

Leroi-Gourhan and the Field of Ethnology

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At the start of his conversations with Claude-Henri Rocquet, looking back over the different stages of his career, André Leroi-Gourhan refers to a study he had made a few years earlier on the words ‘ethnology’ and ‘anthropology’.¹ To some extent the two terms had been used alternately and interchangeably since the mid-nineteenth century, with no clear and stable distinction between them, but Leroi-Gourhan confesses to having long avoided the word ‘anthropology’, as, in his younger days, the term often referred to the study of the human body, now called physical or biological anthropology. He acknowledges the more recent definition by Claude Lévi-Strauss of anthropology as the general and global study of humanity (*RM*, 18), yet he will insist on describing his own work in prehistory as *ethnologie préhistorique*, a branch of ethnology. Despite the thematic diversity of Leroi-Gourhan’s work, it is indeed ethnology, rather than anthropology, which is the guiding thread linking together the different domains of his professional activity over four or five decades.

This article examines Leroi-Gourhan’s particular vision of the field of ethnology as it evolves from the pre-war to the post-war period.

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Beginning with his first publication, *La Civilisation du renne* (*Reindeer Civilization*), written in 1936 when he was only twenty-four, we consider how Leroi-Gourhan begins to practise an ethnology which explicitly distances itself from the main tendencies of the discipline as it had existed in France since the early twentieth century.² We then examine Leroi-Gourhan's decisive experience of ethnographic fieldwork during his mission to Japan, from the perspective of his posthumously published correspondence. In the final section we adopt a wider perspective, looking at the corpus of post-war texts dealing directly with the question of ethnology as a discipline and its place in the human sciences.

I. Beyond the Total Social Fact

Reindeer Civilization was dedicated to Marcel Mauss, whose lectures Leroi-Gourhan had followed at the Institut d'ethnologie, and who had played an important role as one of his intellectual mentors in the 1930s. However, as Leroi-Gourhan confessed to Rocquet, Mauss responded to the book by jokingly comparing himself to a hen which had given birth to a duck (*RM*, 35). It is easy to see the source of Mauss's ambivalence. Published in Gallimard's *Géographie humaine* collection, *Reindeer Civilization* begins not with the human but the animal, not with the social but the environmental.³ In a short introduction, Leroi-Gourhan notes the relative fragmentation of the study of human culture, and the lack of communication between ethnographers, historians of religion and specialists in geology, botany or zoology. He presents himself as attempting to coordinate these different domains of knowledge, restricting his study to the 'purely material' aspect of human existence in the polar regions and using the reindeer as the 'guiding thread' of his analysis (*CR*, 9–11). Thus the first chapter begins with a striking zoological description of the deformed and ungainly figure of the reindeer, which, when placed in the natural environment of the Arctic Circle, is revealed as a marvel of adaptation. The ensuing chapters provide a picture of the extreme environments which the reindeer and other species inhabit. The seasonally shifting geographical zones of tundra and taiga dictate the migration patterns of these species, the reindeer following the movement of growth and recession of its principal source of sustenance, lichen. Predator species — wolves, lynxes, brown bears and humans — follow in their wake.

The opening chapters of *Reindeer Civilization* therefore lay down a sequence of determinations and interdependencies: the seasonal fluctuations of the polar climate determine the relative distribution of flora which determines the migrational movements of native fauna and their natural predators. The position of humans in this framing narrative is neither primary nor predominant: human activities figure as a subset of the total environment — geological-geographical, botanical and zoological. This synchronic description of environment is given diachronic depth as Leroi-Gourhan explores the prehistoric evidence of the human–reindeer complex amongst Palaeolithic peoples who would have occupied similar environments. Present-day occupants of these zones — Chukchi, Eskimo (Inuit), Samoyed, Tunguz, Yakut — enter into a range of relationships with the reindeer, from the seasonal hunting practised by their prehistoric ancestors to various forms of domestication.

Leroi-Gourhan approaches the different ethnic groups in terms of their material culture, the elementary technical means by which they are able to ensure their subsistence and survival in the challenging environments they inhabit. Thus there are detailed descriptions of tools, weapons, clothing, habitation and means of transportation, a technical complex derived from the basic materials of the natural (mineral, vegetal) environment or the species hunted — the reindeer, for example, is described as literally providing the materials for its own destruction. This focalization on the detail of material existence does not mean that Leroi-Gourhan ignores other dimensions of human activity: the text also includes analysis of social morphology, symbolic decoration, myth and religious belief. However, as will frequently be the case with Leroi-Gourhan, the sequencing of his exposition tends to place material and environmental factors first, while other manifestations of human behaviour are examined in the wake and in the light of this primary level of determination. Hence, for example, different Inuit sculpted figurines will each correspond to the animal hunted, while Inuit mythology will predominantly revolve around animals which are eaten or feared, with other species acting as auxiliary figures. The strongly marked sexual dualism characterizing Inuit culture is seen to demonstrate the powerful influence of the physical world on religious representations, at the same time as these representations provide a continuous and detailed interpretation of the physical world. More generally, while Leroi-Gourhan accepts the possibility of an underlying religious and mythical complex common to the different cultures of the North Atlantic–North Pacific, he

warns against premature generalizations on the supposed 'spirit' of this system. Despite the persistence of certain themes or motifs, the ways in which they are taken up and interpreted by different groups at different moments in time are, he claims, as variable as changes in modes of dress. To characterize this complex by one trait — for example, shamanism — is to establish a generalization based on what is simply one of the more visible of religious practices amongst Arctic Circle cultures (CR, 126).

The kind of ethnology practised in *Reindeer Civilization* could therefore be described as a 'bottom-up' ethnology, starting with the material facts of environment and technical culture. In this respect, it is possible to read the text as both a homage to and variation on one of Mauss's earlier publications, the *Seasonal Variations of the Eskimo* (1906).⁴ Mauss had presented the *Seasonal Variations* as a study in social morphology, differentiating his approach from that of geographical anthropology (*anthropogéographie*), which tended to characterize peoples such as the Inuit as being entirely determined by their physical environments. While Mauss's essay offers a vivid description of the geographical situation of the Inuit and the seasonal variations which determine their migrations, he is more interested in the sociological consequences of these material conditions, contrasting the dispersed and 'individualistic' existence of the Inuit during the summer months with their more concentrated and 'collectivist' existence during the winter. For Mauss, the primary determination of climate and environment is therefore mediated by the semi-autonomous determination of social morphology: it is the 'material substrate' of the different social formations observed at different times of the year which determines different behaviours, attitudes and mentalities amongst these groups. Mauss presents the ethnographic example of the Inuit as a kind of ideal experiment demonstrating a more general law of human behaviour, that of the periodic alternation or 'oscillation' between dispersion and concentration, states of relative isolation and inactivity and states of increased communication and a heightened sense of collective existence. The universality of this pattern of behaviour even prompts him to question whether environmental factors such as those observed in the seasonal variations of the Inuit are not simply the occasional rather than the ultimate causes of such a mechanism.⁵

The effectiveness of Mauss's demonstration in *Seasonal Variations* derives from its ethnographic focus on a single culture, the Inuit, whereas this group is only one of a number of polar-region cultures

treated in *Reindeer Civilization*. It is nevertheless possible to consider the two texts as a kind of analytical pair, the study of which reveals some important differences in attitude and methodology. In common with Leroi-Gourhan, Mauss's analysis could also be said to be 'bottom-up' — he does not negate the influence of environmental factors in his characterization of Inuit civilization. At the same time, this analysis complicates the network of causes and their relative importance, situating the determining instance at the level of social morphology understood as an expression of the physical distribution and concentration of human groups. In the final instance the 'material substrate' is therefore a human one. This is, so to speak, Mauss's Durkheimian readjustment of the geographical anthropology of the turn of the century. In *Reindeer Civilization*, by contrast, the attention given to social morphology is relatively minimal, and in this respect Leroi-Gourhan's approach may indeed appear to be closer to that of the geographical anthropology criticized at the start of Mauss's essay. While Mauss's treatment of environment is adequate to his demonstration, Leroi-Gourhan's characterization of tundra and taiga is considerably more detailed in its description of the geophysical and botanical composition of the polar landscape. At the same time, like Mauss, Leroi-Gourhan complicates the network of causes, though he does this in a very different manner. It could be said that Leroi-Gourhan's analysis of environment is overdetermined, to the extent that it includes in a complex triangulation the adaptation of different animal species to Arctic conditions, the co-adaptation of animals and humans, and the technical adaptations which enable humans to survive in this extreme environment. Thus, while Mauss's ethnographic account will simply provide a list of the different animal species hunted by the Inuit, including the reindeer, Leroi-Gourhan prefaces his account of polar-region cultures with a detailed anatomical and physiological description of the domesticated reindeer, explaining why it is perfectly adapted to its physical environment in comparison with its more elegantly proportioned southern relatives. This zoological description is also a technological one, because, while the domesticated reindeer is closer to its wild variant than other human-domesticated species, it is nevertheless the end product of a long process of human-animal adaptation, a 'zootechnics', as Leroi-Gourhan describes it. In a particularly instructive passage on transportation, Leroi-Gourhan explains to the reader the economic as well as ergonomic advantage of using reindeer as opposed to huskies in polar regions. From the

anatomical-physiological viewpoint, the reindeer is incomparably more efficient than the husky as an energy source in terms of effective traction over different forms of snow and ice, capacity for continuous physical activity over a given period of time, and amount of food consumed relative to distance covered (CR, 130–2).

Leroi-Gourhan's treatment of the human–animal complex in *Reindeer Civilization* therefore reveals the relative two-dimensionality of the kind of ethnographic description found in Mauss's *Seasonal Variations*. The same divergence can be observed in the treatment of material culture in the two texts. Mauss's description of Inuit technology is selective and teleological, subordinated to his demonstration of features of social morphology. Thus, he will describe the different materials and modes of construction of Inuit habitations in relation to their seasonal variations, the mobile tent corresponding to the 'dispersed' existence of the summer months and the fixed configuration of individual igloos and communal house (*kashim*) corresponding to the more 'concentrated' existence of the winter season. Social morphology is seen here as the expression or correlate of the material distribution of the built environment. The description of other aspects of Inuit material culture in the *Seasonal Variations* is minimal, mainly restricted to the social or religious significance of this or that object. By contrast, where Mauss will refer in passing to the 'remarkable' Inuit harpoon, Leroi-Gourhan provides a two-page paragraph describing exactly why it is a remarkable piece of projectile technology (CR, 54–8). Further on in the text, he will describe the harpoon itself not as an isolated piece of technology but as part of a technical complex, in which, for example, the eastern variant of the kayak forms an integral part of the harpoon in the hunting of seals. In another adjustment of perspective, the conical tent is understood not simply as the summer mode of habitation of the Inuit, but also as an 'instrument for the pursuit of the reindeer' (CR, 74, 90). As can be seen, these and other descriptions of material culture in *Reindeer Civilization* are thoroughly contextualized, that is, they present the technology as it operates in the everyday activities of the peoples studied. As was noted above, such descriptions are not purely functional in nature, and frequently combine their explanation of material composition and mechanical operation with analysis of ornamentation — the decoration of tools, weapons and clothing expressing a symbolic content the meaning of which is not always immediately self-evident.

The purpose of this comparative reading of Leroi-Gourhan and Mauss is not to question the theoretical contribution of the *Seasonal Variations*, but rather to explore the extent to which the two texts may be seen to be representative of different ways of doing ethnology. In one sense, these texts can be read simply as alternative and complementary perspectives on the same ethnographic object, the one biased towards a sociological perspective, the other towards a material-cultural one. It is probable that Mauss would have seen *Reindeer Civilization* as a reworking of the kind of geographical anthropology he had criticized in the *Seasonal Variations*, hence his equivocal reaction to the book. Symmetrically, while Leroi-Gourhan's dedication of his book to Mauss was doubtless a sincere expression of admiration and gratitude, it was perhaps also not without its ambivalences. In a letter to another mentor, the orientalist Jean Buhot, Leroi-Gourhan expresses his anxieties over Mauss's response to the book, confiding that:

Since the day he compared himself to a hen watching a duck hatching in its nest, Mauss has been anxiously reserved in his dealings with me. I like Mauss a lot — along with Granet and Mazon at the Collège de France he forced me to find my way. I think that Mauss has some affection for me — I dedicated the *Reindeer* to him — but I know that he's not completely satisfied with the content. Above all, my impression is that we don't speak the same language, and his notes on the manuscript tend to confirm this. But there are things in Durkheim which don't correspond to my documents. The sociology of Mauss and Granet is above all a question of texts and oral tradition, myth and ritual, and an entire dimension of my own sources lies beyond their field of competence.⁶

This final sentence encapsulates what may be seen to differentiate the ethnologies of Mauss and Leroi-Gourhan. Despite Mauss's phenomenal erudition, his sources are predominantly verbal and textual, and his focus is essentially Durkheimian, biased towards facts of collective representation and collective behaviour. This means that what by this point Mauss had come to formulate as the 'total social fact', that is, the necessity for an integrative and multi-dimensional analysis of how societies function, is in fact not so total. By contrast, while Leroi-Gourhan's sources appear to include much of the ethnographic documentation supporting Mauss's text, his own documentation is qualitatively more extensive, including on the one hand ecological facts and on the other hand technological facts. These sources may also be in their own manner 'textual', but they are biased towards what may be termed the material-sociological rather than the psychological-sociological dimensions of human experience.

Furthermore, if one examines more closely the technological facts mobilized by Leroi-Gourhan in *Reindeer Civilization*, it becomes clear that they are derived not only from textual sources, but also from their material counterparts deposited in that other cardinal source of ethnographic knowledge, the museum. Leroi-Gourhan's voluntary work at the Musée d'ethnographie du Trocadéro and the Musée Guimet in the years preceding *Reindeer Civilization* provided him with an elementary training in museum work: in the case of the Trocadéro, the classification and conservation of ethnographic artefacts for the purposes of research and the configuration of their display for a visiting public — he had co-organized an exhibition on the Inuit in 1934.⁷ What Leroi-Gourhan himself seems to have taken from this experience is the properly *technical* understanding that can be acquired by the handling of different types of artefact, a three-dimensional and dynamic understanding of modes of construction and utilization, of the material and the operational. This means that the descriptions of technical culture one finds in *Reindeer Civilization* are not static, as can be the case in more conventional ethnographic monographs, but dynamic descriptions which provide the reader with a very real and concrete sense of the material existence of Arctic Circle peoples. No more than Mauss's work is this account based on a first-person observation of these peoples — at this early stage in his career Leroi-Gourhan had no fieldwork experience. Despite this, he manages to combine his primary sources — texts *and* objects — in such a way that his reconstruction of Inuit life frequently seems to approach the immediacy of the documentary.⁸

If, as Leroi-Gourhan confesses apropos of Mauss in his letter to Buhot, the two men seem not to 'speak the same language', he is not simply referring to the differences in their primary sources, but also to how they process them. Indeed, it could be said that their two texts represent very different styles of thinking, presentation and argumentation. As was noted above, the structure of the *Seasonal Variations* is teleological, to the extent that the ethnographic component of Mauss's exposition is deployed to demonstrate a general law of social morphology. As a piece of writing, the essay is a model of clarity, unfolding its argument with admirable determination and focus. However, it is difficult for the reader not to sense the essential *a priorism* of this exposition, as if Mauss knows already at the beginning of his demonstration exactly what his conclusions will be. By contrast, it is relatively difficult to locate the centre of Leroi-Gourhan's argument in *Reindeer Civilization*. This is not to say that

the text lacks structure: as we have seen, there is a strong sense of sequencing in the opening chapters of the book, the environmental and the material preceding the social and the mental, and this sequencing in itself could be said to represent a form of argument. However, the impression one receives as one reads the book is that it seems almost to be operating on too many levels, that — to use Leroi-Gourhan's own metaphor — he is attempting to bring together too many 'threads' or 'strands'. The book's short conclusion — or 'Conclusions' in the plural — is indeed quite remarkable for its absence of conclusions. Here, Leroi-Gourhan indicates the relative lack of palaeontological evidence on the origins of the reindeer as a species, of geographical and climatological evidence of the environments it inhabited, and of historical-ethnographic evidence concerning the links between the reindeer-hunting peoples of the Upper Palaeolithic and the present-day Inuit. Following this sequence of negatives, the closing lines of the book reflexively turn back to question the rationale for its writing:

One could therefore ask why this book has been written; above all, one could ask why it seems to present some appearance of coherence. The reason is that in the enumeration of 'unknowns' in geology, geography, ethnology, prehistory and anthropology — in each domain in which a specialist may seek the solution to the problem — there is a large measure of ignorance of other domains (...). Each discipline therefore ends up revealing one hundredth of the total reality. In writing this book I never thought that ten sciences handled with more or less difficulty would make a hundred and that the truth would jump spontaneously from these lines. My only belief has been that in attempting to work in this direction I might help to uncover some new horizon, however indistinctly it may be perceived. (CR, 172)

It would be tempting to attribute this closing apology to Leroi-Gourhan's relative lack of experience — he was only twenty-four at the time of writing *Reindeer Civilization*. Yet his conclusion is strikingly mature in its characterization of the partial, fragmented and inconclusive nature of our knowledge. The methodological position articulated here is one which will continue to be a trait of Leroi-Gourhan's work: a qualified awareness of what we do not know and a resistance to speculation and generalization; a consciousness of the need for a multidisciplinary approach to the problems of ethnology and prehistory; and the recognition of the practical difficulties of his approach. *Reindeer Civilization* is both an extremely modest and an extremely ambitious book. Leroi-Gourhan is characteristically modest

in his recognition of his own limitations and the tentative nature of his conclusions; he is unusually ambitious in his attempt to conduct a multi-perspectival analysis of a particular state of material civilization, centred on the reindeer. *Reindeer Civilization* can therefore be seen as pointing the way towards a more comprehensive kind of ethnology, in its way more total than the 'total social fact' articulated in Mauss's texts. Leroi-Gourhan himself was clearly conscious of this divergence, later describing the book as being of a 'rare temerity' in relation to the teaching of his master (*RM*, 35).

II. Leroi-Gourhan in Japan

Reindeer Civilization would be the only properly ethnographic monograph that Leroi-Gourhan would publish. However, it could be described as 'armchair' or, more accurately, 'museum' anthropology; Leroi-Gourhan's first fieldwork experience takes place later, during his mission to Japan in 1937–9. We are particularly well informed about this mission from two first-person sources: the series of letters sent from Leroi-Gourhan to Buhot at the time, and the interviews with Rocquet in the late 1970s. The letters are especially informative, offering fascinating insights into Leroi-Gourhan's intellectual development at this stage, when he is still finding his direction. I will concentrate on three aspects of the Japanese experience: Leroi-Gourhan's perception and positioning of himself in relation to French ethnology; the question of language; the problem of the archive.

Perhaps inevitably, Leroi-Gourhan's prolonged absence from the intellectual and institutional networks in which he had participated during the 1930s created a certain distance in relation to the academic establishment. The letters to Buhot reveal the ambivalences of his relationship with the system and his uncertainties regarding the future orientation of his career. These fears were not groundless, if one considers the different factors which would have tended to work against his success. First, there was his unorthodox educational background, his status as a self-confessed 'outsider' who did not necessarily 'speak the same language' as his academic peers. Second, there was the eclecticism of his interests: his work did not fit simply into any established disciplinary divisions. While the methodological eclecticism practised in *Reindeer Civilization* might, from an epistemological perspective, be considered a virtue, from

a practical perspective it resulted in the dispersal of affiliations and loyalties across different disciplines, individuals and institutions. Finally, and inseparably, there was Leroi-Gourhan's personality. There are references in the letters to his difficulty in handling interpersonal relations and his instinctive aversion to institutional politics. He fears that he has lost the support of two powerful figures in French ethnology, Mauss and Paul Rivet (*PJ*, 80–3).

Granted this uncertain picture of young Leroi-Gourhan's career prospects, it is interesting how he attempts to position himself relative to the established configuration of disciplines. The mission was financed by a grant from the Japanese government, which Leroi-Gourhan supplemented with teaching appointments in Tokyo and Kyoto; he also received a subvention from the Musée du Trocadéro for the purchase of objects for the museum.⁹ His letters are full of rather mundane enumerations of the categories of object collected, their cost and ethnographic value, and complaints about his budget. Leroi-Gourhan was oriented towards Japanese popular culture, cheap and ephemeral objects such as *ema*, small wooden ex-voto plates frequently decorated with animal motifs. What is interesting is the extent to which the objects he collects fall between the established distinctions between disciplines and institutions, between orientalism and ethnology, between the Musée Guimet and the Musée du Trocadéro. In a letter to Buhot (December 1938), Leroi-Gourhan expresses his hesitations:

I feel hesitant because I still can't work out exactly what Guimet's line is: I can picture the musical instruments and pieces of shard in the corners of the third floor, things which are neither pure art [*de l'art pour l'art*] nor pure Buddhism. (...) On the other hand, are my objects suitable for the Trocadéro? I'm not at all certain about this: everything is ethnographic, but I'm all too aware of the fate of so many objects which get lost amongst the general bric-a-brac, in which the big drum always ends up crushing the fragile objects. If Guimet's line is Buddhism and the history of religions, then my objects should go there. If to these conditions are added the conditions of high art [*l'aristocratie artistique contrôlée*], I would hesitate, because these things are clearly popular art. (*PJ*, 68)

Leroi-Gourhan's uncertainty, doubtless complicated by interpersonal factors, is a logical response to the structure and content of the two museums. His items of Japanese popular art risk being relegated to a corner of Guimet along with other items of material culture which do not quite meet the aesthetic and ideological parameters of the orientalist museum. The bias of Guimet towards

high art and religion highlights the comparative bias of the Trocadéro towards the representation of non-literate and pre-industrial cultures. This institutional division of labour between the representation of 'civilizations' and 'cultures' is artificial, reflecting the history of colonization and the histories of the different academic disciplines dedicated to the study of non-Western cultures. As Leroi-Gourhan points out, 'everything is ethnographic', but his description of the organization of the Trocadéro suggests a kind of babel of material culture in which only the most spectacular objects attract public attention. Alongside visibility, his hesitations relate to the liminal status of the objects: not only are they fragile and ephemeral, but also they do not coincide with conventional categorizations of the 'ethnographic'.

The problems of placing his objects in the two Parisian museums are symptomatic of the problems Leroi-Gourhan experiences in positioning himself in relation to the academic system in France. Early on, he asks Buhot about the orientation of his career: whether he should become a specialist or a generalist, whether he should concentrate on one or two points of Japanese ethnology or attempt a more general synthesis. The first option would permit deeper analysis of an area in which to become a recognized expert, whereas the second is more difficult to achieve and more exposed to potential criticism. Buhot's advice, responding to an endemic trait of Leroi-Gourhan's work, points to the second option (*PJ*, 20, 25–6). *Reindeer Civilization* had indeed been extensive rather than intensive, focusing on several cultures, and attempting to bring out the common material 'civilization' linking them beyond their individual differences. In a later letter, Leroi-Gourhan will decide that the specialist, 'the pure ethnographer', 'is a curious mammal' (74); but Leroi-Gourhan is located in an interdisciplinary no-man's-land, unable to find a fixed place of residence. He confides:

I often wonder which discipline my work fits into (...): [it could be described as] an ethno-zoology in time and in space of all of the relations between humans and animals, in practical, religious and artistic life. To explore this field I have chosen the 'Mediterranean' formed by the seas of China, Japan, Okhotsk and Bering. Perhaps more simple in its movements than our own Mediterranean, this area is still inhabited by a number of hunting, fishing, pastoral and agricultural peoples at quite an elementary stage of development, which can be treated as a coherent ensemble (...) But none of this work fits in anywhere: you represent one of its facets, Rivet another, while the Museum of Natural History regards me as a stray zoologist. (*PJ*, 73–4)

While this extensive approach may have geographical coherence, it cuts across established divisions. There is first the distinction between Rivet's (diffusionist) ethnology and Buhot's orientalism. If in principle 'everything is ethnographic', in practice different institutional structures will result in different categorizations and qualitatively different treatments of non-Western cultures. Second, Leroi-Gourhan's eclecticism is not confined to the human sciences: his approach to human-animal relations does not begin with the mental and representational but with the material and the natural-historical. The sequencing above, placing the 'practical' before the 'religious and artistic', is typical and crucial. Third, this ambitious synthesis of the human-scientific and the natural-scientific is not restricted to the present of human-animal relationships but also extends to their past: the 'ethno-zoology' proposed is both synchronic and diachronic, an 'ethno-archaeology' (*PJ*, 20).

Leroi-Gourhan's preference for the generalist over the specialist, the synthetic over the monographic, can also be observed in his attitude towards his extensive (rather than intensive) fieldwork in Japan. In addition to the collection and classification of objects, Leroi-Gourhan and his wife, Arlette Leroi-Gourhan, travelled widely, observing and recording aspects of technical and material culture. They tried to live 'in the Japanese way', in order to record the detail of everyday existence rather than the more spectacular aspects of Japanese culture. Like many visitors, Leroi-Gourhan was captivated by Japan and its culture. By the end of the mission he fears that he and his wife are beginning to lack the necessary critical distance, for on matters of aesthetic judgement they have assimilated the Japanese point of view. His references to another researcher funded by the Japanese government, Bernard Lucas, a specialist in medieval painting, are revealing. Lucas has isolated himself from his family in France and is trying to adapt rapidly to Japanese customs. Leroi-Gourhan fears that the young man may never leave Japan and never publish his work (*PJ*, 43, 52). Lucas provides a useful counter-example to Leroi-Gourhan. A degree of immersion in another culture is necessary in order to acquire an internal understanding of how that culture works, but not absorption. Over-identification with the other culture can lead to a loss of objectivity and paralysis of interpretation. Researchers must establish the right distance, attempt to occupy a position that permits both an internal and external perspective on the object studied. This is consistent with the generalist orientation of Leroi-Gourhan's work. While his personal experience of Japan is significant, Japan as an

ethnographic case is only part of his more general interest in North Pacific civilization.

Cultural immersion logically raises the question of language. Leroi-Gourhan's intellectual biography was already a remarkable one, including the study of Russian and Chinese. Language and language-learning are key to understanding Leroi-Gourhan's work. On the practical level, Russian gave him access to extensive untranslated ethnographic literature both pre- and post-war. Chinese offered important access to Eastern art, leading to one of his first publications on ancient Chinese bronzes. His basic knowledge of Chinese characters also lessened the semiotic disorientation often felt by Western visitors to Japan, permitting him to navigate city landscapes with relative ease. Leroi-Gourhan was conscious of his unusually wide linguistic competence, confiding: 'Without false modesty, I am perfectly aware of what I am doing, and of the fact that there is no French ethnologist who is able to read in seven languages, including Japanese and Chinese' (*PJ*, 71). This is 'strategic multilingualism': the languages are privileged points of access to the relevant ethnographic literatures.

Leroi-Gourhan's practice of multilingualism was primarily textual; Japan brings, crucially, parallel competence in the spoken language. He began to learn the language on the sea crossing (*RM*, 41); in the first letter to Buhot following his arrival, he reports 'taking notes, drawing, taking photographs and slowly absorbing the language' (*PJ*, 17). This is important because it presents language-learning as an essential, integral part of the total ethnographic experience. In a configuration familiar to modern linguists, Leroi-Gourhan's linguistic apprenticeship took place across a number of different contexts and registers, from the esoteric to the everyday, from exchanges with Japanese archaeologists, curators and archivists to negotiations with dealers and suppliers, to conversations with workers and artisans. The last category of linguistic contact is significant because it evokes the relationship between the material and the verbal, gesture and speech, in the ethnographic experience. While Leroi-Gourhan's interests in technical and material culture were already developed, his contact with artisans gave him a new understanding of technical processes: 'I had been interested in technology for a long time (...) but the material approach to objects, the way an artisan thinks, only became permeable to me after my stay in Japan' (*RM*, 47). Leroi-Gourhan's first-hand observations of Japanese technical culture are thus the living counterpart of the museum culture which had informed *Reindeer Civilization*. While

the museum had provided a ‘hands-on’ understanding of objects impossible to obtain from textual sources, it could not replicate the experience of observing their contextualized use or how they are made. Leroi-Gourhan’s encounter with Japanese artisans required the element of language for first contact, question and response, explanation and clarification of the operational sequences involved in the making of things. One can therefore imagine a parallel process of enlightenment, linguistic and technical, in which the dedication to learning a language is experientially inseparable from the dedication to understanding a material culture. The learning process itself positions the individual as uninitiated, a novice, and requires time and patience. This double immersion, linguistic and material, the preparedness to *learn* as well as to observe, sets Leroi-Gourhan apart from other French ethnologists of his generation. In principle, the scientific imperative of any kind of fieldwork should be to familiarize oneself as much as possible with the language of the other culture. In practice, fieldwork is often a linguistically mediated experience, filtered through interpreters or a bridge language.

Leroi-Gourhan slowly absorbs the language as he gathers documentation; Buhot has sent him questionnaires on Japanese culture, and these have the virtue of pointing him in the most unexpected of directions (*PJ*, 22). However, these questionnaires provide only a partial structuring of Leroi-Gourhan’s activities. Indeed, from the beginning, his methodological decision is not to be guided by a priori conceptions: ‘I think I’ve acted wisely in renouncing directed work and letting myself be carried along by the circumstances. In this way, I’ve taken around 400 photographs of domestic agricultural techniques, houses, costumes, tools, of anything and everything’ (*PJ*, 19). Leroi-Gourhan had a prodigious appetite for collection of ‘anything and everything’. Photography was an important mechanical means of recording objects and images: in addition to everyday activities and objects, Leroi-Gourhan photographed virtually all the objects collected for Parisian museums as well as thousands of other objects found in Japanese collections. The result is an extensive personal archive of contemporary and archaeological material culture. Despite his lack of preconception in his collection of data, the archive itself is far from unstructured — there is systematic categorization of objects and technical processes according to divisions he had already established.¹⁰ In his second letter to Buhot, he provides a detailed description of the organization of his documentation in categories such as food preparation, fishing, furniture, human and animal transport,

along with the date, location and context of each item of recorded information. This system enables swift navigation of his archive with a minimum of bias, avoiding 'hasty conclusions or an orientation which might conceal reality (. . .) This centralization of data has been of great service to my fieldwork, since one's reading of the album can at times open up the most interesting lines of inquiry' (*PJ*, 19). This 1937 letter represents a relatively early stage of Leroi-Gourhan's fieldwork in Japan. During the remaining eighteen or so months, until his definitive departure in March 1939, his documentation will grow exponentially. In a letter dated 27 November 1937, he reports that the photographic album has been integrated into a more general filing system (*fichier*), including annotated drawings, notes and an index of contents supported by textual commentary (*PJ*, 25).¹¹ Much of the technological content of this archive is incorporated into Leroi-Gourhan's doctoral thesis, *Archéologie du Pacifique-Nord* (1946), and *Evolution et techniques* (1943, 1945).

What is particularly interesting is Leroi-Gourhan's attitude towards the archive, his paradoxical relationship with the documentation he has assembled. The first-person narrative of his letters shows the time and care taken in the collection and organization, but there remains the question of the exploitation of these materials. As regards interpretation, Leroi-Gourhan's attitude towards this archive is passive rather than active. Following the methodological scepticism expressed in *Reindeer Civilization* and later, Leroi-Gourhan avoids imposing interpretations, rather taking the lead from the patterns which emerge from documentation. He explains: 'The work is organizing itself (. . .) I have no general or summary idea on any specific technology and I have to be present at the birth of the most minimal of facts' (*PJ*, 25). Once it has been set up, the archive possesses an operational life of its own, a curious kind of semi-autonomy in relation to its creator. Quite logically, Leroi-Gourhan describes it in technological terms, alternately referring to it as an instrument, a tool or, perhaps most accurately, a *machine*:

My remarkable machine is giving me a lot of trouble as it is firing off in all directions. (. . .) It might seem immodest of me to provide the detail of its inner workings in this way, but I think this is warranted as my impression is that I am little more than the unskilled worker (*manœuvre*) who oils its parts from time to time. I am confident that the machine works and my dream, once I have found a place in one or another institution, would be to set the apparatus up on a larger scale and put it through a number of different operations (*manœuvres*): one can

imagine the results which might be obtained from such a set-up over a period of twenty years. I have been working alone on this for eight years now, and it is already extremely rewarding to be able to instantly produce 200 single-edged knives from Sweden to Borneo across time sequences which clarify everything. (*PJ*, 49)

What might seem disproportionate effort in setting up the machine is rewarded by the results yielded over the longer term. The output justifies the input. The mechanization of the archive permits rapid navigation of its content and an instant production of sequences of data without subjective orientation. Leroi-Gourhan's self-description as an 'unskilled worker' who simply maintains the machine is too modest — he is, after all, also the maker of the machine — but the sense of his metaphor is clear: the process of mechanization shifts the task of interpretation from the human to the machine, or rather, the task of interpretation is divided between human and machine, providing a higher level of objectivity which does not 'conceal reality'.

This delegation and delay of interpretation contrasts with the compulsion characteristic of more subjective response. Leroi-Gourhan criticizes Lucas for being 'too preoccupied with his own personal judgement, rather than just providing the material, simply ordered' (*PJ*, 52). Lucas, however, is simply a local example of a more general tendency, which might apply equally to an eminent Mauss or Granet, whose relationship to the archive is different from that of Leroi-Gourhan. Leroi-Gourhan admires Mauss's inspirational teaching and his erudition: Mauss had read everything. Yet, Mauss's teaching was hard to follow: each student had a different version of what the master had said (*RM*, 31–3). Leroi-Gourhan makes a similar evaluation of Granet, acknowledging the charismatic charm of Granet's teaching and his 'singular intuition', but indicating that Granet's obsession with constructing a system could lead him beyond prudence, and that his intuition could be disappointingly approximate in its results (*PJ*, 80–1). Mauss and Granet's sources are primarily textual and verbal; Leroi-Gourhan is aware of the power, but also the limitations, of this exegetical tradition. Its power lies in the capacity of these remarkable individuals to master a vast archive and generate meaningful interpretations from it. Its limitation lies in the idiolectal nature of the relationship between individual and archive, its dependence on the singular and subjective associations of the exegete and the difficulty of reproducing such associations from the outside.

Leroi-Gourhan's archive is not only qualitatively more extensive than Granet's or Mauss's, including facts of material culture as well as textual documentation, it is also intended to be less idiolectal, less attached to the individual creator. This produces a paradox of ownership. On the one hand, Leroi-Gourhan is intensely attached to his archive, to which he has patiently devoted his time, his energy and his life. The archive is an extension and externalization of himself, his memory, his thinking, a highly personalized construct. In his letters, this psychical and intellectual personal investment is expressed rhetorically in the repeated use of the possessive: *my* documents, *my* objects, *my* machine. On the other hand, the letters formulate a strategy of distanciation and semi-detachment from the archive. The 'machine' must be coupled with a human operator, but the identity of the operator should be indifferent. The machine is separable from its creator, who has arranged its 'apparatus' so that somebody else, *anybody* else, can operate it.

This paradoxical combination of attachment and detachment reflects a complicated practical, ethical and existential attitude towards the archive: it is difficult to separate the different levels of motivation. Leroi-Gourhan argues that knowledge should be shared in a free circulation of information. As he has learned to his cost, in Japan and in France, this ideal of intellectual reciprocity is not always matched by the reality of academic politics. He wants the 'machine' he has been constructing alone over eight years to be used by others, but also, over a longer timescale in an institutional context, to grow to become a collective project. At the same time, in the background of these confidences and confessions there is the properly existential question of his own finitude. While recognizing the uniqueness of his attachment to his documents, he is conscious of the ephemerality of this attachment and the possible continuation of his work by others:

I am so strongly attached to my work that I have almost completely separated myself from it. Tomorrow I may disappear, but anybody will be able to continue with the files [*fiches*] and not a crumb will be lost. The use I make of them is peculiar to me, and I am more sensitive to the weaknesses of my approach than those who might criticize it, but this mountain of raw materials [*pièces brutes*] is safe from any damage I might be able to inflict upon it. (*PJ*, 71)

This projection of mortality may seem strange in a man of twenty-seven. The biographical and historical context is the uncertain state of mind of an exile in a politically volatile country at war with its larger neighbour, China. Despite funding from the Japanese government,

as foreigners Leroi-Gourhan and his wife were automatically suspect to the Japanese authorities, and were interrogated and arrested many times during their fieldwork activities. The letter quoted above was written after Arlette Leroi-Gourhan had returned to France with her half of her husband's documents and objects, the international situation seeming increasingly precarious following the Munich Agreement in September 1938.

However, another spectre seems to haunt the young Leroi-Gourhan in relation to the archive: the figure of Neil Gordon Munro. Leroi-Gourhan was fascinated by the history and ethnography of the Ainu, the genetically and ethnically distinct group occupying Japan's northern island of Hokkaido. Munro, a Scottish archaeologist, was an international authority on the Ainu, devoting his life to their study and living in close proximity to them with his Japanese wife.¹² André and Arlette Leroi-Gourhan visited the couple in 1938, and the two men remained in contact. Leroi-Gourhan is concerned about the fragile state of mind of the ageing archaeologist: Munro had lost his archaeological notes from a previous excavation during the 1923 Tokyo earthquake and in 1932 had lost all of his documentation in a fire. Beyond the rapport Leroi-Gourhan established with Munro, he worries that nothing will be published before his death. As he reports to Buhot:

I've just received two letters in succession from Munro, which I find very depressing. He is very old, very tired and secretly embittered (...) The complete destruction of all of his documents in two fires has turned his head, which is quite understandable, and his failing memory is constantly betraying him (...) I think that everything is lost: the man who knew the most about Japanese archaeology is already far from us. (*PJ*, 83)

Leroi-Gourhan therefore witnesses two levels of irretrievability: the material loss of the archive, the product of a lifetime of intellectual labour, and the mental decline of the individual most able to make sense of this knowledge. The combination of these is devastating, exposing the fragility of the archive, the human subject, and the link between them. It could be said that Munro's relationship to the archive is idiolectical, requiring the unique presence and animation of its creator in order to generate meaning. In symbiotic association with the archive, he holds everything in his head, but once the archive has burned and the head has turned, everything is lost. At the opposite extremity of life, Munro is a spectre for Leroi-Gourhan because his loss is a lesson, demonstrating the danger of the individualization of

knowledge, confirming his own attitude towards the archive, as we have been following it. The archival 'machine' which Leroi-Gourhan constructs is safe from the depredations of memory and mortality — to the extent that it is separable from its creator. As an organized externalization of his mind, it should in principle be operable in his absence, by a plurality of subjects. The ultimate destination of this form of archive is public rather than private: his hope is that his 'apparatus' will have the protection of an institution, forming part of a collective project, and having a duration beyond his own, finite existence.

III. Ethnology and the Human Sciences

Although Leroi-Gourhan's prospects did not seem promising in the years preceding the war, the post-war period saw his progressive integration into the French higher education system through a series of positions of increasing importance: lecturer in Colonial Ethnology at the University of Lyon (1944–56); Professor of General Ethnology at the Sorbonne (1957–68); Chair of Prehistory at the Collège de France from 1969. While his area of specialization would narrow over this period, increasingly focusing on prehistory, he would continue to situate this research within the wider field of ethnology, and, beyond ethnology, that of the human sciences. This wider perspective may be partly attributed to the demands of his university roles, including teaching and research supervision across a wide range of ethnological subjects, but it is also a function of the inherent interdisciplinarity apparent in his pre-war work. After the war, Leroi-Gourhan's rise through the university system brings with it a growing intellectual authority expressed in his specialized publications, but also in *meta-commentaries* on the history, definition and scope of ethnology in relation to other human sciences. The importance Leroi-Gourhan gave to this type of intervention is evident in his inclusion of four texts on ethnology in *Le Fil du temps* (1983), a selection of essays offering a retrospective view on his career from the early 1950s to the late 1960s; together with other, similar texts published during the period, they provide an informative picture of the specificity and originality of Leroi-Gourhan's vision of ethnology.

This vision is a consciously historical one, recognizing the links and continuities between contemporary ethnology and its antecedents in European and world history. The ethnological attitude could be considered an invariant trait of human behaviour in that it can be found

in any of the great ancient civilizations. However, Leroi-Gourhan locates the origins of modern ethnology closer to home, in the last third of the nineteenth century and the development of a more self-consciously scientific attitude. This history of ethnology is presented mainly from a French perspective, describing its emergence at the intersection of three already established and influential disciplines: sociology, prehistory and physical anthropology. The decisive moment of institutional consolidation for ethnology as a distinct discipline comes with Rivet and Mauss's creation of the Institut d'ethnologie in 1928 (*FT*, 91–2).¹³

Leroi-Gourhan insists that it is necessary to be aware of this history of French ethnology to understand its current configuration and limits. As a relatively new arrival amongst the human sciences, ethnology is less a separate science than a 'scientific complex', with fluctuating boundaries and techniques of analysis borrowed from other disciplines: psychology, sociology, linguistics, technology, anatomy and geology. His reluctance to define ethnology differentially or in terms of what separates it from other disciplines sets him apart from Lévi-Strauss, who was much more intent on asserting the centrality of anthropology within the human sciences.¹⁴ Leroi-Gourhan is mildly dismissive of this kind of positioning, preferring to view all of the disciplines included in the human sciences as different perspectives on the same object of study: humanity. He is equally insistent on the fact that ethnology itself should no longer be simply the study of so-called 'primitive' societies, as was, for example, the case with the Durkheimian school. While, historically, different forms of exoticism were the initial impulse for Western interest in other cultures, in the post-war context such a restriction of the field of ethnology is no longer acceptable: ethnology is the scientific study of all forms of human activity, regardless of geographical location or ethnic category (*FT*, 90–1).¹⁵

Despite the advances made by ethnology since its emergence in the late nineteenth century, Leroi-Gourhan does not think that it has yet reached its maturity as a human science. As has been the case in all of the human sciences, and in particular since the 1930s, there has been substantive progress in terms of more rigorous methods of data collection and more sophisticated frameworks of interpretation. However, the growth of ethnology as a science has in Leroi-Gourhan's view been an uneven one, with certain of its 'branches' more developed and more predominant than others. This unequal development can be attributed in part to the peculiar history

of French ethnology, in particular its emergence from the sociology of Durkheim and Mauss. While he recognizes the importance of this history in the present configuration of ethnology, a recurrent feature of Leroi-Gourhan's texts on ethnology is his attempt to sketch an alternative future for the discipline, focusing on the different areas of activity he perceives as not having been sufficiently developed. These areas can be seen to fall into three broad categories: language, technology, aesthetics.

Language

We have already noted the importance of language and language-learning in Leroi-Gourhan's biography: his learning first of Russian and Chinese, then of Japanese, during his mission to Japan in the 1930s. The background of this personal experience clearly continues to inform his references to language in the post-war texts on ethnology. Ethnology and linguistics, he claims, are intimately linked as disciplines in their modes of working. He describes language as the 'cement of acts', which not only makes acts explicit, but also preserves their memory. Though it is common knowledge that there is no systematic coincidence between linguistic group and ethnic group, it remains that language provides the best approximation of the content of a given culture. Linguistic facts and cultural facts can be studied separately, but they are comparable to two sides of the same object: it is impossible to go deeply into either domain without arriving at the other. To the extent that ethnology is the study of relations, language gives a privileged access to the construction of thought itself, allowing the ethnologist to observe the correlations between material facts and mental facts (*FT*, 100). This is why Leroi-Gourhan insists on the absolute necessity of an advanced linguistic competence for ethnographic fieldwork. Ethnographic technique is based on interview and observation and the recording of facts in different media. Its effectiveness will depend on the abilities and experience of the observer, who must make intimate contact with his or her subjects of study, integrating in order to acquire an inside perspective on the group's mental life. To achieve this, it is necessary to know the language, and to spend an extended period of time with the group.¹⁶

The correlation Leroi-Gourhan makes between cultural immersion, language-learning and time is obvious but important. Successful integration is a very delicate matter, requiring tact and patience, and the ethnographer needs to achieve the correct balance between proactive information-gathering and patient waiting. The most

important sources of false information arise from the ethnographer's premature curiosity, asking questions the responses to which he or she has unconsciously suggested. In contrast to this kind of precipitation, Leroi-Gourhan proposes a slower tempo of integration, a different kind of curiosity and a different sequence of observation and information-gathering:

It is therefore normal for [the ethnographer] to use the time he takes familiarizing himself with the language and thought of his subjects to observe the most material manifestations of existence, and to study technical practices: his curiosity and his mistakes will inspire sympathy and trust (. . .) When he is in a position to communicate more freely, he will be able to collect information on social and religious practices, which will come naturally and spontaneously during moments of relaxation. Finally, his integration will be complete when he can ask questions on the actual meaning of institutions and practices. (*HST*, 226)

As we saw earlier, the proposed sequencing of the ethnographer's activities is significant: observation of the material should precede inquiry about the mental, with language acting as the bridge between the two domains. Language-learning takes time, but can be embedded into the study of everyday material activities, which do not require immediate translation. The implication here is that curiosity about the material or the technical is a more natural and less intrusive means of entry into the mental universe of another culture than curiosity about religious or social practices. The combined apprenticeship of the linguistic and the manual will not only lead to a deeper comprehension of mental facts, but will also, crucially, create an affective bond of confidence and trust between the ethnographer and the subjects he or she studies. To attempt to penetrate the mental universe of another culture before such an integration, it is implied, is to attempt to run before one can walk.

The time it takes to achieve the appropriate degree of integration into another culture varies according to the kind of society under investigation and the level of preparation of the ethnographer. Leroi-Gourhan estimates that it normally takes several years, adding that such immersion is impossible without advanced linguistic competence. At the same time, he admits that such a situation is relatively rare. The reality of ethnographic practice is that it has ranged from the journalistic at one extreme to the activities of the few dozen individuals who have fully taken on the role of participant-observer at the other. Despite this rather sobering estimate, the existence of these individuals at least indicates the possibility of intensive fieldwork of

this kind, which will become more generalized as members of societies previously the object of Western ethnology become the ethnographers of their own cultures (*HST*, 126).

Leroi-Gourhan's anticipation of the future role of the ethnologist-linguist is perhaps too optimistic, and the simple fact that linguistic competence was not systematically a feature of the fieldwork carried out in the earlier history of the discipline raises the question of the nature and quality of the data generated by such fieldwork. A similar question haunts the other side of ethnology, the interpretation of ethnographic data. Here, Leroi-Gourhan insists, the ethnologist would need a level of philological competence adequate to the complexities of the linguistic and historical record. Philological knowledge is essential to the study of technology and even more essential to sociology; the lack of such knowledge in these areas can seriously compromise the researcher's understanding of the facts. In technology, there is the danger of associating words and things which are not necessarily historically coincident: the appearance of a term at a given historical moment may designate a technology which predates it by centuries. A similar precaution is required for the definition of the vocabulary of the sociology of religions (or kinship relations), which has preoccupied ethnologists from the outset. Terms such as *totem*, *taboo*, *manitou* and *mana* have been subjected to a plethora of interpretations; only recently have the progress of fieldwork and more advanced philological analysis brought more clarity (*EUF*, 30–4).

Although the injunction that the ethnographer should be an accomplished linguist and the ethnologist an accomplished philologist is an ideal prescription, not necessarily matched by the reality of actual competences, it is typical both of Leroi-Gourhan's critique of sources and his conception of the place of ethnology within the human sciences. What he describes as the proximity, or intimacy, between ethnology and linguistics is quite different from the relationship Lévi-Strauss proposes for anthropology. While Leroi-Gourhan accepts Lévi-Strauss's definition of anthropology as a general science of humanity, dedicated to the discovery of 'laws of structure', he describes ethnology as the study of cultural specificity, focusing on 'rules of singularity'.¹⁷ And one of the most important vectors of such singularity is language, not the universal language (*langue*) of structural linguistics, but the particular languages (*langues*) of ethnic groups. Whereas structuralism seeks to overcome the fact of linguistic difference, the tendency of Leroi-Gourhan's work is constantly to draw our attention back to it.¹⁸

Technology

Leroi-Gourhan describes technology as the most recent and least developed branch of ethnology. While Mauss had been characteristically prescient in his recommendations for a properly developed science of technology, he himself had been incapable of initiating it. His teaching at the Ecole pratique des hautes études, remembers Leroi-Gourhan, provided only the contours of this science, perpetually deferring precise exposition of its content. This omission was the inevitable result of Mauss's academic training, biased towards the humanities and social sciences.¹⁹ Unlike other branches of ethnology, which find their natural counterparts in disciplines such as sociology, geography or linguistics, the equivalent discipline for technology, engineering, is external to the human sciences. In French universities there is no tradition of combining conventional scientific or literary training with an advanced technical and manual training. Engineering sciences themselves, the product of several centuries of technological progress, are more preoccupied with results than with principles, whereas ethnologists, conscious of the corresponding gap in their own discipline, lacks the means to fill it. The roots of this division are embedded in the history of Western humanism, a reflection of our traditional philosophical distinctions between the spiritual and the material, *homo sapiens* and *homo faber* (*EUF*, 11–13, 42–3; *FT*, 86–7).

The unequal development of French ethnology noted by Leroi-Gourhan meant that, while by the 1950s and 1960s areas such as the sociology of religions had undergone considerable development, the study of technology was still largely in its infancy. While it was rare that the traditional monograph did not include some description of technical facts — this was one of the principal means of identification of a given group — it was equally rare that such monographs provided more than a superficial and ritual treatment of this category of ethnographic description. This omission can be attributed in part to the lack of training in technology, but it is also a result of the power of attraction of social and religious factors. As Leroi-Gourhan points out, such a distortion of the field also affects other, cognate branches of the discipline, such as economics. Thus, at the start of the century the focus was on the most singular or spectacular forms of economic activity in non-Western societies, relating for example to matrimonial customs or ritual exchange. Leroi-Gourhan compares this to a building where the higher floors (the study of social and religious phenomena) are highly developed but rest on precarious foundations

(the study of material culture and everyday economic activities). The infrastructure of techno-economic activities is fundamental to the survival of the group, while the superstructure of social and religious behaviour operates as a form of commentary on these activities rather than determining them (*FT*, 98–9; *HST*, 237–8).

The tendency of Leroi-Gourhan's different overviews of ethnology during this period is therefore to turn the discipline on its head. Rhetorically, this proposed readjustment of priorities is reflected in his sequencing of terms describing the components of ethnology, placing the infrastructural before the superstructural and articulating these components in the order: technical-economic-social-religious-aesthetic. This might seem to replicate a Marxist critique of traditional ethnology, but it is probably closer to the Durkheimian–Maussian paradigm from which it diverges. From this perspective, Leroi-Gourhan's sequencing represents a *rebalancing* of the components of ethnology rather than a simple subordination of the superstructural to the infrastructural. As Leroi-Gourhan argues, it would not be sufficient simply to give equal weight to these different components, to complete the different boxes of an ethnographic inventory without reference to the relations between them. Like Durkheim and Mauss, he proposes an ethnology that would look at the dynamic totality of a society, the 'movement' and connections between its different parts (*FT*, 87, 99). Unlike that of Durkheim and Mauss, this ethnology would include a properly developed analysis of the role of technology in social life: 'There remains therefore a vacant space between technology and sociology, and in this respect Durkheim and Mauss's "total social fact" can provide only a partial synthesis' (*HST*, 238).

It is one thing to designate a vacant space within a discipline and another to explain how that space is to be filled. Leroi-Gourhan describes the study of technology as having two goals: the classification of technical objects and the analysis of technological development, a key factor in the development of societies. He names the first branch *descriptive technology*, a domain dedicated to the systematic ordering of the countless products of human industry in time and space. The documentation for this work of classification, which requires a wide technical knowledge, remains patchy for the contemporary period and becomes increasingly sparse as one recedes in time. It is no different in essence from the systematic classifications of the natural sciences — the fossils and living animals that provide the documentation for palaeontology are simply replaced by objects. However, descriptive technology by itself is an abstraction, and needs to be linked with the

second branch, *comparative technology*, which, like comparative anatomy, establishes the principal lines of organization of technical objects through morphological comparison. Comparative technology allows us to explain such fundamental processes as technological determinism, the transposition of primary materials from one use to another and the adaptation of technical forms to new ends (*EUF*, 43–4).

While other disciplines in the human sciences such as history or geography include elements of descriptive technology, according to Leroi-Gourhan technology, as an autonomous discipline with its own specific perspective, accounts for facts other disciplines are unable to access in the same way. The essential and unacknowledged contribution of technology to ethnology is to establish the *technical signification* of the facts observed. The technological perspective could throw new light on the problems of classical ethnology, transforming important areas of research in the discipline (*EUF*, 44–5). Comparative technology provides ethnology with a crucial long-historical perspective. Written history covers only a fraction of human existence; as one recedes into prehistory direct evidence of social or religious life becomes increasingly rare, and technical objects provide the main evidence relating to material life. Technology is the only domain in which one can trace a continuous line of development across the totality of human time and space, from the flint tools used by the first humans to the beginnings of agriculture, metallurgy and urban organization to the automatic machines of today. The typologies of technical objects established by prehistorians and archaeologists provide a stable chronological base upon which to reconstruct the earlier stages of this historical sequence (*HST*, 233–5).

Leroi-Gourhan insists that the study of technology is not an end in itself, that it must be integrated into a study of the totality of human activities. One of the potential dangers of the isolation of technology as a separate area of study is a further entrenchment of the traditional distinction between *homo faber* and *homo sapiens*. The first is associated with a mythical 'primitive' humanity preoccupied only with the fabrication of tools, or with the most trivial requirements of everyday material subsistence, while the second is associated with the higher manifestations of human thought such as art, religion and science. This misleading distinction between the material and the mental still persists in the human sciences, producing an arbitrary line of demarcation between different groups and within the individual. Yet there is no evidence that the first humans were exclusively technical animals, while the subsequent archaeological record clearly indicates

an aesthetic component in the fabrication of tools: it is impossible to dissociate *homo faber* from *homo sapiens* (EUF, 13).

Aesthetics

This brings us to the third area of ethnology which Leroi-Gourhan considers to have suffered from lack of development, if indeed it has been developed at all. If the areas of linguistics and technology require more systematic treatment, historically they have at least existed as defined categories of ethnographic inquiry. It is far from clear that this is the case for aesthetics, the study of form and style. For Leroi-Gourhan, aesthetics relates not only to works of art but to all manifestations of a group's existence, from ways of walking to cuisine to the shape of a knife blade. Form and style, together with language, are critical markers of ethnic specificity, but also the area of human activity which is the most difficult to record and to interpret. The ethnographic monograph is normally based on a *written* record, a medium which captures only part of the lived experience of the fieldwork encounter. Even if it is supplemented by photographs or recordings, the result is still a fragmentary reconstruction of the analogue totality of fieldwork experience. One can classify different ways of sitting, or establish a distribution chart of the use of chopsticks, but the verbal medium of systematic description cannot capture the distinct styles and nuances of such behaviour. Sensitive to the developments in post-war audio-visual technology, Leroi-Gourhan takes film to be the most promising medium for the notation of aesthetic experience of this kind (*HST*, 240–1; *EE*, 1822–3).²⁰

In addition to the difficulties of recording aesthetic facts, there is the problem of analysis. Whereas linguistic facts are amenable to an objective and systematic analysis, the analysis of aesthetic facts is limited by the highly subjective and empirical nature of our perception of them due to the ambiguous nature of aesthetic expression, which Leroi-Gourhan describes as the 'humanization' of behaviour which is in fact common to humans and animals. Aesthetic facts operate on the borderline between the biological and the social, at the point of intersection between physiology, technical behaviour, spatio-temporal awareness and figuration. Despite this overdetermination of the aesthetic, some analytical coherence can be achieved, based precisely on these four elementary categories of aesthetic experience. Leroi-Gourhan's explanation of their content follows the sequencing above, moving from the biological to the technical to the symbolic and figurative. The first category, relating to physiology, covers the

immediate senses of taste, smell and touch and their codification, as well as the variations of body posture when in movement or at rest, and relative levels of comfort. The second category relates to our perception of the relationship between form and function in technical operations. This is the aspect of aesthetics most open to extensive historical analysis: the evolution of flint technology, for example, is characterized by a progressive refinement in terms of mechanical efficiency and formal balance. By contrast, the qualitative and dynamic study of technical activity can only be undertaken on contemporary societies. The third category of aesthetic analysis, the symbolic, is divided into two sub-categories: the organization of time and space, and social organization. While it may seem counter-intuitive to classify the kilometre and the hour as aesthetic facts, Leroi-Gourhan argues that they are the end point of a long process of evolution during which humans have progressively mastered time and space through measurement. The development of symmetry, rhythm, interval and regularity allows the individual subject to situate and orientate itself in a spatio-temporal environment which has become almost entirely 'humanized'. In the intersubjective sphere, social rules relating to hierarchy, polite behaviour or gender relations find their material expression in gestures, attitudes, modes of adornment and marks of distinction which allow the individual to situate him- or herself in relation to other individuals, in a manner which is not fundamentally different from the relationship between dominant and dominated individuals in animal societies. The final category of aesthetic analysis is that of figuration or artistic production. While the methods of art history may appear relevant here, ethnology does not study the art of non-Western societies in and for itself, but in its links with other modes of aesthetic expression and their integration into the totality of a given society. Figuration is a characteristic belonging only to human societies at a relatively late stage of evolution, hence the important role that the prehistorian has to play in the study of cave art as one of the few remaining expressions of the psychic life of prehistoric peoples (*HST*, 242–4).

It can be seen why Leroi-Gourhan considers aesthetics to be a fundamental, unexplored category of ethnological analysis, since it intersects with all of the discipline's traditional areas of investigation — it is *transcategorical*. As Leroi-Gourhan remarks, 'aesthetics in the widest sense of the term could well be one of the keys of ethnology' (*EE*, 1823). One of his consistent definitions of ethnology is that it is the study of 'laws of particularization', the different factors which

distinguish one ethnic group from another, and the most consistently identified markers of ethnic difference are language, technology and aesthetics:

Language, the techno-economic system and aesthetics are historically what best particularizes the ethnic group; they are the most completely assimilated part of the group's general capital and the one which has grown locally: language and aesthetics, in particular, are directly implicated in feelings of ethnic belonging. Political structures, familial institutions and social symbolism have a more diffuse character and historical study generally finds them in superficially adapted forms in different ethnic groups. Religious systems have an even more expansive character and, local variations excepted, diffuse outwards to cover large areas. (*HST*, 246)

Leroi-Gourhan's sequencing here again questions the relative prioritization of different areas of study. If ethnology is defined as the study of ethnic specificity, it is as if the discipline's focalization on social and religious phenomena touched only upon the most superficial and adaptable — one is tempted to say the most universal — aspects of human activities. Without discounting this kind of work, Leroi-Gourhan's descriptions of French ethnology repeatedly emphasize the need to focus on the more 'infrastructural' determinants of ethnic difference: the linguistic, the technical-economic and the aesthetic. The relative underdevelopment of these areas is inevitably reflected in the relative consistency of the ethnographic record. Leroi-Gourhan's argument here is formally equivalent to the argument he makes elsewhere about the history of archaeological research, where the use of stratigraphic methods of excavation had resulted in the irretrievable loss of information in the horizontal dimension of topographical distribution.²¹ Similarly, the bias of ethnology towards the social and religious has meant that ethnographic observation may fail to access the elements of social life which may be the most definitive of ethnic difference. The loss of information may be equally irretrievable, to the extent that these societies are no longer available to direct observation.

One could also view Leroi-Gourhan's descriptions of the field of ethnology as a projection of his own position and the history of his position in that field. From the start, one of the main imperatives of his work in ethnology had been the need to maintain a constant dialogue between the different parts of the discipline. One of the dangers of the post-war development of ethnology as one of the human sciences was a tendency to the type of hyper-specialization

already the norm in the exact sciences. While for Leroi-Gourhan such specialization was a necessary phase for all scientific development, the role of ethnology was to avoid compartmentalization and maintain communication between the different branches of the human sciences; the discipline should not lose sight of what must primarily be a synthetic investigation of the 'total human fact' (*FT*, 95). The problem with this synthetic vision of ethnology is the difference between the ideal of multidisciplinary and the reality of specialization. Leroi-Gourhan was exceptional, a polymath able to master a wide field of knowledge in a practical as well as an intellectual sense. While it may be possible for Leroi-Gourhan to approximate the 'total human fact', such integrative knowledge is difficult to emulate or replicate. Part of the post-war solution to the increasing fragmentation of knowledge in the human sciences is the creation of the collaborative research team, the *laboratoire* in which knowledge is distributed and shared between specialists in cognate and overlapping fields. In this respect, what Leroi-Gourhan describes as the 'heroic' figure of the single researcher, capable of embracing the totality of a discipline, is a figure of the past; in the present time such an overview is possible only in the context of a collective organization of knowledge. Biographically, Leroi-Gourhan himself made a direct and concrete contribution to the institutionalization of this particular form of collective research in post-war France.

The second solution to the fragmentation of knowledge is more technical, involving the *mechanization* of information. This can be seen as a post-war continuation of the archival 'machine' which Leroi-Gourhan described in his pre-war letters. While recognizing the importance of the statistical and quantitative methods used by sociologists, Leroi-Gourhan warns that the application of these techniques in ethnology can lead away from what is most specific to the discipline: the integration of the observer with the observed and the detailed analysis of the totality of a given group's existence. The effectiveness of ethnographic research is therefore less dependent on an external sampling of millions of individuals than on the multiplication of internal, in-depth studies of small-scale groups. However, this intensive research, carried out by hundreds of individuals, generates a 'mass' of information which can only be processed by 'mecnographic' means. A similar kind of mechanization is needed for the treatment of the extensive body of documentation which has been accumulated over the past century in the related field of prehistory (*HST*, 239–40).²²

The kind of mechanization Leroi-Gourhan has in mind for the human sciences is not that of the inert archive, the simple storage and indexation of an increasingly extensive corpus of ethnographic information. In addition to the mnemonic function of the mechanical archive, there is the processing of information. The elementary divisions of ethnology — the technical, the economic, the social, the religious and the aesthetic — are not to be treated in isolation from one another, in the manner of the inventory, but from the point of view of the dynamic relations, or ‘movement’, between them. For the finite human mind, even that of the polymath, the reconstruction of such a totality is neither simple nor certain. Leroi-Gourhan’s remarks on the kind of machine capable of such multidimensional thinking develops in the 1960s, when the rapid advances in electronics and computing technology were offering new possibilities for the storage and processing of information. The passage in question is notable for its proposal of how this technology might be used in ethnology, as well as its reference to Lévi-Strauss:

One could imagine an inventory of a given human group which treated the totality of the relations between the totality of facts in the different domains of the group’s existence. Such a monograph, which would be gigantic for even the smallest group, could, through electronic analysis, provide the general lines of correlation between all of the conceivable elements. The data system (*fichier*) for comparative ethnology used by Claude Lévi-Strauss in Paris gives us an idea of what such a work would look like: its millions of entries relate to several hundred ethnic groups and are therefore able to reveal general structural facts through the study of the relations between different groups (*la confrontation inter-ethnique*). This instrument is remarkable at the level of general facts about which we have until now frequently had only imprecise notions. It is conceivable that a similar instrument might be constructed for the analysis of particular facts within ethnic groups (*l’analyse intra-ethnique*), but this would require many years for the collection of materials, carried out by large teams working on a very limited number of ethnic groups, a task which would be difficult to achieve with the current resources of the human sciences. (*FT*, 99)

The total human fact as it is presented in even the smallest of human groups is too complex in its composition and organization for even the collective intelligence of the research team to apprehend. In the same way that computing technology was supporting sociological research in the statistical study of large populations, in ethnology Leroi-Gourhan envisages a coupling of human and machine intelligence in the study of ethnic groups. The difference is that, whereas in sociology the analysis

is external and quantitative, in ethnology it is internal and qualitative. The post-war computer is not only an adding machine, an efficient processor of large numbers, it is also capable of discrimination and comparison. The reference to Lévi-Strauss's 'remarkable' filing system at the Collège de France Laboratoire d'anthropologie sociale suggests the potential application of this technology. Not only is the system capable of storing millions of entries relating to hundreds of ethnic groups, it is also set up to establish correlations between such data. Whereas the human agent has only been capable of 'imprecise notions' regarding these correlations, the system reveals the 'structural facts' behind them. Leroi-Gourhan's proposed use of this technology repeats his more general distinction between anthropology and ethnology: the former is the study of general laws of structure relating to all human groups, what is here referred to as 'inter-ethnic' comparison, while the latter is an 'intra-ethnic' analysis, the study of ethnic singularity. The inversion of perspective does not reduce the complexity of the object — in fact, the contrary may be true. The human agent is necessary for the intensive ethnographic research which is the foundation of ethnology as a human science: ideally, the ethnic group will be observed by many ethnographers over an extended period of time. However, the task of the interpretation of the data generated by such research falls not only to the human but to the machine combined with the human. Just as the projected application of computing technology in comparative ethnology may reveal regularities which the unaided human mind cannot perceive, so the application of this technology to the study of social complexity may reveal correlations beyond the reach of human intuition.

Leroi-Gourhan's concluding reference to the limited resources of the human sciences is a useful reminder of the material conditions of his writing on ethnology during the 1950s and 1960s. There is a difference between his ideal projections for the organization and technical resourcing of ethnological research and the reality of the funding for the discipline within the post-war university. Like Lévi-Strauss's writing on the place of anthropology, or Braudel's on the scope of the new history, Leroi-Gourhan's prescriptions for the future development of ethnology must be placed in this wider context of the funding of the human sciences and the competing voices for the allocation of that funding.²³ Beyond the particularities of this post-war conjuncture, however, his comments on the role that may be played by a certain mechanization of knowledge in ethnology are consistent with an attitude evident from his earliest writings, in particular, his

suspicion of subjective intuition and the embedded reflexes which guide our habitual acts of interpretation. His repeated response to the variability of human interpretation is to check and correct such variation against a stable external support: the material object, the archive, the 'mechanographic' filing system, the computing machine. The future of ethnology as a human science is for Leroi-Gourhan inseparable from such an externalization of individual judgement.

NOTES

- 1 See André Leroi-Gourhan, *Les Racines du monde: entretiens avec Claude-Henri Rocquet* (Paris: Belfond, 1982) (hereafter *RM*). Leroi-Gourhan is referring to 'Anthropologie et ethnologie' [1968] in *Le Fil du temps: ethnologie et préhistoire, 1935-70* (Paris: Fayard, 1983), 321-5 (hereafter *FT*). See also, in the same volume, 'Où en est l'ethnologie?' [1955], 90-6 (91). Translations of quotations from Leroi-Gourhan's work are by Chris Johnson, unless otherwise noted.
- 2 Leroi-Gourhan, *La Civilisation du renne* (Paris: Gallimard, 1936) (hereafter *CR*).
- 3 The Géographie humaine series was founded in 1928 and directed by the geographer Pierre Deffontaine with the intention of presenting the new school of French geography to a wider educated public.
- 4 Marcel Mauss, in collaboration with Henri Beuchat, 'Essai sur les variations saisonnières des sociétés Eskimos: étude de morphologie sociale', Part VII of *Sociologie et anthropologie* (Paris: Presses universitaires de France, 1950); *Seasonal Variations of the Eskimo: A Study in Social Morphology*, translated by James J. Fox (London: Routledge, 1979).
- 5 See Nathan Schlanger, *Marcel Mauss, techniques, technologie et civilisation* (Paris: Presses universitaires de France, 2012), 57-60.
- 6 Leroi-Gourhan, *Pages oubliées sur le Japon*, edited by Jean-François Lesbre (Grenoble: Jérôme Millon, 2004), 80 (hereafter *PJ*).
- 7 See Philippe Soulier, 'André Leroi-Gourhan, collecteur d'objets pour les musées (Japon, avril 1937-mars 1939)', *Techniques & Culture* 57 (2011), 60-83 (62-4); *RM*, 135-7.
- 8 In addition to twenty-six maps and drawings, the text is supported by over thirty black-and-white photographs. A few years earlier, Leroi-Gourhan had written a review of the Danish-Greenlandic explorer Knud Rasmussen's documentary on the Inuit ('Un film de Rasmussen à Paris', *Nouvelle Dépêche*, 23 November 1934).
- 9 See Soulier, 'André Leroi-Gourhan, collecteur d'objets', 66-72.
- 10 'L'Homme et la nature' in *Encyclopédie française VII, L'Espèce humaine*, edited by Paul Rivet (Paris: Editions Larousse, 1936), 7.10.3-7.12.4.

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- 11 On Leroi-Gourhan's filing systems, see Soulier, 'André Leroi-Gourhan par lui-même: les archives de sa vie' in *Autour de l'homme, contexte et actualité d'André Leroi-Gourhan*, edited by Françoise Audouze and Nathan Schlanger (Antibes: APDCA, 2004), 327–47 (334, 339–41). As Soulier notes, most of these documents have disappeared.
- 12 Neil Gordon Munro (1863–1942), author of *Prehistoric Japan* (1908), made contact with the Ainu in 1898.
- 13 See Marcel Fournier, *Marcel Mauss* (Paris: Fayard, 1995), 501–12; Christine Laurière, *Paul Rivet: le savant et le politique* (Publications scientifiques du Muséum national d'histoire naturelle, 2008), 341ff.
- 14 For Lévi-Strauss's strategic positioning of anthropology in the 1950s and 1960s, see Johnson, *Claude Lévi-Strauss: The Formative Years* (Cambridge: Cambridge University Press, 2003), chapter 1.
- 15 See also *Ethnologie de l'Union française (Territoires extérieurs)* 1, edited by Leroi-Gourhan, Jean Poirier and André-Georges Haudricourt (Paris: Presses universitaires de France, 1953), 22–3 (hereafter *EUF*).
- 16 See 'L'Histoire sans textes: ethnologie et préhistoire' in *L'Histoire et ses méthodes*, edited by Charles Samaran (Paris: Gallimard, Encyclopédie de la Pléiade, 1961), 217–49 (225–6) (hereafter *HST*). See Mauss on linguistic competence and the difference between 'extensive' and 'intensive' fieldwork in *Manuel d'ethnographie* (Paris: Payot, 1967), 13.
- 17 'L'Expérience ethnologique' in *Ethnologie générale*, edited by Jean Poirier (Paris: Gallimard, Encyclopédie de la Pléiade, 1968), 1816–25 (1817) (hereafter *EE*).
- 18 On the problem of language and languages in Lévi-Strauss, see Johnson, 'Before Babel: Lévi-Strauss and Language' in *The Cambridge Companion to Lévi-Strauss*, edited by Boris Wiseman (Cambridge: Cambridge University Press, 2009), 237–54.
- 19 For a contemporary (and more comprehensive) evaluation of Mauss's contribution to the study of technology, see Schlanger, *Marcel Mauss, techniques, technologie et civilisation*, 17–134.
- 20 See Leroi-Gourhan's discussion of the use of film in ethnology in 'Cinéma et sciences humaines: le film ethnologique existe-t-il?', *FT*, 102–9.
- 21 See *Les Fouilles préhistoriques: technique et méthodes* (Paris: Picard, 1950); *La Préhistoire* (Paris: Presses universitaires de France, 1966), 235–40.
- 22 For a historical perspective on methods of recording and storing knowledge in the sciences, see Geoffrey Bowker, *Memory Practices in the Sciences* (Cambridge, MA: MIT Press, 2005).
- 23 Fernand Braudel, *Écrits sur l'histoire* (Paris: Champs Flammarion, 1969); *On History*, translated by Sarah Matthews (London: Weidenfeld & Nicolson, 1980); on Lévi-Strauss, see Johnson, *Claude Lévi-Strauss*.

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