

# Phonosymbolic Drive: More about Ergonomics in Language

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## Abstract

*Phonosymbolism can be considered a universal phenomenon of language. Although the materiality of the linguistic sign is associated with its meaning with a high degree of conventionality, a substratum of iconism persists (and is even required) in the configuration of the expressive means of any natural language. Phonosymbolism is thus far from being an anecdotal fact, as has often been suggested. In the following study I will try to answer some questions that allow us to support this 'need' for an iconic link between expressive means and meaning, which could be characterized in terms of a 'phonosymbolic drive'. Beyond the specific products that reveal 'phonosymbolism', the paper explores the cognitive processes, ergonomically based, that would explain these products.*

**Keywords:** Phonosymbolism – iconism – phonosymbolic-drive – ergonomics

## Résumé

*Le phonosymbolisme peut être considéré comme un phénomène universel du langage. Bien que la matérialité du signe linguistique soit associée à sa signification avec un haut degré de conventionnalité, un substrat d'iconisme persiste (et est même requis) dans la configuration des moyens expressifs de toute langue naturelle. Le phonosymbolisme est donc loin d'être un fait anecdotique, comme on l'a souvent suggéré. Dans l'étude qui suit, je tenterai de répondre à quelques questions qui permettent d'étayer cette 'nécessité' d'un lien iconique entre moyens expressifs et sens, que l'on pourrait caractériser en termes de 'pulsion phonosymbolique'. Au-delà des produits spécifiques qui révèlent le « phonosymbolisme », l'article explore les processus cognitifs, basés sur l'ergonomie, qui expliqueraient ces produits.*

**Mots clés :** Phonosymbolisme – pensée-analogique – iconisme – pulsion-phonosymbolique – ergonomie

## Introduction

New developments in so-called 'artificial intelligence' (AI) are currently opening up a scenario of incalculable possibilities. They also force us to face ethical or deontological challenges that will have to be addressed and that are already being raised in political discourse, philosophical reflection, and by the companies themselves that offer a variety of products based on 'neural network' algorithms. Although the subject is very topical at the moment, it is perhaps worth pointing out that technological development cannot, as some people speculate, alter the biological condition of a species that was originally defined by an inaugural technique, that of language (basically oral) as an instrument of communication. We will continue to be what we are, although some important external aspects may change.

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Language, as manifested in the different historical languages through which this exclusive human capacity is expressed, was the product of an enormous work of ‘solidary intelligence’. This work has finally led to a qualitative change that redefines human cooperative action in symbolic terms. This is especially the case when this action is linked to a subjective reflection thanks to the inner language. The inner language is an obligatory tool for the construction of an autobiographical narrative and therefore it is also the anteroom of self-consciousness. The invention of writing, of the printing press, of telegraphy and the telephone, of radio, of the Internet, of AI processors can only be considered as ‘micro-revolutions’ that partially reformulate that great enterprise of ‘solidary intelligence’ that the inaugural linguistic technique set in motion.

The subject addressed in the present work, that of phonosymbolism or, perhaps better, phonosymbolic drive, does not refer to a fact that accompanies the technique of language anecdotally, but to a fact that is inescapably present in it, to the same extent that without emotion there is no real thought in the human brain. Whenever there has been an attempt to reduce the materiality of signs to a mere conventional vehicle for the expression of ideas, actual discursive practices have contradicted or frustrated this kind of claim.

Signifying matter infiltrates (introduces ‘impurities’) into the realm of meaning. Those that Francis Bacon called ‘idola fori’ are certainly difficult to remove. Scientific rationality demands that they be fought against. Some of them obstruct the path of thought and consensus. They should therefore be eliminated or brought under control. But the question to be asked is whether the undertaking to eradicate them, that is, to eliminate them at their roots, would not in fact be a utopian one. One might even ask whether the absolute elimination of the ‘impurities’ that the signifier leaves in the signified would not, in the end, cause the meanings to lose all their force and value. What underlies the impossibility, or the incoherence of the aforementioned enterprise has to do with the fact –even more substantial– that reality always overflows any attempt to rationalize it, as Kurt Gödel wanted (or pretended) to demonstrate (at least for mathematics or formal logic) with his famous incompleteness theorems.

## **1. Signifying body and speech**

It will be useful to clarify some of the characteristics of this linguistic technique that defines us in biological terms. Language, in its primordial oral manifestation (or primordial gestural manifestation in the sign language of the deaf community), must be present as a stimulus for the correct neurocognitive development of the human being from its earliest stages. These stages may be traced back to the fetal stage, already open at least to auditory stimuli. In any case, the basis for later linguistic development is expressed in terms of primordial bodily communicative interaction between a mother and the newborn. Núñez Fidalgo & Ramírez Ferreiro (2023: 36), in their justification of the so-called ‘kangaroo’ method for the correct treatment of premature infants (and summarizing much of what has already been established in other studies), state the following

Early communication in the kangaroo dyad has a social function, as the baby develops communicative bonding skills through interaction with the mother, caregivers, and the environment. It is a complex process that is expressed through the senses, gestures, and movements, leading to

the development of a universe of interactions that involve a series of elements (chronemics, proxemics, kinesics, reflexes), all of which are essential to lay the foundation for what will later become the different stages of infant language acquisition. (translated from the Spanish original<sup>2</sup>)

The substrate that makes possible the further development of language requires these initial interactions between the mother's body and the body of the fetus or neonate, the premature neonate being an example of how the boundaries are not always easy to establish. It is clear that what is called 'early communication' is little more than the management of contact, the response to contact, or the simple synchronization of instinctive biological processes. Nothing that we can really call meaning may be configured at this stage. Communication in this context is the response to stimuli and the coordination of bodily interactions.

The baby's crying is an instinctive behavior, apparently differentiating the human species (Plessner 1970), which only the adult is conditioned to interpret as a signifier of something. The signifier in this case clearly precedes the potential meanings that can be attributed to it. It is not always easy to determine "what the child is referring to" (often to the despair of the adult). But, of course, the child does not know "what he/she is referring to" either. Something similar can be said of the smile that is sketched by about 6 to 8 weeks. The adult ascribes to the baby's smile a plurality of meanings that it may not have. Thus, in this rudimentary phase of gestural communication, crying and laughing (or smiling) are manifested as physiological phenomena before any intentional communicative function is added to them.

Later, we find in babbling behavior what may already be specific materials of an oral language. Infant babbling, which is consolidated at around 4 to 6 months of age, is a unique exercise in auditory-motor coordination of speech sounds, among other possible sounds. These sounds serve at this stage only as potential signifiers (without any defined meaning). It should be noted that in the case of hearing-impaired children, this auditory-motor coordination exercise is severely hampered. Later, when a cochlear implant improves the residual hearing, the child will still have a delay in the development of phonological skills and other linguistic skills related to phonology. This is observed when comparing children with cochlear implants to children of similar age and normal development. Compensating for this initial deficit in auditory-motor coordination through babbling requires a special commitment to speech therapy (Madrid Cánovas 2023).

Before going any further into the foundations on which the technique of language is based, we can already generalize by affirming that the body and the signifying matter will always come first, as proposed by Lacanian psychoanalysis. Asensi's recent study (2023) reflects very opportunely on the series of implications of this Lacanian assumption. In interaction with the adult, these potential signifiers rehearsed by the child will end up being signifiers in an effective way when they are intentionally related first to a specific referent and later to a categorical notion or perception.

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<sup>2</sup> La comunicación temprana en la dída canguro tiene una función social, pues el bebé al interactuar con la madre, los cuidadores y el entorno desarrolla habilidades para el vínculo comunicativo. Es un proceso complejo que se expresa a través de los sentidos, por medio de gestos y movimientos, propiciando el desarrollo de un universo de interacciones que involucran una serie de elementos (cronemia, proxemia, kinesiología, actos reflejos), esenciales todos ellos para establecer las bases de lo que luego se decantará en las distintas etapas de la adquisición del lenguaje infantil.

It should also be added that for a signifier to be qualified as such, it must have ‘perceptual pregnancy’, i. e. certain characteristics that are intrinsic to it and, in any case, prior to its association with a possible meaning. If we play with words, it must be said that the ‘significance’ of a ‘signifier’ always precedes this ‘signifier’ as associated with ‘signified’. For example, in the case of infant babbling, the sequences ‘pa-pa’, ‘ma-ma’ have the characteristics of being easily articulated and audibly identifiable phonic sequences. For this reason, they are ‘good figures’, to use Gestalt terms, with which to propose signifiers, regardless of the meaning initially attributed to them by the father and mother.

Leaving aside some other preparatory stages that are no less important than the previous ones, such as the control and coordination of eye movements, let us now turn to the origin and initial development of the naming activity. The activity of naming things begins at about one and a half years of age and hatches (lexical explosion) from the age of two. It is not necessary to continue here with an account of the substrates that precede the development of language, since what concerns us in this paper, phonosymbolism, has to do primarily with a singularity of naming activity. However, there is already a long tradition of studies dealing with the cognitive substrates on which other more advanced techniques are based, such as referred speech, the first syntactic constructions or emergent grammars (Fernández Pérez & Lorenzo Herrera, 2023), and discursive or narratological abilities. From the age of two and a half, naming becomes part of symbolic games, linked to referred speech skills, and the child makes ‘prevaricative’ uses: “let’s see what happens when I call a cat a dog and vice versa” (Navarro Ciurana 2023).

But let us return to the first year and a half of life, when the activity of naming begins. It must be said that the words with which the child is initiated into language maintain a clear psychological relationship of necessity with their referents. The initial experiential link is in a sense similar to that between a proper name and its referent. If I cannot remember (although it is on the tip of my tongue) the name of my friend Roberto, who is standing in front of me and whom I want to introduce in a meeting, it is not enough for me to paraphrase or look for alternative solutions to the name ‘Roberto’. Introducing “this bald friend of mine” is obviously not going to serve us at all. It also happens that in the beginning, as is well known, “there is only one mother”. The fact that one later becomes aware that other children also call their mother, who is not mine, does not in fact cancel the psychological link of necessity between name and referent with which the naming activity begins. It is ‘this’ name and no other that stabilizes a categorical perception that is unique as a starting point.

In fact, this initial psychological association will never disappear completely. It represents a cognitive substratum to which all subsequent naming activity appeals in a more or less veiled form. Thus, it happens that the frustrated search for a word on the tip of the tongue, as with my aforementioned friend ‘Roberto’, is the frustrated search for a signifier, not for a meaning or the set of paraphrases that could paraphrase that meaning. The supposed social agreement that established the link between a name and a thing is no longer accessible to our consciousness, as it is no longer accessible the ‘social contract’ that Rousseau spoke of, and which was already pure fiction for Rousseau himself. From a phenomenological point of view, the experience of the relationship between name and thing will remain in some way that of a necessary connection. Cratylus, the character in Plato’s dialogue of the same name, is the child who sees

things as they are offered to him, and we are all in some way still Cratylus, even if we try hard not to be.

In short, since the body is the primary signifying matter, and since we are also bodies, the mental difficulty to separate our body from the sphere of signification it serves is not surprising. This means that it will be difficult to experience the relations between signifier and signified in terms of a purely arbitrary relationship. If, as William James (1950) rightly suggested, meanings are in some sense sensations, it is almost obligatory that they involve what is precisely material or sensible in the sign, something that is –in the end– nothing more than a part or an aspect of our bodies. In short, although the relation between signifier and signified can be considered arbitrary from an objectifying perspective of facts, it is not so arbitrary when we consider this relation as a psychological experience. Only the signifiers, that is, the concrete ways in which we say things, really move us. In other words, meanings cannot hurt, only signifiers really do.

## **2. Phonosymbolism and analogical reasoning**

García Gibert and Hernández Sacristán (1988), in relation to the use of language that characterizes the work of Baltasar Gracián, addressed the issue of analogical reasoning, which, as formulated by Foucault (1966), was the dominant mode of thought in Western culture until the seventeenth century. In this framework, which we could also define as that of ‘natural’ knowledge, knowing things basically means, once they have been classified and organized in an Aristotelian or similar way, finding similarities between them. In other words, the goal of knowledge is to establish analogies or to discover iconic relations between things. Language is also thought of in this analogical way in its relations to the world. The following brief excursus on analogical thinking and the discursive use of etymological reasoning will anticipate what will be said in the following section on phonosymbolism and phonosymbolic drive. Although a particular gnoseological framework of our cultural history is addressed, this gnoseological framework also corresponds to a ‘natural’ attitude toward the facts of language that will always be present in the ordinary speaker (or hearer).

In Gracián’s work, as in many previous cases since Cratylus, etymological reasoning functions to support the existence of analogical relations between the world and language:

What can be called ‘etymological reasoning’ in Gracián prose constitutes, in our understanding, at least one of those universe-shaping aspects through which it becomes possible for us to perceive a basic unity, a necessary implication of content in forms, and vice versa. (García Gibert & Hernández Sacristán 1988: 154). (Spanish original<sup>3</sup>)

Etymological reasoning seeks to give words a kind of essential relationship to what they designate. Thus, Petrus Helias (12th century) explained ‘lapis’ (‘stone’) as ‘laedens pedem’ (‘that wounds the foot’) or ‘fenestra’ (‘window’) as ‘ferens nos extra’ (‘that leads us out’) (*apud* Arens 1975: 62). Gracián continues to argue along similar lines, as late as the 17th Century, when he states, for example (Note that there is a paronomastic relationship between ‘sun’ (Spanish ‘sol’) and ‘alone’ (Spanish ‘solo’):

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<sup>3</sup> Lo que puede llamarse “razonamiento etimológico” en la prosa gracianesca constituye, a nuestro entender, uno al menos de esos aspectos configuradores de universo, a través de los cuales se nos hace posible percibir una unidad básica, una implicación necesaria de los contenidos en las formas, y viceversa.

His name is the sun (*sol*), because in his presence all the other luminaries withdraw: he alone (*solo*) rules (*El Crítico* I, 2: 550)<sup>4</sup>

This kind of argumentation based on paronomasia is not anecdotal, but really something that defines Gracián prose. Gracián's discourse is plagued by this kind of 'idola fori', which are meant to serve as arguments or to support arguments. It happens, however, that –in a contradictory way– the ethical position that underlies this discourse contains the seed that will end up dissolving, at least apparently, the presumed analogical relations between language and the world. What is observed is that, within the same scheme of etymological reasoning, the 'natural' correspondences between word and thing sometimes appear contradictory in a world that, seemingly, is beginning to be perverted, and in which names have, on more than one occasion, ceased to correspond to things. For example, etymological reasoning is frustrated by the referent of the word 'mundo' ('world'), a referent that should also be that of the adjective 'limpio' ('clean') ('mundus' = 'clean' in Latin). But reality contradicts the facts:

— Curious that they call this the world! –said Andrenio. Even the name lies. It has been given the wrong name. Call it unclean ('inmundo') and, in any case, nonsensical (*El Crítico* I, VI: 574)<sup>5</sup>

And following from this point of view we will find, among many other things, that "No son ladrados los ladrones" ("Thieves are not barked at") (*El Crítico*, III, 866). That is, in this 'perverted' world, what should be an expected relationship between 'ladrones' ('thieves') and 'ladrados' ('barked at') is no longer observed.

In the logic of analogical thinking, when etymological reasoning fails, the world (or language) is perverted (García Gibert & Hernández Sacristán, 1988). In any case, the search for analogical relations between signifier and signified, for phonosymbolic effects, in fact implies a desire to repair the perceived split between world and language, between nature and culture. Although rationalism and positivism have developed an idea of arbitrariness, of disjunction between these entities, an 'irrational' human drive, though explicable in perceptual-motivational terms, seeks to re-establish the connection and to 'suture the rupture'. The split between forms and senses is a split or disconnection of psyche / soma that cannot be assumed in the everyday discursive practice of the common mortal.

### 3. The phonosymbolic drive

In the most common literature on phonosymbolism, the subject is usually approached from the point of view of products that can be circumstantially observed in all languages of the world. Indeed, phonosymbolic effects are generally considered to be anecdotal, although some researchers have suggested generic effects of a cross-linguistic scope. Duranti (2003), for example, reminds us of the observation by Swadesh's (1972:141) that "in many languages a palatal or anterior vowel such as [i] tends to be used to express proximity, while posteriorly pronounced vowels such as [u] tend to be used to express distance" (Duranti 2003: 279). This is an imprecise but no less operative analogical link between an experiential component of the referent and one related to the somatic proprioception of the production/perception of a sound. The occurrence of certain speech sounds can also globally characterize text types by the

<sup>4</sup> Llámase sol porque en su presencia todas las demás lumbreras se retiran: él solo campea.

<sup>5</sup> — ¡Que a este llamen mundo! –ponderaba Andrenio–. Hasta el nombre miente. Calzósele al revés. Llámese inmundo y de todas formas disparatado.

emotional content that defines them (Whisell 1999). In any case, phonosymbolism should be understood generically as a kind of resemblance, real or imagined, between a name and the thing it designates. Phonosymbolism suggests that the qualities of expressive matter necessarily lead to a certain kind of meaning.

But, as already anticipated, phonosymbolism is not limited to being a phenomenon that can be observed *de facto* in all the languages of the world. It is, of course, far from being an anecdotal fact. Nor is it an aspect of language use that we should or can eliminate. It happens that phonosymbolism, before being a product to be observed and analyzed, is also a mental process that, if necessary, makes possible new phonosymbolic connections where none exist, that generates new products, that is, new words that establish the connection between the perceptual sensations of a signifier and the perceptual sensations of a meaning or generic referent.

Finally, as could be observed in the processes of etymological reasoning discussed in the previous section, the establishment of analogies or iconic relations between things, between words and things, or between words, is not in itself exempt from a certain degree of subjectivity. The similarity between two things is not always given to us at the outset. Or, to put it another way, two things will always be potentially similar in some way, if we look for a particular aspect or perspective that allows us to establish the correspondence. Thus, it is not so much the observed iconic relations that matter, but rather the need or drive that leads us to look for them.

The latter will only partially limit the arbitrariness of the linguistic sign, which Saussure proposed as a differentiating aspect of human language from an objectifying perspective of the facts. It normally happens that the words with which we signify the same referents in different languages have nothing to do with each other in terms of their phonetic body, as is the case with 'casa' in Spanish and 'house' in English. It also happens that the aspects with which phonosymbolic effects are established are far from being universal and are largely conventionalized, so that the crowing of a rooster is 'kikirikí' in Spanish and 'cock-a-doodle-doo' in English.

Nevertheless, what we want to formulate here has a different scope. In fact, for all words we can say that our experience of the object, being or action referred to by them directly shapes the meaning of these words and, indirectly, also their signifier (Hernández Sacristán 2022: 101-110). It is possible to say, for example, that the word 'sweetness' will be perceived in some sense as 'sweet' and the word 'bitterness' will be perceived in some sense as 'bitter', whether or not there is an explicit phonosymbolism associated with them. An image or sensation of the referent is always associated in our memory with the word that designates it.

Thus, neurological damage to the motor cortex that selectively affects our ability to manipulate objects severely limits our ability to recall the names of instruments from memory and our ability to use those names. There is a tradition of experimental studies on this subject, concluding, for example, that reading the word 'cinnamon' activates brain regions involved in our ability to smell (González et al. 2006) and that reading the word 'salt' activates neural regions involved in our ability to taste (Barrós-Loscertales et al. 2012). This is by no means to say that word and referent are identified. It is clear that the word 'fire' does not burn, and the word 'God' does not save us from death, but –nevertheless– they serve to protect us in some

sense from the experience of fire and death. Our experience of the referent permeates not only the meaning of all words, but also signifiers.

The original phonosymbolic effect may have been obscured over time. That is, an original iconic relationship between the thing and its designation may no longer be perceived. The iconic dependence that would have been observed in an original phonosymbolism may indeed no longer be accessible to the consciousness of the speaker of a language. But this does not prevent the original iconic dependence from continuing to operate from a preconscious procedural knowledge, preserving the name as an appropriate designation of the thing, and making it participate in morphological processes and semantic connections that are somehow aroused by the phonic materiality of the word. This could have been, for example, the history of the Spanish word ‘perro’ (‘dog’). This word, according to Corominas & Pascual (2012), may have had an onomatopoeic origin (a voice that shepherds addressed to dogs). Whether this is the case or not, the phonic characteristics of its voiceless occlusive [p], but above all its voiced alveolar trill [r], would have allowed this word to have morphological derivations and lexical collocations or solidarities for which the term ‘can’ (from ‘can / canis’, designation of dog of Latin origin) would hardly have been useful.

Whether it is observed consciously, pre-consciously, or unconsciously, we will say that phonosymbolism, beyond any possible objective consideration of the phenomenon, is an experiential fact. Phonosymbolism is, as we say, a mental process by which, in our ‘natural’ attitude toward language, we try to restore to the word an essence that social convention has gradually removed from it. The phonosymbolic drive, in fact, operates not so much from the word to the thing as from the thing to the word. This latter sense of the phonosymbolic relation can be called ‘inverse phonosymbolism’. That is, I am speaking here of the mental process by which, as noted above, our experience of the referent colors and makes us see the form of the word as resembling that experience. What better way to illustrate this than to return to another little literary excursus?

Here is a passage from Victor Hugo’s well-known work, *Le Dernier Jour d’un Condamné*. The work was published in 1829 as a plea against capital punishment. It focuses on the experiences of a condemned man shortly before his execution. The aim is to arouse the reader’s sympathy for the condemned. In Chapter XVII of the work, the condemned man obsessively thinks about the instrument of execution, the guillotine; this object, the guillotine, contaminates the word ‘guillotine’ from this particular experiential perspective to such an extent that the condemned man believes he is finding an iconic relationship between the object and the word that designates it. So much so that each of the syllables of the word corresponds –in his imagination– to each of the parts of the instrument of execution:

The name of the thing is terrible, and I don’t understand how I was able to write and pronounce it until now.

The combination of these ten letters, their appearance, their physiognomy, is well suited to arouse a terrible idea, and the unfortunate doctor who invented this thing had a predestined name.



The image I have of this horrible word is vague, indefinite, and all the more sinister for that. Every syllable is like a piece of the machine. I'm constantly building and tearing down its monstrous framework in my mind.<sup>6</sup>

What happens to Hugo's character is an individual subjective manifestation of more general psychological processes, those established between taboo objects and the words that designate them. The taboo object always contaminates, to a greater or lesser extent, the name that designates it. This is the case, for example, with the relationship established between the sexual organs and the names they receive. It is also the relationship that is established between our (indirect) experience of death and the terms that name it. The object or experience may in fact be perceived as unnamable, so that when it is nevertheless named, a certain violence is introduced that contaminates the very act of naming and affects our perception of the signifiers. What needs to be explained, in short, is this generic 'phonosymbolic drive' that universally underlies its specific manifestations in all the languages of the world. It always happens that the perceptual qualities of the thing are transferred to some extent to the perceptual qualities of the name.

### **Conclusion. Something more about ergonomics in language**

To conclude this paper, it is worth returning to those requirements that 'give pregnancy to the signifier', briefly mentioned in the previous section *Signifying Body and Speech*. Signifying matter can only be that which can be subjected to proprioceptive control. In the case of spoken language, this control involves the motor and auditory dimensions in a coordinated manner. In the case of the sign language of the deaf community, and for the gestural component of the support of oral communication, the control affects in a coordinated way the motor and visual dimensions.

The fact that speech sounds must be simultaneously distinguishable to both the producer and the listener limits the number and quality of sounds for ergonomic reasons. Some sounds would be impossible, others rare, and others common. For ergonomic reasons, since the human body and the perceptual control of body are essentially universal, all the languages of the world move between 20 and 40 phonological units. All languages tend to coincide in the control of the most common sounds and differ in part for the less common or less easily produced sounds. Something similar can be said about phonotactic sequences, which can be impossible, rare, or common.

Rarer phonological units or phonotactic sequences usually involve additional processing effort compared to more common ones. Sensitivity to the signifier means that this additional effort can be transformed into a connotative meaning, as is perhaps the case with the aforementioned Spanish word 'perro'. The peculiarity of its voiced alveolar trill [r], a phonic unit that is not among the most common, has already been highlighted. Let us develop a little more the

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<sup>6</sup> Le nom de la chose est effroyable, et je ne comprends point comment j'ai pu jusqu'à présent l'écrire et le prononcer.

La combinaison de ces dix lettres, leur aspect, leur physionomie est bien faite pour réveiller une idée épouvantable, et le médecin de malheur qui a inventé la chose avait un nom prédestiné.

L'image que j'y attache, à ce mot hideux, est vague, indéterminée, et d'autant plus sinistre. Chaque syllabe est comme une pièce de la machine. J'en construis et j'en démolis sans cesse dans mon esprit la monstrueuse charpente.

V. Hugo. *Le Dernier Jour d'un Condamné* (Édition de Roger Borderie). Paris: Gallimard, 2017. Pp. 102-3 (Ch. XXVII)

reflection that this word deserves. Although it may be considered speculative, the presence of this alveolar trill [r] gives the word a perceptual pregnancy that perhaps explains why it has displaced the original Latin name for dog ('can / canis') from colloquial language. Something made the word 'perro' perceived as more adequate than 'can' to signify the referent that both words shared. Supposedly, its perceptual pregnancy gives vitality to the word 'perro' and justifies that it serves as a basis for connotative uses (as in the discriminatory feminine 'perra' = 'prostitute'), for different morphological derivations, such as 'emperrarse', 'aperrear', 'perreo', 'perrear', for known collocations such as 'día de perros', and even for neological collocations such as 'Perro Sánchez' (to which even the current president of the Spanish government, Pedro Sánchez, subscribes). Something similar could be said about kinesic gestures. Again, the pregnancy of the possible signifiers is a matter of degree, with impossible, rare, and common gestures and the consequent effects of meaning.

The present question has a well-known antecedent in the study of the relationship between the phonetic body and the generic meaning of a word. The distribution of the frequency of use of words in a language follows a well-known empirical law formulated by Zipf (1968 [1935]). If we know the frequency of use of the most frequently used word, we can predict the frequency of use of the second most frequently used word, and so on. A general tendency for the most frequently used words to be those with the smallest phonetic body has also been observed empirically. Piantadosi, Tily, and Gibson (2011) claim that it is the amount of information a word contributes that makes the length of its phonetic body more predictable, but it is not easy to separate the concept of amount of information from that of frequency of use. As a general tendency, a word provides more specific information the less frequently it is used, or conversely, the more frequently it is used, the less specific the content it provides. As George A. Miller commented in his presentation of Zipf's work: "We recognize that any language in which short words were not the most frequent would be tremendously inefficient" (viii).

This inefficiency of language, if it were the case, would have to do with a failure in the ergonomic design of language. The perception that speakers of a language have of the costs of language production, that is, the perception that we have of our own speaking corporality, contributes to this design. Shortening the production of those words that are used more frequently, and thus have more general meanings, derives from an operational knowledge of how to maximize the efficient use of language. The subject could take us very far, and this is not the time to unravel all that is involved here. But what can at least be stated –I do not know whether as a conclusion or as a hypothesis– is that the costs associated with giving pregnancy to signifiers enter a relationship of perceptual dependence or attunement, not always easy to determine, with the meanings that these signifiers serve to express.

In the first lines of this study, reference was made to the processing of speech by AI. Although the future of AI is unknown to us, we may say that, at least at present, an automatic speech processor cannot integrate into its algorithm the fact that the physical energies brought into play to produce speech are a very significant part of the configuration of the speech itself. Hardware and software do not (at least not yet) reach the level of interdependence that exists between the human body and language. How could the algorithm integrate the fact that the demands of a speaking body infiltrate the language, determining its anchoring, but at the same time many of its virtualities? Perhaps this is a new challenge for AI itself.

In short, language as an instrument must necessarily be ergonomically designed. This ergonomic design was at its origin and continues to operate in the endless work of its continuous transformation in the different historical languages. Ergonomics in the use of language is, so to speak, that capacity of adjusting and interrelating ‘quanta’ of bodily energy involved in the production and reception of speech, with ‘quanta’ of meaningfulness for our words or sentences. To avoid any restrictive interpretation of this somatic conditioning of language, let us consider that the experience of our body is no less unfathomable than our experience of words.

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