https://doi.org/10.48417/technolang.2024.02.10
Research article

“Une véritable syntaxe”. Some Notes on Leroi-Gourhan and Structural Linguistics

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Abstract

In what follows, I will try to offer a brief overview of the relationships between some of Leroi-Gourhan’s anthropological insights on technology and some of the fundamental theoretical claims that form the general framework of structural linguistics. This hermeneutical movement runs an evident risk, which needs to be addressed and overcome: the risk of including Leroi-Gourhan’s works in the wide range of the structuralist *corpus*. For this reason, in the introduction I clarify what I mean by “structuralism” so that, in the subsequent sections, I can try to show the epistemological relationship between Leroi-Gourhan’s ethnology and the “structuralist turn,” as described in the introduction. To this end, I will point out the possible theoretical influence exerted by structural linguistics, and especially by the structural phonology developed within the Prague linguistic circle, on Leroi-Gourhan’s conceptual toolbox. More specifically, in the paper, I will focus on some passages of *La geste et la parole* (1964), which I will consider in connection with two more minor and older texts, namely *Origine et diffusion de la connaissance scientifique* (1953) and *L’homme et la nature*, an article published in 1936 in the *Encyclopédie française*.

Keywords: Structuralism, Linguistics, Phonology, Syntax, Technological system

Citation: Aurora, S., (2024). “Une véritable syntaxe”. Some Notes on Leroi-Gourhan and Structural Linguistics. *Technology and Language*, *5*(2), 125-135. https://doi.org/10.48417/technolang.2024.02.10

УДК 81-116: 39
https://doi.org/10.48417/technolang.2024.02.10
Научная статья

“Une Vérable Syntaxe”. Некоторые примечания о Леруа-Гуране и структурной лингвистике

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Аннотация
Здесь я попытаюсь предложить краткий обзор взаимосвязей между некоторыми антропологическими взглядами Леруа-Гурана на технологию и некоторыми фундаментальными теоретическими утверждениями, которые формируют общую основу структурной лингвистики. Это герменевтическое движение сталкивается с очевидным риском, который необходимо учитывать и преодолевать: риск включения работ Леруа-Гурана в широкий спектр структуралистских изданий. По этой причине во введении я разъясняю, что я подразумеваю под “структурализмом”, чтобы в последующих разделах попытаться показать эпистемологическую связь между этнологией Леруа-Гурана и “структуралистским поворотом”, как описано во введении. С этой целью я укажу на возможное теоретическое влияние структурной лингвистики, и особенно структурной фонологии, разработанной в рамках пражского лингвистического кружка, на концептуальный инструментарий Леруа-Гурана. Более конкретно, в этой статье я сосредоточусь на некоторых отрывках из “La geste et la parole” (1964), которые я рассмотрю в связи с двумя меньшими и более старыми текстами, а именно “ Origine et diffusion de la connaissance scientifique” (1953) и “L’homme et la nature”, статьей, опубликованной в 1936 году во Французской энциклопедии.

Ключевые слова: Структурализм, Лингвистика, Фонология, Синтаксис, Технологическая система

Для цитирования: Aurora, S. “Une véritable syntaxe”. Some Notes on Leroi-Gourhan and Structural Linguistics // Technology and Language. 2024. № 5(2). P. 125-135. https://doi.org/10.48417/technolang.2024.02.10

INTRODUCTION: LEROI-GOURHAN AND STRUCTURALISM

In what follows, I will try to offer a brief overview of the relationships between some of André Leroi-Gourhan's anthropological insights on technology and some of the fundamental theoretical claims that form the general framework of structural linguistics. To this end, I will focus on some passages of *La geste et la parole* (1964), which I will consider in connection with two "minor" and older texts, namely *Origine et diffusion de la connaissance scientifique* (1953) and *L'homme et la nature,* an article published in 1936 in the *Encyclopédie française*.

This hermeneutical movement runs an evident risk, which needs to be addressed and overcome: the risk of including Leroi-Gourhan's works in the wide range of the structuralist *corpus*.

The term "structuralism" usually refers to a well-defined research trend in the area of the social sciences, especially popular within the French culture during the 1950s and 1960s, whose "pilot science" – to borrow an expression from François Dosse's (1991/2012) *History of Structuralism* – was represented by Saussurian linguistics and, above all, by the structural linguistics developed by the schools of Prague, Moscow and Copenhagen. In fact, however, the history of structuralism begins much earlier and is not at all limited to the field of linguistics and social sciences and still less to a particular period of the French culture. On the contrary, it constitutes a proper and very broad epistemological paradigm, as recent works have tried to show. As Ernst Cassirer wrote in an essay published in 1945 with the title *Structuralism in Modern Linguistics*, it is thus possible to affirm that "[…] structuralism is no isolated phenomenon; it is, rather, the expression of a *general tendency of thought* that, in these last decades, has become more and more prominent in almost all fields of scientific research" (Cassirer, 1945, p. 120).

The term "structuralism" was originally coined in the field of psychology, in order to define the psychological approach introduced by Edward Bradford Titchener, the most important and influent student of the German psychologist Wilhelm Wundt – who is usually regarded as the founder of modern scientific psychology – in a famous article published in 1898 and entitled *The Postulates of a Structural Psychology* (Titchener, 1898). However, although it is, without any doubt, Titchener who explicitly introduced the term "structural" within the field of scientific research, his scientific approach cannot be defined as a form of structuralism in the strict sense of the term. Indeed, the proper structuralist currents that emerge in the years between the late nineteenth and the early twentieth centuries are instead, most notably, the following:

1) In the field of psychology, we can consider the descriptive psychology of Franz Brentano and the mereological analyses developed in his "school" and, especially, the inquiries on perceptual experience developed by Gestalt psychology as initiated by Carl Stumpf's students Max Wertheimer, Kurt Koffka, and Wolfgang Köhler. "[T]he most spectacular form of psychological structuralism," Piaget notes, "was undoubtedly the theory of Gestalten" (Piaget, 1968, p. 53). Gestalt psychology – whose foundational text

is generally considered to be von Ehrenfels's (1890) essay *Über Gestaltqualitäten* – developed, like Brentano's psychology, in direct opposition to Titchener's structuralism, and especially in opposition to its atomism and positivistic attitude. According to Mitchell Ash, "[t]he Gestalt theorists opposed the assumption that sensory 'elements' are the basic constituents of mental life then characteristic of psychological theory and research in Germany and elsewhere" (Ash, 1995, p. IX). Indeed, the fundamental idea of Gestalt psychology is represented by the mereological thesis, according to which a whole differs from the mere sum of its parts and it is therefore impossible to investigate the structure of a complex psychological fact on the basis of its ground elements. This is due to the fact that it is not possible to consider these elements separately, since they can exist only within the system of relations which connects them in a law-governed whole, that is, a structure. As Daniel Lagache puts it, "*Gestalt* theory rejects the idea of simple elements, the composition of which would explain the whole. Whole and parts are given at the same time. The knowledge of the whole cannot be inferred from the knowledge of the parts. The latter cannot be complete without reference to the whole" (Lagache, 1962, p. 81).

2) In the mathematical domain, we can count Evariste Galois's "group theory" as a forerunner of mathematical structuralism (Piaget, 1968), although the term "structure" was actually introduced only with the development of the calculus of variations and of topology. Structuralist approaches can also be found in the works of David Hilbert and, above all, in the program of the so-called "Bourbaki group." Indeed, in a 1948 essay, *L'architecture des mathématiques*, the Bourbakists propose the following definition of the concept of structure: "The common character of the different concepts designated by this generic name, is that they can be applied to sets of elements whose nature has not been specified; to define a structure." They write further: "one takes as given one or several relations, into which these elements enter […] then one postulates that the given relation, or relations, satisfy certain conditions. To set up the axiomatic theory of a given structure [thus] amounts to the deduction of the logical consequences of the axioms of the structure, excluding every other hypothesis on the elements under considerations" (Bourbaki, 1950, pp. 225-226). As Robert Hannah (2010) summarizes,

> [m]athematical Structuralism […] says that mathematical entities (e.g., numbers or sets) are not ontologically autonomous or substantially independent objects, but instead are, essentially, positions or roles in a mathematical structure, where a mathematical structure is a complete set of formal relations and operations that defines a mathematical system. What counts as an individual object of the system is thereby uniquely determined by the system as a whole. (p. 158)

3) Finally, with reference to linguistics, structuralism emerged with the general theory of language established by Saussure and then with the structural linguistics elaborated by the schools of Prague and Copenhagen. Indeed, in the field of linguistics, the term first appears with reference to phonology, more precisely, in the very well-known theses of the Prague Linguistic Circle, presented at the first Congress of Slavists held in

Prague in 1929. As the prominent linguist Émile Benveniste sums up, the Prague-school phonologists "advocated 'a method suitable for permitting the discovery of the laws of structure of linguistic systems and their evolution.'" Moreover:

> the notion of 'structure' was closely linked with that of 'relationship' within the system: 'The sensory content of phonological elements is less essential than their reciprocal relationships within the system *(structural principle of the phonological system).*' Hence this rule of method: 'The phonological system must be characterized [...] by an obligatory specification of the relationships existing among the said phonemes; that is, by tracing the structural scheme of the language being considered'. These principles are applicable to all parts of the language. (Benveniste, 1971, p. 81)

General reconstructions of structuralism usually neglect many of these currents – for instance in the Brentanian school or in early phenomenology – or underestimate them – as in the case of structuralist tendencies in the mathematical domain. On the contrary, when considered in its complexity, the "structuralist turn" allows to better understand and clarify several tendencies in the social and human sciences of the last century, at least until the 80s. This contribution aims to show that some of Leroi-Gourhan's theoretical insights on the relationship between language and technology show a deep solidarity with the "structuralist turn" and, especially, with some fundamental features of structural linguistics. In this sense, it is not by chance that Leroi-Gourhan's anthropology and ethnology show an often-underestimated epistemic relationship with Lévi-Strauss's structural inquiries (see Collins, 2021):

> In rereading his work, I am struck by the fact that, working in different domains, he and I were trying to do basically the same thing […] The guiding idea of his work was always to study the relations between things rather than the things themselves, to try to reduce the chaotic diversity of empirical facts to invariant relationships. (Lévi-Strauss, 1988, pp. 203-204)

In the following sections, I will try to show the relationship between Leroi-Gourhan's ethnology and structuralism by highlighting the theoretical influence exerted by (structural) linguistics on Leroi-Gourhan's conceptual toolbox.

L'HOMME ET LA NATURE (1936): A STRUCTURAL PRINCIPLE OF TECHNOLOGICAL SYSTEMS?

Leroi-Gourhan was more than acquainted with linguistic studies since, as he himself acknowledges his "*première formation ayant été de linguistique et d'anthropologie anatomique*" (quoted in Schlanger, 2023, p. 26) and, especially in the

30s, his scientific training took the form of a "*quadruple formation en langues, linguistique, ethnologie, anthropologie biologique*" (de Beaune, 2011, p. 200).

Moreover, the linguistic apprenticeship of Leroi-Gourhan took place in years of great importance for the development and establishment of a new paradigm in the sciences of language, namely structural-functional linguistics: In 1916, Charles Bally and Albert Sechehaye edited the *Cours de linguistique générale* from notes on lectures given by Ferdinand de Saussure at the University of Geneva between 1906 and 1911; in 1929, the newly born *Cercle linguistique de Prague* presented its theoretical manifesto, in French, at the First Congress of Slavic Philologist, the famous "Théses," which were bound to chart the general direction of structuralism for the subsequent years; finally, in 1933, an important issue of the *Journal de psychologie normàle et pathologique* devoted to the psychology of language was published, featuring contributions by some of the most important linguists and philosophers of the time, with a strong presence of structural linguists and phonologists, such as Sechehaye, Vendryes, Brøndal, Trubetzkoy, Sapir, Bally. Among these potential influences, I believe the scientific work of the Prague linguistic circle to be certainly the most important, even in consideration of its reception in French anthropology and ethnology in the 30's and the 40's (see for instance Lévi-Strauss, 1945).

In his 1936 article for the *Encyclopédie française*, Leroi-Gourhan (1936) proposes a "mechanically logical classification" of general technics (p. 206), namely a critical inventory showing that technics must be described as the result of a combinatorial system of specific material options and potential actions (fig. 1). In a similar way, in the famous "theses" the Prague linguists claim that "acoustic-motor representations," namely objective-material sounds (the *phones*), "are elements of a language system only insofar as they serve to differentiate meanings", that is only insofar as they are *phonemes*; on this basis, they establish "*the structural principle of the phonological system,"* according to which "the sensory contents of […] phonological elements are less essential than their interrelations in the system" (Steiner, 2014, p. 8). On these grounds, the Prague phonologists identify three general fundamental tasks of phonology, namely:

> 1. […] to describe the phonological system, that is to establish the set of simplest acoustic-motor representations which create meanings in a given language (*phonemes*) […] 2. [to] determine *the combinations of phonemes realized* in a given language compared to all the theoretically possible combinations of these phonemes, the variations in the sequence of their grouping, and the scope of these combinations […] 3. [to] determine the degree of utilization and the frequency of realization of the given phonemes and the combinations of phonemes of different scope." (Steiner, 2014, pp. 8-9)

SECTION A - FORMES ÉLÉMENTAIRES DE L'ACTIVITÉ HUMAINE

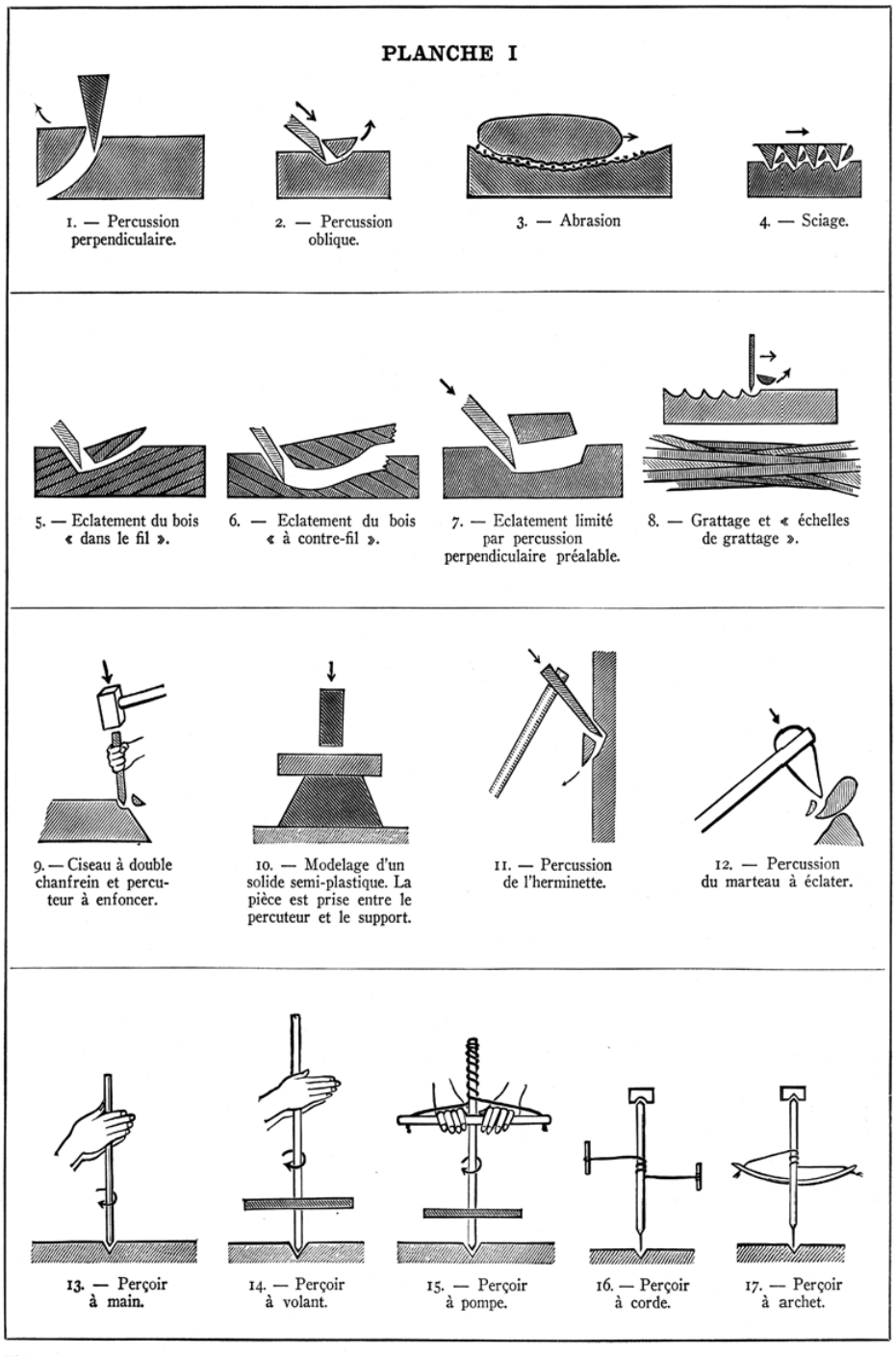

Figure 1. A mechanically logical classification of elementary forms of human activity (Leroi-Gourhan, 1936, p. 8).

In my opinion, the descriptive framework that one can find in *L'homme et la nature* is epistemically equivalent to the methodological principles outlined in the Prague manifesto and can represent a theoretically coherent derivation thereof. This means that what is claimed in the *Théses* with reference to language has been "transferred" by Leroi-Gourhan into the domain of technology. Understood in these terms, one can easily rephrase the Prague phonological principles in technological terms. Accordingly, the *structural principle of the technological system* would claim that *the sensory contents of technological elements are less essential than their interrelations in the system* and the general tasks of a philosophy of technology would thus be the following: 1. To describe the technological system, that is to establish the set of simplest relations between a given material (stable solids, semi-plastic solids, plastic solids, flexible solids, fluids) and a given action (perpendicular, oblique or circular percussion) which create tools in a given society (we could call them *technemes* or, as Leroi-Gourhan writes, "elementary forms of human activities") 2. To determine *the combinations of technemes realized* in a given society compared to all the theoretically possible combinations of these technemes, the variations in the sequence of their grouping, and the scope of these combinations 3. To determine the degree of utilization and the frequency of realization of the given technemes and the combinations of technemes of different scope.

ORIGINE ET DIFFUSIONE DE LA CONAISSANCE SCIENTIFIQUE (1953): THE TECHNICAL PROCESS

In the March 1952 lecture at the Maison des Sciences in Paris (*Origine et diffusione de la conaissance scientifique*), translated for the first time in English in this collection, Leroi-Gourhan aims "to explore […] the paths taken by humankind from its origins to the point at which it entered the period of major scientific speculation, to see when the first concerns with rational research emerged in the history of human societies" (Leroi-Gourhan, 2024, p. 105). According to Leroi-Gourhan, a fundamental premise for such an investigation lies in the claim according to which one has to admit that "technical progress is really linked to [scientific] research" insofar as there is a "link between psychical reactions and technical behavior, between the latter and the manufacturing techniques specific to human beings, between manufacturing techniques and invention, and between invention and scientific speculation" (p. 105). The considerations offered by Leroi-Gourhan in this lecture are thus a coherent development, on a diachronic level, of the theoretical framework established in 1936 on a synchronic level, stating that technology is nothing but a systematic interrelation between materials and actions or *gestures*, as Leroi-Gourhan calls them in this lecture and, notably, in *La geste et la parole*. In this sense, the analysis of flintknapping by the Neanderthals mentioned in the lecture reveals the first precise picture we have in the history of humankind of a complex technical process, since "the systematic knapping of triangular flakes characteristic of the Mousterian represents a series of a dozen gestures following each other in an absolutely

rigorous order" (p. 107). According to Leroi-Gourhan, "this is the first evidence of technical intelligence", which seems thus to coincide with the "setting up of […] a complex arrangement of operations [*un dispositif opératoire complexe*]" and with a "standardised operational thinking [*une pensée opératoire très rationalisée*] involving series of gestures set in precise sequence" (p. 107 and p. 108). As Charles Lenay writes, in this sense "we may even speak of a sort of technical *syntax*, insofar as the fabrication of the tools proceeds by ordered sequences of operations, and a different arrangement would produce different products" (Lenay, 2018, p. 219). As it is well known, in *La geste et la parole* one can find explicit references to syntax and linguistic structures. However, this reference to syntax is, in my opinion, neither new nor metaphorical; on the contrary, as I've tried to suggest in this paper, this reference can be found in Leroi-Gourhan's earlier texts, although in an implicit way, and shows a deep epistemological solidarity with some of the main theoretical principles of structural linguistics and phonology,[1] as the following concluding section will try to show.

LA GESTE ET LA PAROLE (1964): UNE VERITABLE SYNTAXE

In Leroi-Gourhan's 1964 masterpiece, *La geste et la parole*, the term "syntax" occurs six times, while language plays of course a pivotal role throughout the whole text. Although, in my opinion, the references to syntax are always coherent with the theoretical framework previously outlined, there are two occurrences that seem to be particularly relevant for my argument. In the first of these references, Leroi-Gourhan clearly connects the idea of "syntax" to that of an "operating sequence," which cannot but recall the notion of *dispositif opératoire* and of *pensée opératoire*, already encountered in the 1952 lecture:

> We shall revert to the concept of operating sequences [...] but mention of it must be made here if we are to understand the link between technics and language. Techniques involve both gestures and tools, sequentially organized by means of a ‚syntax' that imparts both fixity and flexibility to the series of operations involved. This operating syntax is suggested by the memory and comes into being as a product of the brain and the physical environment. If we pursue the parallel with language, we find a similar process taking place. On the basis of what we know of techniques from pebble culture to Acheulean industry, we could adopt the hypothesis of a language whose complexity and wealth of concepts corresponded

[1] It must be said that an eminent scholar like Nathan Schlanger totally disagrees with the hermeneutical hypothesis advocated in this contribution: "*la notion de ‚syntaxe'* […] *donne une inflexion linguistique ‚grammaticale' ou ‚générative' qui, tout en étant de mode dans les sciences humaines des années 1960 et 1970, est en fait assez éphémère dans le bagage théorique de son auteur. Outre la section du* Geste et la Parole *intitulée ‚Le langage des "préhominiens,"', et mis à part ses interprétations de l'art pariétal paléolithique, cette conception est peu présente et non théorisée dans ses écrits antérieurs*" (Schlanger, 2023, p. 542).

> approximately to the level of those techniques. (Leroi-Gourhan, 1993, pp. 114-115)

In the second instance, Leroi-Gourhan explicitly poses an equivalence that appears to be of particular interest for the purposes of this reflection, namely the equivalence between word-tool and syntax-gesture. Moreover, he seems to understand tools and linguistic elements (together with rhythmic components) as parts of the same process:

> […] the purpose of verbal figures – words and syntax – is, like the purpose of tools and manual gestures, *their equivalents*, to provide an effective hold on the world of relationships and of matter […] we see that tools, language, and rhythmic creation are *three contiguous aspects of one and the same process.* (Leroi-Gourhan, 1993, pp. 365-366, italics added)

As I have tried to suggest in this contribution by means of a brief exploration of some important texts, I believe that some of Leroi-Gourhan's theoretical insights on technology show a deep epistemological solidarity with the "structuralist turn," as it has been described in the introduction, and especially with some of the fundamental tenets of structural linguistics and phonology. Against this background, I think that the 1952 lecture on "The origin and dissemination of scientific knowledge" plays a quite important and significative role.

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Статья поступила 14 января 2024
одобрена после рецензирования 18 мая 2024
принята к публикации 7 июня 2024

Received: 14 January 2024
Revised: 18 May 2024
Accepted: 7 June 2024