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Why an ecological approach to food?

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Ecology first developed as a scientific discipline and subsequently as a political movement. This points to two arguments for adopting ecology as an analytical framework for thinking about food from a sustainability angle: it constitutes a 'hub science' for the study of relationships and has an inherently political dimension.

This book explores food and associated sustainability issues from an ecological perspective. This choice of words sets a daunting challenge, given that ecology encapsulates a host of imaginaries and expectations, some of which often go unfulfilled. Moreover, in French, the use of the multifaceted word 'alimentation'[1] contributes to this challenge, as it alludes to the sheer complexity of the question of food, though without explicitly describing it. This chapter seeks to explain the rationale behind this conceptual choice.

Ecology, ecological, ecologism . . .

What exactly is an ecological approach? The term 'ecological' may refer to anything environmentally friendly. The expression 'ecological practices' is used in industrialized societies to designate behaviours that seek to limit their environmental impact. Food waste composting and organic farming, for instance, are regularly presented as alternatives – often described as 'sustainable' – to environmentally damaging practices. Given the environmental damage caused by industrialized food system operations (Chapter 7), a transition towards a

[1] This complex term can at once refer to food, nutrition, diet, foodways, food dishes, eating practices, foodscapes, food styles and related aspects of culinary life.

more ecological system is an absolute priority. This is a first interpretation of what constitutes an 'ecological approach to food'. However, we use the term 'ecological' here not simply in the strict sense of being environmentally friendly but in its primary sense of 'relating to ecology'.

The word 'ecology' was coined in 1866 by the German biologist Ernst Haeckel. This novel term – derived from the Greek words *oikos* (house) and *logos* (knowledge) – denotes the study of relationships among living organisms and between these organisms and their environment. The term emerged shortly after the publication of *On the Origin of Species* by Charles Darwin, whose theory of evolution by natural selection posits living organisms as a vast, dynamic and transformative system rather than simply a collection of static, independent species. However, ecology was not institutionalized as a scientific discipline until twenty-five years later in the 1890s.

This new field of knowledge was grounded in the biological sciences and had the distinctive feature of being considered a nexus science from the outset – the result of a complex interplay between various disciplines such as biogeography, natural history and physiology. Its pioneers, including the French naturalist Georges-Louis Leclerc de Buffon (1707–88) and the German geographer and explorer Alexander von Humboldt (1769–1859), set out its main principles by seeking to identify, based on their observations, 'the interaction of natural forces'. The unpredictable nature of ecological phenomena proved to be a major challenge for scientific ecology, as the use of conventional scientific criteria – which seek to identify the regularity of a structure or model that can be explained, predicted or quantified – is ill-suited to understanding what eludes the usual representations of order in complex ecosystems. Although ecological processes are governed by the laws of physics, living organisms retain some degree of autonomy, thereby making it impossible to place them within a set of predictive laws. Living systems are therefore both constrained and autonomous, which makes them unique. The distinction between different organizational levels (populations, species, communities, ecosystems) does of course enable scientists to classify living organisms and distinguish between different research topics. But their object of study is still a tangle of trajectories (individual, population etc.), which gives it a dynamic dimension. The latter is shaped by the variability in space and time of living organisms that are continually co-evolving with their environment and other forms of life. By studying sets of nested ecological systems, ecology provides a paradigm that has served as inspiration for the development of conceptual models in several scientific disciplines, including nutrition (Sobal et al., 1998) (Chapter 9).

Ecology has interrogated the role of the human species in the living world from the start, with a long intellectual tradition of attentiveness to and a sensitive relationship with nature (Hepburn, 1967; Kormondy, 1969; Hausman, 1975; Rousseau, 2004). Ecologists are not limited to studying 'pristine' environments that conjure up images of the original lost Eden of the Western Christian tradition but instead focus on the impact of human activities on the environment. In the nineteenth and early twentieth centuries, pioneers such as John Muir (1897), Jean-Baptiste Charcot (Pénard, 1913) and Albert Howard (1940) warned of the effects of destroying nature in pursuit of profit or through war. In 1864, George Perkins Marsh argued that 'the ravages committed by man subvert the relations and destroy the balance which nature had established between her organized and her inorganic creations' (Perkins Marsh, 1864).

After the Second World War, as Western countries embraced a consumer society and developed an unparalleled destructive and exploitative capacity, the impact of human activities on the environment became a growing concern. As early as 1962, in her ground-breaking book *Silent Spring*, Rachel Carson warned of the impact of pesticides on the entire living world: soil, waterways, plants and animals and even human DNA. In the same decade, as the initial images of the earth taken from the moon underscored the fragility of the world's habitability, the first political ecology movements emerged (e.g. Friends of the Earth in the United States in 1969). They highlighted the global nature of ecological issues and called for the protection and even safeguarding of the diversity of living organisms through the project of a society built on a renewed relationship between humans and non-humans.

It was not until the early 1970s that political and public awareness of the looming ecological crisis began to gather momentum. In 1972, the report 'The Limits to Growth' (otherwise known as the 'Meadows Report'), commissioned by the Club of Rome, predicted the collapse of the global system as a result of the pressure exerted by human activities on natural resources. After decades of developing an academic identity, scientific ecology is now in the spotlight and, at the dawn of the twenty-first century, is contributing to the quest for solutions to global issues. To this end, international expert bodies are being set up, such as the Intergovernmental Panel on Climate Change (IPCC) created in 1988 and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) set up in 2012. There is growing consensus that the lifestyles of some segments of humankind urgently need to be called into question if we are to avoid an ecological crisis. In this respect, social ecology draws the links between ecological and social inequality crises. For instance, as wealth creation

in a country becomes increasingly monopolized by a small number of people, the rest of the population has to counterbalance this monopolization through increased economic development, which can be environmentally destructive. The social impact of environmental degradation differs across income classes, thereby generating 'environmental inequality' (Laurent, 2015).

Ecological movements – whether activist, political or social – have long been the main driving force for change that is struggling to become widespread. Note that there are also rifts within the political ecology space which, shaped by different philosophical and ideological roots, is rife with controversy fuelled by the clash between sometimes contradictory value systems (Chansigaud, 2018). This is true for biodiversity conservation, sustainable development and resilience (Lévêque, 2013). Co-viability, which implies the sustainable coexistence of ecological and social systems, could serve as a unifying approach (Barrière et al., 2019). This concept is one of the building blocks of both scientific and political ecology.

Studying food and associated sustainability issues

This historical overview shows that ecology offers a relevant framework for studying food and associated sustainability issues for at least two reasons.

First, as a nexus science of relationships, ecology has an integrative dimension – that is, it is geared towards gaining holistic insight into the phenomena studied, focusing on the links between the different facets of these phenomena and the dynamics produced by their interaction. This approach thus fosters the articulation of complementary viewpoints. While the segmented study of the different facets of a phenomenon is certainly essential to gaining a comprehensive understanding of each facet, relying solely on this approach limits the potential for understanding the overall complexity of a phenomenon, while also running the risk of reducing it to just one of its multiple dimensions. This is illustrated by the parable of the elephant and the blind scholars in the Jaina metaphysical doctrine of Anekāntavāda ('relative reality'), in which six blind Indian scholars try to learn what an elephant is like by studying it from different angles. One studies the trunk, the second the ears, the third the tusks, the fourth the sides, the fifth the tail, and the sixth the legs. Finally, the scholars all interpret the elephant from their own obviously relativistic standpoint and are never able to agree on what an elephant is really like. An integrated approach will not overlook possible conflicts between sometimes antagonistic positions but will instead provide a

space to identify these conflicts (Luyckx, 2020) along with the properties that emerge through interaction.

Food is indeed a multidimensional issue that can be interpreted from several perspectives (Figure 8.1). Historically, the different disciplines that have studied food have each been structured around a specific dimension. For instance, nutrition is mainly concerned with the biological aspects of food, psychology and neuroscience with its hedonic aspects and sociology with its social aspects; while anthropology examines the role of culture, economics analyses food as a commodity for consumption, exchange and value creation, agronomy studies the agricultural production system from a technical perspective and so on. This epistemological fragmentation is rooted in the history of science. In the wake of the Age of Enlightenment, the twenty-first century was permeated by a positivist vision of knowledge that could only be gained by gathering facts through experiments and therefore through disciplinary specialization. This

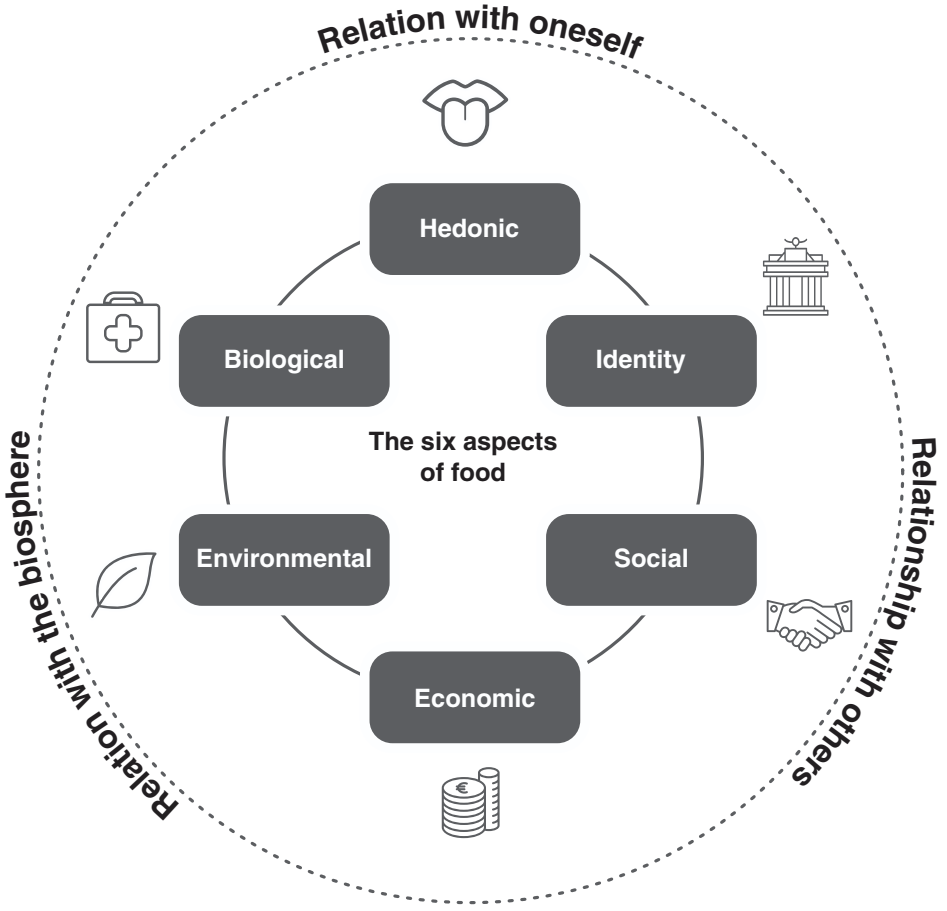

Figure 8.1 The multidimensional nature of food.

means that food research comes with the risk of 'knowledge scattering' (Poulain, 2017), which is extremely detrimental at a time when the social and ecological crisis we face requires a global approach to sustainability issues so as to grasp and leverage interconnections.

In practice, 'food ecology' therefore involves breaking down the barriers of knowledge on food through interdisciplinary dialogue so as to gain an overarching understanding of the sustainability issues that underlie the functioning of food systems (Chapter 9). This articulation of different perspectives on food is guided by a holistic approach that is able to recognize the diverse dimensions of food without presuming any hierarchy, draw links between them and shed light on the dynamics produced by their interactions. This approach seeks to avoid the temptation to investigate food issues while excluding some key aspects from the analysis (looking at health without considering pleasure or culture, looking at environmental and social issues without considering economic aspects etc.). There is also a risk of failing to objectify the contradictions and emerging issues at play along the pathway to sustainability, which may sometimes impede or conversely foster change.

Second, ecology's central focus on the links between living beings gives it an ethical dimension. It urges us to change our relationships in the world and to reconsider ourselves as being 'amongst others' – that is, among other human beings, forms of life and generations before and after us. In essence, ecology champions an exhilarating sense of being part of the living world, with a responsibility to uphold decent living conditions for other humans and non-humans, now and in the future. From this ecological perspective, non-sustainability is viewed as the result of the breakdown of socioecological bonds, thereby undermining the ability to sustain decent living conditions within our collective home (*oikos*).

Contemplating sustainability, especially in terms of food, thus implies rethinking our interactions within socioecological systems in the light of principles such as diversity, resilience, symbiosis, reserves, cycles, free flows and sensitive links. These notions run counter to rationalistic, reductionist, productivist and individualistic views of existence in many contemporary societies. In this respect, intensive, concentrated and uniform industrialized food systems are a far cry from serving as a primary sustainable nurturing source and generally operate at the expense of substantial social and environmental externalities. The main stakeholders in such systems are aware of their vulnerability (Les Greniers d'Abondance, 2020), yet they rely on advanced technology, bolstered by the advent of synthetic biology, nanotechnology and digital technology (IPES-Food and ETC Group, 2021) to ensure that the

systems remain firmly entrenched outside the fabric of living relationships and dynamics.

In practice, 'food ecology' thus involves a political commitment to ensuring that food systems contribute to the achievement of present and future socioecological co-viability (Chapter 10). Protesting, advocating and experimenting are some of the pathways pursued by actors engaged in this new relationship with the world, including civil society actors, the private sector, local authorities, politicians and so on. For anyone seeking to get involved in transforming food systems, the key is to be aware of and overcome the unforeseeable factors, technical barriers and political resistance that hinder change.

Conclusion

This proposed 'food ecology' is intended to offer a new way of thinking about food (Figure 8.2). It is a scientific call to connect the different dimensions of food and to commit to transforming food systems.

The purpose of food ecology is to fuel reflection by researchers and students, but it may also inspire anyone involved in food systems or anyone who is aware of and curious about sustainable food issues. Its aim is not to define a normative framework or prescribe good sustainable food practices. We believe that food should be studied within its context in order to act as consistently as

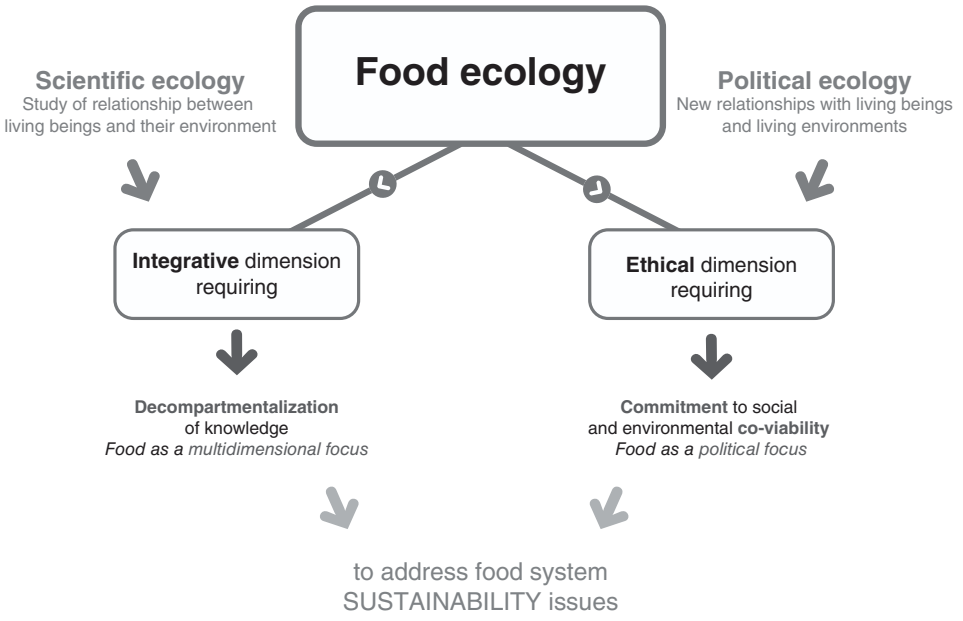

Figure 8.2 Food ecology principles.

possible in relation to the situation at hand. Food ecology is more of a school of thought concerned with the complexity of food and its contemporary issues – this captures the perspective of the UNESCO Chair in World Food Systems, which has matured over several years of science–society dialogue on sustainable food issues. The next two chapters outline the two proposals underlying food ecology: decompartmentalizing knowledge on food and taking a political stand for the transformation of food systems. The practical implications of these two proposals are presented in Parts 4 and 5 of the book.

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