

Emergence of non-summative relations in language

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Abstract

The appearance of signs is linked to the relationship of a form, which in itself has no semantic value, with a content, to which it is linked by convention. From this result two strong assertions: 1) that the signifier (the form) and the signified (the content) are the two sides of the sign; 2) that the union of the signifier and the signified is arbitrary; a corollary of 1) and 2) is that on both levels new units are produced from the addition of smaller units. Since F. de Saussure formulated this definition of the sign, descriptively easy to manipulate, linguistics has been confirming that there is something more. It consists of non-summative transversal relations, which occur at all levels (words whose meaning leads to other words, phonemes that sound like other phonemes in the chain, etc.). These relations are enactive, they result from the mutual determination of language and world.

Keywords: asymmetric linguistic sign – non-summative relations – symbol – iconicity of language – enactionist paradigm.

Résumé

L'apparition des signes est liée au rapport d'une forme, qui en elle-même n'a aucune valeur sémantique, avec un contenu, auquel elle est liée par convention. De cela résultent deux affirmations fortes : 1) que le signifiant (la forme) et le signifié (le contenu) sont les deux faces du signe ; 2) que l'union du signifiant et du signifié est arbitraire ; un corollaire de 1) et 2) est qu'aux deux niveaux, de nouvelles unités sont produites à partir de l'ajout d'unités plus petites. Depuis que F. de Saussure a formulé cette définition du signe, descriptivement facile à manipuler, la linguistique confirme qu'il y a quelque chose de plus. Il s'agit de relations transversales non sommatives, qui se produisent à tous les niveaux (mots dont le sens mène à d'autres mots, phonèmes qui rappellent d'autres phonèmes de la chaîne, etc.). Ces relations sont éjectives, elles résultent de la détermination mutuelle du langage et du monde.

Mots-clés : signe linguistique asymétrique – relations non sommatives – symbol – iconicité du langage – paradigme éjective.

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1. The asymmetry of the sign

The asymmetry of the linguistic sign (López García 1980), that is to say the fact that the signifiers limit the signified, but not the reverse, is a fundamental postulate of the science of language which leads to resolutely favoring the form on the meaning, the signifier on the signified (Figure 1):

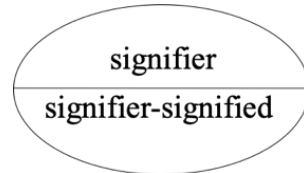


Figure 1. Asymmetrical structure of linguistic sign

This is not noticeable at first glance. We were trained in a tradition, the Saussurean, which, rejecting the consideration of language as nomenclature, nevertheless contributed to veiling the predominance of form (that is to say of phonetics and grammar) over the sense. Let us recall the well-known definition of the sign in the *Cours de Linguistique Générale*, with its obsessive insistence on the metaphor of the sheet of paper and the consequent correspondence of the two planes. However, Saussure himself disavows this interpretation imposed on him by his disciples Bally and Sechehaye in a school textbook that he had not written. In the master's handwritten papers, discovered in the greenhouse of his Geneva house in 1996 and published in 2002, we can read (Saussure 2002: 2d):

Le dualisme profond qui partage le langage ne réside pas dans le dualisme du son et de l'idée, du phénomène vocal et du phénomène mental : c'est là la façon facile et pernicieuse de le concevoir. Ce dualisme réside dans la dualité du phénomène vocal COMME TEL, et du phénomène vocal COMME SIGNE – du fait physique (objectif) et du fait physico-mental (subjectif), nullement du fait « physique » du son par opposition au fait « mental » de la signification. Il y a un premier domaine, intérieur, psychique, où existe le signe autant que la signification, l'un indissolublement lié à l'autre ; il y en a un second, extérieur, où n'existe plus que le « signe », mais à cet instant le signe réduit à une succession d'ondes sonores ne mérite pour nous que le nom de figure vocale.

Modern linguistics has not been aware of this and has therefore described language based on an erroneous equidistance between the planes of the signifier and the signified. This is what Hjelmslev did in *Omkring sprogteoriens grundlæggelse* (1943), and this is what Noam Chomsky did in *The Minimalist Program* (1995) when he defined language as a derivation that connects a phonetic form to a logical form (Araki 2017). The consequence of all this has been the repeated attempt to describe and explain meaning in the manner of the signifier by assuming that the only difference is quantitative, that where languages generally have between twenty and thirty phonemes and between two or three hundred morpho-syntactic schemes, in the lexical component we are dealing with some twenty or thirty thousand lexemes. However, it is generally not noticed that this quantitative jump in transit between linguistic levels follows an exponential scale (Figure 2):

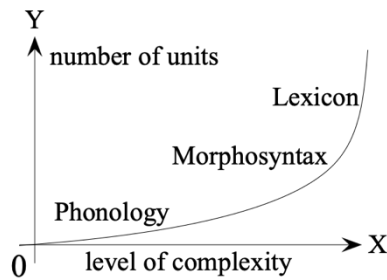


Figure 2. Exponential scale between number of linguistics unities and level of complexity

On the exponential scale, if on one of the axes (here 0X) the progression is arithmetic, on the other (here 0Y) it is geometric and is formalized using the logarithm. The claim to treat the lexicon in the same way as grammar therefore turns out to be illusory and recalls the naive surprise of people when they are told that there was an earthquake of intensity 7.5 with catastrophic effects when another one of intensity 6 was not so serious: naturally, because the Richter scale is also exponential. A ratio of one to a thousand really represents a very difficult challenge to meet, so it is not surprising that if phonology, that is to say the systematic scientific study of the signifier, was already occurring in the 12th century with Icelandic anonymous and exploded with the authors of the Prague school in the 20th century, lexicology remains unfinished and often severely questioned.

But this primacy of the signifier over the signified, which is in question, is not found in all cultures. Classical Chinese culture in relation to language (San Ginés 2004), after an early philosophical period (the so-called “hundred schools of thought”) during which thinkers were interested in the nature of meaning and reference, has become a matter of preference with words, their meanings and a little less their pronunciation: grammar only appeared in the 19th century under the influence of Europeans. This clearly lexicographic and lexicological bias arises from the nature of the Chinese language, isolating and devoid of grammatical variants, as well as the great importance taken by ideographic writing as a system of political unification since the Qin dynasty (2nd century BC). For Chinese tradition, language is fundamentally composed of its words and these are ordered according to semantic criteria, as already noted in the Erya, the first dictionary. The justification for this view is found in Confucius (*The Analects*, ch. 13.3) when he argues with his disciple Zilu and maintains that the secret of government lies in the rectification of names: “If names be not correct, language is not in accordance with the truth of things. If language be not in accordance with the truth of things, affairs cannot be carried on to success.”

These two possibilities of linguistic analysis (Figure 3) derive from the asymmetrical structure of the linguistic sign and are equally unsatisfactory because both leave part of the sign undefined:

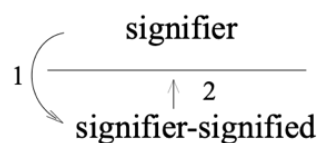


Figure 3. Two linguistic analyses derived of the asymmetrical structure of linguistic sign

Trajectory 1 is that of Western linguistics, which begins with the signifier of the numerator and, although it reaches the denominator, it fails to go beyond the formalism derived from the coincidence of the two signifiers. Trajectory 2, on the contrary, is that of Eastern linguistics which, starting from the signified, does not manage to cross the barrier which separates it from the higher signifier.

2. Iconicity of language

A century and a half ago, Haeckel (1866) revolutionized embryology by postulating the law of recapitulation, according to which ontogenesis summarizes phylogenesis, so that the successive phases of the development of an embryo take place with the forms and in the same order in which previous species appeared during evolution. This theory, fiercely Darwinian in the intention of its author, has been widely criticized and accused of being anti-Darwinian, but it is not without a basis in truth. Nature repeats its formative patterns over and over again and that is why most of its structures are fractal in nature (López García-Molins 2017). For this reason, it is not surprising that the semiotic patterns of the cell survive in larger cell groups and manifest themselves in the most complex organism: the human being and its verbal productions. However, as we intend to show in this monograph, next to fractality, a different phenomenon appears in language, the emergence of non-summative relationships at different levels, which are attributable to the asymmetry of the sign.

It is very common for studies on iconicity, which is a semiotic characteristic of certain communication systems, to consider it as a primitive substitute for arbitrariness. There are fundamentally iconic systems, but the signs of the language would be arbitrary due to simple social convention and, therefore, their form generally does not reflect any feature of the content. Even more: language is considered the prototypical domain of the arbitrary and, consequently, there are up to seven thousand different ways of illustrating it, as many as languages are included in the glotonymic inventories of international organizations. So, for example, verifying that the *apple* can be called *apple* in English, *Apfel* in German, *tufaah* in Arabic, *píngguǒ* in Chinese, *æble* in Danish, *manzana* in Spanish, *sagar* in Basque, *vashli* in Georgian, *mílo* in Greek, *seb* in Hindi, *mela* in Italian, *maçã* in Portuguese, *wayu* in Quechua, *yabloko* in Russian, *olma* in Uzbek or *apu* in Yoruba, etc., convinces the man in the street that the linguistic signs are as they say he liked represent them to Ferdinand de Saussure (1916), that is to say as the pure expression of designation arbitrariness.

Nowadays, this arbitrariness has been called into question by convincing arguments (Toussaint 1983) but also by the provision of empirical evidence: Blasi et al. (2016) published a famous work in which it is demonstrated, with data from thousands of languages, that there are major associative tendencies which articulate the relationship of certain forms with certain contents. We cannot resist reproducing part of the summary which directs this work (Blasi et al. 2016: 10818):

By analyzing word lists covering nearly two-thirds of the world's languages, we demonstrate that a considerable proportion of 100 basic vocabulary items carry strong associations with specific kinds of human speech sounds, occurring persistently across continents and linguistic lineages (linguistic families or isolates).

We will not neglect his conclusion either (Blasi et al. 2016: 10821):

We have demonstrated that a substantial proportion of words in the basic vocabulary are biased to carry or to avoid specific sound segments, both across continents and linguistic lineages. Given that our analyses suggest that phylogenetic persistence or areal dispersal are unlikely to explain the widespread presence of these signals, we are left with the alternative that the signals are due to factors common to our species, such as sound symbolism, iconicity, communicative pressures, or synesthesia.

3. Icons, indexes and symbols

Iconicity or synesthesia seems to go back, in fact, to the origins of the human species. Are these survivals of an earlier evolutionary phase or fully operational underground currents in the languages of our time? It is important to clarify this point. There is a certain tendency among scientists to consider these phenomena as vestiges of the past, a bit like the appendix, whose purpose it is not very clear and whose inflammation often creates problems (appendicitis) in certain people. Scholars of the origins of language present iconism as one of its most likely foundations, given that so-called animal languages often rely on the transparent nature of form-content relationships (beasts baring their teeth when they are preparing to attack, etc.). According to Deacon (1997: 300), there is a neurological hierarchy which leads from icons to indices and from these to symbols, which results in an evolutionary succession icon > index > symbol:

To the extent that each higher-order form of representational relationship must be constructed or decomposed into lower levels of representation, we can expect that their neural representations will exhibit a similar nested hierarchic structure as well. There should be a sort of truncated recapitulation of this acquisition hierarchy, in opposite directions, depending on whether a symbolic relationship is being constructed or interpreted –from icon to index to symbol, or from symbol to index to icon, respectively.

This neurological hierarchy appears to have a logical hierarchy as a correlate. The semiotic justification of types of signs goes back, as we know, to Peirce (1867) for whom icons, which belong above all to the *Firstness*, are signs which are displayed in place of their object by virtue of a certain resemblance to it, for example, a painting (Ransdell 1986). Opposite them are the clues specific to *Secondness*, which show a natural relationship with the object (smoke as a sign of fire); and symbols, belonging to *Thirdness*, where the relationship to the object is conventional (language, for example). Both in the neurological hierarchy and in the logical hierarchy, we find icons at the beginning of the symbol-building process. According to Deacon, neurologically icons establish simple relationships between neighboring neurons, cues establish complex relationships, and symbols very complex relationships: this is why lower animals act based on icons and animals superior also on indices, but not on symbols, which are exclusive to the human species. Correlatively, in semiotic terms, icons come first and belong to *Firstness*.

The original condition of icons, and the conclusion usually drawn from this, namely that they are fossilized phenomena which refer to an earlier stage of language, is contradicted by the observation that iconic relationships exist in all languages and that they are often of recent appearance (Armoskaite and Koskinen 2017). Furthermore, phonic symbolism (whether onomatopoeia or ideophones), which is one of the most frequent manifestations of linguistic iconism, appears especially in poetic language, that is in the most creative type of discourse

which takes the expressive possibilities of languages to the limit. The phonic symbolism of poetry is a classic subject of linguistic studies, almost a branch of this science. It fascinated F. de Saussure in his *Anagrams*, especially interested Roman Jakobson, and continues to arouse studies and controversies today. Its foundation, according to the poets themselves, rests, as Paul Valéry said, on the fact that “le poème, [est une] hésitation prolongée entre le son et le sens”. This prolonged hesitation is unthinkable from the logical category of Firstness of Peirce, it fully corresponds to Thirdness, since poetry becomes the ultimate limit that language allows to reach. It is also not easy to explain it as a simple phenomenon from a neurological point of view: although the icons are supposed to rely on synapses of neurons or neighboring neuronal areas, these oscillations between sound and meaning inevitably involve the whole brain.

4. The linguistic sign and iconicity

The transition from simple phonic signifiers on the level of expression to signifiers-signified on the level of content does not always happen in the same way because the neural circuits that facilitate this transition are sensitive to the speech environment. If grammar and lexicon belong to the linguistic system and can be considered as inventories shared by the speakers of a language and, on a typological scale, of various languages, on the other hand, the transition phase is to a certain extent unpredictable, since it is the responsibility of each concrete participant. This is where submorphemes arise, which represent a degree of socialization higher than that of poetic creations, but lower than that of lexical meanings or that of syntactic constructions, as pointed out by Grégoire (2012: 22):

Il est possible selon nous de définir le signifiant comme une partie du signe linguistique rattachée à un signifié et servant à l'expression ; donc par là-même sujet à des modifications, à des (re)motivations, à des altérations auxquelles les sujets parlants contribuent collectivement et inconsciemment ou bien, dans un cadre poétique, parfois individuellement et consciemment. Il est ainsi soumis aux lois, aux règles et autres contraintes dues au système, et devient un signal.

This situation parallels the processes of genetic transcription from DNA to mRNA. It is quite common for transcription to cause genetic instability, sometimes with very serious consequences such as ALS (amyotrophic lateral sclerosis), which is usually due to errors in RNA splicing. However, it is normal for such errors to be corrected at the time they occur through processes known as proofreading. Something similar happens in language: the motivational tendency is strong, but speakers strive to maintain the arbitrariness of linguistic signs. These opposing theses already appear in Plato's *Cratylus*. Hermogenes is surprised by what Cratylus says (383a-b):

HERMOGENES. — Cratylus, whom you see here, Socrates, says that everything has a right name of its own, which comes by nature, and that a name is not whatever people call a thing by agreement, just a piece of their own voice applied to the thing, but that there is a kind of inherent correctness in names, which is the same for all men, both Greeks and barbarians.

But Socrates agrees with him (*Cratylus* 390d-e):

...SOCRATES. — Then, Hermogenes, the giving of names can hardly be, as you imagine, a trifling matter, or a task for trifling or casual persons: and Cratylus is right in saying that names belong to things by nature and that not every one is an artisan of names, but only he who keeps in view the name which belongs by nature to each particular thing and is able to embody its form in the letters and syllables.

We still do not have a clear position as to the natural or arbitrary nature of the link which unites the signifier of the linguistic sign to its signified. However, twenty-five centuries later, we are clear that the sign is not like a sheet of paper, but results from a process of complex transition between sound and meaning and that it is in this transition, constituted of successive emergences, in which this iconicity has a place because it is a correlative phenomenon of all biological processes (Figure 4):

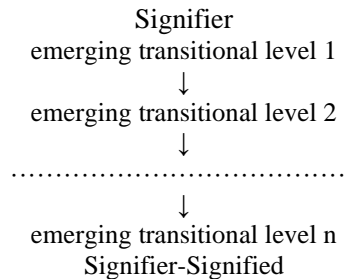


Figure 4. Complex transition between sound and meaning

A transitional perspective of the linguistic sign, such as that which emerges from Saussure’s manuscripts, situates the problem of iconism in its own terms. It is not that this phenomenon goes back to a primitive stage of language, but that it refers to the moment of production and therefore belongs to both code and discourse.

5. Iconicity as creative energy

Almost no one in the history of linguistics has dared to empirically investigate this first phase of semiosis. The one who went further was undoubtedly Gustave Guillaume, a reclusive French linguist from the beginning of the 20th century, who did not go so far as to base his intuitions on empirical data, but made some interesting propositions in the right direction. Gustave Guillaume (1949) proposed the notion of apprehension (seizure) (Figure 5): in the passage from the conceived to the verbalized, the flow of thought, which goes from a universal of power (U_1) to a particular of power (P_1) and then from a particular of effect (P_2) to a universal of effect (U_2), would be interrupted at a certain moment – the entry, represented by the dotted arrow – thus generating a functional value and a categorial value:

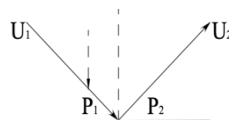


Figure 5. Guillaume’s diagram in the passage from the conceived to the verbalized

There is no doubt that this diagram is very suggestive, but unfortunately it is not convincing. We assume that U_1 represents the universe of the thinkable and U_2 the universe of the expressed. Well, the idea that in U_2 words take their meaning from contact with other words that accompany them in the chain is reasonable. On the contrary, the assertion according to which each time a lexical term or a grammatical morpheme is extracted from memory, one must start from the universe of the knowable and proceed with an ordered separation of the different cognitive fields until arriving at that which interests us, is completely unprofitable. This would

mean that to say that the sun has risen, I must think of the universal; then discriminate between process, quality, substance, relationship, etc. (i.e. between the Aristotelian categories), opting for the process; then, in the process, I can choose between action, state and development and I am left with action (although the interpretation is metaphorical); then, in action, I choose between movement, force, cognition, etc. and I stay with the movement; in turn, in the movement a distinction is made between initial, transitional, final, etc. and I opt for initial, which lets me get by. Then, we should do the same with the sun, distinguishing the substance and in it the inanimate beings and in these the solids and in these the asteroids, etc. We should also consider – before, during or after the aforementioned cognitive specifications – everything relating to the determination of the sun and the time, manner and appearance of sunrise. It is currently impossible to provide empirical evidence to support this type of analysis. Quite the contrary. What we know about memory mechanisms suggests a much simpler and, at the same time, more complex process because various executive functions are involved.

To understand these successive phases, which are not evolutionary, we would have to start from two neuronal processes described by Hebb (1949), ignition and reverberation. Ignition is the activation of an entire neural network; but after switching on, some subnetworks operate again with a reverberant effect, that is, they significantly increase their tendency to activate. Today, Hebb's idea has been empirically verified and perfected in detail. According to Pulvermüller (2002: 169):

Ignition is a brief event, whereas reverberation is a continuous process lasting for several seconds or longer. Ignition of a functional web involves all of its neurons, or at least a substantial proportion of them, whereas reverberation can be maintained by small neuron subgroups within the set being active at given points of time. Ignition does not imply a fixed spatiotemporal order of neuronal activity. In contrast, reverberation is characterized by a fixed sequence of neuron activations, a defined spatiotemporal pattern of activity within functional webs.

Neurology also supports this concept as we have said. Fuster (1995) extended this opposition to the domain of the configuration of mnemonic scenes: there would be groups of neurons which light up at the same time –*ignition*– and sequences of neurons which do so in a transient order –*reverberation*–. It is not difficult to imagine that these two possibilities have perceptual correlates –*figure/ground*– and, therefore, linguistic correlates, as Guillaume postulated.

This is what happens in speech acts. The emission of a linguistic sequence is preceded by the activation of numerous neural networks which offer numerous possibilities for development at the submorphemic level: this is the ignition phase, which supports analog processes. Most of them remain implicit, although they are constantly activated in the mind of the sender. Then said transmitter carries out certain possibilities phonetically and also in temporal order: this is the reverberation phase, which supports the serialization processes. The image below (Figure 6) shows how certain points in uniform space 1, which represent nerve cells before their activation, can light up by increasing in thickness in 2 and finally align themselves in an ephemeral succession in 3:

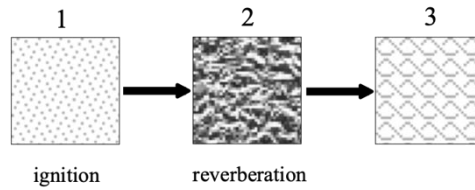


Figure 6. The phase of an emission of a linguistics sequence

6. Ionicity appears before the sign is closed

What criteria guide the choice of vocabulary and with it the creativity which is the basis of introspection? A notable contribution of Guillaume's followers was to focus on the submorphemic component, which allows all types of lexemes outside their semantic field to be linked transversally and to do so in different, although linked, ways in different languages. The idea was implicit in Guillaume, but those who truly developed it were the French psychomechanical Hispanists (Chevalier, Launay and Molho 1984), direct disciples of the master, and their current descendants (Monneret 2018). What can neurolinguistics tell us about input, about how the assimilation of lexemes occurs in the brain? Gustave Guillaume's idea (1949: 230) was as follows:

La pensée existe en nous, s'agite en nous, indépendamment de la langue, mais ce n'est que sous la saisie linguistique que nous en savons opérer, qu'elle se fait lucide et, comme réfléchi sur un [miroir], devient dans notre esprit un objet livré à notre considération.

It's hard to disagree with him. In fact, as Monneret (2003) has shown, psychomechanics admits an updated reading in neurolinguistic terms with some adjustments. We have all experienced inner thought, ideas that flood into consciousness and struggle to assert themselves by manifesting through some linguistic form. Even the most formalist theorists would have serious difficulty denying thought prior to verbal formalization, they would only dare to say that linguistics cannot benefit from something so vague. And they would do well to be wary because all the mechanisms that have been proposed to explain pre-linguistic concepts are only hypothetical, they have never been proven. This is what makes Pottier's position within the Guillaumien so interesting. Although he is the heir of Guillaume's *modus intelligendi* – especially in his oldest works, where he faithfully follows the patterns of cognitive development –, in the last phase of his scientific production Pottier is located in the stratum where conceptualization manifests itself by proposing a formal dynamic fusion diagram with three phases, the trimorph (Pottier 2000:134):

Le trimorphe est une représentation continue et triphasé d'un événement ou d'une catégorisation. À travers un schème mental, on visualise le plus abstraitement possible les cinétismes et les dynamismes constituant un événement et reflétant au plus près l'image qu'on suppose avoir à l'esprit... Un schème n'est pas une représentation spatiale, même s'il occupe une étendue, car il se déroule également dans le temps (il est mouvement), et son abstraction de toute aire d'instantiation le rend apte à se réaliser librement.

7. The enactionist paradigm

Pottier's remarks, which reflect common ideas in the psychomechanical school, refer – probably without the author having the intention of evoking it – to a completely different

paradigm than that of Saussure: the behaviorism underlying the famous work by Ogden and Richards (*The Meaning of meaning*, 1923). The preconceived ideas that many maintain in linguistics tend to reduce the contribution of these authors to the famous semantic triangle, which certainly does not coincide with Saussure's sign, but which is nonetheless a version of Aristotle's classic semiotic ideas, or Boethius. However, there is much more to a work that everyone cites, but many seem not to have read. For the moment, a fierce criticism of Saussure (Ogden & Richards 1923: ch. I, 4):

How great is the tyranny of language over those who propose to inquire into its workings is well shown in the speculations of F. de Saussure, a writer considered by perhaps a majority of French and Swiss students as having for the first time placed linguistic upon a scientific basis, clearly show how great is the tyranny that language exercises over those who intend to investigate its mechanisms. This author begins by inquiring: "What is the object at once integral and concrete of linguistic?" He does not ask whether it has one, he obeys blindly the primitive impulse to infer from a word the existence of some object for which it stands, and sets out determined to find it.

More important than these words, which show that the gap between European and North American linguistics well predates the emergence of Noam Chomsky, are the alternatives proposed by Ogden and Richards (1923: ch. III, 52) to Saussurean symbolism, which could be described as psychological behaviorism:

The effects upon the organism due to any sign, which may be any stimulus from without, or any process taking place within, depend upon the past history of the organism, both generally and in a more precise fashion. In a sense, no doubt, the whole past history is relevant: but there will be some among the past events in the history which more directly determine the nature of the present agitation than others. Thus, when we strike a match, the movements we make and the sound of scrape are present stimuli. But the excitation which results is different from what it would be had we never struck matches before. Past striking have left, in our organization, engrams, residual traces, which help to determine what the mental process will be. For instance, this mental process is, among other things, an awareness that we are striking a match. Apart from the effects of previous similar situations we should have no such awareness. Suppose further that the awareness is accompanied by an expectation of a flame. This expectation again will be due to the effects of situations in which the striking of a match has been followed by a flame. The expectation is the excitation of part of an engram complex, which is called up by a stimulus (the scrape) similar to a part only of the original stimulus-situation.

It should be noted that classical behaviorism, clearly insufficient, is reinforced by the notion of engram, which is the physical trace left by memory according to the Austrian biologist Semon. It is easy to imagine that there was a relationship between the engram approach and the theory of enaction. The concept of enaction was introduced by the Chilean biologist Francisco Varela as follows (1993: 9): "... cognition is not the representation of a pre-given world by a pre-given mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs". Nothing in this definition reminds us of language. However, Humberto Maturana, Varela's teacher, already considered language as a second-order notion, a "domain of recursive linguistic co-ordinations of actions" (1988: 48), which he explained in an interview with Poerksen (Maturana & Poerksen 2004: 91) as follows:

I claim that whenever we encounter a recursive coordination of behavior, that is, a flow in coordination of coordinations of behavior, we see that something new arises, namely, language. As language arises, objects arise, e.g., the taxi. What is a taxi? What I say is that carrying and driving around passengers as a configuration of behavior coordinated by the second coordination of behavior (first recursion), becomes that configuration of behavior that in a third coordination of behavior (second recursion) appears "named" taxi. This means that objects arise as coordinations of coordinations of behavior that obscure the behaviors that they coordinate (as taxi obscures carrying).

It is from this epistemological position that we must examine the double condition of enactive linguistics (Figure 7), because enaction in language can be conceived from a double point of view. Strictly speaking, on the one hand, enaction is the foundation of the linguistic sign, an association of the external physical world, the known, and the internal conceptual world, the knower. But on the other hand, enaction connects a pragmatic aspect of the sign, language, and a self-reflexive aspect of this sign, metalanguage, which takes language as its object:

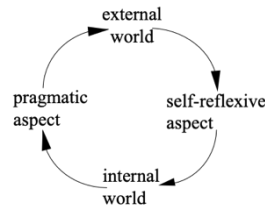


Figure 7. Double condition of enactive linguistics

Is it possible to access the inner world? According to Claire Petitmengin (2006: 90-91):

De ces tentatives d'exploration de la structure dynamique de l'expérience vécue, il ressort que la distinction entre intérieur et extérieur, moi et autre, n'est pas donnée, mais d'instant en instant, créée et maintenue par une micro-activité. A moins de circonstances ou d'un entraînement particulier, seul le résultat de cette micro-genèse complexe apparaît à la conscience, sous la forme d'un monde et d'un « moi » solides et stables.

La micro-activité qui crée cette scission ne peut être considérée ni comme un processus « interne » ni comme un processus « externe », puisque c'est d'elle que naît la distinction même entre intérieur et extérieur. La question n'est donc pas de savoir si l'objet connu est produit ou bien représenté par l'activité du sujet connaissant, mais quelle activité crée la distinction entre objet connu et sujet connaissant. Elle est d'identifier, non les relations de dépendance entre ces deux branches tardives de l'arbre, que sont le connaissant et le connu, mais les différentes phases de leur déploiement conjoint. Quelles sont les différentes étapes du processus par lequel les micro-dynamismes que nous avons cru discerner s'amplifient, pour produire le monde fracturé dans lequel nous nous mouvons habituellement, ou croyons nous mouvoir ?

Certainly, the distinction between interior and exterior, self and other, is not given, but language is precisely the mechanism that allows human beings to apprehend it. Language is a pragmatic activity that exists in the world of human beings; one aspect of this activity is metalanguage which is an activity where the subject recognizes himself. Is it possible to access the inner world from the outer world? Basically, every scientist does it every time he carries out experiments to discover previously inaccessible mysteries. Yet, paradoxically, linguists, who do the external work of providing data as speakers, pride themselves on not speculating about the hidden mechanisms of language.

Many students of enaction lucidly point out the points on which linguistics should touch, but perhaps they are too ambitious to guarantee success. Bottineau (2017: 15) seems well aware of the problem when he writes:

D'où les interrogations de certains « énonciativistes » non linguistes, que l'on exagèrera comme suit : comment ce banc (school) de linguistes « à l'ancienne » (scholars), attachés à la poussiéreuse question du signe lexical, usant d'une terminologie imprégnée de saussurisme, figée dans sa croyance en les catégories grammaticales, classes de mots, représentations, sens, références, langues, séparation de mondes intralinguistique et extralinguistique, centrage sur le sujet prédonné, individualisme internaliste de la cognition... (la liste est longue), comment cette école (school) en vient-elle à s'intéresser à l'énonciation, comment le questionnement de l'énonciation pourrait-il concerner leurs problématiques, comment les leurs pourraient-elle alimenter la bio-écologie émergentiste ?

Et les questions de certains linguistes, que l'on qualifiera de « bifides », en forme de fourche : (i) comment l'énoncé, si abstraite, si générale, si éloignée des questions linguistiques, pourrait-elle fournir des instruments opérationnels et précis dans la description des langues et faits de langues ? (ii) comment réinvestit-on dans l'exploration du languaging et de l'énoncé les acquis précédemment évoqués en linguistique, et comment les transfère-t-on aux énoncivistes intéressés par le langage dans des disciplines autres que la linguistique et les sciences du langage ?

Well yes, you are right, it's just that there is still a long way to go. The semiotic starting point is undoubtedly found in the structure of the sign. For Saussure and traditional linguistics, the sign is bipolar and therefore arbitrary; for Ogden and Richards and the heterodox Guillaumists like Toussaint, the sign is not arbitrary, it necessarily starts from the facts of the world, that is to say it supposes a referent (Figure 8):

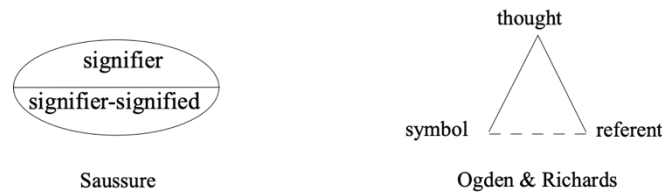


Figure 8. Saussure's structure sign and Ogden and Richards' structure sign

The theory of enaction adds something else: each time a linguistic statement relating to the world is stated, the world is modified and this presupposes a correlative modification of the language in the following statement, and so on (Figure 9):

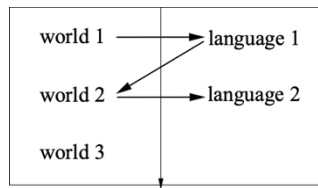


Figure 9. Reciprocal situation in enaction theory (*languaging*)

The reciprocal situation called *languaging* would not be possible with a Saussurian type sign, nor from the Ogden-Richards triangle. This is because the referent of the latter certainly belongs to the external world, but encompasses much more. In Peirce's conception, the referent is extended to the interpretant, which is the set of concepts that determine said referent in the mind of an interpreter:

I define a sign as anything which is so determined by something else, called its Object, and so determines an effect upon a person, which effect I call its interpretant, that the latter is thereby mediately determined by the former (Peirce Edition Project, Indiana University, 478).

This Peircian sign is properly an asymmetrical sign in which the phonic signifier passes through different stages until reaching the lexical signifier-signified. Each of these stages requires a certain degree of elaboration which leads to mental associations that are incompletely standardized and therefore relatively different from one speaker to another (Figure 10):

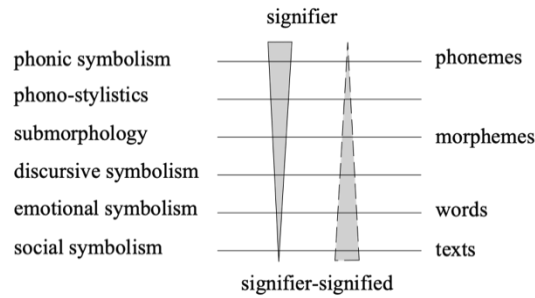


Figure 10. Two parallel and inverse semioticization (Peircian sign)

As you can see, there are two parallel and inverse semioticization processes: the one on the left weaves non-summative horizontal relationships, the one on the right weaves summative vertical relationships. The triangle on the left is based on the primacy of the signifier through similar phonic associations in many languages of the world (alliteration, onomatopoeia, etc.), which are progressively invested with content and become intralinguistic by moving to submorphemes, then to morphosyntactic schemes, and finally to lexical elements loaded with emotional and social values. On the other hand, the triangle on the right works in reverse, following the well-known fractal sequence that has always occupied linguists: phonemes are grouped into syllables, which in turn are grouped into morphemes that then make up phrases, which make up sentences, which are associated in texts. The obviousness of these summative processes has always privileged this methodological perspective, ignoring non-summative relationships as they are considered typical of stylistics. However, this point of view, which is that of the speaker when he chooses the linguistic elements that he is going to use, necessarily completes the listener's own analysis, which an automatic text analyzer could carry out without problems.

For example, phonic symbolism invests sounds with specific connotations, even if they are not always the same sounds in different languages, as can be seen in onomatopoeia (*guau guau, wau wau, woof woof*). In turn, the phono-stylistics, which carries a whole statement of certain emotional evaluations, as occurs in diminutives, although again the way of achieving this is different in different languages (in Spanish by sound [i], in Basque with the palatalization of dentals). Submorphology supposes an additional step in the softening of forms and the consequent strengthening of contents because submorphemes often coincide in different languages and tend to retain their vitality throughout the history of each. Discursive symbolism extends the consolidation of submorphemes to the level of the utterance, that is, it becomes subsyntax. Emoticons and certain comic strip resources represent emerging formalizations of the reception of the statement by listeners, who have become sighted. Finally, social symbolism supposes an opening of the enunciative context to much larger social groups, who cannot ignore certain messages as they have become obsessively obvious to the eye.

This volume presents a set of works which analyze the iconic characteristic of language from various aspects: iconicity and phonosymbolism, the relationship to culture, the acquisition of second languages and the linguistic landscape.

– Carlos Hernández (“Phonosymbolic drive: something more about ergonomics in language”) analyzes in his work the iconic relationship between the means of expression and meaning,

which he calls the phonosymbolic drive, from its characterization and as cognitive processes, and the modifying effect of the perceptual quality of the signifier (reverse phonosymbolism).

– Violeta Martínez-Paricio (“An enactive approach to the sound symbolism of the suffix *-i* in colloquial Spanish”) examines the phonosymbolism of the suffix *-i* in contemporary Spanish (e.g., *Juani*: *Juan-i* < *Juana*) by considering its distribution, its pragmatic values and its productivity effect of symbolic interaction and the values of this grammatical element.

– Lucía Luque-Nadal (“Culture and enaction. An approach from a lexical study of the Spanish online press”) examines the lexicon and the configuration of cognitive networks from the convergence of enactive and cultural analysis, returning to the old method of lexicology (G. Matoré, *La méthode en lexicologie : domaine français*, 1953) from new perspectives.

– M^a Amparo Montaner (“Sign networks between language and world”) examines in her study the relationship between the network of signs and the artistic and poetic work of Ausiàs March: she pays attention to iconic, symbolic aspects and cultural references.

– Agnese Sampietro (“Languaging in Multimodal Digital Interaction: Emoji Metaphors and Embodied Communication”) develops her analysis of emojis as functionally lexical elements.

– Pelegrí Sancho (“Bande dessinée et éaction”) studies the non-verbal languages of gesticulation and costume in the Makinavaja comic series, as an enactive relationship between non-verbal language and the socio-cultural world of a specific Spanish era.

– Floriana Di Gesù (“The acquisition of Spanish as a foreign language: a lexical-enactive approach”) addresses the lexical aspect in a lexical-enactive approach in the field of the acquisition of Spanish as a second language by Italian students.

– Ricardo Morant and A. Martín (“Les balcons : Le paysage linguistique d’un point de vue éactionniste”) examine the relationship between language and the (visual) environment of the linguistic landscape; they analyze the interaction between the balcony and a certain socio-cultural reality: the balcony as an architectural element and support from which we can communicate with the passerby; in turn, this sociocultural reality propagates and is reflected in these architectural elements, configuring a changing linguistic landscape.

It is interesting to note that this collection of studies was not produced from a certain predetermined pattern, that is to say, they are not “illustrations” of a linguistic method. On the contrary, the coordinators of the volume, familiar with the work of the authors gathered here, realized that, despite the disparity of the corpora examined, they started from an epistemologically similar postulate: enaction. This means that in our opinion there is no Spanish school of enactive linguistics, but rather a tendency to develop enactive visions, the result of a shared weariness with formal linguistics and gratuitous distortion which has hampered research on language for some time. This disparity is typical of enaction, as a method and as an object of study. This is what our late colleague D. Bottineau (2017: 12, 14) clarified:

Du côté des sciences cognitives, les éactionnistes (militants, pratiquants, sympathisants) abordent la question du langage avec diverses attentes et objectifs.

[...]

Du côté des linguistes, l'intérêt pour l'énonciation a émergé de manière assez disparate au départ. Elle s'est manifestée dans les études de l'expérience l'énonciation incarnée (Erard, 1999), du discours, de la prosodie [...] et de l'analyse sémiotique [...].

This collective volume aims to continue the search for enaction in the same line of flexible indeterminacy with which, against all prognosis, the essence of language is progressively understood.

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