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A Copernican Revolution?

Anthropology of nature, anthropology of non-humans, animal studies, agentive nature, multi-species ethnographies [1] ... Anthropology has experienced a proliferation of concepts, texts and events over the past ten years that are intended to reshape the discipline by expanding its frontiers beyond humankind. Several events and publications show this dynamism in French anthropology. [2]

These recent trends are also expressed by participants in the E-Anth (Ecological/Environmental Anthropology) listserv, a successful online discussion forum of the Anthropology and Environment section of the American Anthropological Association (AAA) created in November 1998. The listserv forum features discussions of studies of environmental issues that affect diverse ethnic groups such as deforestation, climate warming, and fracking, as well as theoretical reflections on epistemological, conceptual, and methodological frameworks. It is in this theoretical dimension that the contribution of French scholars is the most recognized internationally. The publication of an English translation of Philippe Descola's *Par-delà nature et culture (Beyond Nature and Culture* [2005] 2013), for example, attracted considerable attention, as did the annual AAA conference that followed its publication, including well-attended panels on the "The French Philosophical Anthropology" and "The French Ontological Turn". [3]

Philippe Descola, chair of "Anthropology of Nature" at the Collège de France from 2000 to 2019 (until he retired), is the most prominent French member of this movement. His 2000 inaugural lesson called attention to the paradox of the title selected for the chair: "It looks as though the anthropology of nature is indeed an oxymoron of sorts, given that for the past few centuries, nature has been characterized in the West by humans' absence, and humans, by their capacity to overcome what is natural in them" (Descola, [2001] 2014).

In signalling what he called the "aporia in modern thinking", Descola was announcing the significance of his intellectual challenge to the field of anthropology. Adopting a tone borrowed from Bruno Latour, he argued that "it is now hard to act as if non-humans are not everywhere at the very heart of social life" and that, as a consequence, it is important to rethink the domains and tools of anthropology "in such a way as to include in its object far more than the *anthropos*: that is to say, the entire collective of beings that is linked to him but is at present relegated to the position of a merely peripheral role" ([2005] 2013: xx). Descola launched a new domain of research based on this observation that has subsequently been embraced by a generation of young scholars enthralled by the prospect of a radical

break with tradition.

This infatuation has predictably inspired caustic comments from certain quarters. In his review of a collective book offering an overview of the place of non-humans in the social sciences (Houdart & Thiery, 2011), Quebecois historian and sociologist of science Yves Gingras mocked a self-proclaimed “Copernican revolution” [4] (Gingras, 2012). It has also triggered alarm among scholars such as Jean-Pierre Digard, a French anthropologist specializing in animal domestication (2012), who sees these developments as creating a “risk of diluting the anthropological discipline and its object” and the danger represented by currents of thought whose opening towards non-humans might contradict humanist values [5]. This chapter is not a defence of some form of hypothetical purity of the discipline, however. Instead, I propose a critical appraisal of the alleged novelty of this “anthropology beyond *Anthropos*” in France, by reviewing early work on the relationships between societies and their environments with a particular focus on how studies were formulated and the contexts in which they took place.

This is not entirely a new field of investigation. Two important books by French academics, twenty-two years apart, have examined the place of nature in anthropological theory: *Les sociétés et leurs natures* [*Societies and their natures*] (Guille-Escuret, 1989) [6] and *L'écologie des autres* (*The Ecology of others*, Descola, [2011] 2013). Comparing them highlights the contrasts between their authors, who represent two very distinct currents of thought in the French anthropological sciences. One is left with the impression that the authors defended specific points of view, but did not provide the reader with the necessary reflexive elements to situate their arguments within a broader disciplinary landscape.

As just one example, Georges Guille-Escuret (1955–2021) attributed the role of “the inspirational force behind ethno-ecology” (Guille-Escuret, 1997) to Jacques Barrau (his professor, 1925–1997), a field to which he devoted an entire section of his book. By contrast, neither Barrau nor his field of inquiry are even mentioned in Philippe Descola’s narrative. Barrau was nevertheless well recognized by his peers and institution, as show his role on the CNRS section “Anthropologie, préhistoire, ethnologie” [Anthropology, Prehistory, Ethnology] and a silver medal from the CNRS in 1981 for “his research and promotion of interdisciplinary research on the relations between human societies and their environments”, and finally, by a Cosmos prize presented to him in 1994 in Osaka for “studies of the relations between human societies and nature”. [7] Descola, for his part, dwells much more on the currents of anthropology that have challenged the Western concepts of ‘nature’ and ‘culture’. The diversity of narratives would not be a problem if they received similar amounts of attention from readers and commenters. The difficulty arises from the fact that historiography favors a narrative that tends to align itself with the perspective of dominant actors. This bias, which is highly familiar to historians, might paradoxically lead to the construction of a history of the expansion of “anthropology beyond *Anthropos*” grounded in work conducted at the core of the discipline while neglecting its margins. [8] Yet, the Laboratoire d’anthropologie sociale of the Collège de France (LAS, Social Anthropology Centre), which Descola directed from 2001 to 2012, enjoys far greater prestige than other anthropology research centres, including appraisal commissions that describe it as “the flagship of anthropology” on “the forefront of the discipline in France for forty years”. [9] Further, the simple fact of occupying a chair at the prestigious Collège de France ensures a

wide audience and great legitimacy, both within academia and in the intellectual media. These factors have unquestionably provided Descola with a wider audience than Guille-Escuret.

My purpose here is to reopen the investigation of the various strands of anthropological thought that have examined the relationships between societies and their environment. This has in turn induced me to diversify my sources and introduce an element that seems absent from two aforementioned books, i.e., the parallel evolution of the discipline and its internal politics in France since the 1970s. [10]

To review this recent French intellectual history, I have found it necessary to include the work of a number of foreign researchers who have long interacted with French colleagues with international collaborations and shared terrains. Before turning to my principal subject, however, I outline the terms of the debate between structuralists from the Lévi-Strauss school and Marxists that typically erupts whenever the discussion turns to anthropological theories of the relations between societies and their surroundings. I then discuss the important schools of anthropological thought in France in recent years, including cultural technology, ethnoscience, ethno-ecology, and the anthropology of nature, as well as their central ideas and contradictions. The chapter then concludes by discussing more recent debates related to the “ontological turn”.

Idealism versus Materialism: The Time-Honoured Terms of the Debate

In the early 1970s, Structuralism and Marxism were dominant trends in anthropology. The camps clashed over rival interpretations of the uses of nature and exchanged accusations, on one side of idealism and on the other, of materialism. The most active and outspoken member on the Marxist side that dominated the international anthropological scene was Marvin Harris (1927-2001). Harris is considered to be the founder of “cultural materialism”, the theory inspired by and expanded upon Julian Steward’s (1902-1972) “cultural ecology”. Steward was the first anthropologist to explicitly incorporate the concept of ecology into anthropological inquiry. Steward developed a theory of “cultural ecology” based on a comparative study of two Native American peoples, following the attempts of Alfred Kroeber (his supervisor) and Clark Wissler to find correlations between Native-American “cultural areas” and North-American biogeographical zones. Steward argued that the adaptive strategies of a given society were expressed through what he called the “cultural core”, i.e., sets of social institutions and techniques that are directly related to the exploitation of natural resources. Societies diversify and are distinguishable from one another according to cultural traits that he considered neutral – the “neutral periphery” – including aesthetics, moral values, and mythology – and that are not determined by the environment. These secondary traits thus depend on innovative, local, cultural borrowings. Harris was among the few to react enthusiastically when Steward published *Theory of Culture Change* (Steward, [1955] 1972), which diverged from prevailing “diffusionist” theories within Boasian anthropology. Harris remarked that Steward’s theory represented “the first coherent statement of an approach that allowed the study of the interaction between culture and

environment in causal terms [i.e., without reverting to simple geographical determinism or lapsing into historical particularism]" (Harris, 1968: 666). Proclaiming his support for the Marxist affirmation of the "primacy of infrastructure over superstructure" (in other words, of the material foundation over culture), Harris supported a materialist interpretation of societies. For Harris, this was wholly compatible with Steward's vision, "on condition that we proceed on the assumption that 'core' is analogous to base" (Harris, 1968: 565–569). He proposed taking a step closer to ecological determinism, however, positing that material conditions *determine* the entirety of culture. This strong position led Harris to support Michael Harner's materialist views of human sacrifice among the Aztecs (Harris, [1979] 2001), earning him the disapproval of most anthropologists, including Marshall Sahlins, ardent critic of sociobiology (Sahlins, 1978). [11]

Meanwhile, Claude Lévi-Strauss (1908–2009) was developing an entirely different line of argument. Originally trained as a philosopher, he acknowledged the "primacy of infrastructure" but, as he argued in *La pensée sauvage (Wild thought)*, "it is to this theory of superstructure, barely sketched by Marx, that I would wish to contribute, leaving to history – assisted by demography, technology, historical geography, and ethnography – the task of developing the study of infrastructures properly speaking, which cannot be the principal task, since ethnology is first of all a psychology" (Lévi-Strauss, [1962] 2020: 146). Although the first chapter of *La pensée sauvage* discusses plant and animal classification by peoples whose thought is "in the wild state, as opposed to thought that has been cultivated or domesticated with a view to yielding a return" (Lévi-Strauss, [1962] 2020: 247), the central objective was to advocate for a structuralist approach to the analysis of myths. [12] His emphasis on the symbolic was an implicit critique of the reductionism inherent in the materialist perspective, based on the argument that plants, animals, etc., are not simply "a means of satisfying needs" but are also "object of thoughts" (Lévi-Strauss, [1962] 2020: 3): in other words, they are "good to think with" and not only "good to eat".

In 1972, Lévi-Strauss delivered a lecture at Barnard College entitled "Structuralism and Ecology" acknowledging that he had been labelled an "idealist" or "mentalist" while also defending himself against materialists and ecological determinism – his intellectual adversary – as referred to by the word "ecology" in his lecture title (Lévi-Strauss, [1972] 1973). In his introduction, he claimed that "two types of determinism are simultaneously at work in social life". First, he asserted that "mental laws, not unlike those operating in the physical world, compel ideological constructs such as myths to become organized and to get transformed in accordance with recurring patterns. These laws exemplify the first type of determinism which I have mentioned." A second determinism stems "from the ecology on the one hand, and on the other hand, from the techno-economic activities as well as the socio-political conditions." (Lévi-Strauss, [1972] 1973). The purpose of the lecture was to use an analysis of two myths about clams collected by Franz Boas to illustrate that the first determinism prevailed over the second. Marvin Harris, at the time a professor at Columbia University (affiliated with Barnard College), did not attend the lecture, but he was aware that he was a target.

Harris published a bracing reply in French in *L'Homme*, the prestigious journal founded by Lévi-Strauss, offering a different interpretation of the myth and accusing Lévi-Strauss of basing his reasoning on an erroneous taxonomic identification of clams. [13] In

“Structuralisme et empirisme”, Lévi-Strauss responded by lambasting “the rampant empiricism that is the senile illness of so-called neo-Marxism” (Lévi-Strauss, 1976). Factual arguments on both sides did little to settle their disagreement, because the myths at the centre of the dispute had been reported by Boas, and some uncertainty remained about the translations of the vernacular names of bivalves as “clams”. What struck readers was the virulence of the ideological clash between these two schools of thought. However, both sides focused on the need for flawless taxonomic identification of botanical or zoological species and detailed knowledge of the properties of flora and fauna implicated in the lives of peoples being studied. The actual source of the conflict thus arose from specific applications of naturalistic knowledge. One side contended that the purpose of such knowledge was to support material determinism, while the other maintained that the objective was to describe the raw materials that the human mind used to *bricoler* myths (Lévi-Strauss, 1976: 32).

The clash between cultural materialists and structuralists encompassed ethnoscience, a proposed approach to the study of the relationships between societies and their environments that arose from collaborations between anthropologists and linguists in the 1950s at Yale University. Most of the faculty in the Yale Department of Anthropology had backgrounds in various fields, including anthropology but also linguistics and in some cases the hard sciences. Indeed, it was at Yale in the 1940s that Edward Sapir and Benjamin Whorf developed the “principle of linguistic relativity”, which argues that thoughts are conditioned by the language in which they were expressed, and, conversely, that language was determined by the culture in which it developed. The intention of ethnoscience, which was initially called “the new ethnography”, was to strengthen the rigor of ethnographic methodology, not only by using ethnographers’ categories for describing and analysing phenomena to study “cultures”, but also by learning and applying indigenous semantic categories as they were identified and described by local languages (following the Sapir-Whorf thesis). Kinship studies offer a useful illustration of this approach because each language uses specific kinship terms to designate bonds that are often dissimilar from those used by the culture of outside observers. An ethnographer must collect local terms, and at the same time, describe the kinship ties to which they refer using codified terms developed by kinship anthropology (Sturtevant, 1964).

In other words, the purpose of ethnoscience was to combine *etic* (external) and *emic* (internal) perspectives. [14] The field was jointly developed by Harold Conklin and William Sturtevant, fellow doctoral students at Yale in the 1950s, and Conklin, a botanist as well as an anthropologist and linguist, was the first to systematically apply ethnoscience to the study of plants. His work with the Hanunó’o people in the Philippines opened a new direction of research grounded in folk, particularly botanical classifications. The approach was not limited to using indigenous semantic categories to study the knowledge that a society has of its environment (Conklin, 1954a), but also sought to describe the “particular ways of classifying [a given society’s] material and social universe” (Sturtevant, 1964: 100). The ultimate goal was to study “the system of knowledge and cognition typical of a given culture” (Sturtevant, 1964: 99), primarily through its system of classification, based on the root “science” in the compound term “ethnoscience”.

Lévi-Strauss and Harris responded to the ethnoscience programme in diametrically opposite ways. For Lévi-Strauss, the symbolic order revealed by an anthropologist is mainly the result

of the unconscious mental activity of the society under study. It is the similarity between their mental structures that enables an individual to decipher another individual's thinking. Further, although ethnoscience was initially primarily descriptive – thus avoiding the debate about what prevails between infrastructure and superstructure – some researchers posited an equivalence between the concept of culture (i.e., superstructure) and “the cognitive organization of material phenomena” (Tyler, 1969: 3). As a consequence, Lévi-Strauss was among the first French researchers to express interest in this movement, as is clear from the numerous citations of Conklin in the first chapter of *La pensée sauvage*. For the same reason, ethnoscience was assailed by Harris, for whom “cultural idealism” was still a stumbling block (Harris, 1968: 565–569).

Thinking the Concrete: The Contribution of Cultural Technology

It would nevertheless be a mistake to reduce these divisions within French anthropology in the 1960s and 1970s to a theoretical clash between Marxism and structuralism, because French graduate programmes were also under the influence of an additional important cleavage at the time. Prospective graduate students at the time could choose between two available teaching programmes. One was the *Certificat de formation à la recherche ethnologique* (CFRE), which was overseen by the Institut d'ethnologie on the site of the Musée de l'Homme and directed by André Leroi-Gourhan. The second was the *Formation à la recherche anthropologique* (FRA), which was taught by researchers from the *Laboratoire d'anthropologie sociale* at the sixth section of the *École pratique des hautes études* (EPHE). [15] André Leroi-Gourhan (1911–1986), an ethnologist, archeologist, and historian specializing in prehistory who devoted part of his career to the study of techniques, believed that all these disciplinary fields are continuous and complementary. His teaching helped establish a much-appreciated school of technology in France [16] whose work was extended by the *Matières et manières* [Materials and Manners] and *Technologie culturelle* [Cultural Technology] research groups, and especially by the journal *Techniques & Culture* (active to this day). [17] Lévi-Strauss, however, focused his teaching on “social” anthropology (Zonabend, 2010) [18]. As Descola noted, “the expression ‘social anthropology’ (*anthropologie sociale*) was not in use in France after the war. It evoked the universalist project that was the domain of philosophical anthropologies. It also implied a hierarchy of the modalities and objects of knowledge, of which ethnography and ethnology are the other terms, not in descending order of dignity, but as a function of their internal connections in the different phases of the scientific process”. This orientation of the *Laboratoire d'anthropologie sociale* also explains its strong links to philosophy (Descola, 2011b). Although some scholars managed to navigate between the two schools (Lemonnier, 2011), most members of that generation of French anthropologists remained under the influence of the rivalry between “the Leroi-Gourhan school” and “the Lévi-Strauss school” (Digard, 1979).

Although they focused on the material nature of the world, some technologists were non-Marxists, including the masterful Leroi-Gourhan. Even the many Marxists, however, disagreed with Harris' position regarding the relationships between nature and society. In the French school of technology, relationships between natural resources and societies are seen as mediated by tools and technical gestures. The work of technologists therefore

involves establishing typologies of different techniques and of describing how they evolved historically (Digard, 1979). Linguists, including highly versatile researchers such as André-Georges Haudricourt (1911–1996), shed light on a further type of mediation – the words that are used to reflect on and refer to the world’s constitutive elements.

By combining these approaches over the long term, these anthropologists developed a dialectical perspective on the relationships between societies and their environments. The reference to Engels’ *Dialectics of Nature* is explicit: “Men are always faced by ‘a nature that is historical and [that is] natural’” (Engels, cited in Barrau, 2000–2004: 45), an idea concisely captured by Maurice Godelier: “Man has a history because he transforms nature” (Godelier, 1984: 10).

As will be discussed later, this tradition – slightly obscured by the sheer scale of Lévi-Strauss’ reputation – offered a way of transcending the binary debate between Marxism and structuralism, while also explaining how ethnoscience came to be imported into France.

Maurice Godelier, born in 1934, is known for attempting to reconcile Marxism with structuralism. Rather than siding with either bio-geographical determinism or a form of determinism associated with the symbolic order, he posited the existence of several types of causality. What was important for Godelier was “the study of the hierarchy of constraints in the reproduction of non-industrial societies”, the topic of a seminar cycle that he created in 1975. [19]

Godelier was a student of Lévi-Strauss (for whom he worked as head assistant in the late 1960s) who held an *agrégation* [20] in philosophy and spent a year studying political economy. Like many Marxist anthropologists of his generation, Godelier wanted to explore the economic realities of peoples outside of the market economy. In 1967, he left France to conduct doctoral fieldwork among the Baruya people in Papua New Guinea. His study had a single objective: “Develop a theory of the conditions of reproduction or non-reproduction of social systems that takes into account their internal and external structures and constraints imposed by the ecological environment” (Godelier, 1974). Godelier was eager to understand the material nature of modes of production, which were paradoxically neglected by contemporary Marxist-inspired anthropologists (Lemonnier, 2011). He was nevertheless critical of cultural ecology for reducing mankind’s relationship to nature to mere acts of subsistence, with no consideration of the social relations of production that he believed to be crucial for the distribution of surpluses.

For nearly ten years, a research group co-founded in 1973 by Godelier and Jacques Barrau (1925–1997) called “*Écologie et sciences humaines*” [Ecology and Human Sciences] pursued this line of thinking. A well-known specialist in the agriculture of Oceania, Barrau was among the scholars whom Godelier met with in Paris while preparing for his fieldwork in the region. Barrau had grown up in New Caledonia and earned a degree in agronomical engineering in 1946 (after his studies were interrupted while he was incarcerated in German camps for resistance activities). Subsequently appointed chief of the agricultural service in New Caledonia, he resigned in 1951 after the rejection of his report on the need to expand reservations for indigenous cultures – as opposed to cash-crop farming. [21] He was then recruited by the Commission Pacifique Sud, which enabled him to spend ten years criss-

crossing Oceania. In 1956, he was welcomed by the Laboratoire d'agronomie tropicale [Tropical Agronomy Center] at the Muséum national d'histoire naturelle in Paris, to write his doctoral dissertation. At the Museum, he met Haudricourt, who introduced him to ethnobotany and to Marxism. [22] Barrau, who was appointed assistant director of the laboratory in 1965 (subsequently renamed the Laboratoire d'ethnobotanique et d'ethnozoologie, Centre of Ethnobotany and Ethnozoology), again took an extended research leave to work in the Pacific for five years. Between the two positions, he was a guest professor of ethnobiology (at Conklin's invitation (whom he probably met during his travels in Southeast Asia) in the Yale University anthropology and biology departments in both 1964 and 1969. At Yale, Barrau immersed himself in ethnoscience, returning to Paris in 1971 to resume his position at the Muséum national d'histoire naturelle in Paris (Bahuchet & Lizet, 2003).

Godelier and Barrau had shared interests in Marxism, the communist party, and Oceania, and in the comparative and historical study of modes of subsistence. In May and June 1973, they organized two conferences at the Maison des sciences de l'homme – – “Écologie et sociétés en Mélanésie” [Ecology and Societies in Melanesia] and “Méthodes d'enquête ethnologique sur la conceptualisation et la classification des objets et phénomènes naturels” [Methods of ethnological surveys on the conceptualization and classifications of natural objects and phenomena] – which united scholars from a variety of disciplines that included anthropologists, linguists, prehistorians, and naturalists. This inaugural event was followed by several other initiatives, including the creation of an international group called “Écologie et sciences humaines” [Ecology and Human Sciences] that launched a new partnership between the Maison des sciences de l'homme, the Laboratoire d'anthropologie sociale, and the Laboratoire d'ethnobotanique et d'ethnozoologie. The geographer Olivier Dollfus (1931–2005) also joined this innovative new group of researchers.

Borrowing from the vocabulary of ecology, the group's introductory document proposed a “synecological” perspective on human societies, i.e., a simultaneous view of humans' relationships with each other and with the elements of the surrounding ecosystem, living or not. According to the authors, this approach allowed them to “comprehend how human groups conceive of, interpret, and organize their natural environments, how they adapt to them, and how and why they used and continue to use them, and, finally, how they perceive their natural environment and their role and position in it”. The purpose was to “take into account the fact that human societies are included in two spheres of influence, one cultural and the other natural, that are connected through diverse forms of economic organization”. [23]

The group funded bibliographic studies of the key concepts related to the boundary between ecology and anthropology. [24] It also sponsored task forces that explored various modes of production ranging from agriculture (François Sigaut) and nomadic pastors (Pierre Bonte, Jean-Pierre Digard, Claude Lefébure) to hunter-gatherers (Alain Testart). The Pasteurs nomades [nomadic pastors] group remained active until 1987 through the journal *Production pastorale et société. Recherches sur l'écologie et l'anthropologie pastorale*. An international meeting in 1978 organized by the Chasseurs-cueilleurs [Hunter-Gatherers] group at the Maison des sciences de l'homme, twelve years after the “Man the Hunter” conference held by Richard Lee and Irven DeVore, helped form the “CHAGS” [Conferences on Hunting and

Gathering Societies], a regular series of international conferences that united the four fields of anthropology. [25] Godelier and Barrau collaborated primarily through a regular seminar at the EHESS site at 6, rue de Tournon in Paris, an important rendezvous for a tight-knit academic community. [26] It was also the locus of an important trans-Atlantic dialogue that included Marshall Sahlins (1930–2021), who was invited to guest-lecture about his hypothesis of a correlation between the extent of social stratification and the size of Pacific islands (1958). He hypothesized that the great kingdoms were located on the larger islands, whereas non-hierarchical societies tended to develop in the atolls. [27]

The group also welcomed and debated the ideas of a number of other American scholars. In 1974, Brent Berlin (born in 1936), an anthropologist and linguist who represented ethnoscience at the University of Georgia, was invited to present a recently published book that he co-authored with two botanist colleagues, *Principles of Tzeltal Plant Classification* (Berlin et al., 1974). The group also debated Roy Rappaport's (1926–1997) proposal for an "ecological anthropology". Rappaport published his best-known book *Pigs for the Ancestors – Ritual in the Ecology of a New Guinea People* in 1968, in which he argued that *tsembaga* rituals (notably the slaughtering of pigs to honour ancestors) were regulators of trophic exchanges (Barrau and Dollfus, 1979). [28] Another frequent correspondent was Andrew Peter Vayda (born in 1931), one of Julian Steward's students and the scientific editor of a textbook entitled *Environment and Cultural Behavior* (1969) as well as the founder of the prestigious journal *Human Ecology* in 1972, a research field explicitly rooted in ecology.

In addition to publications in the journal *Information sur les sciences sociales* and in the journal of the Centre of ethnobotany and ethnozoology JATBA, texts by Maurice Godelier in the 1970s also provide a record of the period, many of which were later anthologized in *L'idéal et le matériel* ([1984]; *The Mental and the Material*, 1986). His key proposal was that there is mental [*idée*] in the material. The term "*idée*" referred to everything that involves the labour of thought ("the system of ideas, values, beliefs, and representations constitutive of a society", 1986, 45 note 4), based on the assumption that thought cannot be reduced to the symbolic. [29] The purpose of using a neologism was to avoid the term "ideology", which in a Marxist sense refers to everything that *a posteriori* justifies a given state of relations of production. For this reason, Godelier specified that "in relations between humans or with nature, *idéal* elements are present that are obviously not a reflection of these relations but are part of their internal armature" (Godelier, 2001).

Godelier deconstructed the terms of the materialist vs. structuralist debate by demonstrating that it was erroneous to consider the material to be opposed to culture as 'the conceptual part of reality is no less concrete than its material part' (Godelier 1984 : 167). [30] In using this formula, he was associating himself with Leroi-Gourhan and Haudricourt, other "*penseurs du concret*" [thinkers of the concrete] for whom techniques are a legitimate object of study for the human sciences (Haudricourt, 1987: Barbe & Bert, 2011). [31]

Godelier gradually distanced himself from this approach in the late 1970s, stretching his relationship with Barrau. Godelier abandoned these questions in 1982, accepting an administrative position in the CNRS. He eventually returned to research, founding the Centre de recherche et de documentation sur l'Océanie (CREDO, Centre for Documentation and Research on Oceania) in Marseille, far from the academic turmoil of Paris.

Barrau continued to promote the idea of resituating human history in natural history however, [32] while also attempting to understand the history of nature in relation to human history. He argued for closer collaboration between the natural and human sciences, an argument that continues to resonate within the Muséum national d'histoire naturelle, which continues to be influenced by Leroi-Gourhan's more generalist, diachronic vision of anthropology. This is less true of certain other academic institutions, where the divisions between physical, social, and cultural anthropologies had a longer history (Claude Lévi-Strauss created the laboratory of "social anthropology" in 1960). Clearly confirming these intra-disciplinary boundaries, Barrau rapidly resigned from the CNRS Section 33 "Anthropologie, préhistoire, ethnologie" in 1983, after being not only rejected but treated disrespectfully by fellow section members. [33] Georges Guille-Escuret's obituary for Barrau, who died in 1997, alluded to difficult times: "Marginalized by all sorts of forces of inertia and even ideological hostility, Barrau's career was definitively paralyzed. [...] Barrau was aware of his respected position within the profession outside of what are frightfully called 'decisional agencies,' and he saw these episodes with a touch of irony but not a hint of bitterness" (Guille-Escuret, 1997). Although the archives do not reveal specific information concerning this professional marginalization, the split of CNRS Section 33 in 1992 into two separate sections clearly sidelined Barrau's approach to research (see Appendix 1).

In the early 1980s, Descola (born in 1949), a philosopher by training, influenced by the work of Lévi-Strauss and Godelier and a student in courses team-taught by Godelier and Barrau, returned to France to write his doctoral dissertation after conducting fieldwork in Ecuador. He completed the dissertation in 1983, and it was published three years later under the title *La nature domestique. Symbolisme et praxis dans l'écologie des Achuar* (1986) (*In the society of Nature: a native ecology in Amazonia*, 1994). [34] Pursuing the approach recommended by Godelier, Descola's study focused on "minute attention to the concrete fabric of material life" (Descola, 1986: 3), i.e., on praxis, which Godelier contended is "an organic whole in which material and mental aspects are closely linked" (Descola, 1986: 12). This ethnographic process sought to "analyze the relations between mankind and his environment from the angle of the interactions and dynamics between socialization techniques of nature and the symbolic systems that organize them", but without assigning "causal or analytical preeminence to the material over the conceptual" (Descola, [1986] 1994: 3). This position led Descola to reject the deterministic interpretations of American anthropologists who had done earlier work in the same field. Comparing Achuar production and consumption practices in interfluvial and riparian zones, the quantitative approach developed by Descola clearly showed that the Achuar diet in both habitats contained a high level of protein, refuting previous hypotheses of a differentiation of social forms caused by inadequate access to protein (Descola, [1986] 1994: conclusion). Appointed assistant professor at the EHESS in 1984, Descola succeeded Godelier in teaching economic and environmental anthropology at the teaching programme "Formation à la recherche anthropologique" [35] "including its technical aspects, such as topographical surveys of land areas and the method of squares of density". There was a clear lack of student interest, however. [36] Could the lack of enthusiasm among younger students be explained by the collapse of Marxism? Or did it reflect a shift in the centres of interest in anthropology in the wake of the "interpretive turn" (Geertz, 1973; Clifford & Marcus, 1986)? Did Descola himself lose enthusiasm for quantitative and naturalistic approaches after refuting the hypothesis of

“protein determinism” (Descola, 1988)? Descola retraced these changes and their consequences as follows: “When I stopped offering the course in the early 1990s, no one took it over, and I sometimes wonder whether I am not indirectly responsible for the loss of interest in these questions” (Descola, 2014: 88). The situation did indeed contribute to the fact that the next generation retained only the symbolic dimension of ecological approaches that Descola continued to pursue. [37]

Ethno–Ecology: An Empirical and Interdisciplinary Development of Ethnoscience

After Godelier lost interest in these questions from 1975 on, the epicentre of research that focused on the relationships between human societies and their environments appears to have shifted to the Muséum national d’histoire naturelle and the development of the theoretical and methodological ideas underpinning French ethno–ecology. The process unfolded in several phases, beginning with the introduction of the field of ethnoscience and critical debates surrounding this new research area.

Georges Condominas (1921–2011), a specialist on Indochina who spent time at Yale in 1964, was recognized as the first French researcher to show interest in ethnoscience, but it was Barrau who famously embraced this approach in France in his writings (Barrau, 1984, 1985). He was joined by his colleague Claudine Friedberg, an anthropologist trained at the CFRE who also had a background as a naturalist.

From 1975 through the mid–1980s, Friedberg and the ethnologist Alice Peeters (Barrau’s wife) team–taught the ethnoscience seminar of the laboratoire d’ethnobotanique et ethnozoologie. The course was intended as both a return–from–fieldwork seminar and a discussion group on the work of English–language researchers.

At the time, the scientific community surrounding ethnoscience was divided between universalists – chief among them Brent Berlin – seeking universal laws on which to base classification systems of colours, plants, etc. (Berlin & Kay, 1969; Berlin, 1992) – and relativists focused on the study of classifications within social and ecological contexts (for example, this was the position of the New Zealand Oceania specialist Ralph Bulmer; see Dwyer, 2005). In this divide, The French research group chose its side early, and dissociated itself from a form of ethnobotany/ethnozoology focused on formal plant/animal classification that would not be part of an overall ethnographic approach. This is what one of Haudricourt’s students conveyed when she critically reviewed Berlin’s book *The Principles of Tzeltal Plant Classification* (Martin, 1975). Friedberg’s seminar helped to reinforce a critical position on universalist developments in the United States that was marginally echoed by the founders of cognitivist anthropology in France, including Scott Atran and Dan Sperber. The trajectory of ethnoscience, at least inside the crucible of the Muséum national d’histoire naturelle, broadly influenced by Haudricourt’s holistic, interdisciplinary approach [38] and Leroi–Gourhan’s technology courses, quickly rallied around a new research trend that emerged internationally under the name “ethno–ecology” (Toledo, 1992). [39] The core interest of this new branch of the field was the diversity of human ecological experience in

its many dimensions (material, mental, symbolic, sensory, affective, moral...). Classifications of the natural world were only one of several lines of inquiry intended to improve our understanding of a society's relationship to its environment. Studying the living world was seen as a crucial component of a more holistic approach to societies that integrated the study of the practical and symbolic uses of nature. For members of this school, representations of nature were invariably associated with practices for managing natural resources. Knowledges were never separate from know-how (Friedberg, 1991, 1992a). [40]

In terms of methodology, ethno-ecology remains under the influence of an ethno-scientific approach based on the confrontation between emic and etic perspectives. In Rappaport's work, this method distinguishes the "cognized environment", coded according to local cognitive categories, from the "operational environment", as studied by an anthropologist according to his or her naturalistic baggage (Rappaport, 1968: 237-241; Vayda & Rappaport, 1968). In comments regarding Rappaport's approach, however, Peter Dwyer (an ethno-ecologist of Oceania at the University of Melbourne), argues that the founder of ecological anthropology was on the wrong side of the fence in favouring the positivist objectivization of practices over comprehensive analysis (Dwyer, 1996). Indeed, for most researchers, ethno-ecology is not intended to use the sciences to validate or invalidate vernacular knowledges and know-hows. Instead, the goal is to understand the internal logics of these knowledges and how they contribute to the functioning of a whole society. Barrau clarified this point as follows: "One could state, as Conklin did, that when conducted with respect for local naturalistic knowledges, this research should not burden itself with considerations derived from the natural sciences. Priority should be given to these knowledges in and of themselves. The only function of their scientific interpretation, in other words, in terms of the natural sciences, is to allow comparison between different semantic systems" (Barrau, 1985: 9). Barrau's view was thus consistent with the ethnological approach that adheres as closely as possible to the meanings that local actors themselves assign to their own lived experience.

This is even more true of Friedberg's questions regarding the ability of scientific knowledge to objectify reality:

Ethnoscience connects two kinds of analyses. According to one, it entails gaining access to categories and implicit concepts based on the point of view of those who use them. According to the other, one approaches the same objects or phenomena based on scientific categories or concepts. To distinguish between the two approaches, it appears preferable to refer to 'internal' and 'external' analyses that do not suggest any prior hypotheses about the nature of what is observed instead of referring to the emic-etic opposition. Indeed, no etic reality exists in its raw state because perception, which operates based on criteria supplied by the observer's culture, is always emic in nature" (Friedberg, 1991).

According to these views, this does not necessarily imply a relativistic position according to which every feature of the human relationship with the environment is culturally constructed. It appears that because they are trained as naturalists, these researchers are able to make finer-grained observations and descriptions of local knowledge and know-how. A researcher with a background in botany - or any other discipline - can engage in more fruitful discussions with "those in the know" than if they are unfamiliar with local flora. [41] If the

culture of science corresponds to an academic curriculum, it functions as a point of reference, although a strong agricultural background is equally useful (Barrau, 1985). [42]

Shifting the emphasis of research away from standard systems of classification in favour of local natural management practices and knowledges was one outcome of the “folk naturalist knowledge” (*savoirs naturalistes populaires*) programme that was established in 1982 as part of the *Mission du patrimoine ethnologique* [Ethnological Heritage Mission] (Collectif, 1985). [43] This change was in line with the new orientations for nature conservation in France epitomized by the creation of the Regional Natural Parks in 1968, which focused on the integration of human activities with environmental protection. Another possible catalyst for the shift was the militant agenda of a group of American ethno-biologists, [44] including Darrell Posey (1947–2001), an American ethno-entomologist committed to defending the rights of the Kayapo people of Brazil. In 1988, Posey founded the International Society of Ethnobiology, whose primary goal was to ensure that respect for “traditional ecological knowledge” was inscribed in the 1992 Convention on Biological Diversity signed in Rio (Hunn, 2007). The initiative was successful, leading to Article 8.j of the Convention, [45] which formally recognized traditional knowledge, thus enhancing its visibility among international organizations and increasing support for research on traditional ecological knowledge and management systems. The researchers at the Muséum laboratory in association with the CNRS research team APSONAT (Appropriation et socialisation de la nature [Appropriation and Socialization of Nature]), [46] committed themselves to this topic, [47] joining an emergent “biocultural diversity” paradigm in ethnobiology in order to explore links between cultural and biological diversity (JATBA, 1994; ISSJ, 2008).

The ethnoscience seminar eventually came to an end in the late 1980s. Some of the participants regrouped around the PIREN (Programme interdisciplinaire de recherche sur l’environnement [Interdisciplinary Research Programme on Environment], established by the rural sociologist Marcel Jollivet in 1978. The mission of the core members of this CNRS programme was to foster research that responded to the political agenda of the recently created Ministry of the Environment (established in 1971). The idea was to promote interdisciplinary research by expanding the scholarly circle to incorporate human and social science disciplines such as economics, law and sociology (Pirevs, 1998; Jollivet, 2001). As part of this movement, Guille-Escuret and Friedberg authored a broad, critical overview of research involving the environment, first in a bibliographical synthesis submitted to the PIREN in 1985 (and which formed the basis of Guille-Escuret’s 1989 book, *Les sociétés et leurs natures*) and later in a series of chapters in a book published by Jollivet, *Sciences de la nature. Sciences de la société. Les passeurs de frontière* (1992a, 1992b). Few ethnologists answer calls for proposals from programmes that focus on the environment, perhaps out of reluctance to adhere to the public-policy agenda or to guidelines of other fields perceived as having greater claim to questions related to the environment (Friedberg, 1992b; Pirevs, 1998). Only a small handful of ethnologists working in the interdisciplinary setting of the Muséum (Claudine Friedberg, Marie Roué, Bernadette Lizet, Anne Luxereau, and Laurence Bérard...) responded to the challenges and opportunities made available by public policies that encourage sustainable development. Research in collaboration with natural parks or local collectivities typically explored conflicts between actors or the role of food heritage in preserving local biodiversity.

The creation of a new journal entitled *Nature, sciences, sociétés* in 1993 by a group of participants in interdisciplinary programmes provided a platform for this new scholarly movement. The journal united several ethnologists with rural sociologists, economists, ecologists, legal specialists, modellers, and geographers in order to investigate “every aspect, whether technical or not, of the interface between mankind and nature, with science itself a part of this interface”. The impact of these developments quickly ramified, and in 1995, with the support of the Muséum and the Office de la recherche scientifique et technique outre-mer (ORSTOM, Overseas Scientific and Technical Research Centre), a Diplôme d’études approfondies (DEA) [advanced graduate studies programme] was established at the University of Orléans called “Environnement: temps, espaces, sociétés” [Environment: Time, Spaces, Societies]. The programme promoted interdisciplinarity as the best means of addressing environmental questions. In the wake of major reforms of the French higher education system, the programme became a master’s programme that was hosted at the Muséum, “Environnement: dynamiques des territoires et des sociétés” [Environment: Dynamics of Territories and Societies], with a specialization “Anthropologie de l’environnement” [Anthropology of environment] expressly anchored in social and cultural anthropology. These developments were insufficient, however, to solidly ground a field that might credibly announce itself as environmental anthropology. The difficulty was probably due to the Muséum’s institutional nature, which tended to limit research topics to biodiversity while excluding other environmental domains such as pollution, energy, habitats, and transportation. An alternative explanation is that the classic ethno-ecological approach is not fully relevant to contemporary cultural contexts. [48]

In September 2010, the Centre d’études des techniques, des connaissances et des pratiques (CETCOPRA, Centre for the study of techniques, knowledge and practices) at the Sorbonne held a conference entitled “Pour une socio-anthropologie de l’environnement” [For a Socio-Anthropology of Environment] that claimed to establish this field. It included talks representing diverse approaches and disciplines, ranging from political science and geography to the history of science. In their introduction to the proceedings, the organizers acknowledge that the contributions were quite heterogeneous, and that much work remains to be done in order to achieve a coherent research field (Poirot-Delpech & Raineau, 2012).

From the “Trouble with Nature” to the Anthropology of Nature

While rejecting his American colleagues’ hypotheses about the Amazon Basin, from his fieldwork Descola retained the idea that the women’s maternal relationship with manioc and the men’s seductive relationship with hunting wild game directly mirror the two gendered types of social relationships – by consanguinity and affinity – that are assigned respectively to women and men (Descola, 1986: 402). Based on this observation, Descola cited an article by Haudricourt (1962) in his book’s conclusion in which Haudricourt postulated that the treatment of plant or animal beings was comparable to the treatment of the Other. Although Haudricourt was a Marxist, he formulated his intuition in such a way as to avoid any suggestion that the relationship was causal in nature, thereby allowing it to remain compatible with any position that opposed materialism: “Is it not absurd to think that one has anything to do with the other?” as he bluntly expressed it. Descola continued to explore

this question in a seminar that he launched at the EHESS in 1984, “Problèmes d’anthropologie de la nature” [Problems of Anthropology of Nature]. The hypothesis of the seminar was that the socialization of nature (material and mental relationships with the ecosystem) and the socialization of the Other (definition of identity through differential treatment of self and other) maintain relationships of compatibility that make it possible to engage in systematic comparisons. [49] This first led him to examine so-called “animistic” societies that include animals and plants in their systems of social relations, followed by “totemistic” societies that he saw as a mirror image because they draw on classifications of the natural world to conceptualize their social relations.

In the 1990s, Descola’s research became part of a reflexive trend in anthropology in what could be called “the trouble with nature”, paraphrasing a famous article by historian William Cronon, “The Trouble with Wilderness” (Cronon, 1995). Two edited volumes, both published in 1996, directly confronted this problem: *Redefining Nature*, edited by Roy Ellen and Katsuyoshi Fukui, and *Nature and Society, Anthropological Perspectives*, edited by Philippe Descola and Gísli Pálsson. The first book resulted from a symposium in Kyoto in 1992, “Beyond Nature and Culture: Cognition, Ecology and Domestication”. The second book assembled presentations from a panel at the 1994 conference of the European Association of Social Anthropology in Oslo about the status of nature and the environment in anthropological theory.

The critics of how the term “nature” was used in anthropology was based on a feminist undercurrent fifteen years earlier. In a seminal article, “No Nature No Culture: The Hagen Case” (1980), Marilyn Strathern drew on the analysis of the feminist anthropologist Nicole-Claude Mathieu, who denounced the tendency of structuralist analysts to associate men with culture and women with nature (Mathieu, 1978). Strathern proposed returning to two spatial categories used by the Hagen people in Papua New Guinea that are comparable, at least at first sight, to the binary opposition between nature and culture. She showed that these *Hagen* categories – *mbo* and *romi* – are more closely identifiable as an opposition between domestic vs. wild or planted vs. non-planted. Strathern contributed to a critique of the centrality of the nature–culture duality in anthropological analysis that she characterizes as originating in an ethnocentric projection. Indeed, Lévi-Strauss, after positively defining nature and culture in the *Elementary structures of kinship*, [50] later revisited the relevance of this definition, although he nevertheless gave this binarism a central role in structural analysis. [51]

The social construction of nature serves as the point of departure for both books. Roy Ellen, who contributed to both books, questions the concepts that are referred to by the term nature as it is used in anthropological studies: thinginess – otherness – essence. Other thinkers have also wondered whether anthropological analyses would suffer from the same ethnocentric bias if they used the category of “wilderness” in the place of nature.

Despite this apparent cohesiveness and the fact that several other scholars contributed to these two books, their orientations are somewhat different. As an intellectual heir of Rappaport and founder of the most important school of ethnobiology in the UK (University of Kent, Canterbury), Ellen revisits a theme dear to historical materialists in his introduction – the relationships between humans and their environments over the long term via processes

of domestication or evolution of techniques, in which it would be illusory to seek that which arises from both nature and culture (Ellen, 1996). [52] The organization of *Redefining Nature* into three sections reflects the editors' desire to avoid falling into the relativist trap: 1) nature as a cultural concept; 2) relationships between domesticated forms (specific domesticates) and human populations; and 3) nature, co-evolution, and the problem of cultural adaptation. For Ellen, the now widely accepted observation that the distinction between nature and culture is contingent on a specific moment in Western thought does not diminish the relevance of ethno-ecology and its interdisciplinary foundations. Indeed, on the contrary, it helps justify them. As Ellen argues, "Every social anthropologist who asserts that there is no need to consider biological explanations is merely reasserting the nature-culture opposition" (Ellen, 1996: 18). Some chapters mention conceptual or methodological procedures for developing a stronger understanding of the relationships between men and their environments. François Sigaut (1996), for example, an agronomist by training and a historian of labour techniques, is enthusiastic about "affordance", a concept developed by the cognitive psychologist James Gibson in *The Ecological Approach to Visual Perception* (1979). The term is based on the double meaning of the English verb "to afford" ("to offer", and "to allow oneself") and jointly evokes the properties of the environment and the resources for action that it provides. The reference to Gibson is shared in this volume with British anthropologist Tim Ingold. Initially trained as a biologist but readily drawing on philosophical references, Ingold believes that interrogating the nature-culture opposition goes hand in hand with questioning the opposition between body and mind. What interests him is the active perceptual and practical engagement of every individual with the elements of the actual, lived-in world. To this end, he employs phenomenological approaches to explain how the world arrives at human experience. Ingold pushes the rejection of Western dualisms still further by dismissing the binary subject/object opposition. He argues that the study of beings in a world leads us to focus not on their intersubjectivity, but on their "interagency" (Ingold, 1996: 129). [53] Because the distinction between organism and person is irrelevant in this approach, Ingold's intention is to reunite all anthropologies - including physical and biological on the one hand and social and cultural on the other - and to resume anthropology's historical project to understand humans in their entirety. [54]

Instead, the co-authored work by Descola and Pálsson reveals the influence of the sociology of the sciences, notably Bruno Latour's book *Nous n'avons jamais été modernes* (1991), which appeared in English translation in 1994. In *We have Never Been Modern*, Latour argued that modern societies based their systems of representation of the world on a "great divide" that radically opposes nature and culture. Nevertheless, in practice, "moderns" endlessly produce "hybrid" objects (neither natural nor cultural) that they refuse to analyse. Latour uses a specific vocabulary to explore this problem that is devoid of the cultural charge of the modern system of representation. "Human/non-human" is used to avoid "nature/culture", while the term "society is replaced by "collective" (thereby designating a whole that can include non-humans)". Finally, in accordance with the actor-network theory, the entities interacting within a collective are all "agents", and humans with the capacity to give a voice to non-humans act as "spokespersons". Most importantly, Latour's "symmetrical" perspective suggests that the anthropological gaze be directed onto the production of scientific knowledge, seen as a manifestation of Western modernity. The result among Latourian anthropologists such as Descola and Pálsson is a distrust of statements that originate in the

natural sciences – which are assumed to be ensnared in the binary conceptions of Western modernity – as well as a permanent impulse to renew and interrogate the epistemology of anthropology in order to prevent it from succumbing to a similar ethnocentrism. As a consequence, the book edited by Descola and Pálsson appears to be more focused on the epistemology of the field. Among the challenges that they identify is the need to formulate analytical models of the relationships between societies and their environments that offer alternatives to a henceforth discredited dualistic paradigm.

Descola pursued this line of inquiry for ten years, culminating in the publication of *Par-delà nature et culture* (2005; *Beyond Nature and Culture*, 2013). The book proposed a typology of the relationships that human societies develop with “existing beings” that inhabit their environment. To accomplish this, he posits four “modes of identification” – naturalist, animistic, totemic, and analogic – based on criteria of continuity or discontinuity between humans and non-humans, as considered from the perspective of their “interiority” or “physicality”. What he calls “modes of relation” (exchange, predation, giving, production, protection, and transmission) derive from these four modes of identification, which are also called “ontologies” (Descola, [2005] 2013: 121–125). In an attempt to avoid the Durkheimian “sociocentric prejudice” that defines societies as necessarily composed of humans, Descola in effect assumes that “sociological realities (stabilized relational systems) are analytically subordinate to ontological realities (the system of properties attributed to existing beings)” (Descola, [2005] 2013: 124).

One of the book’s original features is that it incorporates the system of representation of Western modernity into the analysis. Characterized as “naturalist”, this “ontology” is based on the principle of the continuity of physicality between humans and non-humans (a heritage of Darwinism) and of a discontinuity between their interiority (the notion of a soul, human intelligence, a heritage of Christianity and humanism). Deciphering naturalist ontology thus leads to a *mise en abyme* of the entire discipline of anthropology because it is based on the naturalist conception of a diversity of cultures thriving on a substrate governed by universal natural laws.

The book attracted considerable scientific and media attention and was the subject of vigorous debate, first in France when the book was released, then in the English-speaking world when the book was translated in English (2013). Descola’s proposal was judged by his colleagues to be heuristic when contrasting Amazonian animism with Western naturalism, but less convincing for other cultural contexts in which the distinction between interiority and physicality is not salient (Friedberg, 2007). Other questioned the proposal to “fold the world into four” [55]. Was this not a sign of the return to a renovated form of structuralism in which the analytic divide between nature and culture is replaced by a different divide (interiority vs. physicality)? Does analysing all human societies through this lens not amount to crushing the diversity of the world’s social experiences, and furthermore by projecting them solely onto the level of ideas? (See Feuchtwang, 2014; Fisher, 2014). Descola’s theory was also compared to the perspectivism of Viveiros de Castro (2004, 2014), but Viveiros de Castro points out that Descola’s analysis remains embedded in Western naturalism that it does not succeed in transcending. [56] Indeed, as both a Brazilian and a specialist on Brazil, Viveiros de Castro demands that Amazonian “multi-naturalism” be seen as occupying the same analytical level as Western metaphysics.

The Ontological Turn: Infatuation and Confusion

The term ontology has flourished in recent years as a new way of thematizing relationships between societies and their environments. The debate at the 2008 Meeting of the Group for Debates in Anthropological Theory, University of Manchester, about the statement that “Ontology is just another word for culture” is proof of its popularity (Carrithers et al., 2010). Indeed, the infatuation has become an uproar that is currently the source of some degree of confusion. The situation suggests a return to the early uses of the term *ontology* in anthropology by central figures in the field and to a progressive re-examination of its subsequent iterations. In metaphysics, ontology traditionally refers to a “discourse on being”. The term was faithfully used in this sense by A. Irving Hallowell, in “Ojibwa Ontology, Behavior, and World View”, an article on the Ojibwa in North America (Hallowell, [1960] 1976).

In his introduction, Hallowell commented on the concept of “worldview” developed by Redfield – i.e., the characteristic way in which a given society (or individual) sees the world – to emphasize that if a worldview is a perspective, the “self” represents a point on this axis. In other words, analysing a people’s worldview requires understanding what they refer to as the “self”. What follows is a detailed analysis of different methods of conceptualizing the person that demonstrates that Ojibwa narratives of metamorphosis lead them to recognize “other than human persons”. Because they are identified as products of metamorphosis, some entities that are part of the natural world are thus endowed with the same ontological status as humans. The article prompted considerable discussion when it was published, particularly among specialists on Nordic regions such as Mary Black, David Smith... and Tim Ingold. In his 1995 article, Ingold remarked on the contrasts between Ojibwa and Western models of the person (Ingold, 2000: Chapter 6), although without particularly elaborating on the ontology label. Viveiros de Castro, for his part, pursued the ethno-metaphysical trail that Hallowell had opened. According to Carrithers et al. (2010), Viveiros de Castro’s talk, “Anthropology AND Science”, at the Association of Social Anthropologists conference in Manchester, UK in 2003 played an important role in the defining and increasing the visibility of the ontological programme.

In his talk, Viveiros de Castro, who integrated the need for political subversion into his anthropology, spoke about the relationship between an anthropologist and the “object” of his or her research, a relationship that is considerably more complex in anthropology than in the natural sciences because the “native” is not an “object” but a “subject”. According to Viveiros de Castro, this relationship should be pursued to the point at which a native is able to question an anthropologist’s certainties about the very definition of a subject. An anthropologist must be able to take seriously the fact that for the native, things are potentially subjects. Nor is it the task of an anthropologist to theorize the native’s practices, because the production of knowledge by the anthropologist should be contiguous with indigenous knowledge, even if this requires – if the indigenous people do not theorize – renouncing the theoretical and focusing on “the potential conceptuality of the infra-philosophical”. Above all, Viveiros de Castro calls for adopting the language of ontology. In arguing this, he does not claim that every people possesses a metaphysics of Being, but he advocates for renouncing a vocabulary – “worldview”, “representation”, “belief” – that tends to

invalidate native thought, despite the fact that it genuinely talks about the world (Viveiros de Castro, 2003).

Anthropologists must relinquish the Western idea – that permeates anthropology – that there is only one nature, and that it is expressed through multiple cultural representations. An edited volume assembled by former students of Viveiros de Castro, *Thinking through Things*, clarifies and expands upon this programme (Henare et al., 2007). An ontological approach (as opposed to the culturalist approach) does not study other peoples' representations of what we know to be the *real* world, but instead acknowledges the existence of multiple worlds (see Carrithers et al. 2010). It is no longer a matter of “visions of the world”, but of “worlds”. This suggests that the term ontology serves above all to identify an approach that does not give primacy to Western knowledges as explanations of how the world works but instead takes indigenous conceptualizations with utmost seriousness. This position is consistent with the preference for the emic over the etic that Conklin and his disciples promoted over fifty years ago. The recent change arises from a lexicon that bans any terminology that devaluates indigenous discourses and practices. This explains why researchers working on indigenous ecological knowledge have sometimes flown the flag of ontology out of disappointment that research in ethno-ecology has proven incapable of accounting for the radical alterity of ethno-epistemologies (Hviding, 1996). The programme proposed by Henare, Holbraad, and Wastell is not a mere game of words, however.

In their introduction, the editors of *Thinking through Things* also invite us to abandon approaches that dissociate on-the-ground experience from theorizing and call for “thinking through things”: “The aim of this method is to take ‘things’ encountered in the field as they present themselves, rather than immediately assuming that they signify, represent, or stand for something else”. The term ontology helps locate “things” at the centre of study and analysis, given that “The experience of things in the field is already an encounter (...) with meanings”. This declaration of intention leaves open the question of the methods needed to capture the essence of things, particularly given that the editors reject phenomenological approaches, which they critique for failing to address the experiential. Because we must look elsewhere for methodological proposals, we may cite other sources, beginning with the “ontography” theorized by Albert Piette, who proposes “enriching” classical ethnographies by attending to the “modes of presence” of things (Piette, 2009); using a botanical drawing as an ethnographic tool that enables the researcher to approach indigenous perceptions, in the sense that it allows one to “grasp the personality of the plant in an understanding of the uses that humans make of it” (Brunois, 2002); and the semiological analysis of living forms by the Amazon specialist Eduardo Kohn, who argues that humans merely amplify certain pre-existing properties of the world (Kohn, 2013).

This methodological vagueness is rather problematic. Is not a researcher who, under the pretext of relinquishing an analytical frame that distinguishes the real world from representations of the world, simply returning to a naïve form of realism according to which the essence of things imposes itself on the senses? It is also worth noting that the political gesture of substituting the study of epistemologies for the study of ontologies is erroneous from the perspective of analytical philosophy. Indeed, Quine argues that ontology and epistemology are two very different concepts and that the former is subordinate to the latter.

For him, it is impossible to ask ourselves questions such as “What is the world made of? What are its elements? Its properties?” without also asking “How do we know it?” [57] An ontological approach that seeks to unveil the worlds of others does not therefore nullify the question of the modalities of knowledge about the world. [58]

At the same time, a popularized use of ontology has been developed to identify conceptions of the world understood at a high level of generality. Viveiros de Castro, for example, denounces “uni-naturalist and multiculturalist Western ontology” (2004). In his analysis of the modes of engagement in the world, Ingold opposed “modern ontology” to the “ontology of dwelling” of hunter-gatherers. In naming “ontologies”, his four “modes of identification” (on the basis that they stem from ontological properties of *existants*), Descola fuels this semantic slippage. [59] The confusion is such that one commenter on the ontological turn admits that “My use of the term ontology ‘oscillates’ between two different and apparently contradictory meanings, namely ontology in the sense of ‘essence’ (what there is) and ontology in the sense of ‘theory’ or ‘model’ (of what there is)” (Pedersen, 2012) – a polysemy that Heywood proposes clarifying by ascribing this second meaning to the category “meta-ontology” (Heywood, 2012).

Despite efforts to clarify matters, the success of Descola and Viveiros de Castro in France leads to a paradox. While their initial promoters call for renewed attention to the presence of things, the ontological turn in anthropology currently leads instead to a certain idealism because it focuses less on practical, contextualized relations with the material world than on theories of the world. In short, it reduces to the level of metaphysics experiences that actually arise from the domains of the senses, actual practice, and the moral, as well as the cognitive domain. This helps explain the appeal of Tim Ingold’s phenomenological approach – often presented as a counterpoint to Descola’s neo-structuralism – for those unsatisfied by Descola’s neo-structuralist vision. Both Descola and Ingold have long been engaged in a stimulating, although uncompromising debate in which Descola denounces Ingold’s “semiophobia”, [60] i.e., his “iconoclastic ambition to eliminate all social mediation reputed to obscure the power of evidence of practical activity”. This is a problem in Descola’s view because “we only have access to the other, and hence to their experience of the world, via the mechanisms of translation” (Descola, 2011a: 63–68). [61] Ingold in turn rejects the idea that it is possible to homogeneously encompass individuals within the same “culture”. He defends an anthropology that attends to beings-in-training and emergent worlds, shedding light on processes rather than structures (Ingold, in Descola & Ingold, 2014: 46–48).

Now, anthropology has begun to benefit from the adoption of ontological approaches from other social science traditions. [62] For the philosopher of biology John Dupré, “ontology” refers (in a sense relatively close to its meaning in computer science) to the nature, boundaries, and properties of the objects that constitute biology (Dupré, 2012: 97–100). [63] One of his important contributions is to highlight the fact that there is ontological pluralism within the life sciences because not all life scientists study life through the same living objects. Science studies have emphasized the way in which the real is produced and transformed by practices which are always open to contestation (Mol, 1998, 2003). Because they develop the idea of an ontological pluralism that does not resort to culturalist thinking, these studies merit being consulted by environmental anthropologists who take the invitation to think beyond nature and culture seriously. [64]

Anthropology Has Never Been Modern

Anthropology, with its diverse practices and research fields, has never been modern because it has never fully embraced the axiom posited by Durkheim in order to assert the autonomy of the social sciences, according to which “a social fact is explained by a social fact”. To claim the contrary means obscuring research by these mavericks trained in the four fields of anthropology or transplanted to ethnology from the natural sciences. They were occasionally unappreciated because they were perceived as failing to satisfy the modern discipline’s cravings for purity. What transpired in the 1990s – paradoxically just as the CNRS section *Anthropologie, préhistoire, ethnologie* was disintegrating – is less an extension of anthropology beyond the Anthropos than a growing awareness of the ethnocentric biases imposed on structuralist anthropological studies by means of Western philosophical categories.

While there is nothing new in anthropologists’ interest for topics and interactions that lie beyond the Anthropos, the foci of research did indeed shift. Whereas animals and plants were “good to think with” for Lévi-Strauss, and “good to eat” for Harris, they are researchers began to conceive of them as “good to live with” (Kirksey & Helmreich, 2010). The writing of anthropology was improved by efforts to expunge from it a vocabulary encumbered by prejudice (such as object, subject, nature, culture...). The idea is becoming accepted that theorization should be based on concepts from ethnography and not (solely) by projecting concepts drawn from European philosophy (Da Col & Graeber, 2011). Agency, “agentive configurations” (Pitrou, 2015), grasping, ontology, collectives, modes of presence, etc.: for the present, anthropologists already possess a group of concepts that can help them grasp the material world, as well as the diverse ways in which this material world participate in the social lives of groups being studied. All of this has begun to stabilize, [65] and there is no need to assume falsely radical airs to write “in the style of Latour” [66] and to conduct this kind of inquiry. Studies that pursue this approach will be more convincing, particularly for the non-converted, if the use of concepts is rigorous and parsimonious – which is unfortunately not encouraged by fads. To the extent that these new forms of anthropology acknowledge the active role of the environment, its practitioners will also need to clarify their relationships with the natural sciences. Science studies, which have flourished since the 1970s, have opened up an interesting conduit by giving renewed interpretation to scientific discourse, which is no longer able to claim to be a purveyor of hegemonic truths about how the world actually functions. Instead, scientific approaches are relegated to the role of “spokesperson” for living things (Latour, [1999] 2004) – one voice among others, each of whom bears their own biased, partial perspectives (Pestre, 2006). Imbued with insights from the science studies, anthropologists can henceforth conscionably integrate scientific knowledge into the scope of their studies without fear of being accused of peddling positivism.

Environmental anthropology nevertheless remains embryonic in France. Most French anthropologists maintain a fine-grained focus on the relationships of local or indigenous communities with their natural environment, excluding from their scope political aspects. [67] The problem is that in a globalized world, relationships of communities with their environment obviously depend on larger-scale policies and politics. This is true first of all

because societies are directly affected by exogenous interventions in their territories (extractive practices, conservation or development policies, or techno-scientific innovations, etc.), and second because their identities are formed and transformed with respect to their self-representations in national and global society (Kopenawa & Albert 2013; Carneiro da Cunha, 2009). These dynamics continue to be underexplored by the many anthropological currents reviewed in this paper.

The study of indigenous cosmologies in the neo-structuralist tradition actually tends to essentialize them while also confining them to an ethnographic here-and-now. On the side of “ethno-ecology”, the institutional success of its flagship research topic – i.e. “indigenous and local knowledge” – had the disadvantage of confining research within this frame. The socio-political context has evolved, however, and the idea of integrating traditional ecological knowledge into public policies has become commonplace in NGOs and institutions that have embraced international norms of participatory governance (Roué, 2012). By reducing the relationships between societies and their environments to a stable corpus of knowledge and know-how, ethno-ecology not only loses its ability to understand or explain the alterity of ethno-epistemologies (Hviding, 1996), but it also essentializes the concerned populations [68].

To remedy this problem, it would be important to subtly address the alterity of indigenous cosmologies that are conceived and experienced as practice and at the same time take past and present transformations into account, whether in contact with neighbouring groups, the state, or the array of actants that act directly or remotely somewhere on the planet (such as market actors, NGOs, international agencies, technological innovations, living beings, the climate, etc.). Sources of inspiration exist, generally outside France among authors who have not (yet) become examples for others. [69] Some anthropologists of the environment have in fact shifted their gaze toward the effects of environmental policies on community strategies (Tsing, 1999; Li, 2000). [70] Other colleagues investigate the ways in which indigenous cosmologies are used as forms of resistance against modernization in political contexts (Escobar, 2010; Blaser, 2009). Still others are interested in the circulation of projects that compete with each other on a global level and the frictions between them that are always synonymous with the open-endedness of the world (Tsing, 2005) [71]. A number of anthropologists have shown interest in investigating how environmental changes are experienced at the local level (See, for example, Kopenawa & Albert, 2013, among the Yanomami in the Amazonian region of Brazil).

Anthropologists’ contributions to these areas of inquiry are vitally important. The inclusion of environmental issues on international agendas, echoed in alarms sounded by academics, media intellectuals, and NGOs, have helped spread awareness of the dire emergency posed by our planet’s ecological crisis. Texts that combine a lack of empirical study with normative positions on the “anthropological” mutation that this ecological crisis could provoke are also proliferating, however. Framed in this way, this kind of scholarship perpetuates the assumption that the crisis is a reality that is uniformly shared and experienced by all of the peoples of the world. As we confront this type of injudicious over-generalization, as anthropologists we owe it to ourselves to help raise awareness of the diverse ways of seeing and using the world in human societies. It is only by means of close-grained ethnographies, among remote populations as well as collectives that are never completely modern, that

anthropologists will fulfil their mission by revealing the diversity of ways in which life invents itself and emerges from within the interstices of capitalism (Tsing, 2015).

Appendix 1. The Changing Contours of the Discipline

This chapter focuses primarily on social and cultural anthropology, i.e., on the dimensions of anthropology that belong to the human and social sciences. To develop the narrative, however, I return to the 1970s, when these anthropological subdivisions did not yet exist.

Although Lévi-Strauss created the Laboratoire d'anthropologie sociale (LAS) in 1960, a number of his anthropologist colleagues, including André Leroi-Gourhan, did not entirely agree with the name that he chose for the LAS. Opponents of an openly social turn preferred a generalist, longer-term study of mankind focused on the “ethnology of contemporary man and fossil men” [72].

These diverse approaches were assembled in a single CNRS section called “*Anthropologie, préhistoire, ethnologie*”, a legacy of the institutional partnership between the Musée de l’Homme and the Institut d’ethnologie. This CNRS section finally divided only in 1992, resulting in the new Section 31 called “Hommes et milieux: évolution, interactions” [Men and Environment: evolution, interactions], which incorporated archaeologists, anthropobiologists, prehistorians, and bio-geographers interested in the long-term relationships between mankind and the environment. Section 38, which was initially called “*Unité de l’homme et diversité des cultures*” [Unity of Mankind, Diversity of Cultures] but in 2004 was renamed “*Sociétés et cultures: approches comparatives*” [Societies and Cultures: Comparative Approaches], was open to social anthropologists interested in “the comparative study of societies and cultures” via their “systems of representation” in their “cognitive and symbolic aspects” (CNRS, 1996). This decision nevertheless encountered some resistance. A group of colleagues who opposed this classification system suggested an alternative section in hopes of “preserving a strand of research – the “total social fact” – as well as (comparative) methods that are highly original in the field of the sciences of man and society”. The group emphasized the contributions of “research on material culture that derives [partly from ethnology,] and also partly from another tradition close to linguistics (Haudricourt), studies of the technical evolution of societies (Leroi-Gourhan), and even the influence of Marxism” [73]. After the split had been established, researchers who aspired to an approach to societies that was able to account for the material aspects of environments while remaining within the human sciences found themselves doubly marginalized by the binary division into two sections [74].

The division into two sections was confirmed after 2008 when the CNRS was reorganized into separate “institutes”. Section 38 unhesitatingly joined the Institut des sciences humaines et sociales (INSHS, Institute of Human and Social Sciences), but Section 31 was divided and, after animated discussions, opted for the Institut écologie et environnement (INEE Institute of Ecology and Environment), confirming and strengthening its naturalist tendencies. In the same year, Section 38 chose its key words, among which: “Anthropologie de la nature et de l’environnement, ethnosciences” [Anthropology of nature and environment, ethnosciences]. This is explained by the fact that the label adopted by Philippe Descola upon joining the Collège de France in 2001, “anthropologie de la nature”, became the rallying cry for a rapidly

expanding field of research. As a newly announced field of anthropology, the anthropology of nature was demonstrating its refusal to allow naturalist sections to monopolize discussions related to the environment, as well as a desire to remain somewhat faithful to the heritage of ethnoscience.

Although anthropology continues to be relatively under-represented in French universities [75], it is noteworthy that the Conseil national des universités (CNU, National Committee of Universities) has kept a section that suggests general anthropology, currently called “Ethnologie, préhistoire, anthropologie biologique” [Ethnology, Prehistory, Biological Anthropology]. During its September 2015 session, the section reaffirmed the “shared scientific project of our three disciplines” when it proposed a more explicit section title: “Anthropologie générale: anthropologie biologique, ethnologie, préhistoire” [General Anthropology: Biological Anthropology, Ethnology, Prehistory] (Bocquet-Appel et al., 2017).

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[1] Article translated from French by John Angell. First published in *Humanités environnementales. Enquêtes et contre-enquêtes* edited by Guillaume Blanc, Elise Demeulenaere, Wolf Feuerhahn (Paris, Éditions de la Sorbonne, 2017). The book questioned a then emerging research field in France, environmental humanities. The final chapter dedicated to the invention and worldwide diffusion of the label 'environmental humanities' was preceded by a series of chapters organized by discipline, offering all together a history of how environment became an issue for the social sciences and humanities, from a French perspective. This text was the chapter presenting the case of anthropology. Some elements have been updated or adapted to an international audience in the English version.

[2] Among others : "Un 'tournant animaliste' en anthropologie?" conference organized at the Collège de France by Frédéric Keck and Noëlie Vialles, June 22–24, 2011 ; "Penser avec l'anthropologie" (May 6–7, 2014, Université Paris Ouest), closely followed by "Anthropologie et ontologie, une évaluation critique" (June 11, 2014, École normale supérieure de Paris).

[3] The proceedings were published in *HAU: Journal of Ethnographic Theory* 4–1, 2014.

[4] Bruno Latour (2011: 77), cited in Gingras (2012).

[5] Echoing a critique of ecology twenty years earlier by the polemicist French philosopher Luc Ferry (Ferry, [1992] 1996).

[6] The book has not been translated into English.

[7] Established in 1993, the Cosmos Prize has been awarded to such scholars as Richard Dawkins, Jared Diamond, Georgina Mace, Edward O. Wilson, Philippe Descola in 2014, and Augustin Berque in 2018.

[8] This is the case of the work of Pierre Charbonnier (2015), whose intention was to present a "philosophical history" of the anthropological theory of collective relationships with nature based on a reinterpretation of the writings of three renowned figures: Durkheim, Lévi-Strauss, and Descola.

[9] *Evaluation de l'Aeres*, December 2012: Report by the expert committee of the AERES, March 2008.

[10] I wish to express my gratitude to Julien Pomart, director of the Archives of the Fondation de la Maison des sciences de l'homme, who helped orient my research on the *Écologie et sciences humaines* seminar, Claudine Friedberg who provided access to her archives and offered suggestions about how I used them, and Maurice Godelier, Pierre Lemonnier, Frédéric Joulian, Serge Bahuchet, and Dominique Fournier, who granted me interviews. I did not think it was necessary to speak directly with Philippe Descola because I found an exceptional source regarding his views in his interviews with Pierre Charbonnier (Descola, 2014). And last, I also wish to thank Alix Levain and Charles Stépanoff for their constructive comments on an earlier version of this chapter.

[11] A detailed account of this controversy can be found in Guille-Escuret (2008).

[12] See Godelier (2013: 309).

[13] The text was republished in English in 1979 in *Cultural Materialism* (Harris, 1979).

[14] This binary opposition was proposed by the linguist Kenneth Pike based on the distinction in

linguistics between sounds (as described by phonetics) and phonemes, categories of sounds that carry meaning for speakers of a language and are studied in the field of phonemics.

[15] In 1975, the sixth section became independent from the EPHE and was renamed the *École des hautes études en sciences sociales* (EHESS).

[16] In chronological order, Leroi-Gourhan's students included Lucien Bernot, Georges Condominas, Corneille Jest, Robert Cresswell, Louis Berthe, Igor de Garine, Claudine Friedberg, Pierre Bonte, and Aliette Geistdoerfer (Friedberg, 1992b).

[17] See the journal's critical anthology (Bartholeyns et al., 2010).

[18] For more information about Lévi-Strauss's preference for the label "social anthropology" instead of "cultural anthropology", see Dianteill (2012).

[19] MSH Informations, May 8, 1975.

[20] The *agrégation* is a prestigious teaching certification based on a highly competitive examination process.

[21] See Issue 42 (2000–2004) of the JATBA. *Journal d'Ethnobiologie*, devoted to Jacques Barrau.

[22] Haudricourt spent only a short time in the Laboratoire d'agronomie tropicale. He later joined the community of linguists and, with Georges Condominas and Lucien Bernot, established the Centre de documentation et de recherches sur l'Asie du Sud-Est et le monde insulindien (CEDRASEMI; Centre for Documentation and Research on South-East Asia and the Insulindian World) in 1962, followed by LACITO (Langues et civilisations à tradition orale, Languages and Civilizations from Oral Tradition), a linguistics laboratory in which researchers concentrated on vocabulary linked to nature and its uses.

[23] MSH Informations, February 2, 1974.

[24] Report on ecological niches by Ann Cooper; concerning the concept of adaptation, see the report by Elizabeth Robson.

[25] The Boas tradition in anthropology posits a mutually complementary relationship between four fields – human biology, archaeology, linguistics, and cultural anthropology (Kuper, 2001: 356).

[26] In fact, this occurred during Godelier's seminar on economic anthropology at the EHESS.

[27] In the clash between materialism and symbolism, Sahlins later rejected this hypothesis and supported the side of symbolism (Sahlins, 1976).

[28] Although his demonstration was based on the quantification of nutritional flows, Rappaport cannot be accused of a reductionist view of "culture" because, unlike Harris or Steward, he rejected it as a relevant unit of study, preferring the term "populations".

[29] The term "*idée*" is translated as "mental" in the English version.

[30] Twenty years after the Cold War ended, he observed, in a somewhat detached tone, "Just one more proof of the inadequacy of the model that divided society into infrastructures, superstructures, and ideologies and caused an uproar for a while in Paris and well beyond" (Godelier, 2001).

[31] Godelier only marginally cited Haudricourt in *L'idéal et le matériel*, although he organized a collection of his publications under the title *La technologie une science humaine* (1987).

[32] See Barrau's 1980 lecture at the Muséum, "L'homme comme objet d'histoire naturelle" (Barrau, 2000–2004), one of a series of talks on the evolution of ideas in natural history. Barrau also promoted this research orientation at a CNRS colloquium entitled "*L'anthropologie en France, situation actuelle et avenir*" (Barrau & Dollfus, 1979).

[33] According to rumour, the section president, Michel Izard, a researcher at the *Laboratoire d'anthropologie sociale*, called Barrau a "collector of rabbit skins", a sarcastic reference to his interest in collecting natural objects.

[34] The title was intended as an echo of *La pensée sauvage*.

[35] Between 1984 and 1987, the course was co-taught with Pierre Lemonnier.

[36] Pierre Lemonnier, personal communication.

[37] Significantly, he entitled his chair at the EHESS "écologie symbolique" [Symbolic Ecology].

[38] Haudricourt occasionally participated in the seminar. In the spring of 1985, he delivered a talk entitled "Ma conception de l'ethnoscience" [My View on Ethnoscience]. Because no trace of the talk exists, I instead quote his preface to Serge Bahuchet's published dissertation entitled "À propos de l'ethnoscience" [About Ethnoscience]: "According to our master, Marcel Mauss, because society forms a total system, the entire social group expresses itself in an exhaustive study, regardless of the aspect through which we approach it, and hence as much based on relationships with other living things, plants and animals, for example, as on interhuman relationships" (Haudricourt, 1985).

[39] An orientation that has recently been reaffirmed, with the re-creation of the journal of the *Laboratoire* (formerly the JATBA) with the title *Revue d'ethnoécologie* (Bahuchet, 2012). The term ethno-ecology is thought to have been first used by Conklin (1954b).

[40] A growing number of researchers have been trained at this school. Without any claim to exhaustiveness, it is worth citing a small research group surrounding Éric Garine at the *Laboratoire d'ethnologie et de sociologie comparée* (LESC, Centre of Comparative Ethnology and Sociology) at Nanterre University, another cluster of students of Condominas at Strasbourg University, and a larger ethnobiology group at Montpellier that, because it belongs to the Centre d'écologie fonctionnelle et évolutive [Centre of Functional and Evolutive Ecology], is identified as, and grounded in, ecology rather than ethnology.

[41] An oft-cited anecdote regarding an ethno-ornithologist close to the *laboratoire d'ethnobiologie*, Ralph Bulmer illustrates this phenomenon. After working for years on the ornithological knowledge of the Kalam people, he decided to ask his informants, who had been quite forthcoming concerning local bird knowledge, about local stones. They reported only superficial information in response to his newfound geological interest but provided far more detailed information to a soil scientist colleague of Bulmer's who later renewed the study of local stones (anecdote discussed in Diamond, 1989).

[42] Georges Condominas introduced a third term during his seminars, teaching his students that societies' relationships with their environments can be understood on "three levels": Western scientific theory, indigenous conceptions, and "raw facts" (often separate from discourses).

[43] Established by decree in March 1967, France's network of regional natural parks was a response to the need to protect the natural environment while also regulating rural development.

[44] The umbrella term “ethno-biology” encompasses ethno-botany, ethno-zoology, ethno-entomology and ethno-minerology. Barrau emphasized the limitations of these sub-divisions, which he called “ethno-gizmos” based on naturalist disciplines (Friedberg, 2005): “When one approaches the study of relationships between a society and its natural environment, and when one starts to pull on a thread in this tangled mass, it quickly becomes necessary to collect data and ask questions that surpass these disciplinary segregations” (Barrau, 1985: 11). Indeed, the ethno-scientific process required a non-arbitrary method of establishing the limitations of the classification system under study. (Sturtevant, 1964: 104). Barrau was consistent with this view in renaming the Laboratoire d’ethnobotanique et d’ethnozoologie the Laboratoire d’ethnobiologie [Ethnobiology Centre].

[45] The article refers to “knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity”.

[46] The “*Appropriation et socialisation de la nature*” (UA 882) team was formed by Friedberg in 1985.

[47] Among other work in this area, see the special issue of the *International Social Sciences Journal* (2002) on indigenous knowledge.

[48] The *Muséum*’s reorganization in 2000–2001 caused the Laboratoire d’ethnobiologie to be dissolved, as well as the CNRS/APSONAT group. Members joined a newly established research unit, the laboratory Éco-anthropologie et Ethnobiologie [Eco-anthropology and Ethnobiology] that brought together a dozen disciplines, most of which embraced naturalist epistemological views. This institutional and scientific environment led to the relative isolation of social scientists, which did not help them rejuvenate ethnoecology with recent developments in social and cultural anthropology, particularly those investigating contemporary changes linked to globalization.

[49] Seminar final report in the *Annuaire de l’EHESS* 1984–1985 et 1988–1989.

[50] “Let us suppose then that everything universal in man relates to the natural order and is characterized by spontaneity, and that everything subject to the norm is cultural and is both relative and particular” (Lévi-Strauss, [1949] 1967: 9).

[51] “The opposition between nature and culture on which I formerly insisted, seems to me today to offer a value that is above all methodological” (Lévi-Strauss, [1962] 2020: 281, note). In 1972, in his lecture entitled “Structuralisme et écologie,” [Structuralism and Ecology] Claude Lévi-Strauss moderated his position even further by characterizing the nature-culture opposition as an “obsolete metaphysical dualism” (Lévi-Strauss, 1973).

[52] In fact, the Marxist tendencies referred to earlier investigate the materiality of production, with no dichotomy between natural objects and technical artifacts. In *L’idéal et le matériel*, Godelier records at least five types of materiality, arranged along a gradient of the extent of knowledge and control by man (1984: 12–14).

[53] The neologism “interagency” is derived from agency. The concept (which Ingold employs in a pioneering way but does not define in this text) refers to the ability of an entity – whether human, non-human, or inanimate – to orient an action, whether intentionally or not. Borrowed from linguistics, “agency” is based on the distinction between the grammatical notions subject/object and the semantic notions agent/patient (the patient is that which undergoes the action of the agent). The notion of interagency suggests that agency is distributed among the beings engaged in a particular action. For example, when a murder with an automatic weapon occurs, it is reasonable to believe that

there is shared of agency between the killer and his weapon (without the weapon, he cannot kill as much, or at least not in the same way). Acknowledging or denying the agency of objects or non-human beings is an important political matter. The National Rifle Association, an American arms lobby, is not wrong in defending itself from criticism against firearms when it proclaims that “Guns don’t kill people. People do”.

[54] See articles republished in Ingold (2000).

[55] Title of a provocative paper in the French daily newspaper *Libération*, November 17, 2005.

[56] See also Ingold, in Descola & Ingold (2014: 53).

[57] I wish to thank Yves Gingras for calling this point to my attention.

[58] A narrative reported by Hallowell in his article helps shed light on this idea. His informant, Birchstick, reported that one day he found himself face to face with a bear. Armed with a rifle, Birchstick challenged the bear and told him “If you do not want to die, go away”. And the bear left. As he tells his story to the anthropologist, Birchstick judged it useful to specify what his father said to him when he was a child – “The bear always understands what you say to him”. This statement has the advantage of clarifying a point: If Birchstick, face to face with a bear, is certain that he is meeting a person, it is not from the bear that he learned it, but from his father.

[59] Even Descola appears to regret the misunderstandings caused by his slightly idiosyncratic use of the term and now prefers the expression “mode of identification” (Descola, 2014: 236).

[60] Philippe Descola, in response to questions during the colloquium “*Penser avec l’anthropologie*” (May 2014).

[61] This contradiction appears to be circumvented by the concept of “grasp” (*prise*) developed by Christian Bessy and Francis Chateauraynaud in their analysis of authentication processes (Bessy and Chateauraynaud, 2015; see in particular note 3 page 2). For example, an auctioneer’s appraisal is based on his or her identification of affordances of the object to be appraised, but also on a group of socially constructed, shared “points of reference” concerning the value of the objects within a particular pattern of circulation. The dynamics between affordances and points of reference constitutes the “*grasp*.”

[62] See Pellizzoni (2015) for a thorough synthesis of ontological approaches to the social sciences.

[63] For an example of the application of this approach to anthropology, see Demeulenaere (2014).

[64] My claim here meets the argument developed by Gad et al. 2015

[65] A collective observation at the AFEA conference in Toulouse in July 2015 during the round table “*Humains et non-humains au coeur des politiques ethnographiques*”.

[66] There is a consensus among readers that Latour has a taste for provocation that results in an abundant use of puns, metaphors, and deliberately absurd or paradoxical expressions that sometimes hinder comprehension of his arguments. Indeed, the success of *We Have Never Been Modern* contributed to the use of the first-person plural in texts via a collective “we” whose referent is never entirely clear – Westerners? humans? the anthropologists and philosophers who assume the role of thinking about environmental issues?

[67] With the exception of the anthropology of risk, developed on such cases as natural catastrophes

(Sandrine Revet), epizootic diseases (Frédéric Keck), and green tides (Alix Levain), based on borrowings from the sociology of risk, which has been well developed in France since the 1990s. Addendum to the English version: one should also mention the research on agricultural issues led by Birgit Müller, a German anthropologist initially trained in Cambridge and currently working at the CNRS (France). Since 2011, she organizes a research seminar at EHESS, “Agriculteurs, sols et semences dans la globalisation” (“Farmers, soils, and seeds in a globalised world”), and now leads together with PhD students a research group dedicated to “Human Master plans and their non-human challengers”. Among other recent EHESS research seminars, “Atelier des anthropo-scènes” (Workshop in Anthropocene studies) is conducted by Benoît Hazard; and “Appréhension de l’environnement et modes de connaissance de la nature” (Perception of the environment and ways of knowing nature) by Nicolas Ellison. Given that environmental studies are burgeoning in present-day French academia, making an exhaustive list of training programmes and research groups tackling environmental issues from a political anthropology perspective is beyond the scope of this paper, and I apologize in advance for those who might feel they have been forgotten.

[68] Addendum to the English translation: in their critical review of the literature released in 2020 on Traditional Ecological Knowledge, Benedict Singleton and his coauthors point out both a tendency to essentialization and to minimizing power relations (Singleton & al., 2021).

[69] Addendum to the English translation: The original text was written in 2015, prior to the publication in French of Anna Tsing’s *Mushroom at the End of the World* (released end of August 2017), which has rapidly become a bestseller in France, a source of inspiration for many environmental studies scholars, and brought Anna Tsing’s entire work to light.

[70] For a re-contextualization of this “anti-essentialist” current of thought, see Dove & Carpenter (2007).

[71] The Quechua *sumaq kawsay* is a prime example of this type of circulation. Best known as “*buen vivir*” after it was reinterpreted by intellectuals and the Ecuadorian and Bolivian governments (Landivar & Ramillien, 2015), it has received so much media and political attention that it is now part of the conceptual framework of the Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES), the so-called “IPCC of biodiversity” (Borie & Hulme 2015).

[72] Changes in the name of the *Muséum* Chair, established in 1967 and later relabelled “Anthropologie et ethnologie” [Anthropology and Ethnology] and “Anthropologie” [Anthropology] and, in 1987, “Anthropologie biologique” [Biological Anthropology], suggest the reassertion of the distinction between social anthropology and anthropo-biology. (The chair programme at the Muséum ended in 2001).

[73] A three-page, unsigned, undated, typed document (Claudine Friedberg Archives).

[74] Igor de Garine and Serge Bahuchet, both working at the CNRS in the UMR (Scientific Center) “Anthropologie et écologie de l’alimentation” [Anthropology and ecology of food], chose Section 31 because of its name – “Hommes et milieux” [Men and Environments] – but quickly realized that ethnologists were in the minority. Frédéric Joulian, an anthropologist interested in the material culture of non-human primates, publication director of *Techniques & culture*, applied to join the CNRS several times, to Section 31 and Section 38, before ultimately being appointed Deputy director of LAS at the EHESS. These cases illustrate the difficulties that followed the dissolution of CNRS Section 38 “*Anthropologie, préhistoire, ethnologie*” in terms of positioning in the field.

[75] Over fifty per cent of active anthropologists in France are CNRS researchers, an exceptionally high

proportion compared to other disciplines (See J.-F. Gossiaux, Deputy scientific director of the INSHS, Section 38, during the colloquium entitled "*Essai de prospective: l'environnement institutionnel de l'anthropologie et ses évolutions*", March 25, 2010).