

FROM DISPARAGEMENT TO APPRECIATION: SHIFTING PARADIGMS AND INTERDISCIPLINARY OPENINGS IN INTERPRETING HEGEL'S PHILOSOPHY OF NATURE¹

Cinzia Ferrini

To recount the story of how Hegel's philosophy of nature was received and interpreted is to recount a paradigmatic story of paradigm shifts in the Humanities. From its inception Hegel's philosophy of nature was regarded as a horrible example of the aberrations of arrogant philosophical speculation and absolute constructions. Even very recent scholars recall that when dealing with Hegel's philosophy of nature «it is virtually impossible to ignore the harsh criticism that this part of his system has faced over the past two centuries».²

The stream of charges likely began with the Duke of Gotha and Altenburg Ernst II. In 1801 he received a complimentary copy of the *Dissertatio philosophica de orbitis planetarum*, Hegel's first condensed but nevertheless elaborated interpretation of Newton's mechanics and speculative approach to the planetary system. On it the Duke wrote: «Monumentum insaniae seculi decimi noni» and then sent the copy to Baron von Zach, the court astronomer, author of the first disparaging review on Hegel's philosophy of nature in April 1802.³ Note that the Duke's sentence can be rendered both as “monument of” and “monument to” the insanity of the XIX century.

The general epistemological issues at stake in Hegel's 1801 *Dissertatio* are the relations between what is supposed in mathematics, what proves to be true in physics and what actually exists in nature, the contrast between geometrical synthetic method and physical analytical method, between deduction and induction, the ground for demonstration in natural science and the critical control of the theories which orient and direct empirical research and

¹ This paper was submitted in response to a call for papers and presented to the Academia Europaea 25th anniversary conference: *European science and scholarship looking ahead – challenges of the next 25 years* (Wroclaw, 16-19 September 2013), on 19 September 19th, in the session: *Paradigm Shifts in the Humanities*. The present text draws from Section I of FERRINI 2012 and has been thoroughly revised for publication in “Esercizi Filosofici”.

² POSCH 2011, p. 177.

³ On Baron von Zach's evaluation see NEUSER 1986, 1.

observations. The two famous knotty points were Hegel's criticism of Newton's mathematical demonstration of Kepler's second law, so that whoever takes it for granted is not to be envied that underscoring assessment,⁴ and his appraisal of the Timaeus of Locres's doctrine of the formation of the universe. In the last couple of pages Hegel refers to an example drawn from the Platonic-Pythagorean tradition to criticize on philosophical grounds the astronomers's aim to fill the gap between the orbits of Mars and Jupiter according to the expectations of the Titius-Bode arithmetical sequence, *contra* the empty space, so far observed, between the two planets.

Unfortunately, Hegel showed how a hypothetically "truer" philosophical series could be used to determine the mathematical ratios of magnitudes which actually exist in nature just as Ceres (now classified as an asteroid) was discovered between Mars and Jupiter by the Italian astronomer Piazzi.⁵

No wonder that in 1873 J. H. Stirling, who aimed to demonstrate the merits of Hegel's philosophy of nature and to confute the most common prejudices against it, in reply to Whewell's attacks and condemnation in 1849 and 1860, confessed «to sorrow» that the *Dissertation* was ever written, for its «crude Schellingian look» and its blunders.⁶

Hegel outlined the main issues of his philosophy of nature in a chapter on *Observing Reason* in the 1807 *Phenomenology of Spirit*, where he deals with our advancement from perception to the universality of thought in discovering forces, laws or genera in nature, as a distinctive stage of our self-conscious cognitive experience of the world, corresponding to the modern scientific revolution.⁷ There he distanced himself from the Schellingian, romantic, monistic view of nature as visible spirit and of spirit as invisible nature, which purported to reduce organic and inorganic forms, processes, products, or material combinations to merely quantitative ratios of the organized inner activity of nature. Later, Hegel provided a complete exposition of the qualitatively differentiated stages of his own philosophy of nature, which, in

⁴ On the point see FERRINI 1994, Nasti De Vincentis's notes in FERRINI 1995a, pp. 90-99 and NASTI DE VINCENTIS 1998.

⁵ In this regard, note that only in 1992 Craig and Hosking have observed that «what we find [in the last Section of the *Dissertatio*] is no proof that the gap between Mars and Jupiter must be empty, but only a criticism of the argument that was leading contemporary astronomers to think that it was like to be occupied. Hegel cites another series [...] that roughly matched the orbits of the then known planets, but unlike Bode's law did not have any term that corresponded to an apparent gap in the solar system. The criticism is fair and it is not made any the less fair by the fact that, as it happened, Bode's law came up trumps. We all know that a weak argument can turn out to have a true conclusion» (CRAIG and HOSKING 1992, p. 209).

⁶ STIRLING [1873] 1977, p. 100.

⁷ See FERRINI 2009.

addition to mathematics and mechanics, includes physics, chemistry, geology and organics, in his 1817, 1827 and 1830 editions of the *Encyclopaedia of the philosophical sciences*. In the *Encyclopaedia*, Hegel expounds his system according to the three moments of Logic (the ideal part), Nature and Spirit (the real part). Thus, the Philosophy of Nature is that moment of the idea of philosophical knowledge, in which reason's processes are comprehended neither in their ideal or abstract thought-element nor within their human, spiritual context, but as what is really essential and universal in the opposite of spirit, i.e., in the externality of the natural world, which famously Hegel defines as the otherness of the Idea.

Hegel died in 1831. In the same year an empirical scientist, O. F. Gruppe, published anonymously a satirical piece entitled: *Die Winde oder ganz absolute Konstruktion der neueren Weltgeschichte durch Oberons Horn, gedichtet von Absolutulus von Hegelingen*, where Hegel's figure was ridiculed and his demands relegated to a utopian dimension. In 1835 C. H. Bachmann wrote a book simply titled *Anti-Hegel*. This intellectual climate powerfully stimulated Hegel's followers, who began publishing his collected works in 1832 (omitting the infamous *Dissertation*). In 1837, J. Schaller replied to the stream of charges with his: *Philosophy today: on the apology and elucidation of Hegel's system (Die Philosophie unserer Zeit. Zur Apologie und Erläuterung des Hegelschen Systems)*.⁸ In 1841, the same year Schelling was called to take Hegel's chair in Berlin, Michelet, who had graduated with Hegel in 1824, edited Hegel's lectures on the philosophy of nature. Michelet tried to show that Schelling's romantic philosophy of nature was not at odds with Hegel's philosophy of nature, emphasizing the common work of the «two divine twins», the Castor and Pollux of philosophy in Jena before they split, a common view which according to Michelet was never abandoned by Hegel and still formed the basis of his later lectures.⁹

This cultural strategy was likely the origin of a general reaction in Germany where working scientists started to attack Romantic (Schellingian) and Idealist (Hegelian) nature-philosophy as a whole as precisely the kind of work from which serious students of nature should seek to distance themselves. In 1844 the biologist Schleiden dismissed the entirety of the philosophy of nature as a «string of pearls of the crudest empirical ignorance consisting of little more than

⁸ For a bibliography of these early reactions (1802-1841) to Hegel's philosophy of nature see NEUSER 1987, pp. 502-506. More recently, W. Neuser, W. Lenski, E. Barbagallo, S. Roterberg, S. Lange and K. Hata have posted an updated bibliography on the web site of the Technische Universität Kaiserslautern (see NEUSER *et al.* 2013).

⁹ I have deepened this aspect in FERRINI 2003, pp. 35-51.

miserable criticism and excerpts put together without judgment». ¹⁰ The following century continued in this same vein. It suffices to recall Benedetto Croce's 1906 famous and influential verdict in *What is Living and What is Dead in the Philosophy of Hegel*, that the dead part is the philosophy of nature; and Alexander Koyré's 1934 assessment: «Hegel's system is dead, and very much so. And of all its parts, the philosophy of nature is certainly the most dead, the most obsolete, and since then it has always been sterile, and today no one would like, nor even dare, to resurrect it». ¹¹ This death certificate had lasting influence in France on scholars like Dubarle and De Gandt, the editor, in 1979, of the French edition of the infamous Dissertation. In his Preface to De Gandt's annotated translation, Dubarle echoed Koyré, stating: «Excepting only occasional, isolated scholars» – Dubarle mentions Meyerson, De Gandt, Petry – «no one bothers any longer with this part of Hegel's oeuvre, and even less to understand why this part was such a set-back of philosophical intelligence; perhaps of intelligence as such». ¹²

To sum up, durable disparagement has included: incongruities, inconsistencies, absurdities, obscurity, external formalism and flights of fancy, crudest empirical ignorance, ridiculous errors and lack of scientific knowledge, fallacious a priori logical deduction of empirical reality, illicit introduction of real content hidden within the formalism of the logical movement, the inability of the dialectical method to produce any actual cognitive progress, and so on.

No wonder scholars were slow to reconsider this part of Hegel's system. Indeed it has been noted that for «nineteenth-century scientists (and for historians), the rejection of Hegel [...] had a "paradigmatic significance"». ¹³ A new trend in research began only in the 1970s, as G. Buchdahl, A. Doz, D. von Engelhardt, J. Findlay, H. S. Harris, G. Nicolin, M. J. Petry and then W. Neuser and P. Ziche collected sources and evidence of Hegel's competence in the empirical sciences (astronomy, mechanics, physics, chemistry). ¹⁴ Notably, in 1970 Michael John Petry produced a ground-breaking English edition of the

¹⁰ SCHLEIDEN [1844] 1988, p. 60; quoted in HOULGATE 1998, p. xi.

¹¹ In his article *Hegel à Jena*, published in the "Revue Philosophique" (1934), Koyré wrote: «La système de Hegel est mort et bien mort. Et de toutes ses parties la philosophie de la nature est certainement la plus morte, la plus périmée celle, qui, d'ailleurs, a toujours été stérile, celle dont personne, aujourd'hui, n'oserait ni ne voudrait entreprendre la résurrection»: quoted in NADLER 1938, note 1, p. 130.

¹² DUBARLE 1979, p. 13: «A l'exception de quelques isolés, de loin en loin [...] on ne s'occupe plus de cette partie de l'oeuvre hégélienne, et moins encore de comprendre pourquoi et en quoi elle fut un considérable échec de l'intelligence philosophique. De l'intelligence tout court, peut-être».

¹³ HOULGATE 1998, p. xii.

¹⁴ For a 1970-1985 bibliography on Hegel's philosophy of nature see NEUSER 1987, pp. 522-537.

second part of Hegel's 1830 *Encyclopedia*, with Additions drawn from Hegel's lectures collected by Michelet in his 1842 edition. In the same year, John Findlay (introduction and notes) and Arthur Miller (translation) published another English edition of the *Philosophy of Nature*. However, Petry's more detailed and informative notes demonstrated for the first time the soundness and consistency of Hegel's scientific background. Note that, in Italy, Valerio Verra's edition of the 1830 *Encyclopedia* with the Additions appeared only in 2002.

Here we have a first paradigm shift. Indeed, what emerged from these seminal works was a strategy of "vindication", «trying to show that the criticism Hegel levels at several of the prevailing attitudes of his day assumes a new significance once a proper distinction is drawn between Newton's own views and those of his professed followers».¹⁵ Their main focus was Hegel's relation to the sciences of his time, with special attention to the "competence" issue, to save him from the host of alleged blunders in celestial mechanics. By stressing a distinction between Hegel's criticism of Newton and Hegel's criticism of Newtonianism the new approach aimed to bring out «the basic convergence of many of Hegel's views with those of the historical Newton». A case in point was Hegel's pitting both the rigour of Kepler's kinematic approach and the implication of his own dialectical account of the interplay between centrifugal and centripetal force against Newton's *Principia*.¹⁶

Though most of the publications in the last 25 years are conference proceedings or anthologies, the progressive deepening of this research and its constant comparison to the sciences of Hegel's time and to contemporary issues, increasingly supported the production of monographs. In 1982, O. Breidbach published a systematic monograph on organics, and in the same year D. Wandschneider famously proposed, in his monograph *Raum, Zeit, Relativität. Grundbestimmungen der Physik in der Perspektive der Hegelschen Naturphilosophie*, to relate the fundamental determinations of contemporary physics (space, time, relativity) to insights of Hegel's philosophy of nature.

Against the background of the competence issue, the later Eighties and 1990s saw a turn to more collective, specialised and comprehensive enterprises: scholars from North America and Europe increasingly produced major collections of essays to deepen the understanding of the historical importance and the enduring scientific relevance of Hegel's philosophy of nature. Specialized reviews began to acknowledge this upsurge. In 1988 a note on *Die*

¹⁵ This was the explicit aim of the 1989 Cambridge conference *Hegel and Newtonianism* and of its Proceedings (see PETRY 1993).

¹⁶ For a different approach, focussed on Hegel's arguments *contra* the historical Newton's model for centrifugal force, see Nasti De Vincentis's Appendix in FERRINI 1995, pp. 203-240.

Aktualität der Hegelschen Naturphilosophie by Wolfgang Bonsiepen, accounted for the works of D. Wandschneider, W. Neuser, M. J. Petry and B. Falkenburg. Bonsiepen arranged their works along the following lines of research which well represented the agenda of the time: A) fundamental problems of Hegel's Philosophy of Nature; B) Hegel's criticism of Newton; C) Space, time, motion and matter; D) Philosophy of mathematics.¹⁷

This body of research on Hegel's scientific sources and background produced a second, slow shift in perspective: scholars began to stress how Hegel had criticized the logical procedures and metaphysical presuppositions of the working scientist's activity,¹⁸ Hegelian research began to inquire into the proper rational, methodological and cultural dimension of the philosophy of nature in "context" and to focus on Hegel's epistemology. This development from the "competence" paradigm was also supported by a series of publications of students's transcripts, with their variants and details, taken when Hegel was lecturing on Philosophy of Nature (in the Winter Semester 1819/20, 1821/22, 1823/24, 1825/26 and in the Summer Semester 1828, 1830).

This shift in perspective from the "competence issue" to "context" produced studies placing Hegel's philosophy of nature within the historical frame of post-kantianism, against the formal background of the relevant mathematical models or in logical relation to empirical sciences.¹⁹ The emergence of this second paradigm opened up several research directions and interdisciplinary prospects, and also stimulated analysis from an "encyclopedic" standpoint, aimed at accounting for epistemological consequences. Systematic readings such as K. Westphal's *Hegel's Epistemological Realism* (1989) highlighted how Hegel's methodological idealism acknowledges the genuine otherness of nature, in the form of its radical givenness and contingency, as what essentially distinguishes the "fact" of nature from the "thought" of it.

Many of these systematic studies focussed on the enigmatic encyclopedic transition from Logic to Nature, itself burdened by heavy charges of apriorism, from Schelling to Popper, who famously wrote: «Hegel achieved the most miraculous things. A master logician, it was child's play for his powerful dialectical method to draw real physical rabbits out of purely metaphysical hats».²⁰ An increasing sensitivity to transition problems also brought more attention to the *prima facie* less problematic transition from philosophy of nature

¹⁷ See BONSIEPEN 1988.

¹⁸ See for example NEUSER 1995, p. 175f.; ILLETTERATI 1995, p. 347; FERRARIN 1998, p. 76.

¹⁹ See for instance ZICHE 1996.

²⁰ POPPER [1945] 1963, p. 27.

to philosophy of spirit,²¹ and to the presuppositions of the philosophy of nature in Hegel's *Phenomenology*.²² Through systematic and contextualized readings, the study of Hegel's philosophy of nature has been reassessed in light of the historical experience of consciousness in knowing the external world, and in relation to the place of man within nature and within our spiritual world. These developments have changed and broadened our perspective yet again. In the last decade, scholars have aimed to deepen our understanding of the dialectic between biological (first) and cultural (second) nature at the phenomenological level of the self-conscious, linguistically mediated recognition of our rational dignity, freedom and ethical life. For instance, at the end of the Nineties, Russon made explicit a «philosophy of embodiment» within Hegel's 1807 *Phenomenology* through the notion of «second nature», focussing on the institutional embodiment of human subjectivity; the way was paved to address such issues as Hegel's ethics of recognition and social philosophy,²³ also within the context of Hegel's treatment of natural life in his Jena writings.²⁴ Indeed, this third paradigm shift is characterized by issues such as the emergence of the problem of the naturalness of man in respect to culture and to democratic, "open" societies and the related feature of the reappraisal of the relation of logic to nature and to spirit from the standpoint of bioethics and ecological revolution on the other hand. One of the most recent development of this complex trend derives our ethical self-constitution and the concept of recognition from the experience of "biological" desire in natural life, raising the question about the harmonious connection between a social-political order based on recognition and the universal naturalistic structures of desire, needs and environment. From this new standpoint, the study of Hegel's organics is seen as filling the gap between the physical and the mental,²⁵ and Hegel's organic and relational conception of socio-political life is seen to «provide resources for thinking through both the tension between holism and atomism in social theory and the tension between liberal individualism and communitarian collectivism in political theory».²⁶ A fine example of this interweaving is Pinkard's 2012 book on Hegel and the mind, nature and the final ends of life, where the first chapters show renewed interest in Hegel's "naturalism" and deal with animal and human subjectivity and awareness, animal life and will, the issue of being at odds with

²¹ See for instance MARMASSE 2002 and 2008.

²² See for example VERRA 1997 and 2002; DAHLSTROM 2007, FERRINI 2007, QUANTE 2008.

²³ Cf. BRANDOM 2007, HOULGATE 2010, BEUTHAN 2011, HONNETH 2010 and 2012.

²⁴ See for instance TESTA 2009, 2011 and 2012.

²⁵ Cf. SPAHN 2011.

²⁶ QUADRIO 2012, p. 317.

oneself in desire, while the final chapters focus on inner lives and public orientation, public and private reasons, civil society and the balance of interests, on the forms of democracy and state. In parallel, an hegelian approach to current ethical concerns on the preservation of biodiversity and our environment is becoming increasingly popular: since 2008-9 we have attempts to develop a species-based environmental ethic in Hegel's Logic of Life .

Indeed, this latest interpretive shift has also stimulated reassessment of the relation between Hegel's systematic account of human naturalness and the animal organism as the "truth" of organic nature, because it fulfills all the logical determinations of the idea of life in the philosophy of nature.²⁷ Moreover, attention is drawn to the formative dimension of human cognitive capacities and collective forms of intentionality against the background of the comparative ethology. For instance, Michael J. Thompson's 2011 claim to «enlarge» the human sphere of «recognition» to non-rational nature in order to avoid «pathologies» of ethical life, implies a reassessment of Hegel's treatment of animal life in the philosophy of nature, enhancing attributes such as animal's self-feeling, pain and suffering and stressing that there are real, shared continuities between human beings and most animals. In fact, Hegel's philosophy of nature now inspires enlarging the sphere of recognition to include such issues as animal rights. In his 2012 introduction to a special issue of *Critical Horizons* containing articles on this recent refocussing on nature *in spirit*, H. Ikäheimo remarks that this new direction for Hegel-studies and Hegelian Philosophys amends «the prevailing picture of "spirit according to Hegel" where sociality, attribution and normative statuses are highlighted with more light and detail also on corporeality and subjective structures distinctive of human persons and their form of life, and their prerequisites in animality».²⁸

In this regard, a paradigmatic work is the collection of nineteen essays *Natur und Geist*, published in 2011 in honor of Wolfgang Welsch, which fall under five headings, nicely representing the current agenda: 1. escaping dualism; 2. spirit, brain and evolution; 3. life, subjectivity and intentionality; 4. continuity and discontinuity between man and animal; 5. historical-systematic, cultural and intercultural perspectives. Four contributions deal directly with Hegel's philosophy of nature and philosophy of spirit.²⁹

In sum, shifting from very harsh criticism to appreciation and employment, today's research on Hegel's philosophy of nature appears: 1) increasingly

²⁷ See FERRINI 2010.

²⁸ IKÄHEIMO 2012, p. 153.

²⁹ See TEWES and VIEWEG 2011.

motivated to connect the systematic determination of nature to the theory of mind, to escape dualist problems of connecting a disembodied spirit with nature; 2) interested in showing the bearing Hegel's conception has on current ideas in bioethics and environmental philosophy, illuminating the relation between organic and inorganic nature, nonhuman and human animals, as well as between natural life and social world; 3) to develop a contextualized and systematic approach to both the difference and the relation between the natural and spiritual ways of joining the particular to the universal, mediating between individualism and holism, *Gattung* and *Volk*, *qualia* and *moralia*.

To conclude, because unequivocally disparaging charges of Hegel's alleged scientific blunders set the tone of the reaction, the first paradigm shift we identified was essentially monothematic. By contrast, the second paradigm shift, resulting from the deepening and the extension of the inquiry, paved the way to manifold avenues of research. The last shift has left behind those earlier preoccupations, and moves freely across natural and social sciences, engaging more constructively with the contemporary concerns of our lives and our changing sensibilities.

Each time we must conclude, as Hegel did his lectures on the history of philosophy in Berlin, that: «It is up to this very point that philosophy has now arrived».³⁰ However, after these major paradigms shifts, we can say that at least “this” time, *pace* Popper, the “high tide of prophecy” places the Hegelians in position to get ready for what comes next, in an open society.

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³⁰ Quoted in PINKARD 2012, p. 196.

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