

## 1. Humboldt's new vision of nature

In June 1802, Alexander von Humboldt and his companions, Aimé Bonpland and Carlos Montúfar, climbed the Chimborazo, then believed to be the highest mountain in the world, in present-day Ecuador. As they ascended<sup>1</sup> from the mountain's foot to almost its pike, the men traversed<sup>2</sup> various climatic zones. Connecting these impressions with observations Humboldt had made earlier in Europe, he was able to form a larger picture and make an important discovery regarding the interconnection between climate, altitude<sup>3</sup>, flora, and fauna.

### a. A new idea of nature

Looking down Chimborazo's slopes<sup>4</sup> and the mountain ranges in the distance, everything that Humboldt had seen in the previous years came together. (...) As he stood that day on Chimborazo, Humboldt absorbed what lay in front of him while his mind reached back to all the plants, rock formations and measurements that he had seen and taken on the slopes of the Alps, the Pyrenees and in Tenerife. Everything that he had ever observed fell into place. Nature, Humboldt realized, was a web of life and a global force. He was, a colleague later said, the first to understand that everything was interwoven as with '3 thousand threads'. This new idea of nature was to change the way people understood the world.

Humboldt was struck by this 'resemblance<sup>5</sup> which we trace in climates the most distant from each other'. Here in the Andes, for example, grew a moss that reminded him of a species from the forests in northern Germany, thousands of miles away. On the mountains near Caracas he had examined rhododendron-like plants — alpine rose

tree, as he called them — which were like those from the Swiss Alps. Later, in Mexico, he would find pines, cypresses<sup>6</sup> and oaks that were similar to those that grew in Canada. Alpine plants could be found on the mountains of Switzerland, in Lapland and here in the Andes. Everything was connected.

For Humboldt, the days they had spent travelling from Quito and then climbing up Chimborazo had been like a botanical journey that moved from the Equator towards the poles — with the whole plant world seemingly layered on top of each other as the vegetation zones ascended the mountain. The plant groups ranged from the tropical species down in the valleys to the lichens<sup>7</sup> that he had encountered near the snow line. Towards the end of his life, Humboldt often talked about understanding nature from 'a higher point of view' from which those connections could be seen; the moment when he had realized this was here, on Chimborazo. With 'a single glance', he saw the whole of nature laid out before him.

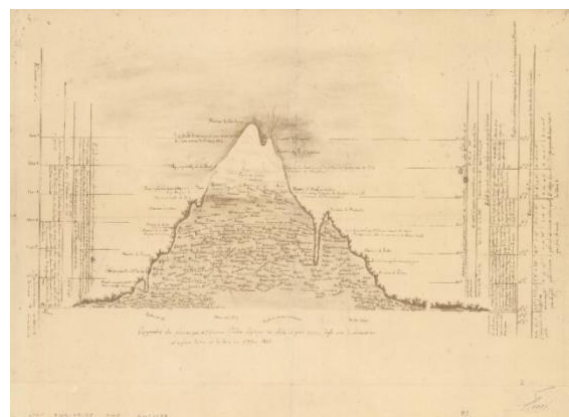
(*The Invention of Nature*, p. 107-8)

### b. *Naturgemälde*

When they [i.e., Humboldt and his companions] returned from Chimborazo, Humboldt was ready to formulate his new vision of nature. In the Andean foothills, he began to sketch his so-called *Naturgemälde* — an untranslatable German term that can mean a 'painting of nature' but which also implies a sense of unity or wholeness. It was, as Humboldt later explained, a 'microcosm on one page'. Unlike the scientists who had previously classified the natural world into tight taxonomic<sup>8</sup> units along a strict hierarchy, filling endless tables with categories, Humboldt now produced a drawing.

'Nature is a living whole,' he later said, not a 'dead aggregate<sup>9</sup>: One single life had been poured<sup>10</sup> over stones, plants, animals and humankind. It was this 'universal profusion<sup>11</sup> with which life is everywhere distributed<sup>12</sup> that most impressed Humboldt. Even the atmosphere carried the kernels<sup>13</sup> of future life — pollen, insect eggs and seeds. Life was everywhere and those 'organic powers are incessantly<sup>14</sup> at work', he wrote. Humboldt was not so much interested in finding new isolated facts but in connecting them. Individual phenomena were only important 'in their relation to the whole', he explained.

Depicting<sup>15</sup> Chimborazo in cross-section, the *Naturgemälde* strikingly illustrated nature as a web in



Humboldt's first sketch of the *Naturgemälde*

which everything was connected. On it, Humboldt showed plants distributed according to their altitudes, ranging from subterranean<sup>16</sup> mushroom species to the lichens that grew just below the snow line. At the foot of the mountain was the tropical zone of palms and, further up, the oaks and fern-like shrubs<sup>17</sup> that preferred a more

temperate climate. Every plant was placed on the mountain precisely where Humboldt had found them.

35 Humboldt produced his first sketch of the *Naturgemälde* in South America and then published it later as a beautiful three-foot by two-foot drawing. To the left and right of the mountain he placed several columns<sup>18</sup> that provided related details and information. By picking  
40 a particular height of the mountain (as given in the left-hand column), one could trace connections across the table and the drawing of the mountain to learn about temperature, say, or humidity<sup>19</sup> or atmospheric pressure<sup>20</sup>, as well as what species of animals and plants  
45 could be found at different altitudes. Humboldt showed different zones of plants, along with details of how they were linked to changes in altitude, temperature and so

*Views of Nature* [one of Humboldt's best-known book publications] again described nature as a web of life, with plants and animals dependent<sup>22</sup> on each other — a world teeming<sup>23</sup> with life. Humboldt highlighted the 'inner  
5 connections of natural forces'. He compared the deserts in Africa with the Llanos<sup>24</sup> in Venezuela and the heaths<sup>25</sup> of northern Europe: landscapes far removed from each other but now combined into 'a single picture of nature'. The lessons that he had begun with his sketch after the

on. All this information could then be linked to the other major mountains across the world, which were listed according to their height next to the outline of Chimborazo.

This variety and richness, but also the simplicity of the scientific information depicted, was unprecedented<sup>21</sup>. No one before Humboldt had presented such data visually. The *Naturgemälde* showed for the first time that nature was a global force with corresponding climate zones across continents. Humboldt saw 'unity in variety'. Instead of placing plants in their taxonomic categories, he saw vegetation through the lens of climate and location:  
55 a radically new idea that still shapes our understanding of ecosystems today.  
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(*The Invention of Nature*, pp. 108-10)

10 ascent<sup>26</sup> of Chimborazo, the *Naturgemälde*, now became broader. The concept of a *Naturgemälde* became Humboldt's approach through which to explain his new vision. His *Naturgemälde* was not just a drawing any more — it could also be a prose text such as *Views of Nature*, a  
15 scientific lecture, or a philosophical concept.

(*The Invention of Nature*, pp. 154-5)