Chapter 2: The social construction of nature and the environment

Overview

In this chapter, you will learn about the diversity of social ideas about nature (concepts of nature) and their significance for social order. You will learn that social constructions of nature are anchored in everyday knowledge on a basic level but are also differentiated according to the logic of different subsystems. At the same time, you will gain insights into the role played by different constructions of nature in relation to historical changes and for dealing with the challenges of sustainable development.

People perceive nature and the environment through a cultural lens that directs their gaze and determines their associations, preferences and fears. As a result, they experience the natural world (everything from the external environment to their own bodies) not "directly" but rather from whichever perspective is socially available to them. It is known, for example, that children initially adopt the views of their parents and perceive arachnids either as threatening or useful, depending on their parents' view. On a supra-individual level, social groups value what fairy tales, the media and fellow humans portray as beautiful about nature and, conversely, fear what is seen as threatening within their culture or social milieu (e.g., dark forests or big bad wolves). In everyday constructions of nature, rabbits, dogs, meadows, lakes, and enzymes regularly fare better than pigs, wolves, forests, rivers, and bacteria. Such symbolic categories go hand in hand with far-reaching consequences, so that, for example, pigs, which are not inferior to dogs in terms of their sensitivity and intelligence, are perceived in many countries primarily as "farm animals" for industrial meat production, the presence or absence of wolves plunges entire regions into conflict, and rivers are easily politicised in relation to usage rights (→ chap. 6 on the environmental movement and environmental conflicts). German understandings of nature, for example, differ from those of other countries and continents due to different nature discourses and references to nature, but even within Germany, perceptions of nature differ from group to group depending on factors such as expertise, practical relevance and interests, as studies on nature awareness show (→ chap. 4 on environmental attitudes and action).

Professional and specialised knowledge influences the perception and evaluation of nature, in that certain phenomena from the biophysical world receive special cognitive attention. Take for instance the differing ways in which a forest ranger and someone going for a walk may view forest damage, or the way body weight is typically viewed from female and male perspectives. Normatively, different functionalities and values are attributed to natural things. In addition, individual and collective practices have a fundamental influence on the perception of nature, because they enable relationships with nature and experiences of nature and turn them into routines, so that dog owners or gardeners, for example, perceive dogs and plants differently and interact with them differently than people with only little practical experience with dogs or plants. This is also expressed by the fact that it is these individual and collective practices that enable people to

adapt to the natural world and organise it according to their own interests. In this respect, interests determine what is perceived as nature in the first place and which possibilities for interaction and utilitarian considerations are included in people's actions and decisions. The social significance of the environment is therefore generally anthropocentric: the environment only becomes an issue and a problem when its otherwise taken-for-granted availability and usability for human interests is called into question or when natural disasters thwart human interests. By contrast, ecocentric constructions of nature are dealt with almost exclusively in areas like the ethics or philosophy of nature and have recently received increasing attention in cultural and human geography as "more-than-human-worlds" (→ chap. 3 on society-nature relations).

For environmental sociology, the socio-cultural representations of nature in everyday knowledge (as well as their temporal and social variability and contextual character) are an important field of investigation, especially in interdisciplinary contexts. For example, when urban development decisions need to be made about green infrastructure such as gardens and parks (Priego et al. 2008), when acceptance among rural communities must be gained for the proposed locations of wind turbines or production facilities, or when it is necessary to increase motivation for sustainable consumption, social scientists are asked about patterns in the way nature is perceived and evaluated. We will take a closer look at the background and analysis of environmental attitudes and environmental awareness in chapter 4, and environmental conflicts are covered in chapter 6.

In contrast, this chapter discusses sociological theories that focus on social *constructions* of nature and their importance for social order and social change. Here, "constructions of nature" encompasses all the ideas and interpretations of nature that are directed towards external "nature" or the natural environment (the latter being commonly associated with environmental problems). The theorisation of constructions of nature has only been pursued intermittently in sociology. On the one hand, this is the consequence of a disciplinary division of labour, through which social metabolism and its social observation, i.e., the "socio-material" relationships with nature, have long been considered the object of study of the natural sciences—even though their importance for ownership structures and the relations of production was highlighted early on by John Locke and Karl Marx (Immler 1985). On the other hand, social constructions and discourses about nature have often entered contemporary diagnostic theories as a subtopic, for example in critical theory (Horkheimer & Adorno 2002 [1947]), cultural theory (Douglas & Wildavsky 1982), systems theory (Luhmann 1989), and the theory of reflexive modernisation (Beck 1992). In light of this, the theoretical references to *social constructions of nature and the environment* in environmental sociology are somewhat disparate and need to be systematised for presentation in this book. We do this by first reconstructing the history of the social construction of nature from a sociology of knowledge and thus social constructivist perspective, before addressing the social transformations in the way nature is understood in historical perspectives of appropriation. We then explore the relevance of these constructions of nature for the challenges of sustainable development in the so-called

"Anthropocene". Then in chapter 3 we embed the social construction of nature described here within interdependent socio-material relationships with nature and build on these ideas to look at *society-nature relations*.

1. The social construction of nature: the importance of concepts of nature in everyday knowledge

After Peter Berger and Thomas Luckmann (1991 [1966]) highlighted the importance of everyday knowledge for social meaning, social action, and social institutions, a social constructivist perspective became established in the social sciences that is interested in the conditions that lead to the social production of what counts as knowledge about reality. According to this perspective, actors acquire knowledge that is established in their culture through processes of primary and secondary socialisation, for example, about what they should eat, what they should think about certain animal species, how they think about forests and forest management, or how they evaluate their bodies. Accordingly, (environmental) sociology considers knowledge and thinking about nature as an object of study that is deemed "universally valid" by the various actors in a society, but which cannot be objectively determined. This also applies to the natural sciences: the expert view of natural scientists is also shaped by institutionalised perspectives of knowledge and by historically and culturally embedded specialised knowledge and routines. "Nature" thus emerges within the framework of "the social construction of reality", according to the title of Berger and Luckmann's (1991 [1966]) central work. Accordingly, while instinct plays a minor role in how people navigate their way in the world, we are primarily guided by our everyday cultural knowledge, which we internalise during the process of socialisation through language, symbols, roles, and routinely applied value judgements. After we adopt our initial constructions of nature as intersubjectively valid realities from significant others such as parents and teachers, and subsequently regard pigs and cows as useful sources of food, and dogs and cats as lovable pets[3], this is followed by role-specific technical and specialised knowledge. It comprises correspondingly differentiated norms, which are conveyed to us in subworlds such as agriculture, medicine, cuisine and art, so that we develop different constructions of nature and routines, for example, in relation to pigs (pork). As long as we do not experience crises or other external disruptive processes that challenge our culturally ingrained understandings of nature and subject their plausible validity to a recoding that "resocialises" us, then those constructions will guide our social action over the long term. In this way, constructions of nature stabilise the social order as an intersubjectively shared, taken-for-granted reality.

The language we use, or one could also say the usual *way* of speaking about nature, the environment, and the body, becomes fundamentally important as the origin of the social construction of the everyday world. It structures semantic fields of reference to nature (for example, city and country, farm animal and

3 In recent years, critical animal studies have critiqued the hierarchical ordering and unequal treatment of animals as specialism and explored possibilities for thinking in "multispecies worlds" (Westerlaken 2020).

domestic animal), organises individual experiences according to vocabulary into generalised orders of meaning, and provides the inventory of knowledge that determines what is considered "normal" in the various subworlds – at least until it is no longer possible to easily act and interact with other people on the basis of the stable constructions of nature found in everyday knowledge. Thus, constructions of nature guide everyday actions like a social institution that creates the "mental rules of the game shared standards and a semiotic environment of mutual predictability. Institutionally, therefore, a pork steak on the menu is unproblematic in many Western countries, but a dog steak would cause irritation. If, however, industrial meat production with its mostly cruel conditions for pigs and cows is scandalised in the social world and becomes unbearable for the individual, this triggers a legitimation crisis of the dominant construction of nature and can lead individually, but also among specific milieus or even historically, to a change in the social construction of farm animals and to the creation of new subworlds, such as vegetarianism. However, the degree of reification or "objectification" of given worlds of meaning in strong institutions (which have been bolstered through many repetitions, norms and rules) plays a major role and limits their variability. It can be assumed that the social understanding of nature as an essential part of social worldviews is strongly objectified, firmly integrated into the social inventory of knowledge and therefore very stable. It is virtually regarded as "natural" or inevitable.

This strong institutionalisation of constructions of nature can be traced back to the fact that in societies those fields of action that solve everyday problems (such as the provision of nutrition) are primarily institutionalised. The institutionalised handling of such solutions, which transcend time and place and are common to all members of society, is so profoundly culturally internalised that their institutionalisation is regarded not as subjective but as objective reality, and is passed on from generation to generation. As a result, cognitive dissonance can occur: Individuals integrate contradictory attitudes into their social practice, such as an assessment of farm animals' living conditions as intolerable on the one hand, and the culturally routinised consumption of meat on the other. In contrast, countercultural constructions of nature, such as a vegan lifestyle, are perceived as "alien" and rejected by the bearers of the "ingrained" patterns of interpretation. Dialectically, the "externalisation" of the dominant interpretations as a self-evident, religiously, culturally and legally secured, "objective" inventory of knowledge in most relevant structures of society contributes to this: "The reified world is, by definition, a dehumanized world," write Berger and Luckmann (1991 [1966]: 106), emphasising that humans experience this world as a "facticity", an "*opus alienum*" over which they have no control.

The nature of society thus emerges in everyday life, as a socially shared reality becomes institutionally entrenched through individual educational processes and social interactions and is passed on in a variety of ways in subworlds of meaning. This social construction of nature is objectified and, according to the final paragraph in Berger and Luckmann's seminal work, has an effect on the appropriation of nature:

> "Man is biologically predestined to construct and to inhabit a world with others. This world becomes for him the dominant and definite reality. Its limits are set by nature, but, once constructed, this world acts back upon nature. In the dialectic between nature and the socially constructed world the human organism itself is transformed. In this same dialectic man produces reality and thereby produces himself." (Berger & Luckmann 1991 [1966]: 204).

This dialectic in relation to nature—i.e., the internal construction of biophysical phenomena as "external nature" and their externalised objectification—plays a central role in environmental sociology. Modern everyday knowledge is determined by a nature-society dichotomy that simultaneously enables the demarcation between society and nature *and* their continuous, primarily technical production and transformation for the benefit of social needs—a double movement that Bruno Latour (1993) calls the modern constitution (→ sections on Bruno Latour in chap. 3 on society-nature relations).

Since antiquity, nature has conceptually denoted the other – the thriving being (*phýsis*) in contrast to the technically made (*techné*). As externally given, non-human, and extra-societal, this concept of nature consolidates the special position of humans as "extra-natural": living (and thus natural) humans do not understand themselves as such, but as cultural beings that rise above nature. Helmut Plessner (2019 [1965]) accordingly coined the category of an "excentric positionality". According to this, humans are positioned or "placed" in their environment, but in this environment they are dependent on language, culture, and knowledge for the objectification of themselves and the external world. Thus, unlike other living creatures, humans do not orient themselves instinctively in their surroundings, but do so by entering into a distanced, "open-minded" relationship with their natural environment and themselves. "As an excentrically organized being, the human must *make himself into what he already is*" (2019 [1965]: 287, emphasis in original). This "law of natural artificiality" means that, for example, the environmental question not only presupposes human beings' "excentric positionality" —how they distance themselves from nature—but that engagement with the environmental question is what first makes people human beings with this special ability in the first place. In his philosophical anthropology, Plessner thus develops a non-dualistic understanding of humans and nature, which seems to contradict the social distinction between nature and society. But even the opposition of nature and society, conceived in everyday practice, is conceptually already a dialectical reciprocative relationship.

The dialectic of the construction of nature is also remarkable in terms of its significance for collective identities. The demarcated other, nature, defines and stabilises the identity of the demarcating subject – even in human-human relationships. Thus, gender relations and ethnic concepts of race can be examined as sub-themes of social constructions of nature. Starting from the white, Western man as the imagined norm, women were—and still are—identified with reference to their "natural weaknesses" or "reproductive tasks" as the Other (*caregiver*)

in opposition to the male homo faber (*breadwinner*). In the same way, in ethnic classification schemes, the white identity only emerges through demarcation from people of other colours, and the Global South as an imagined counterpart to modern society. In each case, these demarcations are based on the assumed closeness to nature of the respective group, while civilisation took the place of the sacred as the counter-concept to nature (Luhmann 1989: 3). In the aforementioned cases, the subject—society, the (white) man, modernity—is constituted through the negation of the objectified Other, above which the subject rises.

From a semiotic perspective, 'nature' can fundamentally only be addressed and signified if it can be positioned as something else within our worlds of language and signs. However, when collective identities are 'shifted' in postmodern deconstruction through the dissolution of dualistic essentialisms, it appears, according to Stuart Hall, as if those identities are no more than wandering signifiers "in search of a *transcendental signified*" (1989: 12)[4]. Clearly, the signifier is just as impossible to pin down as the signified. Just as there is no essential, ontological approach to intrinsically distinguish *people of colour* from white populations, the conceptual identification of nature also fails to provide a substantial determination of itself or its essentialist (i.e., intrinsic) differentiation from the artificial, the human, or the social. As a result, "nature" remains a complementary concept used for differentiation from the non-natural and which is primarily brought into the debate when one wishes to pull ultimate justifications out of one's sleeve to counter the desired, the made, and the conceivable through a stark contrast with the original, the self-evident, the necessary. There may be, in addition to a conservative use of the concept, also progressive ones with which alternatives are brought into play by positioning the existing as not 'natural' and drawing on extra-societal nature as a template for other, natural orders, as witnessed in Romanticism and in the environmental movement.

These considerations make clear that the concept of nature is used according to social interests and patterns of interpretation. However, it does not only exist "abstractly" in everyday knowledge and social ideas – it is structurally anchored in worldviews, from where it informs motives for action and practices. For cultural anthropologist Mary Douglas and political scientist Aaron Wildavsky (1982), different social groups' constructions of nature express their respective group loyalty and their different beliefs in the necessity of hierarchical norms and rules. Accordingly, market-oriented and individualist milieus with strongly liberal attitudes "select" an understanding of nature as benign, resilient and capable of supporting their lifestyles, whereas members of the environmental movement, with its emphasis on strong group cohesion and egalitarian models of interaction, prefer the idea of nature as vulnerable (→ chap. 4 on environmental attitudes and action).

4 In semiotics, a sign (for example, a symbol or word) consists of a signifier (for example, ♀ or "woman") and a signified (the concept denoted by the signifier, for example female / feminine / woman).

2. "Nature" in systems theory: environmental communication in social subsystems

Niklas Luhmann (1989) takes a somewhat different approach and examines communication about nature and environmental problems in the various social subsystems from a systems theory perspective. In order to answer the question of whether modern society is able to adapt to ecological threats or whether it will enter a discursive standstill in the dispute over different constructions of nature, he sheds light on how ecological problems are communicated in a function-specific way and the associated possibilities of perceiving relevant environmental changes. When he talks about the environment, Luhmann usually does not mean "external nature" as a system on its own (however this may be defined), but rather "as the totality of external circumstances, it is whatever restricts the randomness of the morphogenesis of the system and exposes it to evolutionary selection" (Luhmann 1989: 6). This thus includes everything that does not belong to the social system, everything that is suppressed as background noise in favour of the communicative reduction of complexity.

For Luhmann, societies are social systems whose elements are not individuals but self-referential (*autopoietic*) operations in the form of operationally meaningful, i.e., resonant communications. Luhmann defines communication as a combination (unity) of three selection processes (information, message and understanding), through which social systems differentiate, reproduce and maintain themselves. This takes place in communicative operations that use subsystem-specific codes and associated programmes, which help the respective system to restrict its overly complex environment to the information that is relevant for its own processing by means of limited and categorically preformed selections. This means that communication is only possible if it can be continued in subsystem-specific "codes" that the system uses to differentiate itself from external environments.

This means, for example, that in the legal system and in the economic system different information about nature is selected, communicated and understood, and the respective communicative operations cannot be exchanged across system boundaries either. Instead, the messages must correspond to the differentiated and evolving programmes in such a way that further operations can refer to them in a subsystem-specific, self-referential process, for example, within the economic system. In the economic system's central code "payment/non-payment", external "environment" only occurs as a resource (e.g., pork) that yields benefits for economic processes of production and consumption. This means that for meaningful communication to take place, ecological issues must be communicated as quantity and benefit calculations that can be economically internalised (Luhmann 1989: 58). In the subsequent steps involved in the selective processing of information, a decision is then made in a subsystem-specific way as to whether or not it is economically rational within the framework of existing programmes to make payments for ecological benefit calculations, for example to invest in better living conditions for livestock. According to Luhmann, the subsystem's ability to respond to ecological criticisms of pig farming is correspondingly limited: "whatever does not work economically, does not work economically" (1989: 62).

Analogous to the theory of differentiation, the legal system is not orientated towards the language of prices, but towards the language of norms, so that here the assessment of meat production takes place according to the code of legal/illegal and follows the corresponding programming in laws, ordinances or statutes. In the legal system, too, ecological criticism of the environmentally harmful consequences of intensive pig farming, for example, only disturbs the smooth fulfilment of familiar expectations if it triggers conflicts within society against which legal precautions must be taken for the sake of social order. However, the development of programmes that would grant pigs rights against society is not only unlikely, but also not compatible against the background of existing case law, so that Luhmann expects an "essential incongruence of legal categorisation" in relation to environmental problems (1989: 68).

According to Luhmann, the differentiation of society into subsystems with their respective specific information processing represent the conditions under which ecological facts and changes in nature can generate "resonance", according to systems theory:

> "It should be noted that this is a phenomenon that is exclusively internal to society. It is not a matter of blatantly objective facts, for example, that oil supplies are decreasing, that the temperature of rivers is increasing, that forests are being defoliated or that the skies and the seas are polluted. All this may or may not be the case. But as physical, chemical or biological facts they create no social resonance as long as they are not the subject of communication. Fish or humans may die because swimming in the seas and rivers has become unhealthy. The oil pumps may run dry and the average climatic temperatures may rise or fall. As long as this is not the subject of communication it has no social effect. Society is an environmentally sensitive (open) but operatively closed system. Its sole mode of observation is communication." (Luhmann 1989: 28f.).

A system "can only see what it can see. It cannot see what it cannot. Moreover, it cannot see that it cannot see this" (Luhmann 1989: 23), so it remains unperturbed by anything that may be happening outside its self-referential perception. Luhmann sees this structural blindness as the reason why modern societies find it so difficult to react to the ecological threats facing them. The theoretical approach of viewing societies as self-referential systems that reproduce themselves through communication led him to the logical conclusion that social systems and their *autopoiesis* can only be jeopardised through communication. Although he considered the ecological problem to be a threat to society, the basic idea of functional differentiation means that modern societies without a control centre only ever process events in their self-referential, system-specific codes (i.e., environmental disasters or the increased scientific communication about them) according to their own modes of operation in a way that creates resonance within the system. Even if irritations arise in individual subsystems, for example when the scientific uproar about climate change, which is judged to be "true" within the system, reaches the political system through communicative interdependencies, society as a unit

of differentiated subsystems produces too little resonance (and indeed too little unified resonance) or too much and "the system can burst apart from internal demands without being destroyed from outside" (1989: 116).

It would be wrong to assume that Luhmann does not see any relationship between societies and their natural environments. He does consider social systems to be "environmentally sensitive" and energetically dependent, for example, and discusses the possibility of self-endangerment in the sense of a destructive evolution, at the end of which humanity would disappear. But despite this "structural coupling", social systems remain too "operationally closed" to be environmentally open. This means that "at the level of the system's own operations there is no ingress to the environment, and environmental systems are just as little able take part in the autopoietic processes of an operationally closed system" (Luhmann 2012: 49). Thus, operational closure does not mean thermodynamic or energetic closure, but rather the exclusively recursive enabling of intrasystem operations through the results of their own communication, so that social systems are autonomous in Luhmann's sense, but not self-sufficient.

The concept of structural coupling reveals Luhmann's own understanding of nature, which is strongly influenced by the cybernetics of his time and especially by the work of the biologist Humberto Maturana (Kropp 2002: 92). Consequently, structural couplings limit the range of possible structure formation within which a system can organise its *autopoiesis* and through which its existence is already adapted to the (respective natural and social) environment. Where functionalism conceptualises social functions and their fulfilment (e.g., adaptation to the natural environment) as inputs or outputs, Luhmann thinks of the material and energy-related system prerequisites as structural couplings whose complexity can only be understood through the internal complexity of the social system. For Luhmann, the operational closure, within which the conditions of nature remain opaque to societies, guarantees the environmental openness of the system, because the relationship with the environment is not determined by the environment, but by the system's closed mode of organisation: "The entire physical world, including the physical basis of communication itself can affect communication only via *operationally closed* brains, and these brains only through *operationally closed* consciousness systems, and thus only through 'individuals'" (Luhmann 2012 [1984]: 63, emphasis in original). With this understanding, Luhmann draws on contemporary scientific concepts of nature: he analyses societies not in the sense of Emile Durkheim as reality *sui generis*, but in terms of the biologically described ability of living organisms to re-produce and organise themselves, above all with a focus on *autopoiesis* and the possibilities of cognition that this provides. Biological laws shape his understanding of the social construction of reality. We should not underestimate Luhmann's great achievement: the analysis of the inevitably subsystem-specific communications, problem definitions and constructions of the natural environment and their significance for political ecological communication. Yet ironically, this is accompanied by the fact that he naturalises and sets absolute conditions for this analysis.

3. Changes in the social construction of nature

In contrast, the following outline of changes in the social construction of nature is concerned with analysing the historical rules of construction according to which society's understanding of nature is formed. Like Luhmann, the sociologist Emile Durkheim tried to show in his sociology of religion (1912) that concepts of nature and classification systems (for example, totemism) are not taken from nature, but originate in society and are projected onto nature. According to his research, social concepts and classifications of nature organise nature according to the same (hierarchical) patterns that already exist in society. The repercussions of this once again make visible the dialectical architecture of the concept of nature mentioned above; these projections help to stabilise social relations through analogies with nature (Durkheim 1995 [1912]: 221ff.). Durkheim thus ascribes a legitimising and reproductive function to constructions of nature for existing social relations and emphasises their historical and ideological character.

Because society's concepts of social order are linked to those of nature, from a sociological perspective it is worth looking at concepts of nature, their changing history and their significance for society-nature relations. The focus here is on the extent to which constructions of nature are linked to ideas of society and social order, and which practices of ordering and stratification they legitimise, reproduce, exclude, strengthen or devalue. In the following, we will outline some moments of the history of the concept of nature and its interrelationship with social change. This interdependence between the concept of nature and society's self-image also applies to the sciences themselves: In the sciences, too, there are competing understandings of the natural environment and, for example, its resilience, depending on the underlying hypotheses about society's metabolism with nature. This is also true for sociology.

Carolyn Merchant (1980) describes the connection between the understanding of society and the understanding of nature very pointedly in the context of her project to uncover analogous changes in the description of nature, the industrial/technical treatment of nature and gender relations:

> "As Western culture became increasingly mechanized in the 1600s, the female Earth and the virgin earth spirit were subdued by the machine. The change in controlling imagery was directly related to changes in human attitudes and behavior towards the earth. Whereas the nurturing earth image can be viewed as a cultural constraint restricting the types of socially and morally sanctioned human actions allowable with respect to the earth, the new images of mastery and domination functioned as cultural sanctions for the denudation of nature" (Merchant 1980: 2).

According to Merchant's hypothesis, the establishment of a mechanistic view of nature—which began in the modern era and conceptualised nature as a machine that functions according to laws—is the cultural prerequisite for more profound interventions in the natural environment. Such interventions would not have been morally legitimate and acceptable in conditions with holistic constructions

of "nature" as a good "mother" or overarching "cosmos". Raymond Williams takes this thesis to its logical conclusion with regard to the "unacknowledged key concepts" of Western thought in the modern understanding of nature: "Men come to project on to nature their own unacknowledged activities and consequences" (1980: 81). According to Williams, one of the most important changes since the 13th century is the loss of a plural, polyphonic construction of nature and the associated marginalisation of alternative patterns of legitimation and explanation, through which an authoritative understanding has gained interpretative sovereignty. Since the end of the Middle Ages, the term "natures" has been replaced by the singular "nature". In the context of this singularisation, nature was first described as a goddess, then as a divine mother, an absolute monarch, a minister, a lawmaker and finally as a selective breeder, thus opening up different spaces for the interpretation of nature-society relations. The second essential change concerned the construction of a "state of nature", which preceded the human state and had to be subjugated by civilised society, whereby the state of nature and civilised society became opposites.

The template for this dualising European thinking, which draws a distinction between a determined nature and a society of free people, was provided by ideas such as the *scala naturae*, the ladder of nature, which emerged in Ancient Greece and placed every living being, from the lowest to the highest, in hierarchical order. At first, it was not humans at the top but rather supernatural beings, from the angelic hierarchy to the deity. Later the leading position was essentially taken by the white man. Even though the theory of evolution has long since rendered this idea obsolete, many considerations of long-term human development are implicitly linked to it, for example when it is said that the human animal has taken the lead in evolution and left its natural state through civilisation. Although humans and nature, environment and society have been conceived in a variety of ways in historical and cultural comparisons (Descola & Palsson 1996) and essentially can hardly be distinguished from one another, the idea of a complementary, recognisable nature has prevailed over time and continues to shape the self-image of modern societies and their claim to dominate nature, above all through technology.

The high point of this dualistic opposition between nature and society was reached in the 19th century in industrialising societies. Nature was now completely degraded to a realm of enslavement and struggle, and had to be subjugated and controlled. Modernity and progress, according to the corresponding understanding of the world, were, in contrast, valorised through the concept of "mastery of nature" and regarded as universal processes of civilisation. This conceptual juxtaposition of a controllable nature and freely developing societies led to the utilisation, exploitation and devaluation of nature and the environment to an unbelievable extent, which today appears intolerable and threatening and calls the future of civilisation into question. In his book "The Conquest of Nature", historian David Blackbourn (2007) uses the example of German hydraulic engineering to explain how the external environment has been systematically and fundamentally remodelled and appropriated since the 18th century. He illustrates how

cultural intentions and ideas of a progressive conquest of nature by humans led to the draining of wetlands, the straightening of rivers, the construction of dykes and dams, thus creating heroic subjects and also triggering a countermovement, the romantic glorification of the natural. Blackbourn traces this objectifying thinking about nature from the domestic "colonization" (ibid. 153) of the high moors to the Nazi seizure of the "wild East" and its inhabitants:

> "What made the 'wild East' wild? [...] the inhospitable environment [...]. In this distorted view of the world the indigenous inhabitants were written off as 'history-less people', not true Europeans, 'nomads' rather than tillers of the soil. And the Germans projected onto them the qualities to be expected of wild people or 'savages': passivity, a childlike nature, above all cunning, cruelty, and undying hatred for the 'superior race'. They cast them, in short, as Indians." (Blackbourn 2007: 301).

William Cronon (1992) reconstructs a similar devaluation of the rural in favour of the process of urbanisation. He uses the context of the opposing but interdependent development of modern metropolises (Chicago) on the one hand and a rural "hinterland" (The Great West) on the other. Cronon argues that industrialisation and the emergence of capitalist markets brought about the first widespread transformation from a "first" (natural) nature to a "second" (human-made) nature. The urbanisation of industrial society required a supply network between consumer households in cities, industrial production facilities, the agricultural hinterland and the markets, in which the natural materials (e.g., forests) and the variety of agricultural products (e.g., *pigs*) were standardised into tradeable goods in capitalistically organised supply chains (e.g., wood or *pork*).

At the beginning of the 20th century, Max Weber defined "cities" as those (ideal or model) places in which the population can only satisfy its everyday needs with products that are "acquired or produced specifically for sale on the market" (Weber 1968 [1921: 1213). Accordingly, key characteristics of urban consumer households are that they are unable to survive without being supplied by the private market and public infrastructure, and that more reproductive (mostly female) housework takes place in them than productive (gainful) labour. This urban lifestyle has become the norm since the mid-20th century. It first alienated urban populations from the natural conditions of their existence and has since been based on the promise of an industrial society freed from natural constraints, scarcity and tight social control. From the outset, this social order has been associated with the ecological problem of rapidly increasing energy, land and material consumption. However, overcoming this problem and thus moving towards sustainable development paths is still blocked today by internalised ideas about the progressive growth, convenience and consumption opportunities provided by industrial production and consumption methods—and these ideas have long since extended beyond urban areas to the rural population of the Global North. In the meantime, this way of life, now described as "imperial", has emerged as a central element of a growth paradigm based on economic land grabbing that is

ecologically, socially, and economically destroying the natural foundations of life in the Global South as well (Brand & Wissen 2021).

A brief look at the historical development of the interplay between the understandings of nature and society shows that the social construction of nature varies depending on society's internal conception of the social appropriation of nature: An understanding of nature is not formed independently of the appropriation of nature—it is a necessary prerequisite. For this reason, in recent decades concepts that no longer focus on the social constructivist understanding of nature but rather on the co-production of constructions and relationships with nature have gained importance in environmental sociology, and this has been accompanied by a particular interest in the role of the technical sciences (→ chap. 3 on society-nature relations). For the understanding of nature in the natural sciences such as physics, biology and chemistry, this means that their scientific practices, which are based on the worldview of the Enlightenment, also presuppose the objectification of nature as a counterpart to society, whose laws must be deciphered and utilised (→ chap. 1 introduction). In the course of the development of scientific technologies and industrial forms of production, new ways of appropriating nature and the opening up of new habitats in particular have shaped scientists' understanding of nature. For sociology's understanding of nature, this in turn means that, as a child of industrial society, it adopted the worldview of the natural sciences and thus either completely ignored "nature" or viewed it as a passive resource and product of social development (Kropp 2002: 37). Agrarian societies would have formulated a different type of sociology based on their different understanding of cyclical nature. For this reason, the current question, discussed in the last section, is whether the global environmental catastrophe will lead to a different understanding of nature and a different sociology in post-industrial knowledge societies.

4. Social understandings of nature, sustainable development and the Anthropocene

Considerations about how "nature" could be included in theories of social change were only developed later and were mainly due to pressure generated by an awareness of the ecological self-endangerment of modern risk societies (Beck 1992). Bruno Latour has described the systematic ignoring and denial of dependence on nature as a "Modern Constitution" (1993) and took it as the starting point for a new sociology (2005) that is devoted to the manifold associations beyond the juxtaposition of nature and society (→ sections on Bruno Latour in chap. 3 on society-nature relations). The disregard for socio-natural relations that became established alongside the modern concept of nature enabled modern societies and their sciences to formulate a paradigm of growth and progress as if industrial mass production, location-independent mass consumption, and the associated global consumption of resources and waste were possible on the basis of optimised mechanisation and social organisation without risky, catastrophic repercussions for the natural environment and the embeddedness of people in terrestrial contexts. In contrast, a new sociology should place the interactions and

repercussions between plural "natures" and "societies" at the centre of the study of social change. For today it no longer seems likely that the Earth, as a finite planet, can support an ever-expanding world of production and consumption without suffering irreparable damage as a place where people live (Richardson et al. 2023). The task at hand is to explore the understanding of nature in the geological epoch of the "Anthropocene", in which human activity has become the main driver of bio-physical conditions.

The majority of society-nature relations that this has produced are proving to be unsustainable: From a global perspective, so many resources are being consumed, so many emissions and waste products are being produced that are harmful to health and the environment, so many species are being wiped out, and there is so much interference in ecosystems that it is foreseeable that future generations will no longer be able to fulfil their existential needs, and entire regions and population groups are already threatened by global climate and environmental change. Has this dramatic development led to a different understanding of nature? Not really. It is true that a growing number of people worldwide consider climate change, the loss of biodiversity and environmental degradation to be an important or even the most important policy area. However, beyond individual approaches and specific concepts, this has not yet been accompanied by a culturally new understanding of nature in everyday social knowledge and the relevant subsystems, in the context of which the interrelationships between nature, technology and society would be reinterpreted. Rather, the dominance of objectifying constructions of nature can be seen right down to the concepts that will supposedly bring about a socio-ecological transformation and create a sustainable society. They continue to ignore the dependence of humans on nature and fail to adequately recognise the entanglement of human practices with non-human practices, ecological effects and repercussions. Symptomatic of this is the three-pillar model of sustainability, which dominates the debate and is often criticised in concepts of sustainable development, but is always considered more "feasible" than so-called "strong" ecological guard rail models. Although this recognises the challenge of integrating ecological, social and economic concerns, it remains insufficiently complex in relation to their interdependence, monitors targets by separating them into different areas (and indicators), and almost completely ignores the natural anchoring of social and economic systems. In contrast, the 17 *Sustainable Development Goals (SDGs)* adopted by the United Nations in 2016 manage to overcome the sectoral juxtaposition of economic, social and ecological issues by naming thematic priorities and sustainability goals in addition to universal human rights. However, the *SDGs* also read like an anthropocentric wish list of what is worth preserving, without even slightly revising the industrial-capitalist perspective of the appropriation and control of nature or its cognitive foundations.

And yet this understanding of nature has long since led to ecological changes on a planetary scale. Accordingly, many (geo)scientists refer to our geological era as the Anthropocene to argue that humans have become the greatest influencing factor on the biological, geological and climatic conditions of life on Earth. Due to the unintended repercussions of human intervention, the planet has left the

relatively stable phase of the Holocene. In this analysis, nuclear fallout and plastic particles are regarded as "index fossils" that indicate the problematic human activity which, thousands of years from now, will still be associated with the militarised, industrial-capitalist way of life and its understanding of nature. The term "Anthropocene" gained attention primarily through the widely acclaimed article "Geology of Mankind", in which meteorologist and Nobel laureate Paul Crutzen (2002) problematises the variety and depth of human interventions in ecological contexts and their risky consequences. As a consequence of this development, which Crutzen blames on the wealthy quarter of humanity, he now sees that science and technology's enormous task is "to guide society towards environmentally sustainable management [..]. This will require appropriate human behaviour at all scales, and may well involve internationally accepted, large-scale geo-engineering projects, for instance to 'optimize' climate" (Crutzen 2002: 23). Many social scientists, especially those working in the field of political ecology (see, e.g., Swyngedouw 2006), criticise this conclusion. It perpetuates the industrial understanding of a passive nature to be technologically managed and optimised through scientific-technical mastery over nature, which is responsible for precisely those forms of nature appropriation that are seen as the cause of global climate and environmental change. In particular, simplistic and naturalising talk of the Anthropocene attracts harsh criticism because it either abbreviates or completely ignores the economic, (geo)political and social background and effects of environmental degradation with its winners and losers.

In contrast, historians Christophe Bonneuil and Jean-Baptiste Fressoz (2016) elaborate in detail how various regimes of nature, particularly unsustainable forms of energy use, militarisation, the formation of profit-oriented technostructures and fossil capitalism, consumer society and the handling of knowledge and non-knowledge all contributed to the Anthropocene in historically, culturally, and economically very unequal ways. In relation to the present, Timothy Luke (2020) therefore views Anthropocene concepts as a political strategy for interpreting threatening anthropogenic changes. The term "anthropogenic" falsely attributes these changes to humanity as a whole, although they are largely caused by privileged groups in rich countries who use specific technological, political, financial and cultural means and mystify them as scientific enlightenment. The benefit of the Anthropocene concept for these groups is that it enables them to position themselves as "planetary managers" and impose immense burdens on the "managed" human and non-human actors, legitimised by their scientific and technical authority. The Anthropocene concept thus repeats the specific constructions of nature elaborated in the previous sections, not only for the unrestrained subjugation and conquest of non-human creatures and environments, but also for the degradation of a section of humanity.

The claim has been made that "humanity" is now "enlightened" about the ecological problem and, thanks to better knowledge and new scientific and technical instruments, is in a position to make progress towards a solution, yet it becomes clear that even that claim still exists within the traditional dualistic understanding of nature as an objectified counterpart that can be controlled by advanced

societies. The relationship between the concept of nature and the scope for social development that it opens up remains the blind spot of social constructions of nature.

5. The social construction of nature and its political implications

The environmental sociological considerations of the first three sections of this chapter can be summarised in the three findings that social constructions of nature are firstly shaped by different perspectives of perception depending on practices, knowledge and appropriation interests, which are secondly deeply anchored in everyday knowledge and subsystem-specific resonances, and thirdly are externalised and materialised in modes of appropriation that correspond to historically and culturally specific understandings of nature. In this respect, the social construction of nature has a dialectical character because, as generalised and institutionalised ideas about appropriate and inappropriate ways of dealing with nature, it creates social imaginaries of what is desirable and feasible, what is permitted and forbidden (→ chap. 3 on society-nature relations). It symbolically structures the material and energy-related exchange relationships and directs them into historically and culturally varying forms of use. Constructions of nature prove to be the mostly unacknowledged flipside of society's understanding of itself. They reveal more about society and its organisation than about socio-ecological relationships, and are shaped to no small extent by laboratory instruments and production techniques and the scientific/technical interpretations which these enable. Nevertheless, modern constructions of nature have become controversial, with the result that different interpretations and assessments compete in every environmental debate. Even supposedly objective expert knowledge appears to be "biased" and permeated by implicit theoretical assumptions and specific interests and values, as we explain in chapter 6 on environmental conflicts.

Conversely, constructions of nature prove to be political terms, as Luke (2020) recently highlighted in relation to concepts of the Anthropocene. Such terms always implicitly project and postulate a social order, with unequal effects for men and women, urban and rural areas, low-, middle- and high-income countries, as well as the various non-human creatures and regional landscapes. For this reason, concepts of nature are essential elements of the social power relations that encompass human-human, human-technology and human-nature relationships (Kropp 2002). Against this backdrop, Donna Haraway (2018) calls on us to no longer place (male) humans and their destructive activities at the centre of history, but rather the diverse ways of living demonstrated by other species ("critters") in order to find out what survival in *sympoiesis* might look like on the damaged planet. For more on this see chapter 3 (society-nature relations).

What students can take away from this chapter:

- Knowledge about patterns in the way nature is perceived
- Knowledge about historical shifts in the social constructions of nature
- An understanding of how nature is conceptualised in different sociological theoretical traditions
- An understanding of the relationship between social constructions of nature and the social order
- An understanding of the political nature of social constructions of nature

Recommended reading

Berger, P.L. & T. Luckmann, 1991 [1966]: The social construction of reality. A treatise in the sociology of knowledge. *An introduction to social constructivist thought. In this book you will learn about the fundamental importance of (everyday) knowledge for social institutions and society's self-image.*

Barry, J. 2007: Environment and social theory. *An equally recommended introduction to social ways of conceptualising the environment from ancient and pre-modern times to contemporary industrial societies.*

Luhmann, N., 1989: Ecological communication. *A classic of environmental sociology. This book provides a good insight into how the ecological question is discussed in systems theory.*

Blackbourn, D., 2007: The conquest of nature. Water, landscape and the making of modern Germany. *A conceptual perspective on the interdependence of anthropogenic landscape transformation and processes of industrial modernisation. This book illustrates the consequences of constructions of nature in landscape planning and societal development.*

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