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Alexander von Humboldt and the Beginning of the Environmental Movement*

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ABSTRACT

In the middle of the 19th century the question whether expanding civilization and industrialization had an effect on climate was discussed intensely worldwide. It was feared that increasing deforestation would lead to continuous decrease in rainfall. This first scientific discussion about climate change as the result of human intervention was strongly influenced by the research Alexander von Humboldt and Jean-Baptiste Boussingault had undertaken when they investigated the falling water levels of Lake Valencia in Venezuela. This essay aims to clarify the question whether Alexander von Humboldt can be counted among the leading figures of modern environmentalism on account of this research as is being claimed by Richard H. Grove in his influential book *Green Imperialism. Colonial Expansion, Tropical Island Edens and Origins of Environmentalism, 1600–1860* (1995).

ZUSAMMENFASSUNG

In der Mitte des 19. Jahrhunderts entstand eine intensive weltweite Diskussion, ob die sich immer weiter ausbreitende Zivilisation einen Einfluß auf das Klima hat. Es wurde befürchtet, daß die zunehmende Entwaldung zu einer kontinuierlichen Abnahme der Niederschlagsmenge führt. Diese erste wissenschaftliche Diskussion um eine anthropogone Klimakatastrophe wurde entscheidend durch die Forschungen von Alexander von Humboldt und Jean-Baptiste Boussingault beeinflußt, die die beiden Wissenschaftler am See von Valencia unternommen hatten. Der Beitrag versucht die Frage zu klären, ob Alexander von Humboldt auf Grund dieser Forschungen zu den führenden Köpfen der modernen Umweltbewegung gezählt werden kann, wie dies in dem einflußreichen Buch von Richard H. Grove *Green Imperialism. Colonial Expansion, Tropical Island Edens and Origins of Environmentalism, 1600–1860* (1995)behauptet wird.

* *Editorische Anmerkung:* Der Anmerkungsapparat enthält in der Original-Datei (HTML) des Artikels eine duchgehende Zählung, aber keine korrespondierenden Verweise im Text. Auf eine nachträgliche Ergänzung der fehlenden Verweisstellen für die Druckfassung wurde verzichtet, da der Redaktion keine Autorenoriginale mehr vorliegen, die eine Rekonstruktion möglich gemacht hätten.

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Today, both the apparent decline of the power of the ecological movement and the diminishing fear and wariness about the prospects of civilization as such provide us with a new opportunity for reflection. Research into the history of environmentalism is of course an offspring of the environmental movement itself. However, as much as our perspective and knowledge has been broadened by that concern for the future, its close reliance on an anticipation of disaster entails a very real risk. The search for the Origins of Environmentalism at the end of the eighties and nineties has often been incapable of moving beyond the restrictions set by its own Zeitgeist. Claiming origins going back as far as the 17th and 18th century, it is difficult to explain why environmentalism vanished back into oblivion in the early 20th century—if apparently so much had already been understood.

Of course, with a presentation time of 20 minutes it is easy enough to come up with a number of propositions. The historical material which might offer some proof of their correctness, however, may only be sketched in the most superficial of terms.

Based on my research into the historical relationship of man, forest and climate in which I took a closer look at Alexander von Humboldt and his 'students', I would like to acquaint you with the following two propositions:

1. The Origins of modern Environmentalism cannot that easily be traced back to the 17th and 18th century. An environmentalism in the modern sense did not develop until the 19th century. A history of environmentalism which focuses solely on the 'environment per se', would—as Joachim Radkau has stated—automatically restrict its view of other contexts of the historical sources. Therefore, it tends to resist criticism of sources and therefore, at times, leads to self-deception. When we start reconstructing the historical context, what we find time and again in many of the early-modern complaints about the clear felling of forests, is that in truth these were not all about the woods, but rather about maintaining forest laws and privileges. Especially where the use of water and forests was concerned, environmental issues turned into political issues from early on.
2. Halfway through the 19th century, the relationship between civilization and nature becomes dramatized to such an extent that it is the concept of civilization itself which is now seen as the cause of mankind's potential self-destruction. This is the point in time which modern environmentalism may be dated back to. Prior to that, nature required man's helping hand for its own redemption.

Alexander von Humboldt's enormous work provides us with some proof supporting this view. He devoted himself to an immensely thorough investigation of all aspects of climate. His concern however lies mainly with the effects the climate may have on a person's psyche and their physical well-being. In a work of such amazing scope, the reverse question of man's influence on the climate is only just touched upon in a brief chapter of his travel log. As sketchy as this examination by Humboldt may be, it was elevated to great significance during the course of the 19th century. It was revisited within the context of a—nowadays largely forgotten—perception of crisis which, for the first time in history, led to a discussion on possible anthropogenic climate changes. Unlike the concerns of today, however, it was not set off by the emission of greenhouse-gases into the earth atmosphere, but rather by the rapid disappearance of forests. Which in turn would lead to a reduction in precipitation—so it was feared—and then to drought and famine.

It was Clarence J. Glacken who may take the credit for being the first 20th century scientist to remind his contemporaries of Alexander von Humboldt's and J. B. Boussingault's contributions

to ecology. In 1955, his manuscript 'Changing Ideas of a Habitable World' was discussed at the conference on 'Man's Role in Changing the Face of the Earth' in New York. After careful preparation, this symposium took stock of the then available historical and current knowledge on the issue. It should be seen as an indication of a changing awareness amongst American scientists after the experience of World War II. Rachel Carson, who in 1962 was to become world-famous with her epoch-making book *Silent Spring,* later described the realization that she was standing at a historic turning-point in the following words: "It was pleasant to believe that much of Nature was forever beyond the tampering reach of man: he might level the forests and dam the streams, but the clouds and the rain and the wind were God's [...] These beliefs have always been part of me for as long as I have thought about such things. To have them even vaguely threatened was so shocking that, as I have said, I shut my mind—refused to acknowledge what I couldn't help seeing." What Carson felt was the sensation of passing a watershed between a whole long era in which nature had seemed to be forever beyond the reach of a lasting human impact and the new period after 1945 in which everything had become possible for the insatiably aggressive spirit of mankind—up to and including the destruction of the physical world altogether.

When the conference proceedings were published in 1956, they were dedicated to the work of the American diplomat and scientist George P. Marsh. That very fact alone gave an indication to the outside world that the experience described by Carson reached back far further than many scientists would have expected at that time. As early as 1864, Marsh in his broad-ranging study 'Man and Nature; or Physical Geography as Modified by Human Action' had described humanity as the one strong factor which was capable of destroying Earth as an inhabitable planet. At the center of 19th century fears were the effects of rapidly spreading deforestation caused by the ever expanding industrialization. Predictions abounded that the increasing felling of forests would lead to a disturbance of the earth's water balance: reductions in the conservation of ground water and water storage, together with decreasing rainfalls would lead to wide-spread droughts and increasing climatic changes. With that new awareness of history and crisis taking hold, data obtained in the past were extrapolated into the future.

But George P. Marsh had himself had predecessors. As early as 1847, Carl Fraas had had visions of civilization and nature being on an irreversible collision course. Fraas had interpreted the loss of the natural vegetation of Persia, Mesopotamia, Palestine, Egypt and Southern Europe as the result of human intervention and had prophesied the same outcome through the threat of climatic change for Central Europe. These theories about climatic shifts as the consequence of anthropogenic influence which furthered the expansion of agriculture at the expense of native forests had—as Glacken correctly observed—often been based on publications by Humboldt and Boussingault.

Humboldt's investigation in South America was prompted by questions put to him by the inhabitants of Lake Valencia who wanted to know the reasons for the falling water levels of their lake. Humboldt summarized the outcomes of his thorough examination as follows: "By felling the trees, that cover the tops and the sides of mountains, men in every climate prepare at once two calamities for future generations; the want of fuel and a scarcity of water."

Without exactly determining the authors' relationship to one another, Glacken constructs a path of tradition which starts with Fabre's early research into the Alps and continues via Saussure, Humboldt and Boussingault right up to the alarming studies in the British colonies of India and South Africa.

In Richard H. Grove's monumental work *Green Imperialism. Colonial Expansion, Tropical Island Edens and Origins of Environmentalism, 1600–1860* (Cambridge 1995), Humboldt and Boussingault are placed in yet another context of tradition. In his search for the origins of a critical opposition against the ruthless exploitation of nature, Grove comes up with a fascinating and, at first, compelling link. He is of the opinion that the origins of that new environmentalism developed already during the 17th and early 18th century in connection with the colonial conquest and destruction of the tropical vegetation of Pacific islands. During that same period, these islands were the focus of a utopian search for life's happiness away from the restrictions of European civilization. It was however especially in these locations that the finiteness of the earth's natural resources became apparent at an early stage. Grove does not subscribe to the view—held by most historiographers—that Europe and North America were the pioneers in the development of a new environmentalism, he emphasizes the significance of the experiences made by scientists on the extreme periphery of the colonial conquest. Colonial companies urgently required well-trained doctors and botanists who were capable of thinking for themselves. It was their job to come to a better understanding of the unfamiliar flora, fauna and geology, in order to reduce the health risks and other dangers posed by an unknown environment. According to Grove, this position gave colonial scientists the freedom to gain influence, collect information and develop theories far beyond the opportunities which existed at home.

In his argument, a key role was played by Mauritius or the Isle de France. Between 1722 and 1790 and under French rule, Mauritius became the setting for a thriving, complex and unique environmental policy, which Grove presents us with under the title 'Protecting the climate of paradise: Pierre Poivre and the conservation of Mauritius under the ancien régime'. Poivre, too, had seen a close connection between rainfall and plant cover. This view brought him to become a committed proponent of forest reserves and reforestation programs. Among others, he maintained close ties with Bernhardin de Saint-Pierre who utilized the foreign vegetation for an early romantic nature cult in which traditional physico-theological elements were interwoven with Rousseau's ideas. In his successful novel *Paul et Virginie* (1788), he managed to transpose the South Pacific cult—which had reached new heights with the publication of Bougainville's *Voyage autour du monde* (1769) and Georg Forster's description of Cook's journey in 1777—into another tropical setting, but with a European cast. Since Bernhardin de Saint-Pierre was among Humboldt's favorite authors, who had a special liking for Paul et Virginie, the reference to this French aspect of his concept of nature seems to gain special credibility. If we further take into account the great influence which Georg Forster had on Humboldt, the connection between the European perception of tropical islands and the early insights into the threat to nature become more and more plausible. This link places Humboldt in the proximity of French Romanticism which, following in the footsteps of Rousseau, converted the colonial experience of ecologically vulnerable tropical islands into a critical evaluation of the European impact on the tropics as a whole.

This interpretation suffers its first serious setback however, once we begin to scrutinize some of the facts. For instance, Poivre—Grove's crown witness for the ecologically motivated forest protection policy supposedly emanating from Mauritius—ruled over the island for a total of nine months and without any lasting effect. Furthermore, he was a physiocrat who was interested mainly in an increase in agricultural production. Checking the quotes which play a central part in the development of Grove's analysis will raise further doubts. One of the mainstays of his argument is a quote by Saint-Pierre which is introduced with the following commentary: 'Saint-Pierre moves in the 'Harmonies' from the general to the particular lesson of Mauritius, and to an explicit critique of the ecological impact of European colonial rule. While an island, he explained, might teach the harmony of nature, it could also reveal the destructiveness of Eu-

ropean man.' The quote itself is taken from an essay entitled 'Harmonies Végétales de l'homme' and can be found in Saint-Pierre's book *Harmonies de la Nature* which Grove then quotes:

"To contemplate the progress of a rising colony is spectacle worthy of a philosopher, for it is there that the culture of man forms a striking contrast with that of nature. That contrast was frequently brought before my eyes, in the pedestrian journey which I made in 1770 [...] I entered spots lately brought into cultivation, where monstrous trunks of trees, overturned by the axe and sometimes by gunpowder, lay along the ground." At first, that passage might well read as convincing evidence of an early criticism of the destructive actions of the colonizers who used all means at their disposal axe, fire and cannon powder to let the new colony's ancient forests go up in flames so that the ground was covered by a foot of ash. However, a closer look at the text reveals the exact opposite: It is an apotheosis of man's civilizing powers. By clearing trees man creates space for settlements and gardens and thus fulfils his destiny of divine providence. The philosopher Saint-Pierre found pleasure in uncovering the opposition of nature and culture—an insight which only a young colony at the moment of its birth could provide. What Saint-Pierre seemed to advocate was a co-existence of culture and nature which granted both states their respective rights, but there is no criticism of any 'green imperialism' to be found in his writing. Just like Humboldt and Forster however, he rejected all forms of racism and was a resolute opponent of slavery. His novel *Paul et Virginie* deals explicitly with the cruel treatment of slaves. Yet, there is not a word about the all too obvious damage to the environment. His critique of civilization was aimed at the depraved moral conduct of the Europeans, but crimes against the native environment did not yet rate amongst their sins.

Humboldt stood in the tradition of Buffon, to whom both the Forsters father and son also referred when they favored the beauty of civilized nature. For Buffon as well as for the two Forsters, nature needs to be liberated by man. Left to its own devices, it would suffocate in its own disorder and be subject to continuous decay which would weaken it more and more. It is only man's cultivating work which supplies it with revitalizing vigor, strength and fertility. Johann Reinhold Forster wrote in his Observations Made during a Voyage round the World (1778): "Where man the lord of creation on this globe, has never attempted any changes on it, there nature seems only to thrive; for in reality it languishes, and is deformed by being left to itself. [...] As soon as the lord of the creation appears in these regions, he eradicates all those vegetables, which afford no nutriment to him, and to other useful animals. All that is broken, decaying, and rotting, he carefully clears away, preserving the air from petrification and noxious effluvia. He opens a channel for the dead, motionless, stagnating water, which, being endued by motion, with new life and limpidity, becomes serviceable to a whole world of creatures, for whom its fluid was originally destined. The earth becomes dry; its rich soil is soon covered with a new verdure, forming a brilliant sod, enamelled with the most fragrant flowers. [...] The violence of the vertical sun no sooner begins to fade this new paradise, than man spreads, for a short time, the refreshing and salutary waters of the purling, limpid stream over its surface, and restores life and vegetation. [...] How beautiful, how improved, how useful does nature become by the industry of man! and what happy changes are produced, by the moderate care of rational beings."

And Alexander von Humboldt too, even if he opened his mind to the pristine nature of the Americas, remained attached to the concept of civilization put forth by the French Enlightenment. In his visions for the future—which Humboldt drew up for Spanish America which, at the time was consumed, by the process of liberation—the notion of civilization attains a utopian quality, in which the antagonisms between cultures, between rich and poor, between Old World and New World will continuously be resolved. A free world trade and contacts between the

nations will bring the rewards of modern science and technology to all people. Humboldt also shared the French Enlightenment's condemnation of colonial conquest, of the slavery trade, of all forms of despotism and, above all, of the evangelist zeal of Christian missions in foreign places. Following the break-down of the economic and cultural barriers set up by colonialism, a bright and shining future would have looked something like this: "If then some pages of my book are snatched from oblivion, the inhabitant of the banks of the Oroonoko [Orinoco and the Atabapo] will behold with extasy [sic!], that populous cities enriched by commerce, and fertile fields cultivated by the hands of freemen, adorn those very spots, where, at the time of my travels, I found only impenetrable forests, and inundated lands."

This is barely the beginning of the story I would have wanted to tell, but my time is up now. During the second half of the 19th century, Boussingault's work was used as a central argument against the destruction of forests by scientists such as John Crombie Brown in South Africa and Richard Schomburgk in Adelaide. In the sixties, both men experienced devastating droughts in their home states and put them down to the continued loss of forests. Both Brown and Schomburgk combined their criticism with a call for reforestation programs. Only now was the concept of civilization rejected and viewed as the cause for the interminable unleashing of nature's destructive forces. Schomburgk wrote, for example: "Let us hope that the times are past for ever when the progress of civilization was equal to wasting and desolating the surrounding nature. One thing is certain—a broad strip of waste land follows in the wake of culture, and noxious weeds like henbane, solanum, thistles, nettles etc. serve to mark the footsteps of men. Before him, Nature in all her beauty; behind him, desolation and hopeless waste. Looking at this picture, we have no cause to be proud of being called the Lords of Creation; but let us hope that the future generation will be wiser than the past ones." Forster's and Humboldt's holistic vision of nature enabled their followers to be ahead of nearly all others in realizing the dangers of the environmental destruction in the colonies where the mechanisms for the protection of forests—which had taken hold in Europe since the 16th century—were still brutally disregarded. Yet, Schomburgk's lines written in 1870 read in a way like a direct response to Forster's praise of civilization. In fact, Schomburgk's and Brown's views are far closer in spirit to today's environmentalism than the ones held by Poivre, Saint-Pierre, Forster and Alexander von Humboldt ever were.

Anmerkungen

(1) Joachim Radkau: *Natur und Macht. Eine Weltgeschichte der Umwelt.* München: Beck 2000, p. 11.

(2) Clarence J. Glacken: Changing Ideas of a Habitable World. In: William L. Thomas jr. (Ed.): *Man's Role in Changing the Face of the Earth.* New York: University of Chicago Press 1956, p. 70–92.

(3) Quoted from Paul Brooks: *The House of Life. Rachel Carson at Work.* Boston 1972, p. 10.

(4) Carl Fraas: *Klima und Pflanzenwelt in der Zeit, ein Beitrag zur Geschichte beider.* Landshut 1847.

(5) Alexander von Humboldt: *Personal Narrative of Travels to the Equinoctial Regions of the New Continent during the years 1799–1804.* Transl. into English by Helen Maria Williams. Vol. 4. London 1819. [Reprint:] Amsterdam, New York 1972, p. 143.
French original: "En abattant les arbres qui couvrent la cime et le flanc des montagnes, les hommes, sous tous les climats, préparent aux générations futures deux calamités à la fois, un manque de combustible et un disette d'eau." Alexander von Humboldt: *Relation historique du Voyage aux Régions équinoxiales du Nouveau Continent.* Neudruck des 1814–1825 in Paris erschienenen vollständigen Originals, besorgt, eingeleitet und um ein Register vermehrt von Hanno Beck. Vol. 2. Stuttgart 1970 (Quellen und Forschungen zur Geschichte der Geographie und der Reisen, hrsg. von Prof. Dr. Hanno Beck 8), p. 72.

(6) Richard H. Grove: *Green Imperialism. Colonial Expansion, Tropical Island Edens and Origins of Environmentalism, 1600–1860.* Cambridge 1995, p. 168.

(7) Ibid., p. 186.

(8) Ibid., p. 250.

(9) J. H. Bernhardin de Saint-Pierre: Harmonies de la nature. Tome 1. In: *Œeuvres Completes.* Nouvelle Edition par L. Aimé-Martin Paris 1834, Tome VIII, p. 144 f.

(10) Johann Reinhold Forster, 'Remarks on the Changes of our Globe'. In: *Observations Made during a Voyage round the World.* Ed. by Nicholas Thomas, Harriet Guest, and Michael Dettelbach. Honolulu 1996, p. 99 f. The same sentiments, if even more clearly, are expressed by Georg Forster in his essay 'Ein Blick in das Ganze der Natur. Einleitung zu Anfangsgründen der Thiergeschichte', in: Georg Forster: *Werke.* Vol.8: Kleine Schriften zu Philosophie und Zeitgeschichte, ed. by Siegfried Scheibe. Berlin 1974, p. 94 ff. On the nature concept in French Enlightenment, cf. Wolf Lepenies, 'Historisierung der Natur und Entmoralisierung der Wissenschaften seit dem 18. Jahrhundert'. In: *Gefährliche Wahlverwandschaften. Essays zur Wissenschaftsgeschichte.* Stuttgart 1989, p. 7 ff.

(11) Alexander von Humboldt: *Personal Narrative of Travels to the Equinoctial Regions of the New Continent during the years 1799–1804.* Transl. into English by Helen Maria Williams. Vol. 1. London 1819. [Reprint:] Amsterdam, New York 1972, p. L–LI.
French original: "Si alors quelques pages de mon livre survivent à l'oubli, l'habitant des rives de l'Orénoque et de l'Atabapo verra avec ravissement que des villes populeuses et commerçantes, que des champs labourés par des mains libres occupent ces mêmes lieux où, a l'époque de mon voyage, on ne trouvoit que des forêts impénétrables ou des terrains inondés." Alexander von Humboldt: *Relation historique du Voyage aux Régions équinoxiales du Nouveau Continent.* Neudruck des 1814–1825 in Paris erschienenen vollständigen Originals, besorgt, eingeleitet und um ein Register vermehrt von Hanno Beck. Vol. 1. Stuttgart 1970 (Quellen und Forschungen zur Geschichte der Geographie und der Reisen, hrsg. von Prof. Dr. Hanno Beck 8), p. 37 f.

(12) Richard Schomburgk: Influence of Forests on Climate. Read before the Philosophical Society, August 9, 1870. In: Richard Schomburgk: *Papers read before the Philosophical Society and the Camber of Manufactures.* Adelaide 1873, p. 4.