

## Chapter 9

### Etymology and Original Sources of the Term “Ecology”

Astrid Schwarz and Kurt Jax

Literal Translation in German: *Ökologie*; in French: *Écologie*

The term “Oecologie” was coined by the German zoologist Ernst Haeckel in 1866 in his book *Generelle Morphologie der Organismen*.<sup>1</sup> It derives from the Greek “οἶκος” (oikos; house, household, also dwelling place, family) and “λόγος” (lógos; word, language, language of reason). “Oecologie”, later appearing as “Ökologie” (from around 1890),<sup>2</sup> was used to refer to the “whole science of the relations of the organism to its surrounding outside world”<sup>3</sup> or, to put it differently, the science of the household of nature or the economy of organisms.<sup>4</sup> The term was taken up rather rapidly by some authors (e.g. by Semper 1868, p. 229), but more than 20 years passed until it became widely used. It was not until 1885 that it was

<sup>1</sup> Haeckel 1866, Vol.1, p. 8 (footnote), 237, 238 (table); Vol.2, p. 286. There is a persisting tale that Thoreau used the word prior to this (see, for instance, Michel Serres in *Revisiting the natural contract* 2006). According to Walter Harding, editor of “The correspondence of Henry David Thoreau”, this interpretation is a misreading that confused geology with ecology: “I must assume that, since *geology* makes as much sense in the context as *ecology* does, *geology* must have been the word that Thoreau intended”. (Harding 1965, p. 707 (emphasis in the original); see also Egerton 1977 or Acot 1982).

<sup>2</sup> In the 1896 German version of his book on Ecological Plant Geography, Warming wrote *Ökologie* while Dahl (1898), for example, still used the spelling *Oekologie*.

<sup>3</sup> “Gesammte Wissenschaft von den Beziehungen des Organismus zur umgebenden Aussenwelt”, Haeckel 1866 (p. 286, emphasis in original).

<sup>4</sup> Haeckel 1870 (p. 365) originally referred only to animals: “[der] Haushalt der thierischen Organismen” (“the household of animals”). This paper was a written version of his inaugural lecture as a professor in Jena.

A. Schwarz (✉)

Institute of Philosophy, Technische Universität Darmstadt, Schloss, 64283 Darmstadt, Germany  
e-mail: schwarz@phil.tu-darmstadt.de

K. Jax

Department of Conservation Biology, Helmholtz Centre for Environmental Research (UFZ),  
Permoserstr. 15, 04318 Leipzig, Germany  
e-mail: kurt.jax@ufz.de

used for the first time in a book title, namely in Reiter's *Die Consolidation der Physiognomik als Versuch einer Oekologie der Gewächse*.

In English the term "Oecologie" was initially translated as "œcology". Its first use occurred, it seems, in the English translation of Haeckel's book *Natürliche Schöpfungsgeschichte* (*The History of Creation*)<sup>5</sup> in 1876 (cf. Bather 1902,<sup>6</sup> p. 748; Benson 2000, p. 60). In the early 1890s, not least following a recommendation of the Madison Botanical Congress in 1893 (Madison Botanical Congress 1894, pp. 35–38), the double-letter was dropped in favour of the final English form "ecology". From that time on, the term "ecological" was widely used in publications<sup>7</sup> and from 1904 the *Botanical Gazette*, a University of Chicago publication, produced a column entitled *Ecological notes*.

However, the old wording still persisted for some years in the writings of a number of authors and even more in dictionaries (Bessey et al. 1902; Bather 1902). For example, the English translation of Warming's (1895) seminal book *Plantesamfund* was published in 1909 as *Oecology of plants*.

In French the word was also introduced as "oecologie" via the translation of Haeckel's "Natürliche Schöpfungsgeschichte" (*Histoire de la création des êtres organisés*) in 1874. Its first use by French scientists (now as "écologie") can be traced definitively to the year 1900 in the context of plant ecology. Charles Flahault, a botanist loosely associated with the Montpellier school, used the word in its adjectival form in his "projet de nomenclature phytogéographique".<sup>8</sup> However, despite being introduced by a famous zoologist and Darwinian apologist, the word was not very successful in the French community of biologists; this might be due to the fact that resistance to Darwinian ideas was much greater in France than in the English-speaking world.<sup>9</sup>

In Russian the term "ekologia" was first introduced through an abridged translation of Haeckel's *Generelle Morphologie der Organismen* in 1869. In similar fashion to its impact on the French and the English-speaking world, it was not influential in the sense of leading to the founding of an ecological research programme or institutions. In the late 1890s, this situation changed with the translation of Eugenius Warming's *Plantesamfund* into *Oikologicheskaya Geografia Rastenii* (1901) which was highly influential, together with the translation of Grisebach's work (1874, 1877); researchers now began to focus on groups of organisms and to develop a synecological approach.

<sup>5</sup>Haeckel 1876, Vol. II, p. 354.

<sup>6</sup>Bather erroneously assumes that Haeckel also coined the word in the *Natürliche Schöpfungsgeschichte*. Haeckel's *Generelle Morphologie der Organismen* (1866), where the word was in fact used first, was never published in English translation.

<sup>7</sup>For instance A. S. Hitchcock, *Ecological Plant Geography of Kansas* (1898) or H. C. Cowles, *The ecological relations of the vegetation on the sand dunes of Lake Michigan* (1899).

<sup>8</sup>C. Flahault, *Projet de nomenclature phytogéographique*, Actes du 1er Congrès international de botanique tenu à Paris à l'occasion de l'exposition universelle de 1900, Lons-le-Saunier, 1900, p. 440, 445 (cf. Matagne 1999, p. 107).

<sup>9</sup>Matagne 1999, p. 109; also Acot 1982, p. 106 ff.

## Brief Overview of Part IV to VII

The term "Oecologie" was coined in the second half of the nineteenth century. However, ANTECEDENTS OF AN ECOLOGICAL IDEA in the sense of a modern science and in contrast to natural history existed before it was described as "ecology". Such ideas were present, for example, in Alexander von Humboldt's "physiognomic system of plant forms", Alfred R. Wallace's "geography" of animal species, and Charles Darwin's "entangled bank"; they also existed in Louis Agassiz' studies on lakes and oceans. In 1866 "Oekologie" was introduced by the German zoologist Ernst Haeckel. From the beginning he referred to the meaning of the Greek "oikos" as "household", suggesting that "ecology" is the science of the household of organisms, i.e. of their relation to their biotic and abiotic surroundings. None of the definitions he offered denoted an existing research programme, nor was Haeckel's aim to develop such a programme. The term primarily filled an empty place within his disciplinary system of zoology: that of "external physiology". This search for an order of the study of living beings was in line with contemporary efforts to find a general system of biology. However, the new name "Oekologie" gave way to a focus on the field as a self-conscious enterprise, despite varying LOCAL CONDITIONS OF EARLY ECOLOGY according to nation-state and language area.

At the time a number of COMPETING TERMS existed. "Ecology" was used in a wide range of ways to refer to different domains of objects and phenomena. During the late nineteenth and early twentieth century, what is nowadays called "ecology" was also described as "ethology" or "biology" in a narrower sense. Likewise, different approaches were taken towards delimiting the term "ecological" to terms such as "physiological" and/or "sociological".

In the first half of the twentieth century a STABILISING OF THE CONCEPT occurred. At the same time the FORMATION OF SCIENTIFIC SOCIETIES, academic institutions and publishing bodies accelerated, and the later SUBDIVISIONS OF ECOLOGY appeared on the horizon. With the RISE OF SYSTEMS THEORY in the 1940s and THE ARRIVAL OF THE ENVIRONMENTAL MOVEMENT in the 1960s the concept broadened and ecology came to be described as a "super-science". "Ecology" in this sense served to blur the boundaries between scientific, philosophical and political knowledge, and at the methodological level there was a merging of facts and values, the epistemic and the social. The BORDER ZONES BETWEEN SCIENTIFIC ECOLOGY AND OTHER FIELDS became the subject of highly controversial discussions. From this time on, "ecology" can refer to a variety of completely disparate ideological doctrines and political stances.

The struggle to define ecology and its sub-disciplines has thus always been both one of structuring and assessing the complex subject matter of "the interdependence of living and non-living nature" and a debate about the delimitation of institutional and social groups – in academia and beyond. This process is still ongoing and will be of central importance in LOCATING ECOLOGY IN THE CONTEXT OF 21<sup>ST</sup> CENTURY ENVIRONMENTAL SCIENCES. It also has importance with respect to the question of whether THE DOMAIN OF ECOLOGY IS DETERMINED BY METHOD, OBJECT OR INSTITUTION.