EMPIRICS, SCIENCE, AESTHETICS: ALEXANDER VON HUMBOLDT'S ORIGINAL APPROACH TO NATURE

GIAN FRANCO FRIGO

* Correspondence: gian.franco.frigo@unipd.it

"Ideas are only useful when they spring to life in many minds."[1]

1. Nature and its meanings

The contributions made by Alexander von Humboldt (1769-1859) in his time to various cutting-edge scientific fields (astronomy, botany, mineralogy, chemistry, galvanism, physiology)[2]; his extraordinary exploratory activities in the Spanish colonies of the New World and in vast swathes of the Russian empire, with his precise measurements of astronomical and geographical data, and the orographic, geological, atmospheric structure; his impressive collection and cataloguing of specimens of tropical flora and fauna; his descriptions, based on direct investigation and first-hand documentation, of the different historical-ethnographic and social-economic situations of the countries he visited[3] - all this makes him a unique and incomparable character in the history of modern science[4]. It is no coincidence that he was compared to Aristotle by the transcendentalist philosopher Ralph Waldo Emerson (1803-1882), and described as the "Columbus of Sciences" on account of his investigations and discoveries.[5]

Humboldt also had an unparalleled ability to 'popularize' the results of his investigations and his view of nature, striking a balance between robust positive information and clear and enjoyable descriptions: the extraordinary global success of works such as the *Ansichten*

[1] Alexander von Humboldt in his letter to Ludwig Bollmann, Cumaná 15.10.1799, in: A.v. Humboldt, *Briefe aus Amerika 1799-1804*, ed. by U. Moheit, Berlin, Akademie Verlag, 1993, p. 63.

[2] Humboldt's countless scientific publications that appeared in a wide variety of places and in different languages over seventy years (1789-1859) are now available in ten volumes edited by O. Lubrich and T. Nehrlich: *Alexander von Humboldt, Sämtliche Schriften* (*Aufsätze, Artikel, Essays*), Bern edition, 10 volumes, München, DTV, 2019. The most up-to-date reference work for his other writings is H. Fiedler, U. Leitner, *Alexander von Humboldts Schriften. Bibliographie der selbständig erschienenen Werke*, Berlin, Akademie Verlag, 2000.

[3] *Voyage aux régions équinoxiales du nouveau continent fait en 1799, 1800, 1801, 1802, 1803 et 1804, par Al. de Humboldt et A. Bonpland; rédigé par Alexandre de Humboldt et A. Bonpland. Avec deux Atlas, qui renferment, l'un les vues des Cordillières et les monumens des peuples indigènes de l'Amérique, et l'autre des cartes géographiques et physiques*. Paris 1807-1831. The work which comprises 29 volumes is divided into six sections: I: Relation historique; II: Observations de zoologie et d'anatomie comparée; III: Essai politique sur le royaume de la Nouvelle Espagne; IV: Astronomie; V: Physique générale et géologie; VI: Botanique. A German-language edition was also published in parallel to the French edition; there are editions in various languages of the individual sections and volumes.

[4] Cf. H. Scurla, *Alexander von Humboldt. Sein Leben und Wirken*, Berlin, Verlag der Nation, 1980; K. Schleucher, *Alexander von Humboldt. Der Mensch, der Forscher, der Schriftsteller*, Darmstadt, Roether, 1984; O. Ette (ed.), *Alexander von Humboldt. Aufbruch in die Moderne*, Berlin, Akademie Verlag, 2001; O. Ette (ed.), *Alexander von Humboldt Handbuch. Leben – Werk – Wirkung*, Stuttgart, Metzler, 2018.

[5] Cf. V.M. Kutzinski, "Das Amerikanische Reisewerk", in: O. Ette (ed.), *Alexander von Humboldt-Handbuch*, cit., p. 41.

der Natur[6] and *Kosmos*[7] established his reputation as a universally renowned scientist well beyond the first half of the 19th century.[8]

In order to better understand, 250 years after his birth, the merits of his prolonged scientific activity (and influence), it is necessary to view him within the scientific culture of his time, particularly in terms of his vision of nature and the methods with which he endeavoured to investigate and describe it.

Nature is a subject in which our philosophical (and scientific) tradition has been directly involved since its infancy in Ionia, where the first philosophical works we still have evidence of are entitled *perì physeos* (on nature) and the first philosophers were later called "physiologists" as researchers in *physis*. Nature has been a constant theme in the reflections of later philosophers until modern times – despite the meanings and values changing every time, they have always been instrumental in defining the meaning attributed to the world and history, and in particular to the role of mankind in them. Nature and culture are constantly referring back to one another - a culture defines and understands itself according to what it identifies as nature.

It is precisely its complexity and epistemic stratification that has made the concept of 'nature' so problematic for modern people - as the phenomenologist Maurice Merleau-Ponty (1908-1961) noted a few decades ago - it is difficult to define it and to identify through it a univocally recognized object. The risk is then that of breaking 'nature' down into its parts "as the product of a history in the course of which it has acquired a series of meanings that have ended up making it unintelligible."[9] Now, according to Merleau-Ponty, the term *nature* refers to the concept of "a life that has meaning, but in which, however, there is no thought; hence the kinship with the vegetative: nature is what has a meaning, without this meaning being posited by thought."[10] From the perspective of the subject, nature manifests itself as 'objectivity', but it is not resolved in objectivity: it "is an enigmatic object, an object that is not an object at all; it is not really set out in front of us. It is our soil, not that which faces us, but that which carries us".[11]

2. The crisis of the '*historia naturalis*' model

In the cultural context within which Alexander von Humboldt developed his scientific-naturalistic interests, the concept of nature had a plurality of meanings and values, among which there were first of all those linked to the centuries-old tradition of *historia naturalis*, which had

[6] The *Ansichten der Natur mit wissenschaftlichen Erläuterungen* had three editions (Tübingen, Cotta, 1808, 1826, 1849) which expanded each time both in terms of texts and especially in terms of the footnotes. The work was immediately a great success and was translated into major foreign languages. For the references I used the new edition: *Ansichten der Natur, mit wissenschaftlichen Erläuterungen und sechs Farbtafeln nach Skizzen des Autors*, Frankfurt (Main), Eichborn Verlag, 2004.

[7] A.v. Humboldt, *Kosmos. Entwurf einer physischen Weltbeschreibung*, Stuttgart and Tübingen, Cotta, Vol. 1, 1845; Vol. 2, 1847; Vol. 3, 1847; Vol. 3, 1850; Vol. 4, 1858; Vol. 5, 1862; new edition in a single volume to which I refer: *Kosmos. Entwurf einer physischen Weltbeschreibung*. Edited and with an afterword by O. Ette and O. Lubrich, Frankfurt (Main), Eichborn, 2004; to put the work in context, see P. Werner, *Himmel und Erde. Alexander von Humboldt und sein Kosmos*, Berlin, Akademie Verlag, 2004.

[8] Making a reappearance even now as the protagonist in D. Kehlmann's bestseller, *Die Vermessung der Welt. Roman*, Reinbek (Hamburg), Rowohlt, 2005.

[9] M. Merleau-Ponty, *La natura . Lezioni al Collège de France 1956-1960*. Text established and annotated by D. Séglard, Italian edition by M. Carbone, Milan, Cortina, 1996, p. 3.

[10] Merleau-Ponty, *La natura* cit., p. 4.

[11] *Ibidem*.

recently received a boost from the new classification method proposed by Linnaeus (1707-1778)[12]. The *historia naturalis*, which drew on the naturalistic investigations of Aristotle (384-322 BC)[13], Theophrastus (372/70-288/85 BC)[14], Pliny (23/24-79),[15] had developed a model and a method for studying nature based on observing and describing natural phenomena and forms, viewed as an entity that was basically always identical and investigated in view of the benefits these phenomena and forms could have for mankind.[16]

With the discovery of new continents and the sudden expansion of the boundaries of the plant and animal kingdom, but also due to improved research methods and instruments, *historia naturalis* was no longer able to do its job properly[17]. Nevertheless, the epistemic relevance of the *historia naturalis* is attested by its extensive coverage in the *Système figuré des connoissances humaines* of the *Encyclopédie* by Denis Diderot (1713-1784) and Jean Le Rond D'Alembert (1717-1783); here it is categorized under "Mémoire" and its subject matter is divided into "Uniformité de la Nature", "Ecarts de la Nature" and "Usages de la Nature", then further divided into dozens of entries.[18]

This model was still very popular during Alexander von Humboldt's formative years and he applied it when describing and cataloguing the numerous specimens he collected during his travels.[19]The model later came under pressure not from within but due to developments in the field of geology which, at least since the 17th century, had shown without a shadow of a doubt that the Earth has undergone significant transformations, which in turn presuppose that it has gone through a long, and sometimes traumatic, succession of eras.[20] Nature, therefore, underwent a sort of 'temporalization', a 'historicization' that makes the synchronic 'horizontal' model of *historia naturalis* obsolete, since nature's present appearance bears the signs of ancient and recent transformations, something which Humboldt experiences at first-hand during his American

[12] C. Linnaeus, *Systema Naturae sive regna tria naturae systematice proposita per classes, ordines et species*, Leiden 1735.

[13] In various fields of naturalistic investigations Aristotle was the landmark author from antiquity to late modernity with his works *Physica, Meteorologica, Parva naturalia, De historia animalium, De generatione et corruptione*.

[14] In particular in *Historia plantarum* and *De causis plantarum*.

[15] *Historia naturalis libri XXXVII*. Humboldt takes the motto for his *Kosmos* from Pliny: "Naturae vero rerum vis atque maiestas omnibus momentis fide caret si quis modo partes eius ac non totam complectatur animo". (*Hist. nat.* VII, 1).

[16] Examples in this regard are the popular works by G.-L. Leclerc, Comte de Buffon, *Histoire naturelle, générale et particulière*, 15 vol., Paris 1749-1767, and by J.H. Blumenbach, *Handbuch der Naturgeschichte*, Göttingen 1779.

[17] In the *Ansichten der Natur*, Humboldt notes that in the meantime the number of plant species has exceeded 80,000 and that new criteria should be considered to provide them with a system not only based on certain external characteristics, but that identifies those essential forms that constitute a "physiognomy of plants" and links them to their habitat (*Ansichten der Natur* cit., pp. 248-249).

[18] "Prospectus de l'Encyclopédie" in *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers, par une société de gens des lettres*, Volume 1, Paris, Briasson et al., 1751, p. 52.

[19] Cf. E.-M. Siegel, "Repräsentation und Augenschein. Organisation des Wissens und Wahrnehmung des Fremden um 1800 am Beispiel der Reiseberichte und –Tagebücher Humboldts", *HiN -. Internationale Zeitschrift für Humboldt-Studien*, 4 (2003) 7, pp. 36-50, and E. Knobloch, "Erkundung und Erforschung. Alexander von Humboldts Amerikareise", *HiN – Internationale Zeitschrift für Humboldt-Studien* 8 (2006) 13, pp. 55-73.

[20] W. Lepenies, *Das Ende der Naturgeschichte. Wandel kultureller Selbstverständlichkeiten in den Wissenschaften des 18. und 19. Jahrhunderts*, Munich, Hanser, 1976.

travels. For example, when describing the boundless plain at the foot of the great Andean mountain ranges, Humboldt recalls that "during the youth of our planet" there was the sea there;[21] or when he penetrated the interior of the continent, he notes how the Europeans' senseless deforestation to make way for highly profitable monocultures caused rapid climate change and a drastic drop in the water level of Lake Valencia[22]. The 'historicization' not only of human events, but also of telluric events, as Humboldt noted on his travels, provides the basis for his conviction of the essential relationship between human culture and natural conditions, which he summarizes in the phrase that the shape of the earth tells its history.[23]

3. Overcoming the mechanistic model

In modern times, alongside the model of *historia naturalis*, there is another physical-mathematical model which, used for the first time by Galileo Galilei (1564-1642)[24] and René Descartes (1596-1650)[25], became fully established with Isaac Newton (1642-1727)[26]. It made available a new type of knowledge about matter and the universe which, unlike those coming from a purely tangible experience, revealed the rational structure of phenomena and the laws which determined them, thus opening up the possibility of predicting them and the prospects of 'experimenting' with and controlling them. Humboldt acquired an extraordinary level of expertise in this field too which, during his long stays in Paris, allowed him to talk and collaborate actively with the most important scientists of the time as their equal.[27]

A further theoretical perspective on Nature took shape in Germany at the end of the 18th century - one that conceived Nature not as a purely material world governed by necessitating mechanical laws and fundamentally separate from the spiritual one, but as a self-organizing totality in which matter and spirit are two aspects or two moments in a single finalistically-structured entity. This is the perspective underlying the empirical and theoretical investigations of Johann Wolfgang Goethe (1749-1832) in *Versuch die Metamorphose der Pflanzen zu erklären*[28];

[21] *Ansichten der Natur* cit., p. 15.

[22] "When forests are destroyed with reckless haste, as they are everywhere in America by the European settlers, the springs dry up or reduce their reach. The river beds remain dry for part of the year, they become torrents whenever great rains fall on the heights. [Consequences:] The grassy ground and moss on the backs of the mountains disappear, the rainwater is no longer held back in its channels: instead of slowly augmenting the level of the rivers by progressive filtrations, at times of great flood they furrow the hillsides, drag away the loose soil and cause the sudden floods that devastate the countryside."(*Voyage de Humboldt et Bonpland.* Première Partie: *Relation historique*. Vol. 2, cit., p. 72).

[23] As Laura Dassow Walls wrote, for Humboldt "the history of man and the history of nature were mutually readable." L. Dassow Walls, "Ansichten der Natur", in: O. Ette (ed.), *Alexander von Humboldt-Handbuch* cit., p. 38.

[24] G. Galilei, *Dialogo sopra i due massimi sistemi del mondo* (Florence 1632), in: *Le opere di Galileo Galilei*, edited by A. Favaro. Vol. 7, Florence, Barbera, 1933, pp. 33-489.

[25] See *Principia Philosophiae*, Amsterdam 1644, and the posthumous *Le monde ou, Le Traité de la lumière et des autres principaux objets des Sens,* Paris 1664.

[26] *Philosophiae naturalis principia mathematica*, London 1687.

[27] Cf. on this point M.-N. Bourguet, "Französische Wissenschaftler", in *Alexander von Humboldt Handbuch* cit., pp. 215-223 and E. Knobloch, "Alexandre de Humboldt et le Marquis de La Place", *HiN - International Journal of Humboldt Studies* 15 (2014), pp. 26-38.

[28] Gotha 1790; the text was republished together with other studies on botany, anatomy, geology and meteorology in *Zur Naturwissenschaft überhaupt, besonders zur Morphologie. Erfahrung, Betrachtung, Folgerung, durch Lebensereignisse verbunden*, 4 issues, Stuttgart and Tübingen 1817-1824. Humboldt and Goethe were lifelong friends and fellow scientists, they carried out experiments together, and Humboldt

it is also behind the works by various authors and romantic scientists,[29] and above all typifies the philosophical current of the *Naturphilosophie* of Friedrich Wilhelm Schelling (1775-1854), according to which "Nature shall be the visible spirit, and spirit, the invisible nature",[30] and by Georg Friedrich Wilhelm Hegel (1770-1831), for whom nature is "the idea in the form of *otherness*" and is "in itself a living whole."[31]

Even though Humboldt is more in tune with Goethe's *modus operandi*, which favours the moment of direct experience when investigating phenomena over the metaphysical framework of the *Naturphilosophen,*[32] on important issues such as the creation and structure of the Earth (which saw 'Neptunists' and 'Volcanists' pitted against each other), he does not hesitate to distance himself from them, as a result of his experiences in the Americas[33]. In the *Naturphilosophie*, which developed in Germany during his American travels, he appreciates the intention of reaching a universal and unitary understanding of the different types of knowledge provided by the individual sciences, but does not share their idealistic outcomes.[34]

In general it can be argued that Humboldt had participated since his formative years with great enthusiasm in the major developments in the science of the time - from the discoveries of galvanism and electricity to the popularity of the chemistry of Antoine-Laurent de Lavoisier (1743-1794), in the shift from the mechanistic to the epigenetic paradigm in the study of living organisms - also providing original contributions in various fields.

---

kept Goethe informed during his travels in America about his experiences and discoveries; he would later dedicate to Goethe – with an engraving by Bertel Thorwaldsen depicting Apollo unveiling a statue symbolizing Nature – the German version of his landmark essay *Ideen zu einer Geographie der Pflanzen nebst einem Naturgemälde der Tropenländer, auf Beobachtungen und Messungen gegründet, welche vom 10ten Grade nördlicher bis zum 10ten Grade südlicher Breite, in den Jahren 1799, 1800, 1801 und 1803 angestellt worden sind. Mit einer Kupfertafel*, Tübingen 1807. On the meaning of the above-mentioned engraving see P. Hadot, *Zur Idee der Naturgeheimnisse: beim Betrachten des Widmungsblattes in den Humboldt'schen "Ideen zu einer Geographie der Pflanzen",* Wiesbaden, Steiner, 1982. Goethe would in turn contribute an extensive review of Humboldt's *Ideen einer Physiognomik der Gewächse* (Tübingen 1806) to the "Jenaische Allgemeine Literatur-Zeitung" (No. 62, 14.3.1806, coll. 489-492).

[29] Cf. Cunningham, A.; Jardine, N., *Romanticism and the Sciences*, Cambridge, Cambridge University Press, 1990; K. Köchy, *Das Ganze der Natur. Alexander von Humboldt und das romantische Forschungsprogramm*, HiN. International Journal for Humboldt Studies, 3 (2002) 5, www.hin-online.de

[30] F.W.J. Schelling, *Ideen zu einer Philosophie der Natur (*1797), in *Historisch-kritische Ausgabe (= AA).* I, 5, Stuttgart 1994, p. 107. In the *System des transscendentalen Idealismus* (1800) he is even more explicit about the nature-spirit relationship, arguing that nature "is an unripe intelligence" and that therefore it is "originally identical with what is known in us as intelligence and consciousness", (AA I, 9-1, Stuttgart 2005, p. 31) and that "the same activity which is *consciously* productive in free action, is productive *without consciousness* in bringing about the world" (pp. 38-39).

[31] G.F.W. Hegel, *Enyzklopädie der philosophischen Wissenschaften* (1830), in Hegel: *Werke in zwanzig Bänden*. Frankfurt (Main) 1970, vol. 9, §§ 247, 251, pp. 24, 36.

[32] Cf. D. v. Engelhardt, "Quellen und Zeugnisse zur Wechselwirkung zwischen Goethe und den romantischen Naturforschern", *Acta historica Leopoldina* 20 (1992), pp. 31-55.

[33] Cf. F. Krafft, "Alexander von Humboldt's Mineralogischen Beobachtungen über einige Basalte am Rhein und die Neptunusmus-Vulkanismus-Kontroverse um die Basalt-Genese", in: U. Leitner, R. Mikosch (eds.), *Studia Fribergensia. Alexander von Humboldt Colloquium. Freiberg 1991,* Berlin, Akademie Verlag, 1994, pp. 117-150; W. von Engelhardt, "Goethe and Alexander von Humboldt. Bau und Geschichte der Erde", in: *Das Allgemeine und das Einzelne - Johann Wolfgang von Goethe und Alexander von Humboldt im Gespräch*, ed. by I. Jahn and A. Kleinert, Stuttgart, Wiss. Verl.-Ges., 2003, pp. 21-31;

[34] P. Werner, "Übereinstimmung oder Gegensatz? Zum widersprüchlichen Verhältnis zwischen A.v. Humboldt und F.W.J. Schelling", *HiN - International Journal of Humboldt Studies* 1 (2000) 1, pp. 71-109.

Yet Humboldt's idea of exact science did not prevent him from considering other contemporaneous approaches drawing on nature's ability to speak to our sensibilities, to arouse in us an awareness of the beautiful and the sublime and which, as a result of the reflections of Edmund Burke (1729-1797)[35], Immanuel Kant (1724-1804)[36] and Friedrich Schiller (1759-1805),[37] had provoked a broad-ranging debate in which the aesthetic moment also took on a cognitive value in relation to nature.[38] Humboldt's appreciation for an aesthetic-sentimental approach to nature stayed with him throughout his long life without conflicting with his need for the most accurate and precise naturalistic investigations, using the most modern tools[39]; this was very useful indeed when presenting his research results in all their fullness and complexity. In fact, these descriptions were designed to create a happy synthesis of both points of view: the physical-objective one, represented by the data provided by the instruments, and the empirical-subjective one, in which the subject and the external world tend to merge. A synthesis that Humboldt constantly pursued, but which only at certain moments and with certain subjects did he achieve: this is the case of some memorable parts of *Ansichten der Natur* and *Kosmos*. In other cases, there is a more or less happy juxtaposition of the two moments: a lively and engaging description of the natural phenomena is complemented by very extensive notes full of dry physical data and statistical information.[40]

4. Ways and means of representing Nature

On his return from his American voyage (from 5th June 1799 until 3rd August 1804)[41], on which Humboldt had collected an enormous quantity of materials and documents which it would take him more than twenty years to catalogue and study, he felt the need first of all to expound the purpose of this undertaking that had aroused so much interest among his naturalist contemporaries. This is what he did in the *Ansichten der Natur,* dedicated to his brother Wilhelm, then Prussian Plenipotentiary to the Holy See and an expert on the classical world, almost as if to show a parallel between the investigation of the historical world and the natural world. The

[35] E. Burke, *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*, London 1757.

[36] I. Kant, *Beobachtungen über das Gefühl des Schönen und Erhabenen*, Königsberg 1764, and *Kritik der Urteilskraft*, Berlin/Libau 1790.

[37] F. Schiller, *Über naive und sentimentalische Dichtung*, Tübingen 1795/96; *Über das Erhabene*, Leipzig 1801.

[38] Cfr. J. Ritter, *Landschaft. Zur Funktion des Ästhetischen in der modernen Gesellschaft* (1963), in: idem, *Subjektivität. Sechs Aufsätze*, Frankfurt (Main) 1974, pp. 141-163; A. Bauereisen; S. Pabst; A. Vesper (eds.), *Art and Knowledge. Relations between aesthetics and epistemology in the 18th and 19th centuries*, Würzburg, Königshausen & Neumann, 2009.

[39] See the long "Liste des instruments de physique et d'astronomie" reported by Humboldt in *Relation historique*. Vol. 1, Paris, Schoell, 1814, pp. 57-60. On the role of new technical equipment in naturalistic research, see M.-N. Bourguet, "Landscape with Numbers. Natural History, Travel and Instruments in the Late Eighteenth and Early Nineteenth Centuries", in: *Instruments, Travel and Science. Itineraries of Precision from the Seventeenth to the Twentieth Century*. Ed. M.-N. Bourguet, C. Licoppe, H. O. Sibum, London, Routledge, 2002, pp. 96-125.

[40] Cf. H. Boehme, "Ästhetische Wissenschaft. Aporien der Forschung im Werk Alexander von Humboldts", in: *Alexander von Humboldt - Aufbruch in die Moderne* cit., pp. 17-32.

[41] Which he embarked upon - as he emphasizes in the "Introduction" to the *Relation historique* - not out of a "desire for agitation and the wandering life", but for "seeing a wild, majestic and varied nature in its productions" and "gathering facts useful for the advancement of science". (*Relation historique*, Vol. 1, cit., p. 41).

"Preface" to the first edition of 1808 still retains the profound emotion felt by Humboldt in the presence of natural phenomena that aroused his lively naturalistic interest and aesthetic sensibilities:

> It is not without diffidence that I present to the public a series of papers which took their origin in the presence of great scenes of natural grandeur — on the Ocean, in the forests of the Orinoco, in the Steppes of Venezuela, and in the mountain wildernesses of Peru and Mexico. Detached fragments were written down on the spot and at the moment, and were afterwards moulded into a whole.[42]

The author's wish is that this "may impart to the reader a portion of that enjoyment which is derived from their immediate contemplation by a mind susceptible to such impressions. As this enjoyment is enhanced by insight into the more hidden connection of the different powers and forces of nature, I have subjoined to each treatise scientific elucidations and additions."[43] Hence the importance of portraying in a vivid way the multicoloured spectacle of nature and at the same time the physical world of the scientist, its manifestation – a task in which science, literature and art must work closely together.[44]

Humboldt's intention is to provide an "aesthetic staging of scientific knowledge", a "representation of the data" that engages the intellect, sensibility and imagination, as well as the various modes of expression from prose to images, from atlases and maps to diagrams which connect the various places on the globe with the same climatic characteristics and living forms.[45]

To achieve this, Humboldt uses various illustrative models which, in his opinion, lend themselves to doing better justice to the object experienced and in which objective observation is always mixed with subjective perception.[46] The titles of Humboldt's various works provide the most obvious evidence of this: they range from *Essai* and *Tableau physique* to *Ideen*,[47] from *Vues* and *Atlas pittoresque*[48] to the aforementioned *Ansichten der Natur*, but also the description of his

[42] *Ansichten der Natur* cit., p. 7.
[43] *Ansichten der Natur* cit., pp. 7-8. At the beginning of the second book of *Kosmos* (1847), in which the various techniques required for the study of nature are considered, Humboldt situates the portrayal offered by landscape painting (*Landschaftmalerei)* alongside the description of nature (*Naturbeschreibung)* that arises from enthusiastic viewing and direct objective observation (*unmittelbare objective Betrachtung*) of the characteristics of living forms. (*Kosmos* cit., p. 190).
[44] "A book about Nature must produce the same impression as nature itself. In my *Ansichten der Natur* I was specifically aiming to always describe and portray in a *truthful way*, true even from a scientific point of view, without ending up in the arid region of science". Alexander von Humboldt to Karl August Varnhagen von Ense, 24.10.1834, in: A.v. Humboldt, *Briefe an Varnhagen von Ense aus den Jahren 1827 bis 1858*, ed. L. Assing, Leipzig, Brockhaus, 1860, p. 23.
[45] Cf. O. Lubrich, "Humboldts Bilder. Naturwissenschaft, Anthropologie, Kunst", in: O. Lubrich (Ed.), *Alexander von Humboldt. Das graphische Gesamtwerk*, Darmstadt, Lambert Schneider, 2014, pp. 7-33, here p. 7. See also T. Kraft, *Figuren des Wissens bei Alexander von Humboldt. Essai, Tableau and Atlas in the American Travel Work*, Berlin-Boston, W. de Gruyter, 2014.
[46] Cf. B. Hey'l, *Das Ganze der Natur und die Differenzierung des Wissens. Alexander von Humboldt als Schriftsteller*, Berlin-New York, W. de Gruyter, 2007.
[47] See, for example, l'*Essai sur la géographie des plantes, accompagné d'un tableau physique des régions équinoxiales, fondé sur des mesures exécutées, depuis le dixième degré de latitude boréale jusqu'au dixième degré de latitude australe, pendant les années 1799, 1800, 1801, 1802 et 1803, avec une grande planche en couleur ou en noir*, Paris, Schoell, 1807 and the *Ideen einer Physiognomik der Gewächse*, Tübingen, Cotta, 1806.
[48] *Vues des Cordillères et Monumens des Peuples Indigènes de l'Amérique,* Paris, F. Schoell, 1810-1813,

life's monumental work as the *Voyage aux régions équinoxiales du Nouveau Continent* refers to a literary-scientific model in which lived experience and objective observation encompass landscape, monuments, society and politics.

Humboldt assigns a special role to landscape painting as it has the ability to provide "a more detailed and more complete picture of nature" by combining mass and shapes in a virtually limitless space: landscape painting "follows the edge of the forest until it is lost in the effluvium of distance; it makes the mountain stream plunge from boulder to boulder, it spreads the deep blue of the tropical sky over the tops of the palm trees as above the undulating prairie that surrounds the horizon".[49]

In fact, Humboldt speaks of "pictures of nature"[50] as the best method of rendering the richness of natural phenomena, even if in their static individuality even they cannot fully render the broader overall perspective and the calm impression of the whole.

While until now the "thinking consideration" had produced the modern physical image of the world, Humboldt believes that sensibility and imagination are also indispensable tools to render the exotic image for a European audience of the flora, fauna and amazing landscapes of the Tropics. This involved attributing a cognitive value to the enjoyment and aesthetic representation of nature, which was deeply rooted in the human predisposition, different in the different phases of civilization and culture, to appreciate beauty, and which found its expressive tools "in the glowing fancy of the poet, and the imitative art of the painter".[51] Both qualities that were not lacking in Humboldt, who had had a first-class classical education[52] and attended drawing and painting classes as a young man,[53] but who was under no illusion about the fact that the aesthetic treatment of the objects of natural history created major difficulties in presenting a complete overview, because the profusion of individual images, which intended to render the incredible richness of natural forms, disturbed "the repose and the unity of impression which should belong to the natural picture".[54]

With respect to the 'sentimental' approach to nature, used for the first time by *Julie ou la Nouvelle Héloïse* (1761) by Jean-Jacques Rousseau (1712-1778) and continued with *Paul et Virginie* (1788) by Bernardin de Saint-Pierre (1737-1814)[55] and *Atala, ou Les amours de deux sauvages dans le desert* (1801) by René de Chateaubriand (1768-1848), Humboldt stands the

which in the German version makes explicit reference to the picturesque: *Pittoreske Ansichten der Cordilleren und Monumente americanischer Völker*, Tübingen, Cotta, 1810.

[49] *Kosmos* cit., p. 235. This excerpt provides a telling example of Humboldt's exceptional writing skills that have certainly made both *Kosmos* and *Ansichten der Natur* popular with a wide audience.

[50] *Kosmos* cit., p. 386.

[51] *Ansichten der Natur* cit., p. 260.

[52] The notes of his texts are full of references not only to classical Greek and Latin texts but also to modern ones, and among these we are pleased to mention references to Dante's *Divine Comedy.*

[53] In his youth Humboldt had attended the Academy of Fine Arts in Berlin, in Paris he had lessons with the painter François Gerard. The journals of his American voyages are full of drawings and sketches of plants and animals (over 1500) which in part served as a basis for the artists he commissioned to prepare the coloured plates for several volumes of the *Voyage*.

[54] *Ansichten der Natur* cit, p. 7.

[55] In addition to measuring instruments, atlases, maps, botanical and astronomical treatises, Humboldt also took with him the novel by Saint-Pierre, whose eloquent descriptions of the island of Mauritius would serve as a model for his tropical "Tableaux" in which he sought to merge naturalistic, sentimental and scientific elements into a harmonious whole.

relationship between subject and nature on its head, as he states that the impressions we feel when faced with certain natural phenomena are not purely subjective reactions but the effect of nature having an active influence on us. As he reiterates in the second book of *Kosmos* (1847), his aim is twofold: on the one hand to represent nature "in the pure objectivity of the external phenomenon", on the other "in the reflection of a picture (*Bild*) sensibly perceived in the soul of man, in all his ideas and emotions."[56] In fact, Nature speaks to us more generally through its "silent and creative life, its quiet operation and production", but also in the "individual character of a landscape", in the "confluence of the contours of the clouds, the sea and the coasts of the islands", in the "beauty of plant forms and their grouping."[57]

For this reason his undertaking - as he will reiterate in the "Preface to the second and third edition" (1849) of the *Ansichten der Natur* – is designed "to enhance the enjoyment (*Genuss*) of Nature by animated description, and at the same time to increase in proportion to the state of knowledge at the time the reader's insight into the harmonious and concurrent action of different powers and forces".[58]

This is possible if the purpose of the description is "*natural truth*" (*Naturwahrheit*), both about the impressions on the senses caused by the outside world and about the concatenation of thoughts and intimate feelings. This natural truth is more easily attainable through "the simplicity in the narration of what we have ourselves beheld or experienced" by connecting it to a well-defined moment in space and time, because the generalizations of physical data and their statistical evaluation fall for us within the field of "a science of Induction".[59]

5. An overall image of Nature

The other fundamental aspect underlying all of Humboldt's research is that of representing the multiplicity of natural phenomena, investigated in all their particularity and peculiarity, in a unitary form - an aspiration present from the beginning and culminating in the feat of producing *Kosmos*, which took years and was continuously updated on the basis of new discoveries and new data provided by a group of colleagues.

> My main object was to endeavour to comprehend the phenomena of corporeal things in their general connection; to embrace Nature as a whole, actuated, animated by internal forces. […] But details in physical science are endowed by their intimate nature with an appropriative power, whereby they are reciprocally fructified.[60]

The perspective from which Humboldt interprets nature is to consider it not simply in its static aspect, which was an approach favoured by contemporary physical science, but together with its momentum as a profusion of life and forms:

> The most important consequences of practical physical researches are therefore these: to acknowledge unity in multiplicity; from the individual to embrace all that the discoveries of recent ages offer us; to probe and separate the individuals, yet not to be over

[56] *Kosmos* cit., p. 386.
[57] *Kosmos* cit., p. 11.
[58] *Ansichten der Natur* cit. p. 9.
[59] *Ansichten der Natur* cit., p. 216.
[60] *Kosmos* cit., p. 3.

> whelmed with their mass: to keep the high destinies of man continually in view; and to comprehend the spirit of nature which lies hidden beneath the covering of phenomena.[61]

The irrepressible role that appreciative, and therefore individual and defined, experience plays in learning about nature cannot guarantee Humboldt's undertaking the status of a pure "*rational science*", which is only possible in a Kantian sense starting from a priori principles: it aims to be "the rational observation (denkende Betrachtung) of phenomena, obtained through empirical experience (Empirie), as of a natural totality (Naturganzen)".[62]

This unity, which Humboldt's meticulous and objective investigations focused on from the outset, can then be translated into a "physical description of the world (physischen Weltbeschreibung)" which has the same epistemic status as the historical reconstructions that cannot deduce always particular events and facts from universal principles: "description of the world (Weltbeschreibung) and world history (Weltgeschichte)" are both based on empirical experience (Empirie).[63]

It is Humboldt's belief, however, that a "rational observation (denkende Betrachtung)" of these two, an "intelligent disposition (sinnvolle Anordnung) of natural phenomena and historical events", leads mankind to believe that an "intimate necessity (innere Nothwendigkeit)" dominates the activity of all material and spiritual forces, expanding and contracting, and always returning to itself in a universal concatenation, not with a linear structure but closely intertwined like a web.[64]

This necessity represents the very essence of nature differentiating itself in a physical and a spiritual sphere, and is the foundation of our images (Ansichten) of nature and the search for laws which constitute that "*science of experience (Erfahrungs-Wissenschaft*)" - the ultimate goal of human research.[65] For the human intellect it remains an ideal to be progressively approached without ever being able to completely achieve it, because both natural and spiritual phenomena are countless and changing, and the search for the origin of the universe, as a way to explain the present world, remains blurred to us.[66] The realization that "all [...] flow from one source; and all blend again together in one perpetual, all-pervasive force"[67] is the result of a long process that involves in the beginning a mysterious sensation among primitive peoples, a reassuring feeling of nature as a whole, and that only the development of the various sciences has subsequently brought closer to us. With the rational observation that typifies experimental science, mankind achieves a "spiritual freedom" that transforms "faith in the unity of nature into vivid knowledge and clear understanding."[68]

---

[61] *Kosmos* cit., p. 10.
[62] *Kosmos* cit., p. 22.
[63] *Kosmos* cit., p. 22.
[64] *Kosmos* cit., pp. 22-23.
[65] *Kosmos* cit., p. 22. A little later he will repeat: "Just as in those higher spheres of ideas and feelings, in the study of history, philosophy and rhetoric, so also in every part of natural knowledge the first and highest purpose is an *internal* one, namely the discovery of natural laws, the foundation of a systematic articulation in the formations, the intuition (Einsicht) of the necessary connection of all transformations in the universe". (*Kosmos*, cit., p. 24).
[66] *Kosmos* cit., p. 397.
[67] *Ansichten der Natur* cit., p. 34.
[68] A. v. Humboldt, *Über das Universum. Die Kosmosvorträge 1827/28 in the Berlin Singakademie*, edited by J. Hamel and K.-H. Tiemann in collaboration with M. Pape, Frankfurt, Insel, 1993, p. 147.

6. Nature as the realm of freedom and antidote against universal pessimism

Due to nature's ability to awaken in us a sense of the beautiful and the sublime, due to its influence on the overall development of human civilization from the first awakening of consciousness to the forms of a culture enlightened by reason and sustained by the universal feeling of humanity, according to Humboldt, nature must also be recognized as a form of freedom. Already the experience of "entering *free nature* (*das Freie*)" arouses in the open and innocent soul "the mysterious feeling of harmony that presides over the eternal motion of its silent operation."[69] That primitive feeling of harmony is joined by the development of reason, the concept of order and legality, so that nature appears to the naturalist as the result of cooperating forces and freedom: "*free* nature" is together the "realm of freedom"[70]. Just as in an organism the universal is mirrored in the particular, so the infinity of nature is reflected in the individual finished products.

The intrepid traveller who, anticipating artists and writers a few decades later, intends to leave the Old Continent behind, as if it were a cultural and existential burden, to venture out on the rapids of the Orinoco or on the rugged slopes of the Chimborazo in search of new cultural stimuli and invigorating contact with a nature at one moment sublime and the next peaceful. Then he returns to a Europe torn apart by the Napoleonic wars, and experiences the dramatic human events in a different, more participatory dimension. Even the luminous colours of the 'paintings' of a nature bathed in beauty and harmony as tropical nature was now make way for darker if not more dramatic colours.

Certainly the *Ansichten der Natur* draw us in with sublime images of the immense ocean and the boundless plains of the *llanos* to leave us at the end with the harsh scenes of animals' deadly struggle for survival in the steppes, forests and rivers, which form a counterpoint to the bloody struggles and wars that tear apart humanity, with bitter proof of the repeatedly affirmed unity between man and nature, between the historical world and the physical world.

> But as in the Steppe tigers and crocodiles fight with horses and cattle, so we see on its wooded edge, in the wildernesses of Guyana, man is ever armed against man. Some tribes drink with unnatural enthusiasm the blood of their enemies; others are apparently unarmed, and yet prepared for murder, choke with a poisoned thumbnail. The weaker tribes, when they trample the sandy shores, carefully erase with their hands the traces of their timid footsteps.[71]

As the years go by and confronted with the sight of wars bloodying the Old and New World,[72] Humboldt seems to develop a form of universal pessimism that embraces the entire history of mankind:

> Thus, man at the lowest degree of animal coarseness as in the apparent splendour of his superior culture always creates for himself a pitiful life. Thus, the wayfarer who goes

[69] *Kosmos* cit., p. 10.
[70] *Kosmos*, cit., pp. 230, 4. In order "to represent in a vivid way the sight and feelings that a pure natural sense gives us, discourse should always move with the dignity and freedom that only great skill can give it". (*Kosmos* cit., p. 4)
[71] *Ansichten der Natur* cit., p. 36.
[72] In the "Introduction" to the *Relation historique* Humboldt recalls the wars for independence that broke out in the Spanish colonies as "one of those great revolutions that stir mankind from time to time" and of which some friends he met during his journey were victims. (*Relation historique*, Vol. 1, cit., p. 36)

> through the vast world, through lands and seas, is persecuted by the monotonous, disconsolate images of the tearing apart of mankind - just like the historian who goes through the centuries.[73]

But against this dramatic and disconsolate vision of history, both animal and human, Humboldt contrasts the therapeutic effect that contemplating the deep essence of nature can provide:

> [...] whoever, in the midst of the irremediable discords of peoples, seeks spiritual tranquillity, willingly immerses his gaze in the silent life of plants and in the internal activity of the sacred force of nature, or, abandoning himself to the innate impulse that has inflamed man's breast for millennia, looks towards the high stars that in quiet harmony travel along their usual, eternal orbit.[74]

In these expressions one can perhaps detect an echo of Rousseau's critique of culture in general, whereas in fact here the link made between nature and freedom makes him define nature as the "realm of freedom" and in the "Introduction to the First Edition" (1808) of the *Ansichten der Natur* encourages him to exhort the "souls oppressed" by the chaos of life to follow him "into the dense forests, to the endless steppes and to the high ridges of the Andes" because, quoting Friedrich Schiller (1759-1805), "In the mountains dwells freedom! The breath of the caves / does not rise into the pure ether; / the world is perfect everywhere / save where man comes with his torment".[75]

DOI: 10.15167/2612-2960/BELS2020.2.1.1231

[73] *Ansichten der Natur* cit., p. 37.
[74] *Ansichten der Natur* cit., p. 37.
[75] F. Schiller, *Die Braut von Messina*, in F. Schiller, *Sämtliche Werke*, vol. 2, Munich, Winkler, 1970, p. 364.