

## ECOLOGY

EDMUND HUSSERL was just seven years old when the German zoologist Ernst Haeckel (1834–1919) coined the term *Oekologie* in 1866, using it to refer to the new science of the relations between the organism and its environment. The systematic scientific investigation of the household of nature starts at approximately the same time as Western humanity was intervening into this household on an unprecedented scale with industrial mass production based on the extensive use of fossil fuel. Paradoxically, just as humanity breaks out of nature for good and starts to nest in a world of iron and concrete, it is completely reinserted into nature and its evolution by the newly emerging scientific disciplines of evolutionary biology and ecology.

“Ecology” is also often called “environmentalism” because it is more than a branch of natural science. Only two years before Haeckel coined the term *Oekologie*, the American George Perkins Marsh had published his book *Man and Nature* (1864), a radical critique of the destruction of nature by humans, of the unremitting war humanity wages against nature in its rise to civilization. According to Marsh, humanity is threatening the balance nature has brought about between its organic and inorganic components. Nature will revenge itself, he predicts, with natural disasters, an unsettled climate, erosion, etc. Marsh himself was not a scientist but a lawyer and politician — in today’s terms, he was a political ecologist. His book became a sacred text of the conservation and ecology movement.

From its very beginning, though, ecology was strongly motivated by pragmatic and technocratic motives. It promised new possibilities of more efficient use of natural systems and of an increase in their productivity. A classical example is the applied ecological research of the German Karl August Möbius (1825–1908) into the possibilities of raising oysters along the German coast in *Die Auster und die Austernwirtschaft* (1877).

Thus from its very inception, the new science of the household of nature stands at the crossing between the romantically inspired revolt against the destruction of nature by the machine age, on the one side, and modern technocratic pragmatism, on the other side.

It was the book of a courageous woman — *Silent Spring* by Rachel Carson (1907–1964) — that when it appeared in 1962 sparked off the present widespread concern called “environmentalism” that is focused on the “ecological crisis.” Her book on the “elixirs of death,” as she calls synthetic insecticides, is dedicated to Albert Schweitzer, whose somber forecast opens the book: “Man has lost the capacity to foresee and to forestall. He will end by destroying the earth.”

Ten years after the publication of *Silent Spring*, the first report to the Club of Rome, entitled *Limits to Growth*, reinforced the apocalyptic message: further unchecked exponential growth of industrial production, of capital, of consumption of energy and nonrenewable resources, of pollution, and of population will lead to a catastrophic breakdown of the world-system in the not too distant future. Since 1972, a series of further reports on the development of the ecological crisis have been issued based on an ever increasing amount of data and on ever more sophisticated mathematical models. The conclusion of all of these reports is more or less the same: the global human household in its growing numbers, in its production and consumption patterns, in its use of nonrenewable resources, in its aspiration to more material growth and wealth, is ecologically unsustainable; in other words, it is on a course to self-destruction.

Recently, however, political ecology or ecologism, with its critique of the destruction of nature, appears to be based on an outdated holistic and teleological paradigm of ecology that was built around the central idea of the ecosystem. According to this paradigm, nature, if not hindered by human intervention, always tends toward equilibrium, harmony, stability, and order. A radical shift from the old ecology of order towards a new ecology of non-equilibrium and chaos has recently taken place. Nature, according to this new paradigm of ecology, is characterized by incessant and erratic change, constant disturbances, discontinuity, and unpredictability. If nature in itself is chaotic, then of course the consequences of human intervention into nature can be regarded as less dramatic and disruptive. One irrup-

tion of a volcano, it can be argued in the framework of this new paradigm, causes much more environmental and atmospheric disturbances than our whole global industrial machine.

MARTIN HEIDEGGER's thinking has been related to environmentalism under the heading of DEEP ECOLOGY and connections can be made with the work of MAX SCHELER and MAURICE MERLEAU-PONTY as well, but at first sight, Husserl's transcendental phenomenology seems of little relevance, be it for the pressing problems of global environmental destruction or be it for the foundational problems of the science of ecology. There are no critical reflections in Husserl on the destructive consequences of large-scale intervention into and transformation of nature by industrial technology and production. As the remarkable *Mensch und Erde* (Man and earth, 1913) by Ludwig Klages (1872–1956) shows, these dire consequences were, however, already clearly visible when Husserl published his first blueprint of transcendental phenomenology, the *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie I* (1913). Klages complains about the global destruction of nature, about agricultural monoculture, about excessive urbanization, about the extirpation of animals and plants, and even about the harmful effects of tourism.

Nor did Husserl reflect on the foundational problems of ecology. There is in general a remarkable omission in Husserl's theory of science of a phenomenological grounding of the biological disciplines. There can be no question, then, of turning Husserl into an environmental philosopher *avant la lettre*. However, since Husserl's CONSTITUTIVE PHENOMENOLOGY offers a unique and fruitful philosophical approach to the foundational problems of science as well as to the axio-practical problems of human life, it has rich implications for the foundational problems of ecology and for a philosophical understanding of the ecological crisis and environmentalism.

It is well known that Husserl's whole philosophy from its early beginnings until its very end is motivated and driven by a sense of crisis and urgency. Until World War I, Husserl's main concern is the foundational crisis of the sciences, especially of the formal sciences of LOGIC and MATHEMATICS and the NATURAL SCIENCES, more precisely the physical sciences. The experiences of the Great War and its aftermath broaden

and intensify Husserl's sense of crisis. It is the whole of European culture, the cultural project of Europe, that is in deep crisis and can be helped, if not cured, by phenomenologically grounded HUMAN SCIENCES.

The cultural project of Europe is the universal human project of REASON, of an enlightened life and a culture of reason. Since reason, according to Husserl, comes into its own in science and philosophy, the life and culture of reason is a scientific and philosophical life and culture. The crisis of European culture that shows itself in widespread alienation, loss of purpose, disorientation, nihilism, and cynicism, as well as in violence and destruction, has its roots, according to Husserl, in a crisis of science and philosophy.

Not reason and rationality as such are to blame for the crisis, but rather a fundamental lack of reason and rationality in the one-sided rationalism of modern science. According to Husserl, there is a certain tragic element involved in the development of modern natural science. The impressive modern progress of natural science and scientific TECHNOLOGY is grounded in the mathematization, the specialization, and the technical method of research. But exactly these conditions of success are responsible for a dangerous blindness, a lack of rationality in modern science and technology. The ultimate foundation of this blindness is, according to his diagnosis, NATURALISM and objectivism. What modern science takes to be objective nature purified from all subjective appearances and apperceptions, all values and purposes, are only mathematical idealizations and constructions. All scientific theories and models, as well as the technical devices built with their help, are rooted in the LIFEWORLD and its primordial nature.

Thus the first step toward a lasting solution to the crisis of European science and culture is the rediscovery of the lifeworld as that which grounds and encompasses the sciences and their idealizations. A theory and phenomenological foundation of science has to start with an ontology of the lifeworld, a descriptive account of its essential characteristics. The lifeworld as the world of our everyday life is a historical and cultural world. Its a world of natural and of artificial, human-made objects, of real objects, like trees, chairs, animals, and people, and of ideal objects like works of art and scientific theories, but above all it is a world of human, cultural MEANING. There is nothing in the

lifeworld that does not have human meaning. The lifeworld is an eminently axio-practical world, a world of human interest.

The lifeworld encompasses nature as that which is not human-made but which is nevertheless clothed with and soaked in human meaning. Lifeworldly nature is not yet the abstract, objective nature of mathematical natural science, but it is an abstract layer of our concrete lifeworldly experience. It is the first nature out of which we matured into the second nature of human culture. What we witness today as a global ecological crisis is the destruction of our biologically natural lifeworld and, together with it, the destruction of the natural lifeworlds of countless other species. Following Husserl's diagnosis, we can say that these natural lifeworlds are ultimately destroyed by ontological neglect. The prevailing naturalist and objectivist ontology that regards the mathematical abstractions and idealizations of modern physics as the only true objective reality legitimates the project of a radical transformation of our lifeworldly nature into a technosphere, which would be a cultural lifeworld on a par with the lifeless and unintuitive world of mathematical science. But is not the nature we encounter biological before the physical nature is extracted from it?

The return to the lifeworld and the threefold distinction between the concrete historical-cultural lifeworld, its underlying lifeworldly nature, and the idealizations of mathematical natural science is the first important step toward breaking the spell of the reductionist paradigm of naturalism and objectivism. Nature and culture, first and second nature, both have to be saved from the destructive grasp of this paradigm and its material manifestation in the form of technological expansion and technocracy.

The return to the lifeworld, however, must not be understood in the sense of life philosophy, i.e., as a return to irrational life as opposed to reason and rationality. The return to the lifeworld is rather an intermediate step toward a radical renewal of science, reason, and cultural life. For Husserl there is no way back to a prescientific religious or mythical rootedness. It is true that positivist science and its technology has deprived us of an overall sense of meaning and purpose, alienating us from ourselves, from each other, from history and tradition, and from nature. But to overcome this alienation we do not need new gods or goddesses to

save us, but a radical critique and renewal of reason and science in the form of a rigorous scientific philosophy.

The lifeworld is not an objective, but a subject-relative world. The historical-cultural lifeworld is relative to the cultural practices of humans in their different communities, cultures, and traditions. These practices include acts of knowledge and of evaluation as well as volitions and practical acts. Our primordially natural lifeworld is relative to the need-structured perceptions and behavior of humans as natural beings; in other words, it is what ecologists call an environment, but with the recognition that environments always already have values and purposes in them for animals, humans included. It can even be asked whether in this stratum of life all things in nature are animate, so that there are thus rudimentary intersubjectivities discernible there too.

A universal and rigorous scientific philosophy presupposes, according to Husserl, a radical subjective turn. Such a turn consists in attending to and giving a descriptive account of the constitution of worldly being in all the different forms it takes in the acts and concatenations of acts of transcendental consciousness. This is achieved by the method of a transcendental EPOCHÉ AND REDUCTION that opens up the new field of research of transcendental-constitutive phenomenology, the radical and universal science of transcendental consciousness in which the world and all sciences of it, ecology clearly included, can be grounded.

The bracketing and reduction of the world and of worldly being includes my human self that lives in this world, my world-life. The newly discovered realm of transcendental consciousness is a non-worldly subjectivity, which, however, includes everything worldly, its own worldliness included, as a senseformation, an apperceptive stratum or a capacity arising out of its constitutive performances. Ultimate rational justification of our theoretical, axiological, and practical position-takings can only be achieved by and in the framework of patient, detailed, and diligent transcendental-constitutive analysis.

The present ecological crisis is a crisis in the relationship between human culture and nonhuman nature. What used to be only patches of human culture in a vast surrounding milieu of wild nature has become a kind of planetary crust of material and immaterial human artifacts and activities with wilderness areas within it. The

different historical-cultural lifeworlds are merging into one global industrial lifeworld, the capitalist-industrial world-city. In the near future, this world-city will be inhabited by at least ten billion mostly young people who will almost all aspire to well-paid jobs, mobility, and a high material standard of living. Only partially to fulfill these aspirations, if it is even possible, would require a sharp further increase in the consumption of renewable and nonrenewable natural resources. The human species would have to colonize and exploit as efficiently as possible all land, water, and air, as well as everything that lives on and in it. Life forms that are of no use to the reproduction and growth of our human numbers and to the fulfillment of our aspirations have to go. A few of them may be kept in zoos or their genes stored in gene banks for possible future use.

If this course of the development of human culture is taken for granted, then the ecological crisis seems nothing more than a technical problem pertaining to the maximal sustainable exploitation of the earth's resources. This, in fact, is the ecological crisis defined in terms of modern science and technology. What is the carrying capacity of the earth and how can this carrying capacity be maximized by technology? How many people can live on earth with such and such a level of material consumption? Because of the enormous amounts of data that have to be gathered and processed as well as the complexity of the equations involved, answers to these questions will be, for the foreseeable future, only preliminary and highly controversial.

There is a widespread feeling, however, that the ecological crisis is more than a scientific and technological problem, that it rather confronts us with fundamental questions about ourselves as humans, about our destiny in the larger scheme of cosmic and natural evolution, about our responsibilities toward the non-human other, about our genuine aspirations, and about the essential ingredients of a good, fulfilled, and rewarding human life. We are, it seems, at the threshold of an unrestricted one-dimensional utilitarian approach to nonhuman nature. The question is whether the further self-realization and self-perfection of humankind, the becoming more fully human, requires that we cross this threshold or whether by crossing it we shall rather destroy ourselves — if not physically, then spiritually and morally.

Husserl's transcendental phenomenology offers a fruitful philosophical approach to these questions. The critique of modern mathematical natural science and the return to the underlying lifeworld and its historical-cultural and ecological-natural aspects are the first steps. The radically subjective turn to transcendental consciousness as constituting the entirety of worldly being opens up the ultimate ground on which these questions can be precisely articulated and, by way of a careful constitutive analysis, can find an answer.

Does the intuitive and descriptive transcendental-constitutive analysis point then to a different view of the relationship between human culture and nature than the utilitarian resource view? Is nature in a transcendental-constitutive perspective more than an external object of use, exploitation, or touristic attraction? The self-mundanization of transcendental subjects, the constitution of other persons and of communities of persons, and the constitution of the lifeworld, including the constitution of lifeworldly ecological nature, form an intrinsic and inseparable unity. For Husserl, however, the *telos* of transcendental life and constitution is spiritual self-perfection, which leads to the rule of reason in individual and common life and which has its objective correlate in a culture of genuine truth, beauty, and goodness. What is the place and role of nature in this process of self- and world-perfection?

Husserl's later analyses of constitution and reason show that transcendental life is suffused by analogous forms of empathy, trust, respect, and love. Spiritual self-perfection is more than intellectual self-perfection. It must rather be conceived as a kind of harmonious and integrated perfection of our transcendental-spiritual faculties, in particular of the mind and the heart, of reason and love. Conscious life is then at once and inseparably an intellectual, an appreciative, an empathic, a respectful, and a loving relationship to its object. The community of reason is a community of love, the culture of reason is a culture of love. This means that the life of spirit cannot flourish in distrust, disrespect, and hate, nor on heartless utilitarian calculation and neglect. Nature then is not originally constituted as mere substrate and resource for the economic and cultural activities of humankind, nor does the teleological vector in this primordial constitution point to such a purely utilitarian relationship in the community and culture of reason. This transcendental-constitutive and

teleological conception of human growth and maturation and the corresponding concept of world-formation will therefore be critical of the further expansion of the industrial-capitalist world-city, which can hardly form such a community of reason and love.

To sum up: Husserl's transcendental-constitutive phenomenology offers a unique approach and method for reflecting on the metaphysical, ethical, anthropological, axiological, epistemological, and socio-economic implications of the ecological crisis. Its critique of modern mathematical natural science and the return to the lifeworld are of great significance for the foundational problems of ecology, in particular the determination and delimitation of that science's proper research field and method. Further constitutive analysis will help to clarify its fundamental concepts as well as reveal their tacit, often ideological, presuppositions. Like all sciences, the science or sciences of ecology, and beyond them, environmentalism will ultimately receive their systematic place in the teleological ecology of transcendental subjectivity and its adventurous odyssey to our true home, a community and world of reason and love. Transcendental phenomenology may help us to resist the powerful song of the sirens with its false promises of freedom, comfort, and wealth in the capitalist-industrial world-city. What has been sketched here, though, is hardly more than an outline that has to be filled in by extensive, systematic, concrete, and detailed transcendental-constitutive analyses.

#### FOR FURTHER STUDY

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**ECOLOGY, DEEP** See DEEP ECOLOGY.

**ECONOMICS** Phenomenologists have always shown a strong interest in the social or HUMAN SCIENCES. EDMUND HUSSERL was of course greatly concerned with PSYCHOLOGY and sought to lay the groundwork for a phenomenological psychology. Inspired by Husserl's phenomenology, ALFRED SCHUTZ devoted the greater part of his energies to founding a phenomenological SOCIOLOGY, i.e., a phenomenology of the social lifeworld (*Lebenswelt*). In France, MAURICE MERLEAU-PONTY applied Husserlian insights to a wide range of human disciplines, including psychology, linguistics, sociology, and ETHNOLOGY. Leaders of HERMENEUTICAL PHENOMENOLOGY such as HANS-GEORG GADAMER and PAUL RICŒUR have also devoted much of their attention to the human sciences. In fact, phenomenological hermeneutics as they have defined it is essentially a philosophy of the human sciences. Only recently, however, has the science of economics become a subject of major interest for phenomenological hermeneutics. The attempt currently under way at working out a "hermeneutical economics" is nevertheless not without historical precedent. Although it came to full fruition only recently, an exchange between phenomenology and economics dates back to the earlier decades of this century.

It is interesting to note that this earlier exchange was a genuinely two-way conversation between economists and phenomenological philosophers. The linkages are complex and of different degrees of intimacy and importance, and remain still to be explored in a thoroughgoing fashion. Key interlocutors in this multifaceted conversation included ALFRED SCHUTZ and FELIX KAUFMANN and, on the economics side, Ludwig von Mises (1881–1973), Friedrich A. Hayek (1899–1992), and Fritz Machlup (1902–1983). The conver-

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