\_\_\_. Amyntas. In: . *Werke. Hamburger Ausgabe in 14 Bänden.* ed. Erich Trunz. Munich., 1981. (HA 1), p.196 f.
- \_\_\_\_\_. *Sämtliche Werke. Briefe, Tagebücher und Gespräche.* org. Friedrich Apel, Henrik Birus et al. Frankfurt a/M, 1985. (FA).
- \_\_\_\_\_. *Sämtliche Werke nach Epochen seines Schaffens.* org. Karl Richter in collaboration with Herbert G. Göpfert et al. Munich (MA), 1985-1998.
- HOGARTH, W. *The Analysis of Beauty.* ed. Ronald Paulson. New Haven/London, 1997.
- KOŠENINA, A. Lust und Leid durch tausend Ranken der Liebe. Goethes *Amyntas* und ein literarisch-emblematisches Zitat. *Jahrbuch der deutschen Schiller-Gesellschaft*, n.33, 1989, p.240-60.
- LAVATER, J. C. *Physiognomische Fragmente zur Beförderung der Menschenkenntniß und Menschenliebe.* Leipzig, Winterthur, 1775-1778.
- MAINBERGER, S. Einfach (und) verwickelt. Zu Schillers "Linienästhetik". Mit einem Exkurs zum Tanz in Hogarths *Analysis of Beauty*, *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* (dvjs), 79.2., 2005, p.196-251, 2005.
- \_\_\_\_\_. *Experiment Linie. Künste und ihre Wissenschaften um 1900.* Berlin, 2010.
- SCHILLER, F. 'Kallias' oder über die Schönheit. Briefe an Gottfried Körner. In: *Theoretische Schriften.* ed. R.-P. Janz. Frankfurt a. M., 1992. p.276-329.
- \_\_\_\_\_. *Kallias ou sobre o belo.* Rio de Janeiro: Jorge Zahar, 2002.
- STOCKHAMMER, R. Spiraltendenzen der Sprache: Goethes *Amyntas* und seine Theorie des Symbols. *Poetica. Zeitschrift für Sprach- und Literaturwissenschaft*, n.25, , 1993, p.129-54.
- WINCKELMANN, J. J. *Gedanken zur Nachahmung der Griechischen Werke in der Mahlerey und Bildhauer-Kunst.* Friedrichsstadt (Dresden), 1755.
- \_\_\_\_\_. *Geschichte der Kunst des Alterthums.* Dresden, 1764.

*ABSTRACT* – In his final years Goethe was obsessed by the so-called “spiral tendency”. The problem, however, was far from new to him as the versions and variations of curved lines and spirals in Goethe’s work clearly show. These forms can actually be found at the crossroads of poetry, visual aesthetics (namely of ornaments), and scientific studies. A crucial point of reference for aesthetics in the later 18th century was William Hogarth’s famous concept and model of the “line of beauty” (1753), which also left its traces in Goethe’s writings, even in his late period. This study examines his elegy “Amyntas” (1799), the essay “Fossile Bull” (1822), and texts on the metamorphoses of plants and the spiral tendency in vegetation. Spiral forms seem to be so fascinating for Goethe because, with their manifold functions and meanings, they allow us to cross the borders between different genres and disciplines and to connect different kinds of thinking. This transgressive intellectual activity, which we could call ‘transdisciplinary’, remains a model for important thinkers of the 20th century, such as Paul Valéry, Walter Benjamin or Aby Warburg.

*KEYWORDS:* Goethe, Spiral tendency, Martius, Line of beauty, William Hogarth.

*Sabine Mainberger* is a professor of Literary Theory and Compared Literature at the University of Bonn. She published the following books: *Experiment Linie. Künste und ihre Wissenschaften um 1900* (2010); *Die Kunst des Aufzählens. Elemente zu einer Poetik des Enumerativen* (2003); *Schriftskepsis. Von Philosophen, Mönchen, Buchhaltern, Kalligraphen* (1995) among numerous essays on modern literatures of different languages, aesthetic issues and theory of the art. @ – s.mainberger@uni-bonn.de

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