

## Towards an enactive lexicology : From muscle salience to signifying

Michaël Grégoire<sup>1</sup>

### Abstract

*This paper lays some foundations for a method of enactive lexicology by applying the postulates of enaction at the submorphological level following Bottineau (2008, 2010, 2012a, b). We use the theory of submorphemic saliencing (Grégoire, 2012a, 2014a,b; 2015), which postulates that only one of the signifier's characteristics is exploited for a given word according to synchronic events and utterances. The enaction of form and meaning underpinned by this saliencing (salience + -ing) process therefore involves the activation of one part and the inhibition of the rest of the morphology, analogously to muscular and neural functions. It is also a perception-action phenomenon that is at once simplex and vicarious according to the definitions of Berthoz (1997, 2009, 2013).*

**Keywords :** theory of submorphemic salience ; lexicon ; enaction ; submorpheme ; 1<sup>st</sup> and 2<sup>nd</sup> orders of languaging

### Résumé

*L'objectif de cet article est de poser les bases d'une méthode de lexicologie énaive en appliquant les postulats de l'énaïon au niveau submorphologique à la suite de Bottineau (2008, 2010, 2012a,b). Nous utilisons pour cela la théorie de la saillance submorphologique (Grégoire, 2012a, 2014a,b ; 2015) qui postule que seul un élément du signifiant est exploité pour un même mot en fonction des synchronies et des énoncés. L'énaïon de la forme et du sens qui repose sur ce processus de mise en saillance correspond donc à l'activation d'une partie et à l'inhibition du reste de la morphologie rappelant ainsi les fonctionnements musculaire et neuronal. Il s'agit par ailleurs d'un phénomène à la fois perçactif, simplexe et vicariant suivant les définitions de Berthoz (1997, 2009, 2013).*

**Mots-clés :** Théorie de la saillance submorphologique ; lexique ; énaïon ; submorphème ; *Languaging* de 1<sup>er</sup> et 2<sup>nd</sup> ordres.

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<sup>1</sup> Clermont Auvergne University, France. Laboratoire de Recherche sur le Langage (EA 999). E-mail : [michael.gregoire@uca.fr](mailto:michael.gregoire@uca.fr).

We thank Richard Ryan for language-editing the English version of this paper.

*[S]cience cannot provide a true discursive description of independent reality. [...] It does not really reach reality as it is.*

Bernard d'Espagnat (1990: 259). Our translation.

## 1. **Languaging and *perception-action***<sup>2</sup>

### 1.1 **Languaging conceived as voice *perception-action***

The cognitivist approach to language conceives the world as pre-existent to our cognition, and represented or encoded by language: information or stimuli from an outside world are processed by the brain, and expressed by language. By contrast, the enactive approach to language postulates that the world as we perceive it is neither pre-existent to our cognition nor represented (or encoded) by language. Instead it considers cognition as a dynamic, embodied process in which the world is constructed, and of which language partakes. Our interest in the signifier and its embodiment places our linguistic research in this framework.

Importantly, any enactive approach, whether linked to language or not, owes much to the perception-action [see Berthoz (1997)]. This principle draws on Merleau-Ponty's philosophy of corporeity and the conception of memory and perception according to Edelman (1987), with neuronal Darwinism, and later according to Rosenfield (1989)<sup>3</sup>. It is the process by which a living being constructs the surrounding world through the activation of its own bodily mechanisms. For Berthoz (1997: 277), « perception is [...] inseparable from action; it is a prediction of the future; it has been organized in the course of evolution according to the natural properties of the physical world and biological mechanisms. » Bottineau (forthcoming 2) presents *perception-action* as a synthesis that includes two patterns of motor action: the perceptual engagement of the senses themselves (oculomotricity, activation of sensory or biomarkers sensors, etc.) and the manipulation of objects synthesized by the senses, paths in space, and possible interactions in general. Perceiving takes its place *a priori* in the perceived world by perception-action motricity and its memorized correlates (or recorded actions), a world specific to our species, and fitted to its scope of action. For Bottineau, languaging, as a technique of vocal action, plays a fundamental role:

To speak, to produce voice signals, is to modify by his action the conditions of perceivability of the surrounding world in the context of an interaction (exophasia), or to imagine this modification to simulate its effects (endophasia). Thus defined, speech is presented as a particular modality of *perc-action* [= perception-action] : it consists of an interactive coordination of subjective interventions in a collective environment (interactions, dialogue, conversations, exchanges, production and distribution of writings) which makes it possible to act intentionally on the synthesis of the [perceived world] by an ethical, behavioural, social, normative and regulated system. (Bottineau, 2012a : 78. Our italics).

Although the perceptual synthesis of space and objects is imposed by common behavioral models dictated by social life, it is also partly enacted by verbal interactions (notably through family education and schooling). Bottineau presents the word as « a dialogic reactivator [that]

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<sup>2</sup> We use the word *languaging* to translate the French Saussurian term *parole*, or an « interactive cognitive technique formatted by routinary procedures and social norms » (Bottineau 2013 : 216) and not as a consensual domain of coordinated interactions like Maturana (1978).

<sup>3</sup> For Rosenfield (1989), memory is not localized in the brain but is a dynamic process that produces categorizations. It is part of a synthesis of sensory, affective and corporeal experience. Memory thus creates an impression of traces refreshed in the subject's current context.

recalls memories stemming from interactive practices.” Bottineau (2012b : np). This is socially inherited behavior, and

likely to trigger intentionally (endophasia) as well as for others (exophasia), a paradigm of knowledge corresponding to the synthesis of the history of situations of verbal interactions where this lexical unity was previously encountered when relating to others and self (through endophasia). (Bottineau, 2012b : np. Our translation).

The word is thus seen as a process, a behavior among others, whose purpose is to refer to an experience of the world acquired socially, and not as an object of memorized language. Bottineau illustrates this with the word *sandwich*:

As a signifier, or active sensorimotor loop, the word *sandwich* calls up the set of knowledge recorded on the occasion of earlier encounters of this same signifier (exactly like the smell of tea recalls multimodal sensitive impressions linked to previous situations where the same tea, the same “madeleines” were consumed). (Bottineau, 2012b : np. Our translation).

By its social acquisition and its dialogical function, the word thus helps to construct a vision of the world specific to a linguistic community, just as human perception-action helps to build a world characteristic of our species. But this definition of the word raises the question of its mode of acquisition and its repercussions in enactive sense-making, in short, of its ontological status: the phenomena of coalescence, composition, elision and other truncations, for example, in our languages, or the absence of segmentation in those with an oral tradition, question the importance to be attached to the word itself.

## 1.2 From signs to sub-signs

The question of the status of signs and words has been dealt with in particular by Kravchenko (2007), who regards words as metalinguistic, second-order elements:

the signifying function of linguistic signs does not arise from their direct relation to the external world, it arises from *human experience* as the basis of knowledge; therefore, it cannot be arbitrary in the accepted sense of the word. The essential non-arbitrariness of signs is sustained by Peirce's semiotics, particularly, by his concept of indexical signs. (Kravchenko, 2007 : 251. The author's italics).

Kravchenko arrives at the conclusion that « language is a system constituted by signs of signs » (cf. Peirce's « a sign for a sign » principle)<sup>4</sup>. This resonates with the words of Cowley (2009), who underlines the standardized, acquired character of words:

Far from being material, words are virtual entities that, in themselves, lack causal powers. Human activity is directed at linking experience, material events and culture. Like sport, music, dance, and computer-mediated activity, language (and words) realize values only within a body (as feeling) or with reference to utterances, thoughts, and actions. (Cowley, 2009 : 496).

The author adds that

Language skills emerge as experience of coordination teaches us to hear second-order constructs (‘words’). Given linguistic reflexivity (the fact that we can talk about talk), we later report what we hear. Unlike machines that process ungrounded symbols, we act as we language. The feeling of thinking emerges in coordinating with living beings. While grounded in bodies, language evokes historically derived

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<sup>4</sup> Kravchenko (2007 : 669).

patterns. By vocalizing (and moving), we use cultural resources. Phylogenetically, ontogenetically, and neurally, language is dynamic first, symbolic *second*. Cowley, 2009 : 499. The author's italics).

Schooling and family education is thus fully involved in the use and design of language by the speaking subjects. The fact of knowing the existence of autonomous, syntactically adapted forms to recall a set of recorded experiences modifies how the language itself functions. Words are first of all dialogically recognizable signifying processes that emerge on the vocal continuum formed by a speech chain, and are only later considered as units segmented by the child. But one of the cognitive gains of this acquired segmentation is that it makes it possible to stabilize meaning, semiotize it, and thus re-enlist the signifying processes for a new instruction if need be. In short, Peirce's « a sign for a sign » scheme proves economical and effective for the use of language, especially the lexicon.

However, this secondary characteristic of the acquired segmented word raises in turn the question, in the framework of an enactive lexicology (or an enactive linguistics), of the enactment of other types of signifying processes in the vocal continuum. Could there be meaningful processes not acquired by education or reanalysis performed by adults during verbal interactions? We seek an answer to this question in the enaction of meaning at another level, where instruction has not played a conscious role in metalinguistic construction, namely the *submorphemic level*. It is perhaps in involuntary or untimely creations that we can more easily detect new constructions that deviate from the acquired norm. The slip, for example, does not always involve words or signs, but rather fragments that make sense in specific interactive discursive situations. For example, the word *hynoptize* (<https://soundcloud.com/hynoptize>) is a cross between *hypnotize* and *optical*, the etymology of *hypnotize* (from the Greek *hypnosis* "dream") having been forgotten. The link to vision then operated. However, this analogical reconstruction was based on a non-morphemic part *opt*. We thus set out to focus on this sub-morphemic domain, which is still uncharted from the perspective of an enactive lexicology.

## 1.2 The submorpheme, a “phenomenological mediator”<sup>5</sup>

### 1.3.1 Definitions from an enactive perspective

Several specialists in different languages have proposed approaches to the lexicon that do not study words or morphemes-signs, but rather the elements located at a submorphemic level, called *submorphemes*: Firth (1930), Tournier (1985), Bottineau (2008, 2010, 2012b, forthcoming 1 and 2), Philips (2002, 2010), Bohas-Dat (2007), Bohas (2016), and Grégoire (2012a). As early as the 17th century, this type of marker had been intuitively placed at the origin of words, to be later recorded and linked to a meaning (see Wallis 1653). The submorpheme can be defined as a procedure for the construction of phenomenological experience by recourse to a succession of *sensorimotor actions*<sup>6</sup> recognizable dialogically as word or morpheme but *never autonomous* syntactically. In their realization in words, the submorphemes are hierarchized spatiotemporally, while always standing upstream of the morphematic level. For example, Bottineau (2012b: np) on the English submorpheme *sp*:

*Sp*- (fricative apicoalveolar continuous wheeze + bilabial plosive) instructs the interpreter to conceptualize the object / event / action in the context of the

<sup>5</sup> Bottineau (2012b : np).

<sup>6</sup> We emphasize the *corporeal* aspect and not only the *vocal* character of these actions insofar as verbal language, like access to cognition, also mobilizes other parts of the body (see for example Alott 1973, Giudicelli et al. 2001, Philips 2010).

experienciation of a centrifugal rotational motion associated with a centripetal force ejection (spin, spear, spill, speak) [...] characterized by the notion of integral and recurrent rotation, in a loop.

Bottineau points out that diachronically, « the examples are extremely numerous and the dictionaries do not suffer any exceptions for this matrix, in spite of the heterogeneity of the concerned etymological sources » (*ibid.*), which supports the hypothesis of the existence of this submorpheme as such. The submorpheme thus has an identifiable phenomenological function based on environment and multimodality. Bottineau explains more precisely that

These markers are dedicated to the selection and prediction or anticipation of a sensorimotor experiential class by which an animate subject, an inanimate object or a process / action manifests itself typically in the experience of the observer, the experiencer or the manipulator, for example the fact that a sponge projects water when twisted (*sponge*, provided with the same submorpheme *spill*, *spit*, *spout*, *spray*, *sprinkle*); These markers specify, for the community that practices the language, a predictable, typical sensorimotor experiential class for the object, the event or the action considered by the notion.<sup>7</sup>

It is this typically salient aspect of the sensorimotor experience with the object or the action that constitutes the *notion* (Philps, 2002, 2010), also called *concept* (Grégoire, 2012a, 2014a), to which is attached the submorpheme in question. The concept is thus constructed according to the relation that an experimenter is likely to have with the object. It is even through this same prism that the object is perceived and conceived. In this case, *speak* is conceived by an anglophone as a centrifuging and ejection activity.

### 1.3.2 Methodology for semantic recognition and attestation of submorphemes

It should be pointed out, however, that the submorpheme, though embodied and linked to sensorimotor experience, is not systematically linked to any given concept: not all words containing the same submorpheme are necessarily attached to the same sensorimotor experiential class. *The submorpheme does not systematically operate as a marker.* Philps (2002) thus established a methodology for distinguishing words containing submorphemes linked to a concept from those not involved. To this end, he combined two approaches, synchronic (verification of meaning in discourse) and diachronic (verification of etymology). It was thus discovered that many English words containing the submorpheme *sn-* in the initial position were linked to the domain of « bucco-nasality », and were etymologically derived from the Indo-European root *\*(s)n*, with mobile *s*. This allowed the author to oust certain words that did not meet this criterion, such as *snail*, *snake*, *snug* or *snack*.

It is therefore at the same time the *body dimension* (articulatory process combining a fricative and a labial plosive), the *experimental dimension*, the *transmitted experiential dimension* (dialogical relation), the *sufficient recognition in the corpus*<sup>8</sup> and the *diachronic path* that prove decisive in the recognition and validating of submorphemes.<sup>9</sup>

These submorphemes emerge according to at least three mechanisms established by Bottineau (2012b: np): « analogical rehabilitation », « analogical remotivation » and the systemizing of the submorphemes ». In the first mechanism some consonant groups with the same form but

<sup>7</sup> Bottineau (*ibid.*) Our translation and italics.

<sup>8</sup> For statistical studies, see Drellishak (2007).

<sup>9</sup> The psycholinguistic existence of submorphemes, especially in English, was demonstrated by Bergen (2004): in this experiment, the submorphemes displayed priming effects like those reported for compositional morphemes.

not initially included in the same submorphological structure are recruited diachronically. For example, *spend* from the Latin EXPENDERE penetrated the class of words in *sp*- essentially of Germanic origin (e.g. *speak*, *sprechen*). Analogical remotivation is the activation of the conceptual value by homophony with a collocated lexicon unit: e.g. *scarce and scant, to stay still, to come to a standstill, writhing wrath, sprightly spirit, glittering glory*. Lastly the systemization of submorphemes manifests the intercorrelation of submorphemes according to analogical and opposing criteria. This is – writes Bottineau – especially the case for the opposition *sp* (rotation) / *sw* (slow pendulum) / *tw*- (rapid oscillation). The rotation of *sw* is, according to Bottineau, conceivable iconically as an attenuation of *sp* rotation, proportional to the loss of the occlusive, while we find the oscillation and its rapidity with *tw*, which contains an occlusive.

Thus unlike words or signs, submorphemes bear a more direct relation to sensorimotor, social and ecological experience, while also having a dialogical dimension. They also reveal the linguistic roots of intersubjectively distributed cognition, because the submorpheme accounts for the dynamic relation to the world, by simulation of the body's involvement in building it. For Bottineau (forthcoming 2), the lexicon therefore relies on perception-action by inscribing in its submorphemic forms a selective, effective motor simulation. This perception-action is selective, that is, conventionalized by use and common to all speakers. It also serves to anticipate a sensorimotor property of the object and facilitate access to the stabilized concept. Lastly it classifies the lexicon according to a limited repertoire of structuring kinetic models. But the «choice» of motor simulation by the submorphemes remains unordered. For example, the submorpheme *skr* present in the Spanish verb *escribir* («to write») or in the German *schreiben* (idem) is opposed to the *wr* of the English *write*; they mark two distinct ways of conceiving the writing act: a friction applied to a surface by an agent for *skr*, and the (hand) torsional motion for *wr*<sup>10</sup>. Hence the use and even the existence of submorphemes depend on a language's cognitive options and the salient aspects of the relevant sensorimotor world experiences, which can vary widely among different languages.<sup>11</sup>

This whole dynamic process of meaning adventing leads us to envisage, after Launay (1986), a *signifying* that we can define as those potentialities inscribed in the continuum of sensorimotor actions for the enacting or adventing of acts of thought, adjusted and oriented by experience, intersubjective relations, the environment and the acquired norm.<sup>12</sup> The question therefore arises of how this signifying operates, in particular through submorphemes.

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<sup>10</sup> The author draws on the frequency of use of these submorphemes consistent with the dialogic relation established. He connects the submorpheme *sk* to the class of "Surface (two-dimensional object, and / or movement applied to it" (e.g. *skin, skull, skate, skid, skittle, scamper, scab, mask, cask*). The intermediary *r* would then correspond to an agentive implication as we perceive it in *scrooge, scour, screech, scratch, scrawl, scribble, scrofula, scrub*. As for *wr*, it is related to the movement of "torsion", as illustrated in the terms *wrought, wrath, writhe, wrist*. (See Bottineau, 2008 : §14). For an application to other Germanic, Slavic or Romanic languages, see Bottineau (2012: § 29).

<sup>11</sup> For this, Bottineau replaces the arbitrariness of the sign by the contingency of the motivations of the submorpheme (on two different levels).

<sup>12</sup> For Launay (1986: 37), «the signifier can be the object of a reading, an analysis that integrates, by associations, in a network where each term is taken with others in *relations of resemblances and differences*: someone recognizes the paronymic pressure and its opposite: the differentiating pressure. But the world of referents is itself caught up in another network of resemblances and differences, identity and diversity. Signifying, as I understand it, would be the result of the analogical linking of both networks of resemblances and differences: this connexion is what will confer on the signifier its *value*». The author's italics. Our translation. The conception of language according to Launay may thus appear as «pre-enactive» in certain aspects.

## 2. Theory of Submorphemic Saliencing (TSS)

### 2.1 Fundamentals of the theory

The behavior governed by languaging that causes a submorpheme to emerge among other components of the articulatory and / or graphic continuum is still unknown, insofar as submorphemics does not specifically address the *selection* of the submorpheme in a string of discursive sensorimotor actions. *Submorphemic saliencing*, as we define it, is the process of selection (by saliencing) of one of these sensorimotor actions dialogically instituted on the basis of verbal interactions, and identified analogically by comparison with other words recorded as signifying processes. This principle is based on perception-action insofar as it allows the corporeal engagement of “thought acts” (see Bottineau), and thus transmits a phenomenological viewpoint. In short, it is construed as a procedure for the emergence of form and meaning. Thus with this term *saliencing* (*salience* + *-ing*), we emphasize the submorpheme enaction process and not the submorphemic unit.

Let us take another example. For Bottineau (2010: 15), the submorpheme *st* {coronal wheeze + occlusive coronal} is linked to the concept of « perceptual stand (space / time) », which embraces many English words such as *still*, *stall*, *stand*, *stay*, *stare*, *start*, *stop*, *step*, *stab*, *rest*, *mast*, among others. In the framework of our theory, the submorpheme {coronal wheeze + occlusive coronal} appears as salient, as a result of a saliencing in the sentences where these words are used directly or indirectly with this concept of « perceptual stand (space / time) ». This explains, among other things, why unifying power and a conceptual link form the embodied character of the submorpheme: the coronal wheeze forms a continuity of the air flow, abruptly stopped by the occlusive at a stage very close to the initiation of friction. This makes this process suitable for expressing the idea of “stabilization”, or metaphorically a « stand ». This prominent element is then considered as the focal point of the (dis) nomination, in contrast to the rest of the morphology seen as less relevant. The saliencing therefore implies a *simplex mechanism* (Berthoz, 2009)<sup>13</sup>, which requires that only some sensorimotor actions be chosen from the complex array of co-articulated and / or graphic phonoarticulatory characteristics implemented on different levels: (micro-)articulatory movements<sup>14</sup>, phonemes or phonological components, graphs / graphics, internal syntax, reduplication, syllabic structures, suprasegmental data, and formed by non-exclusive organs and muscles (mouth, nose, pharynx, tongue, muscles, and hands and eyes for writing). Our conception of submorphemes therefore applies not only to mono-, bi- or triconsonantic elements, but to any entity located upstream of the morphological level, that is to say not yet semiotized.

A salient submorpheme is realized in a word in a constitutive form of a semiotized morpheme compatible with the systemic constraints and the oppositions / analogies (here *st*, *s-d*, *s-t* or *s-t*). We note that this phenomenon of enaction by saliencing *is not systematic*,

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<sup>13</sup> See Berthoz (2009 : 259) : “Simplexity, as I understand it, is the set of solutions found by living organisms so that, despite the complexity of natural processes, the brain can prepare the act and project its consequences. These solutions are simplifying principles that make it possible to deal with information or situations, taking into account past experience and anticipating the future. These are not caricatures, shortcuts or summaries. These are new ways of posing problems, sometimes at the cost of a few detours, to achieve faster, more elegant, more effective actions.” Our translation.

<sup>14</sup> See, for example, Mc Farland (2009), which traces all the muscular movements giving rise to a sound. According to our theory, each (micro) movement is then amenable to exploitation at one level or another to bodily envelop the meaning.

insofar as other processes may be at work, and are likely to be engaged in real time in speech by the speaker.<sup>15</sup>

## 2 Illustration. Spanish verbs *sitiar* and *cercar*: two different constructions of the idea of « besieging »

We have seen elsewhere (Grégoire, 2012a: 321-353) that semantic differences between the Spanish verbs *sitiar* and *cercar*, though they both express the idea of « siege », arose because they were not constructed with the same salient submorpheme, and therefore not based on the same aspects of the sensorimotor experience. The verb *sitiar* preferentially reflects the idea of « blocking stabilization », in line with the submorpheme given above: {coronal wheeze + coronal occlusive} realized *s-t*. The expression of this phenomenological point of view can be found in Spanish in the words *asta* (« stick or pike »); *balaústre* (« baluster »); *construir / destruir* (« to construct » / « to destroy »); *estar* (« to be »); *estricto* (« strict »); *estoico* (« stoic »); *obstáculo* (« obstacle »); *sestar* (« to sit », « set »); *sostener* (« to support ») *poste* (« post »), and as an analytical production: (*a*)*sentar* (« sit »), *situar* (« to place »); *seto* (« hedge ») or *sujetar* (« support »). This viewpoint can be found in the following example:

- (1) los Ingleses salida á la provincia Bulacan, asistieron los pampangos á sitiar ó bloquear los enemigos, que se habían apoderado de la iglesia y del convento [...] <sup>16</sup>  
*(When the British left for the province of Bulacan, the Pampangos helped to besiege and block their enemies, who had taken over the church and the monastery [...].)*

We also find occurrences of *sitiar* in the sense of « static seat » where this viewpoint is strengthened such as:

- (2) Terminó su carrera con unas estadísticas que le aseguraban su *sitiar* en el Salón de la Fama: trescientos setenta y nueve jonrones, dos mil trescientos cincuenta y un imparables y un promedio de 297 a lo largo de su carrera en Grandes Ligas. <sup>17</sup>

*(He ended his career with statistics that ensured him a place in the Hall of Fame: three hundred and sixty-nine circuits, two thousand three hundred and fifty-one successes and an average of 297 during his career in the top leagues.)*

The verb *cercar*, on the other hand, expresses the sense of « besieging » from another viewpoint, that of « tightening ». This may be related here to the visual, oculo-graphic experience, a gesture of tightening (potentially hands) materializing a circle. The trace of this visualization may have been kept in the graphic *c-c*, which depicts it.<sup>18</sup> *Cercar* is one of a large analogous set of words related to the concept of « tightening » (or its result, « roundness ») and containing this graphic matrix, such as *cercenar* (« to trim, to round »); *cácabo* (« saucepan », « kettle »); *cacahuacintle* (« maize variety with very round grains »); *Cacahuete* (« peanut »); *cacastle* (« wicker basket »); *cacimba* (« small well »); *cancho* (« big

<sup>15</sup> See, for example, the principle of *chronosignifying* according to Poirier (this issue and forthcoming), which we mention later (4.1) or *chronosemantics* and *chronophonetics* according to Macchi (2017 and forthcoming).

<sup>16</sup> Martínez de Zúñiga (1893 : 143).

<sup>17</sup> Rodríguez Julia (1997 : 42).

<sup>18</sup> For a demonstration of the synchronization at the neural level of the actions of the hands and the buccal sphere, see Gentilucci et al. (2001). For example, in children: “Premotor neurons involved in generating multiple grasp signals to hands and mouth might be used to transfer motor patterns from hand to mouth. The hypothesis of a common substrate used for hand gesture and speech production is supported by research showing that deaf children, when learning American Sign Language, go through a “hand-babbling” stage, in which they manipulate sublexical elements of signs, much like the babbling stage of hearing infants.” (Gentilucci *et al.*, 2001 : 1698).

rock »); *caracol* (« shell of the snail »); *cáscara* (« shell »); *casco* (« helmet », « skull »); *cercha* (« wooden hoop »); *cica* (« stock exchange »); *cícera* (« sort of chickpea »); *ciclo* (« cycle »); *cincha* (« belt »); *coconut* (« coconut and coconut fruit »); *coca* (« small round berry », « head », « sort of cake »); *coccinela* (« ladybug »); *coclear* (« spiral-shaped »); *cuca* (« coin », « walnut or hazelnut », « tuber », « cockroach »); *cuco* (« small round basket »).<sup>19</sup>

To meet the requirements of this graphic submorphemic saliencing, the submorpheme should be stable diachronically: words coming from a Latin group -CT- / kt / are excluded (e.g. *acción* < ACTIŌNIS, *lección* < LECTIŌNIS or *cocción* < COCTIŌNIS). In this case, the *c-c* root has persisted in most of the above terms from at least the pre-Latin period. The others appeared later, sometimes with uncertain etymologies, and may have been inserted in this structure by analogical reconstruction. The verb *cercar* expresses the nuance of a « dynamic tightening » explicitly:

(3) Hernán Cortés lograba por fin cercar e invadir Tenochtitlán, el centro de poder of Moctezuma.<sup>20</sup>

(*Hernan Cortes finally succeeded in besieging and invading Tenochtitlán, the center of Moctezuma's power.*)

It is this phenomenological viewpoint that allows *cercar* to express the meaning of « fence », which the verb *sitiar* cannot do.

(4) [...] Se ha cercar todo para hacer dentro un parque de caza, donde se puedan entretener los Reyes cuando vinieren aquí.<sup>21</sup>

([...] *We have to fence everything to make a hunting park where the royal couple can be entertained when they come here.*)

In short, *sitiar* implies a « take-over », or « attack through continuous blocking », whereas the verb *cercar*, implies « surrounding », or « encircling », and may express the idea of « encircling » without necessarily intruding, taking the circle as a boundary. These are two distinct salient aspects of the multimodal experience of besieging. On the bodily level, for each series, only a part of the bucco-naso-pharyngeal muscular movements is solicited for the concept-enacting, and so for the sense-making. We thus note the principle of the activation of precise parts of the morphology by saliencing, and the inhibition of other parts. This calls to mind the principles of inhibition / activation of neurones or muscles (« antagonist » muscles, e.g. triceps / biceps, cannot be activated at the same time). Within the sensorimotor continuum, submorphemes are thus considered here as « antagonists » in relation to each other according to the discursive situation.

### 2.3 Enaction of the lexical meaning by saliencing: a potentially vicarious process

This theory also claims to solve the question of the possible enacting of several submorphemes within the same word. It is then necessary to take into account the relationship between the submorphemes themselves, which involves another phenomenon directly related to the simplex construction of the world: vicariousness.

<sup>19</sup> Bohas (2016) proposes a complementary submorpheme for this series: the matrix (dorsal feature) linked to the « curvature » by virtue of the rounding of the tongue during its plating against the palate for the pronunciation of a dorsal consonant. These are two distinct submorphemes linked to two specific aspects of the sensorimotor experience (i.e. tightening and rounding). Thus if the two submorphological structures can cross, they do not overlap completely. For example, the structure presented here intersects lexical items that sometimes contain no backbone.

<sup>20</sup> Newspaper article ; Author not specified (1995 : § 27).

<sup>21</sup> Cabrera de Córdoba (1857 : 276-277).

According to Berthoz (2013: 30) « Usual vicariousness [...] refers to the fact that the same object, the same part of our body, the same person, can be perceived as fulfilling different roles according to our intentions and our *Umwelt*. » Thus a knife can be used either to cut or as a screwdriver, as required (see Berthoz, 2013: 14). In the same way, submorphemes emerging from saliencing can vary according to dialogical experiences for the same given word or morpheme. This explains many cases of homonymy or ambiguity (see Bohas-Dat, 2007, Grégoire, 2012b). This plurality of saliencings can be termed *transmorphology*, because the segments transcend words and morphemes. For example, the word *word* can be considered as a graphic trace resulting from a wrist twist as attested by the submorpheme *wr* it contains: e.g. *wr* in *wrought*, *wrath*, *writh*, *wrist* (see Bottineau, 2008, 2010), realized *w-r*. This form can also be perceived as a graphic or phonic *linear* element because of the process analogy it introduces with e.g. *tree*, *direct*, *drive*, *train*, *timber*, which causes the submorpheme *tr* to be enumerated linked to the idea of « rectitude » (See Bottineau, 2012b), realized *-rd*. Lastly, in the sentence *Are our words worlds?*, access to meaning relies on homophony: the word segment appears as salient insofar as it is common and systemizes *words* and *worlds*. In each case, the form has undergone perceptual reanalysis leading to specific submorpheme saliencing.

We can illustrate the same phenomenon in greater detail in the Spanish word *flamenco*. First, the meanings given by the *Diccionario de la Real Academia (DRAE, s.v. flamenco)*:

**Flamenco, ca** (From the Dutch *flaming*, see *DRAE*). 1. adj. Originally from Flanders. 2. adj. Of Flanders or related thereto. 3. adj. Pictorial style that developed in Flanders in the 15th and 17th centuries. 4. adj. Culture or popular musical event interpreted by the Andalusians. 5. adj. Pertaining to Flemish (dialect). 6. adj. Colloq. Vain, insolent. 7. adj. Colloq. For a person: robust and ruddy. 8. adj. P. Rico. Thin, lean. 9. m. Dutch dialect spoken in Belgium. 10. m. Flamenco singing or dance. 11. m. Flamingo.<sup>22</sup>

According to Corominas & Pascual (sv *flamenco*), as this term refers to that which pertains to Flanders (meanings 1, 2, 3, 5, 9), meanings 6 and 7 can stem from stereotypes of Flemish people (robustness, red coloring). But the meaning designating a bird (flamingo) is more obscure. Our hypothesis is the insertion of *flamenco* by analogical rehabilitation or remotivation in the {labiodental fricative + lateral liquid} structure related to the concept of « attenuated friction flux » (see Toussaint, 1983 : 74) : *flamenco*. This structure is common to a number of Spanish lexemes not linked etymologically, such as *fluir* (« to flow ») ; *falcón* (old, « falcon ») ; *fleta* (« friction ») ; *falda* (« skirt ») ; *mofletes* (« swollen cheeks ») ; *flamear* (« to ripple, to undulate ») ; *fletar* (« to charter ») ; *flatulencia* (« flatulence ») ; *flauta* (« flute ») ; *flotar* (« to float ») ; *flojo* (« soft, loose ») ; *falena* (« kind of butterfly ») ; *flagelar* (« to flog ») ; *inflar* (« to inflate »). The use of *flamenco* to designate the bird could thus be attributed to the saliencing of this submorphological characteristic (labiodental fricative + lateral liquid), because a bird floats in the air and flaps its wings, whence an idea of « attenuated friction ».

Another use of *flamenco* may come from the differentiated prominent aspect of the sensorimotor experience: the meaning of « thin, lean » attested in Costa Rica. This could be explained by a new saliencing, that of the submorpheme (nasal + velar), linked to the concept of « reduction » : *flamenco*. This is attested in particular by the existence of *menguar* (« to reduce »), *ñengo* (« to reduce »), *gansarón* (« weak and lean man ») *angosto* (« narrow »), *ángulo* (« angle ») ; *rincón* (« inward corner ») / *esquina* (« outgoing corner »), or more abstractly *congoja* (« anguish ») ; *angustia* (idem)<sup>23</sup>. At the articulatory level, the

<sup>22</sup> Cf. *Diccionario de la Real Academia Española*, s.v. *flamenco*. Our translation.

<sup>23</sup> See Grégoire (2012a: 169-236; 2012b) for further developments and other examples.

pronunciation of combined nasal and velar involves contact between the tongue and the soft palate. This junction obstructs the airflow into the nasal canal at the nasopharynx level and produces a «narrowing» by activation of the pharynx constrictor muscles. Phenomenologically, it could therefore be a construction of the meaning «thin, meager» from the viewpoint of «body reduction». This may refer to the slimness of the flamingo, an aspect of the bird different from that addressed by the submorpheme {labiodental fricative + liquid}.

Cognitive and bio-behavioral variations can thus occur in the variation of the saliencing for any given form. In this case, the participation of *flamenco* in two networks of phenomenological experiences enables it to activate at least two distinct submorphemes, that of {labiodental fricative + lateral liquid} and {nasal + velar}. In short, it may be through a vicarious process that an acquired word lets us reactivate the various experiences linked to it, and which occur at the submorphemic level. It is then morphosyntax, as an articulated action, and the context, that make it possible to specify the salient submorpheme downstream in the sentence.

However, cases of «transmorphological vicariousness» raise some questions that warrant attention. We see at least two: (i) that of the «enactive significance» of any particular submorpheme in relation to another depending on the use, and (ii) that of the number of saliencing processes for the same word. These are new problems to which specific parameters will apply.

### 3. Emergence of complementary parameters

Because of the contingency of the lexicon based *inter alia* on its mutability and on the plurality of sensorimotor experiences, not all saliencings may have the same *significance*, in other words the salient sensorimotor actions are not exploited in the same proportions in all languages and by all speaking subjects in the same linguistic community. It is therefore necessary to evaluate the «enactive significance» of each salience, that is, the tendency of speaking subjects to (re)activate one aspect of the sensorimotor experience. We call this enactive significance the *saliencing coefficient*. In addition, when there are several saliencing processes for the same morpheme or word, we will also try to calculate what we term the *saliencing valence*.<sup>24</sup>

#### 3.1 The saliencing dynamic potentialities (saliencing coefficient)

We propose the following protocol to calculate the enactive “saliencing potentialities”:

- 1) Examine all the uses of a given word in a corpus;
- 2) Classify each use in the identified submorphemic structures;
- 3) Calculate the proportions (percentages) of each use among all the recorded uses;
- 4) Reduce to a scale from > 1 to 10 (coefficients).

We propose an application to the Spanish word *ganga*, which has several distinct uses:

**Ganga (1)** (by imitation of the cry of this bird, see Corominas & Pascual, *s.v. ganga I*). 1. f. Grouse (bird). 2. F. Property acquired at a price much lower than what it is normally worth.

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<sup>24</sup> Our terminology draws on Tesnière (1965), who applied this notion to syntax, especially of the verb. This is the number of actants that the verb must or can receive to provide a correct statement. In this case, it refers to the number of submorphemes for the same word. See *infra* 3.2.

**Ganga (2)** (from French *gangué*, 1884. Cf. Corominas & Pascual, *s.v. ganga II*). 1. f. Engin. In mining, worthless material accompanying minerals and from which these are separated.

**Ganga (3)** (from the English *gang*, see *DRAE*, *s.v. ganga 3*) 1. f. P. Rico. Street gang with a bad reputation.<sup>25</sup>

According to Corominas and Pascual, « metaphorically, the word *ganga* has been applied to unprofitable things, because the grouse is a tough bird and difficult to skin and eat, but it has been repeatedly used ironically and came instead to designate valued things that someone acquires inexpensively ».<sup>26</sup> The other meanings are of different origins (French and English) and concern different domains (geology, sociology).

First of all, for the bird, the characteristic of its cry and the aspect of experience linked to hunting (difficulty), from which derives the idea of a « bargain », do not belong to the same mental construction. This singularization of the aspects of experience would lead us rather to compare this use of « good deal » to the other two entries of *ganga* (« worthless material » and « band, gang »). We find the same semantic exploitations in a number of lexical items containing the group {nasal + velar} and expressing the idea of « effort reduction » : *zangón* (« lazy »); *gandul* (« lazy »); *realengo* (« lazy »); *holgazán* (« lazy »); *galbana* (« laziness »); *ganforro* (« workshy person »); *zangamanga* (« cheating »); *gandaya* (« wandering life »); *engañar* (« deceive »); *pochonga* (« lie »); *mangar* (« steal »); *ganzúa* (« thief »).

In its use to designate a « bird » in the strict and primitive sense, *ganga* seems to exploit the characteristic of the two velars, with the repetition of the guttural feature describing the cry (*ganga*), *i.e.* the submorpheme {duplicated velar}. This characteristic is then connected to the concept of « guttural echo ». This is a way of naming birds that is quite common in the Spanish-speaking world: thus *carraco*, *a* (« duck » in Costa Rica, « bird of prey » in Colombia, « species of migrating bird » in Spain); *cacatúa* (« bird of prey »); *concuna* / *cuncuna* (« dove, pigeon »); *corco*, *corconera* (« duck »); *coscoroba* (« small swan »); *cuco* / *cuclillo* (« cuckoo »); *cusco* (« owl »); *gagachín* (« sort of bird »); *gálgulo* (« azure-winged magpie »); *guacamayo* (« kind of parrot »); *guacharaca* (« galliform bird with a very low-pitched cry »); *guaco* (« night bird » in Spain, « sort of hawk » in Costa Rica and Honduras); *guangolola* (« generic name given to certain birds in Honduras »); *güegüecho* (« turkey, cock »); *kakapó* / *kakapú* (« parrot »).<sup>27</sup> The following distribution is obtained :

<sup>25</sup> See *Diccionario de la Real Academia Española*, *s.v. ganga*. Our translation.

<sup>26</sup> Corominas & Pascual (*s.v. ganga I*). Our translation.

<sup>27</sup> See Grégoire (2012a, b).

Uses of the word <i>ganga</i>	Submorphemes	Submorphemic realizations in forms
Uses related to the bird and its cry (entry 1, primitive nomination)	Submorpheme {reduplication of velars} concept of « guttural echo »	<i>ganga</i>
Uses derived from and related to ideas of « worthlessness » or « bargain » (Entries 1, 2 and 3)	Submorpheme {nasal + velar}, concept of « reduction »	<i>ganga</i>

**Table 2. *Ganga* use classification according to the TSS**

In *CORDE* (Spanish diachronic corpus), 87 uses of the form *ganga(s)* related to the concept of « guttural echo » were found out of 446 (in 230 documents), or a proportion of 19.50%. In *CREA* (synchronic corpus), there are 2 out of 185 in 147 documents, or 1.08% of uses.<sup>28</sup> The other salienting observed ({nasal + velar}) and related to the concept of « reduction », appears much more frequently, with 359 uses out of 446 (80.50%) in *CORDE*, and 183 uses out of 185 (98.92%) in *CREA*. For clarity, this data is collected in the following table :

Corpus of the <i>Real Academia Española</i>	Ratio (uses due to this submorpheme / total of uses)	Saliencing proportions	Saliencing coefficients (approx.)
<b>Corpus <i>CORDE</i> (- 1974)</b>			
Submorpheme {doubling of velars}	87 / 446	19.50%	Coeff. 2
Submorpheme {nasal + velar}	359 / 446	80.50%	<b>Coeff. 8</b>
<b>Corpus <i>CREA</i> (1975- )</b>			
Submorpheme {doubling of velars}	2 / 185	1.08%	Coeff. 0,1
Submorpheme {nasal + velar}	183 / 185	98.92%	<b>Coeff. 9.9</b>

**Table 3. Comparison of the saliencing coefficients of the submorphemes {doubling of velars} and {nasal + velar} synchronically and diachronically**

<sup>28</sup> See the Real Academia Española website [www.rae.es](http://www.rae.es) to go to the corpus.

We see that the enactive significance of the submorpheme (nasal + velar) is much greater in this case, irrespective of the perspective adopted, and so has more often been the subject of enactive exploitation. The saliencing coefficient lets us evaluate the « enacting capacity » of any particular prominent sensorimotor characteristic synchronically or diachronically, and thus see its evolution.<sup>29</sup> This device also lets us measure an aspect of the operation of the lexicon that traditional lexicometry cannot access, by integrating the criteria related to the enactive approach and applying them to the submorphemic level. If we take into account all the theoretical implications of corporeity and enaction, it is even possible to assess, at the scale of the lexicon, the language users' ways of constructing the world through the sensorimotor features most often used, and those that are correspondingly rejected.

### 3.2 Saliencing valence

We term *saliencing valence* the number of possible saliencies for a given sign, panchronically. It reflects to an extent the use of the signifiers by speakers synchronically, that is to say of the phenomenological *perception-action* elicited by the discursive interactions. For example, the word *ganga* has a valence of at least 2 if we refer to the above corpus. A more exhaustive survey of *ganga* uses at time *t* would certainly entail an adjustment of both the coefficient and the valence. It may be that other uses are not constructed through the two submorphemes we have approached, but by others, e.g. in wordplay, poetry or hapax cases. Saliencing valence not only extends the results obtained by the calculation of the coefficients, but also allows for the less “conformist” semantic uses that attest to the vitality and evolution of the language. In such cases, homophonies and other echoes can cause the enactment of new submorphemes (different segmentations by reanalysis).

## 4. Saliencing, speech and intersubjectivity

### 4.1 Taking temporality into consideration in the sense-making enactment

The enactive perspective also implies taking into account the temporal dimension induced by the speech chain, which is approached by several theories, such as *chronosyntax* (Macchi 2005), *chronosemantics* (Macchi, forthcoming), *chronophonetics* (Macchi 2017) and *chronosignifying* (Poirier, this issue and forthcoming). Here we emphasize this last approach, which seems to us the most comprehensive, and involves actual submorphemic saliencing.

For Poirier (this issue), *chronosignifying* is the « progressive temporal construction of signifiers and signifying. » It is therefore a « process of enaction, of synthesis of signifiers, with variations in the levels of delimitation, agglutination, etc., which lead to possibly different, varied segment semiotizations. » The author gives examples of grammaticalization by coalescence, diachronically. For example, the medieval Spanish collocation of the forms *cual* (« what / which ») and *quier* (« want ») emphasized the velar feature at the initial position in each case<sup>30</sup>. After collocation in a new submorpheme corresponding to a new aspect of the sensorimotor experience, the submorpheme (open vowel + lateral +velar) realized [álk] or [álg], caused coalescence in *cualquier* (« any »). This submorpheme can be recognized in *algo* (« something »), *alguien* (« someone ») or *alguno* (« some »). The

<sup>29</sup> We emphasize that this device reflects the limits of the corpus to which it relates. For example, the *CREA* corpus is relatively heterogeneous in nature, and contains many idiolectal and sociolectal variants (including variants from Latin America), unlike *CORDE*, whose sources are mostly Iberian and mainly literary.

<sup>30</sup> We find this in other correlative structures corresponding to this syntactic scheme including *tal cual* (« as is »), *tan como* (« also... »), *cuanto más ... más* (« more ... more »), etc. See Fortineau-Brémond (2012).

saliencing did not then operate at the same temporal stage of semiotization but at another. The segmentation process therefore varied from one synchrony to the next. Similarly, the word *también* (« also ») and *tampoco* (« no longer ») are derived respectively from collocations and coalescences of *tan bien* (« as well ») and *tan poco* (« so little »). These locutions previously actualized the submorpheme (coronal + labial). The actualization of a new distinct salience: {nasal + bilabial} realized [mb] or [mp], then generated the coalescence into *también* and *tampoco*. These forms recall *ambos* (« the two »), *empero* (« but »), *[sin] embargo* (« nevertheless »), *empós* (« after ») or *compañía* (« company »). Again, the segments perceived were not the same from one stage to the next. The author also demonstrated that the saliencing was *exclusive* in each case and that the two saliencings were not concurrent, but were *successive*, diachronically. The loss of the correlative function caused coalescence and then reanalysis of the signifying segment, which caused a change in saliencing and in the corresponding diachronic network (see Poirier, forthcoming). We then observe the same principle of exclusive submorphemic saliencing both diachronically and synchronically for the meaning enactment. This shows that this selection can activate a part of the morphology, but inhibit others, in the same way that *perception-action* at a more general level implies the exploitation of certain external stimuli and the corresponding neglect of others.

We can go on to propose, following Launay (2003: 281-282)<sup>31</sup>, that what best reflects this chronosignifying process by saliencing are cases of homonymy, slips, wordplay, popular etymology, misunderstandings or poetic and paremiological utterances.

Let us take the example of slogans based on wordplay. In the following sentences (5a) to (5d), echoes by homophony (here in italics and bold) retroactively generate the segment saliencing of the truncated French noun *déco* (« decoration »):



(5a) [t0] **Déco** [t1] et [t2] **des cadeaux** [t3] [kado]  
(*Decoration and gifts*)



(5b) [t0] **Déco** [t1] et [t2] **des** [t3] prix  
(*Decoration and prices*)



(5c) Un [t0] Noël [t1] **néo** [t2] – [t3] **déco** [t4]  
(*A Christmas 'new decoration'*)

<sup>31</sup> For Launay (2003), the principle of Saussurian relative motivation is part of a wider phenomenon of analogies and oppositions between signifiers, what he calls *semiotic connotation*. This phenomenon may then be found « in various forms (whose diversity should be analyzed), in slogans, nursery rhymes, newspaper titles, advertisements, mistakes, and so on. In short, in all those places where the convoked semiotic connotation suggests other words under words, other sentences under sentences, and other sounds under sounds. It could be readily shown that this mechanism is also the basis of Saussure's anagrams, analyzed by Starobinski (1971) ».



(5d) La [t0] *déco* [t1] à prix [t2] *éco* [t3]<sup>32</sup>  
 (Decoration at economy price)

In each case, a different segmentation of the *déco* form is performed and detected as soon as the temporal stage of the homophonic segment is reached.<sup>33</sup> In examples (5a), (5b) and (5c), at t1, the *déco* form is pronounced, but the saliencing process is not yet defined. In t2, the continuous or discontinuous homophonic segment appears, and in t3 the saliencing of the corresponding segment in *déco* takes place. Thus since the saliencing is distinct in each case, the delivered message is also different. Finally, independently of the playful effect caused by the unusual employment of *déco* in these sentences, the values given to this substantive are quite understandable even though they are not attested nor yet lexicographically attestable. In example (5c), there are even two possible saliencings: *néo* / *Noël* (non-ordained submorpheme {néo}) and *Noël néo-déco* (submorpheme {eo}) We are close to both Saussure's anagrams (Starobinski 1971) and the principle of *analogical remotivation* by collocation according to Bottineau.

A misunderstanding in the TSS results, for ambiguous sentences, from the discrepancies between speaker and hearer (collective perception « pact » not observed). Bottineau (forthcoming 1) analyzes the theoretical foundations with application to the French noun *café* (both « coffee » and « café ») as follows:

The interpretation of the word *café* is determined both by the situation and by the string of analogical sentences to which is attached the particular sentence in which it appears. The meaning of the utterance lies in the way its formulation advances the pragmatic situation in the course of collaborative management – the preparation of breakfast or the planning of the reopening of the premises. In other cases, the interpretation of the word *café* is determined by the feedback effects induced by the predicate: *le café est servi* [“coffee is served”] (drink), *le café est fermé* [“the pub is closed”] (premises), *coffee is down* [“le café est en baisse”] (raw material price).

Thus what the misunderstanding reveals is that any morphosemantic adventing is at the same time *correlation and contrast*, and *both dialogical* (due to experiences related to the uses of the recorded word) *and dialogal* (between interlocutors).<sup>34</sup> We offer as an example the Spanish word *cuca*, integrating the theory of submorphemic saliencing and chronosignifying data in synchrony. The word *cuca* can designate, according to the context, a « cockroach » or the « female of the cuckoo »:

(6) - ¡Mira esa *cuca*! (submorpheme {duplication of velars} for the speaker: *cuca* is understood to mean « female of the cuckoo »)

- ¿Una *cuca*? (The context is not sufficient for the saliencing specification, so the hearer is waiting for the necessary saliencing at this stage, and is not sure whether what is for him the « prototypical » saliencing is the speaker's.)

- Sí, te estoy hablando del *ave* [the ambiguity is lifted: submorpheme {duplication of velar}, t1], *no de la cucaracha* [graphic submorpheme saliencing {cc}, t2, *cuca* is understood in the

<sup>32</sup> (5a): La Foir'Fouille Advertising catalog, September 2013; (5b): La Foir'Fouille Advertising catalog, November 2013; (5c): La Foir'Fouille Advertising catalog, December 2013; (5d): Carrefour Advertising catalog, September 2013. Our italics. For other examples of this type, see Grégoire (2013).

<sup>33</sup> This is based on the same activation mechanisms as for Saussure's anagrams, for example. See Starobinski (1971) on the « significant echoes », re-examined in the TSS framework by Grégoire (2010, 2012a).

<sup>34</sup> For the distinction between the two notions of *dialogal* and *dialogic*, see Bres (2005).

sense of « cockroach » and acknowledging the ambiguity, *i.e.* the multiple salient valence of *cuca*].<sup>35</sup>

(- *Look at that cuckoo!*

- *A cuckoo?*

- *Yes, I'm talking about the bird, not the cockroach.*)

These cases let us evaluate the ability of the word to function as a « dialogic reactivator » depending on the subjects, because the two interlocutors did not enlist the same experience *during the time of the ambiguity*. The dialogal and situational contexts were also not sufficiently discriminating, which generated misunderstanding.

#### 4.2 The intersubjective construction of a salienting

Examination of these particular utterances demonstrates in particular that the perception and understanding of salienting presupposes the simultaneous identification of several elements:

- The *characteristic used and saliented* recognized intersubjectively by the dialogal arrangement and the contextual discrimination.

- The *sensorimotor profile of the submorpheme exploited by salienting*. In this case, the submorphemes {c-c} and {velar duplication} are related to distinct salient aspects of the sensorimotor experience, and involve respectively « tightening » and « guttural echo » concepts. We note that this is not systematic, and that in some cases studied here, the sensorimotor profile is not always engaged in the meaning-enacting process.

- The *enaction and correlation mechanisms* (themselves acquired dynamically) by procedural analogy with the others involved in forming the linguistic system. In this case, the means by which *cuca* is connected to *cucaracha* (« cockroach ») in Spanish or *déco* to *décoration* in French is truncation.

- The *salienting enactive significance (salienting coefficient)*, that is to say the link with the dialogical experience maintained by the subject himself. Coefficients are seen in contrast to other uses. Thus cases of confrontation with a new meaning or a new form imply a dialogical (re) analysis that is potentially based on a new salienting, and thus on the redeployment of the coefficients acquired as and when interactive situations arise. For example, in sentences (5a) to (5d), the sets of echoes have caused decoupled submorphemes to be enumerated with very low coefficients (<1).

- The *salienting valence*. The valence is transmitted at the same time as the acquired word and attests its dialogical heterogeneity. This is a (re) dialogical analysis, which makes it possible to discriminate the two salientings in the case of multiple valence. For example, the substantive *déco* has a valence of at least 4, although the uses are very specific. Also, in the learning phase, the expression of a new relation to the object, space or environment (new aspect of the experience) allows the hearer to increase the valence known to him.

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<sup>35</sup> Oral sentence heard in Murcia (Spain) in 2015. NB: The proposed translation cannot render the ambiguity because of the irreducibility of the languages to each other.

## 5. Conclusions. Perspectives and problems in the theory of submorphemic saliencing

By proposing perception-action of linguistic sensorimotor actions by saliencing, TSS may offer some insights into how body functioning (muscle saliences: activations of certain muscles and antagonist inhibitions), including that of the brain (neuronal activations / inhibitions) and language (formal and conceptual submorphemic saliencing vs. inhibitions of other parts of the vocal and graphomotor sensorimotor continuum) are linked. Thus the selection of any particular muscular movement may correspond to the construction of a specific instructional effect linked to experience. For example, the attenuated friction generated by the {labiodental fricative + liquid} group enables it to express the idea of « attenuated friction » and be enacted in speech with the use of the substantive *flamenco* owing to a correspondence with experience related to the bird's flight. It is not therefore the object itself but rather the relation to the object that is made salient *for and through* the lexical meaning enactment. Moreover, because of its « dialogical heterogeneity », the word is no longer presented as a « behavior reference »; it is the submorpheme, considered by Bottineau as a « phenomenological mediator » that seems to us most often able to directly summon sensorimotor experiences, as the cases studied here demonstrate.

The method presented also leads us to break with the binary dimension of the phoneme, and to resume a bodily analysis of the submorphological elements in the framework of a given social and cultural environment. This frees us from a *mimological conception* of articulation. A more « anatomical » approach would perhaps detect new articulatory micromovements. This singularization of sensorimotor actions at a very early stage could then make it possible to appraise the saliencing possibilities for meaning enactment according to the dialogical and contextual situation.

The problem is that there is as yet (to our knowledge) no fully embodied, phoniatic, enactive phonology that could explore all the spatiotemporal ordered articulatory coordination of a given language. For the time being therefore, the analysis of the functioning of the submorphological system remains limited. This question arises not only for the TSS, but equally for any enactive theory applying to the language and more precisely to the lexicon, insofar as the imprecision caused by the binary distribution of the phonemes prevents us from exploring all the implications of articulatory (micro-)corporeality. However, this should not impede the analysis of the lexicon, but rather offer an opportunity to modify how we rethink the mechanisms of phonation (singularization and spatio-temporal hierarchization of muscular movements, consideration of all articulatory characteristics, even non-oppositives, taking into account direction of air flow, long-term modeling of the bucconasopharyngeal muscles, synchronization with other parts of the body, etc.) and their implications for signifying and languaging. The ultimate conclusion may be that *everything in language is a process*.

## References

- ALLOT, Robin (1973). *The physical foundations of language*, Seaford : ELB Printers.
- BERGEN, Benjamin K. (2004). « The psychological reality of phonæstemes », *Language*, 80(2), Washington : LSA, 290-311.
- BERTHOZ, Alain (1997). *Le sens du mouvement*, Paris : Odile Jacob.
- BERTHOZ, Alain (2009). *La simplicité*, Paris : Odile Jacob.
- BERTHOZ, Alain (2013). *La vicariance. Le cerveau créateur de mondes*, Paris : Odile Jacob.

- BOHAS, Georges (2016). *L'illusion de l'arbitraire du signe*, Rennes : Presses Universitaires de Rennes.
- BOHAS, Georges & DAT, Mihai (2007). *Matrices et étymons : développements de la théorie*, Lyon : ENS Editions.
- BOTTINEAU, Didier (2008). The submorphemic conjecture in English : towards a distributed model of the cognitive dynamics of submorphemes. In *Lexis*, 2, 17-40. Available at <https://lexis.revues.org/688>.
- BOTTINEAU, Didier (2010). L'émergence du sens par l'acte de langage, de la syntaxe au submorphème. In M. Banniard & D. Philips (éds), *La fabrique du signe. Linguistique de l'émergence* (p. 299-325). Toulouse : Presses Universitaires du Mirail.
- BOTTINEAU, Didier (2012a). Le langage représente-t-il ou transfigure-t-il le perçu? ». In *Formes sémantiques, langages et interprétations, Hommage à Pierre CADIOT, La Tribune internationale des langues vivantes*, Paris : Union des professeurs de langues in les grandes écoles scientifiques, sans numéro, 73-82.
- BOTTINEAU, Didier (2012b). Submorphémique et corporéité cognitive. In D. Philips (ed.) *Miranda : Submorphemics*, 7. Available at <http://miranda.revues.org/5350>.
- BOTTINEAU, Didier (2013). Remembering Voice Past: Linguaging as an embodied interactive cognitive technique. E.I. Pivovar. *Conference on Interdisciplinarity in Cognitive Science Research* (p.194-219). Moscow: Russian State University for the Humanities,.
- BOTTINEAU, Didier (Forthcoming 1). Que nous arrive-t-il quand nous parlons ? Parole, enaction, malentendu ». In G. Fabre et A. Bourgain (éds.), *Le malentendu : une question de linguistique et de psychanalyse*. Limoges : Lambert-Lucas.
- BOTTINEAU, Didier (Forthcoming 2). Incarnation langagière et grammaire des langues naturelles: vers la fin d'un clivage. In D. Perrin (éd.), *La cognition incarnée*, Paris : J. Vrin.
- BRES, Jacques (2005). Savoir de quoi on parle : dialogal, dialogique, polyphonique. In J. Bres P.P. Haillet, S. Mellet, H. Nolke et L. Rosier (éds.), *Dialogisme, polyphonie : approches linguistiques* (p. 47-62). Bruxelles : de Boeck-Duculot,
- COROMINAS, Joan & PASCUAL, José (2006/1980). *Diccionario crítico etimológico castellano e hispánico*. Gredos : Madrid.
- COWLEY, Stephen (2009). Distributed language and dynamics. *Pragmatics & Cognition*, 17, Munich : John Benjamins, 495-507.
- D'ESPAGNAT, Bernard (1990). *Pensez la science, ou les enjeux du savoir*. Paris : Dunod.
- DRELLISHAK, Scott (2007, April) Statistical Techniques for Detecting and Validating Phonesthemes. Conference at *Linguistic Society of America Annual Meeting*, Anaheim.
- EDELMAN, Gérard (1987). *Neural Darwinism. Selection Neural Groups Theory*. New York : Wiley.
- FIRTH, John Rupert (1930). *Speech*. London : Ernest Benn.
- FORTINEAU-BREMOND, Chrystelle (2012). *La corrélation en espagnol contemporain*, Rennes : Presses universitaires de Rennes.
- GENTILUCCI, Mauricio, BENUZZI, Francesca, GANGITANO, Massimo & GRIMALDI, Silvia (2001). Grasp with hand and mouth : a kinematic study on healthy subjects. In *Journal of Neurophysiology*, 86(4). Pittsburg : APS, 1685-1699.

GREGOIRE, Michaël (2010). *Exploration du signifiant lexical espagnol [Structures, mécanismes, manipulations, potentialités]*, thèse de doctorat sous la direction de M.-F. Delport, Université Paris-Sorbonne. Available at <https://tel.archives-ouvertes.fr/tel-00656189/fr/>.

GREGOIRE, Michaël. (2012a). *Le lexique par le signifiant. Méthode en application à l'espagnol*, Sarrebruck : Presses Académiques Francophones.

GREGOIRE, Michaël (2012b). « La polyréférentialité des vocables espagnols *ganga* et *cuco (/a)* ». In R. Gauthier & P. Marillaud (coords.), *L'ambiguïté in le discours et dans les arts* (p. 357-368), Toulouse : Presses Universitaires du Mirail,.

GREGOIRE, Michaël (2013). « La motivation submorphologique de quelques noms de marques et slogans espagnols ». *Échanges linguistiques en Sorbonne. 1*, Paris : Covarius, np. Available at <https://halshs.archives-ouvertes.fr/halshs-01065986>.

GREGOIRE, Michaël (2014a, June). « Corporéité cognitive et motivation du signe linguistique », Talk presented at the IRPALL symposium *La motivation corporelle du langage*, organized by D. Philips, Toulouse Le Mirail University, France.

GREGOIRE, Michaël (2014b). « Théorie de la saillance submorphologique et neurosciences cognitives ». In A. Elimam (dir.) *Énonciation et neurosciences cognitives : nouveaux enjeux pour la linguistique, Synergies Europe, 9*, 107-119. Available at <https://gerflint.fr/Base/Europe9/gregoire.pdf>.

GRÉGOIRE, Michaël (2015). « Pour une conception extensive de la submorphologie lexicale : l'exemple du substantif espagnol *urraca* ». In C. Fortineau-Brémond & E. Blestel (coords.) *Le signifiant espagnol : de l'unicité à l'iconicité, Cahiers de Praxématique. 64*, Montpellier : Praxiling. Available at <https://praxematique.revues.org/3802>.

GREGOIRE, Michaël (2017). « Vers une application de la Théorie de la Saillance Submorphologique à la morphosyntaxe : le cas des déictiques espagnols en panchronie ». In C. Fortineau-Brémond & E. Blestel (coords.), *Le signifiant sens dessus-dessous*, Limoges : Lambert-Lucas.

GREGOIRE, Michaël (Forthcoming 1). Fondements et perspectives d'une méthode d'analyse (sub-)lexicale incarnée : la 'Théorie de la Saillance Submorphologique' (TSS). In G. Le Tallec-Lloret, D. Bottineau & E. Blestel (coords.), *Submorphémie lexicale et grammaticale : protocoles d'expérimentation et de validation*. Berne : Peter Lang.

GREGOIRE, Michaël (Forthcoming 2). L'évolution de la signifiance en diachronie ou l'exploitation des propriétés détectables au niveau submorphologique ». In S. Pagès (éd.), *Submorphologie et diachronie dans les langues romanes*. Aix-En-Provence : Presses de l'Université de Provence.

KRAVCHENKO, Alexander V. (2007). Essential Properties of Language, or Why Language Is Not a Code. *Language Sciences, 29(5)*, Saint-Louis : Elsevier, 650-671.

LAUNAY, Michel (1986). Effet de sens : produit de quoi ?. *Langages, Le signifiant. 82*, Paris : Larousse, 13-51.

LAUNAY, Michel (2003). Note sur le dogme de l'arbitraire du signe et ses possibles motivations idéologiques. *Miscellanées, Le temps des saints, Mélanges de la Casa de Velazquez, 33(2)*. Madrid : Casa de Velazquez.

MACCHI, Yves (2005). Le poème comme sculpture de la temporalité intraphrastique – Chronosyntaxe (V). *Bulletin Hispanique, 107(1)*, Bordeaux : Université Michel de Montaigne, 35-70.

- MACCHI, Yves (Forthcoming 2017). Sur les nombres premiers du lexique espagnol (esquisse d'embryologie du mot). In C. Fortineau-Brémond & E. Blestel (coords.), *Le signifiant sens dessus-dessous*. Limoges : Lambert-Lucas.
- MACCHI, Yves (Forthcoming). Du sens et de la signifiante du substantif monosyllabique espagnol *pie* – Chronosémantique (I). In J. Vicente Lozano (dir.), *La linguistique du signifiant. Approches et domaines d'application, Cahiers de l'ERLAC*. Rouen : Presses de l'Université de Rouen.
- MATURANA, Humberto (1978). Biology of language: The epistemology of reality. In G. Miller and E. Lenneberg (eds.), *Psychology and Biology of Language and Thought: Essays in Honor of Eric Lenneberg* (p. 27-64). New York: Academic Press,
- MCFARLAND, David H. (2006). *Atlas d'anatomie en orthophonie : parole, voix et déglutition*. Paris : Elsevier Masson.
- MCFARLAND, David H. (2009). *L'anatomie en orthophonie : parole, déglutition et audition : atlas commenté*. Paris : Elsevier Masson.
- PHILPS, Dennis. (2002). Le concept de marqueur sub-lexical et la notion d'invariant sémantique ». *Travaux de linguistique. La notion d'invariant sémantique*, 45(2). Paris : Deboeck-Duculot, 103-123.
- PHILPS, Dennis. (2010). Stratégies de nomination du corps et émergence du signe linguistique. In M. Banniard & D. Philps (éds), *La fabrique du signe. Linguistique de l'émergence* (p. 281-298). Toulouse : Presses Universitaires du Mirail.
- POIRIER, Marine. (Forthcoming). *También / tampoco* : émergence d'un micro-système par le signifiant. Submorphémie, diachronie et chronosignifiante. In S. Pagès (coord.), *Submorphologie et diachronie dans les langues romanes*. Aix-En-Provence : Presses de l'Université Aix-Marseille.
- POIRIER, Marine. (2017). Esquisse des principes d'une chronosignifiante ». *Signifiances (Signifying)*, 1(2). *Revue de Clermont Université* (this issue). Available at : <http://revues.clermont-universite.fr/index.php/Signifiante/issue/current>.
- REAL ACADEMIA ESPAÑOLA. (2014). *Diccionario de la lengua española*. 23a edición. Madrid : Espasa Calpe.
- ROSENFELD, Israel. (1989). *The Invention of Memory. A New View of the Brain*. New York : Basic Books.
- STAROBINSKI, Jean. (1971). *Les mots sous les mots. Les Anagrammes de Saussure*. Paris : Gallimard.
- TESNIERES, Julien. (1965). *Éléments de syntaxe structurale*, Paris : Klincksieck.
- TOUSSAINT, Maurice. (1983). *Contre l'arbitraire du signe*, Paris : Didier Erudition.
- VARELA, Francisco, THOMPSON, Evan & ROSCH, Eleanor. (1991). *The Embodied Mind. Cognitive Science and Human Experience*. Cambridge, USA : MIT Press.
- WALLIS, John. (1653). *Grammatica Linguae Anglicanae*. Reed. 1969, No.142, dir. R. C. Alston. Menston : The Scholar Press.

## **Corpora**

MARTÍNEZ DE ZÚÑIGA, Joaquín. (1893). *Estadismo de las Islas Filipinas, 1803-1806*, éd. W. E. Retana, Madrid : Imprenta de la Viuda de M. Minuesa.

RODRÍGUEZ JULIÁ, Edgardo (1997). *Peloteros*, San Juan : Universidad de Puerto Rico.

PRENSA (1995). “Noticia de una época con tantas luces como sombras”, *Geo*, 101, Madrid: G+J Ediciones.

CABRERA DE CÓRDOBA, Luis (1857). *Relación de las cosas sucedidas en la corte de España desde 1599 hasta 1614*, circa 1599 – 1614, Madrid: Imprenta de J. Martín Alegría.

La Foir’ Fouille Advertising catalog, Editor not specified, September-December 2013.

Carrefour Advertising catalog, Editor not specified, September 2013.

REAL ACADEMIA ESPAÑOLA (2003). *Banco de datos (CORDE) [en línea]. Corpus diacrónico del español*. Available at <http://corpus.rae.es/cordenet.html>.

REAL ACADEMIA ESPAÑOLA (2003). *Banco de datos (CREA) [en línea]. Corpus de referencia del español actual*. Available at <http://corpus.rae.es/creanet.html>.