How submorphological relics of perceptual parameters still influence synchronic use and may have had an impact on recent presidential elections

Liane Stroebel[1]

Abstract

This contribution focuses on the close link between sensorimotor actions and language. The interaction between perceptual and conceptual parameters will be illustrated in detail and from different perspectives via specific examples. Furthermore, the analysis will extend beyond morphological evidence to include the role of submorphological relics of perceptual and conceptual parameters. It will also raise the question of whether submorphemic knowledge might have had an impact on recent presidential elections. In short, this paper seeks to tackle three questions : first, how aware are we that words are never « innocent »; second, how transparent are words, and finally, is it possible to sketch semantic mappings from the initial encoding strategies on to the synchronic « power » of a given word.

Keywords : Perceptual Parameters ; Conceptual parameters ; Concepts ; Source domain ; Submorphemes.

Résumé

La présente contribution traite du lien étroit entre les actions sensorimétriques et notre langue. L'interaction entre les paramètres perceptuels et conceptuels sera illustrée en détail et à l'aide d'exemples spécifiques à travers différentes perspectives. L'analyse ne s'arrêtera pas aux éléments morphologiques des paramètres susdits ; elle traitera également leurs aspects phonétiques et posera la question de savoir si les connaissances submorphologiques ont pu avoir un impact sur les élections présidentielles. Dans cet article, il s'agira également de trouver des réponses à trois autres questions : premièrement, est-on conscient du fait que les mots ne sont jamais innocents ? Deuxièmement, quel est le degré de transparence synchronique d'un mot ? Et finalement, est-il possible d'illustrer les réseaux sémantique et conceptuel à partir des domaines sources et jusqu'aux domaines cibles pour montrer le « pouvoir » d'un mot.

Mots-clés : Paramètres perceptuels ; Paramètres conceptuels ; Concepts ; Domain Source ; Submorphèmes.

---

[1] RWTH Aachen Institution, Germany. IFAAR Romance Linguistics. E-mail : Liane.Stroebel@ifaar.rwth-aachen.de.

1. Introduction

« A word is a powerful madeleine » (Robert, 2003) or as Bottineau (2008) described it, it is

> a constant and reiterated piece of vocal action linking heterogenous sections of experience with converging and diverging properties; the role of this *socially controlled motoric token* is to map, when needed, a given experiential occurrence against the knowledge and pragmatic knowhow acquired in the course of all previous occurrences of the word / real life coupling : the word maps singularize currently experienced occurrences of categories against a recorded background of features retrieved from multiple previous occurrences. (Bottineau, 2008 : 20)

In other words, words are never neutral or innocent as they evoke in us sensations and experiences of past events or usages of those words :

> All embrained species exploit what Alain Berthoz (2012) calls perçaction. Action meshes with perception as, inseparably, people actively perceive the world. In humans, however, perçaction is transformed by language. Once utterance-acts are heard as reiterating patterns (as utterance-types) people mesh perçaction with experience of phonetic gestures (or wordings). They perceive objects and hear what the folk call « words ». (Cowley, 2014 : 3)

This contribution seeks to tackle three questions : first, how aware are we that a word is never just a word to be taken at face value ?, second, how transparent are words ?, and finally, is it possible to at least sketch a semantic mapping from the first encoding strategies on to the synchronic « power » of a given word (Ramachandran & Hubbard, 2001; Thompson & Estes, 2011; Aveyard, 2012; Drijvers, Zaadnoordijk, & Dingemanse, 2015; Lockwood & Dingemanse, 2015) ? While the first question might be difficult to answer, this paper attempts to illustrate that language is far less random and arbitrary than commonly considered. It also seeks to draw attention to synchronic submorphemic relics of perceptual parameters. Before continuing it will be necessary to briefly define perceptual parameters. For example, when we see a person clambering up a hill, we can divide our observation into smaller perceptual units or parameters, such as [motion], [path], [force], [direction], etc. Not all of these perceptual parameters play a role in forming the concept « to clamber », e.g. [direction] is not as important as the parameters [force] and [contact]. The perceptual parameters physical [force] and [contact] selected in forming the concept can also be called conceptual parameters:


Figure 1. Conceptual Parameters of « to clamber »[2]

---

[2] Drawing by Vicente Ballero Flores.

It is often the case that different languages choose similar perceptual anchorage points (e.g. fr. *grimper,* ger. *klettern,* sp. *trepar* 'to clamber'), which can all be traced back to Proto Indo-European **sreigʰ-/sreik-* 'a [motion] involving [force] and hand and foot [contact] with an object.' Over time, the parameter [force], has gained salience as the association got strengthened via the submorphemic combination of a plosive and a liquid, e.g. fr. *GRimper,* ger. *KLettern,* sp. *TRepar* 'to CLamber' (see chapter 4).

Nevertheless, different languages can also choose different anchorage points (A, B, and C, in Fig. 2) to describe the perception that a person is fulfilling an upwards oriented movement, e.g. « climbing a mountain ». In this instance, the focus can either be placed on a prototypical object associated with the action (A), on the subject fulfilling the action (C) or on the distance and angle between the two entities (B) :
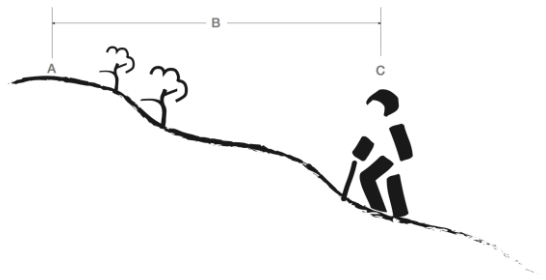
Figure 2. Perceptual Parameters of « climbing a mountain »[3]

Here we perceive at least three separate perceptual anchorage points, the object/hill itself (A), the person going up this hill (C) and the distance between these two entities (B). As such, it comes as no surprise that the different foci also imply different perceptual parameters. These different perceptual parameters also lead to different conceptual parameters.

The French verb *monter* (< Latin *mons, montis* 'mountain', < Proto Indo-European **men-* 'to stand out' [height/visibility]) is the result of the focus on the object involved in the action (A, in Fig.2 = conceptual parameter). *Monter* reflects an [inanimate], [static], [natural] object, characterized by a dominant [orientation] on the vertical axis and an inherent upward [direction]. Furthermore, it possesses a certain horizontal [extension], a summit [end point/ telicity], a certain height [value], and from a global perspective, it is prototypically associated with a triangular [shape].

The Spanish verb *subir* is derived from the Latin *subīre* (< *sub* [direction] + *ire* [motion] 'down + go') and focuses on the spatial distance or change of location implied in fulfilling the action (B, in Fig.2 = conceptual parameter). It displays the parameters [animated], [dynamic], [motor capacities], [orientation], [direction] and [value], but lacks information concerning the [shape], [extension] or [telicity] of the action.

German *steigen* focuses on the subject fulfilling the action (C, in Fig. 2), and can be traced to Proto Indo European **steigʰ-*, which refers more to a manner of motion, similar *to lift and then to vigorously put down the feet again* or *to lift the foot in order to step over something*. It can be described as an [animated], [dynamic] [motion], based on [motor capacities], with a clear [orientation] on the vertical axes, a certain [extension] on the horizontal axes, and a height [value], but with neither a clear [direction], nor an associated [shape] nor an explicit end point [telicity].

---

[3] Drawing by Vicente Ballero Flores.

To summarize, due to the focus on different conceptual parameters, neither German *steigen,* nor Spanish *subir* can express all readings possible for *monter*, as they lack the required parameters. In contrast to fr. *GRimper*, sp. *TRepar* and ger. *KLettern* 'to CLamper', the submorphemic pattern of these three verbs also displays significant differences :

	Shared parameters with fr. *Monter*	**Different & missing parameters**	**Parallels to synchronic (sub)morphemic pattern**
fr. *Monter*	[inanimate], [static], [natural], [orientation], [direction], [extension], [telicity], [value], [shape]	---	[height/visibility], e.g. fr. *monstre* 'monster' (even though it goes back to a different root, it shares the association [big] with *monter*)
sp. *subir*	[direction], [orientation], [value]	[animated], [motion], [motor capacities], [dynamic] / [shape], [extension], [telicity]	[directed motion], e.g. sp. *subestimar* 'underestimate' (*subir,* as well as *subestimar,* involve both a [bottom-up] perspective)
ger. *Steigen*	[orientation] [extension] [value]	[animated], [dynamic], [motion], [motor capacities] / [direction], [shape], [telicity]	[manner of motion], e.g. ger. *stetig* 'constant' (*steigen* and *stetig*, both indicate an uninterrupted action)

Table 1. Parallels and differences of conceptual parameters of « to climb »

The differences and restrictions between *monter, steigen* and *subir*, that can be traced to the different underlying conceptual parameters will be illustrated with the help of the following examples :

(1a) ger. Er stieg in die Pfütze. (lack of [direction])

'He stepped in the puddle'. (Geuder & Weisgerber, 2006; Geuder 2009)

vs.

fr. ?/*Il monte dans la flaque. ([direction] = only upwards)

(1b) fr.   Pierre monte les bagages. [inanimated] 'Peter takes the luggage upstairs'.

vs.

ger. *Peter steigt die Koffer nach oben. ([animated] = focus restricted)

(1c) fr.   La tour monte à 300 mètre. [value]

'The tower [lit. goes up to 300 meters] is 300 meters high'.

vs.

ger. *Der Turm steigt auf 300 Meter. (no [value] indication)

(1d) fr.   Ximena monta sur la table. [telicity]

vs.

Ximena se subio/*subio a la mesa (lack of [telicity])

'Ximena climbed onto the table'[4]

In other words, different perceptual and conceptual parameters play an important role in the synchronic and *ad hoc* usages and restrictions of these concepts (Carsten 2002, Casasanto & Lupyan 2015, Recanati 2004, Sperber & Wilson 2008, Wilson & Carston 2007).

In the following sections, we will concentrate on the role of perceptual and conceptual parameters, and the influence they yield on the synchronic usages of a given lexeme.

2. The close link between sensorimotor actions and language

Embodiment theory has long argued that the mental representations used in cognitive tasks are grounded in the sensorimotor system (Varela, Thompson, & Rosch, 1991; Barsalou, 2008). In contrast to the amodal perspective (Fodor & Pylyshyn, 1988), where meaning is independent from bodily experience, for embodiment, the human conceptual system is immediately anchored in the perception, experience and simulation of sensorimotor actions (Barsalou, 2008). This claim is supported by the following facts : a) sensorimotor knowledge is the most specific and best-differentiated concrete human experience we possess, and b) sensorimotor experiences are conceptually simple and presumably easy to encode given their pervasiveness in everyday life. This simplicity gives rise to semantic flexibility so that they can function as cognitive anchorage points for a diverse range of encoding strategies. Therefore, it should come as no surprise that we use sensorimotor concepts as models for less specific, less differentiated, more abstract knowledge, such as emotions, needs or temporal and spatial relations. A cursory examination of frequent terms (e.g. *comprehend* (< Latin *prehendere* 'to catch, to seize' [force]) quickly reveals their sensorimotor origin, as do haptic-based metaphors, such as to « GRASP an idea » or to « HANDle a problem », which both imply [control]. These terms underline the predominance of sensorimotor source domains in the lexicon. Grammar, too, is full of morphemes that can be traced to sensory-motor activities. One example is the way we refer to time, e. g. French *le passé* 'the past' [motion] (something that has gone by), *maintenant* 'now' (< Latin *manu tenendo* 'in the hand holding' [possession > control]) and *l'avenir* 'the future' (< Latin *advenīre* 'still to come' [motion]) or that we encode emotions or feeling with the help of a possessive verb related to haptic actions, such

---

[4] Torres Cacoullos & Schwenter (2008) pointed out that *subir* refers to the entire trajectory, e.g. *Ximena subió la escalera* 'Ximena climbed the stairway', without indicating an end point [-end point], while the reflexive from *subirse* marks a particular point or the endpoint of the [PATH] reading (Maldonado, 1999).

as *I HAVE concerns, etc.* Many light verbs and auxiliaries can also be traced to haptic or foot actions, such as *to GIVE a smile, to TAKE a walk, or I am GOing for a swim, etc.* Similarly, the copulae or existence verbs in Spanish can be traced to bodily positions (e.g. *ser* [< Latin *sedēre* 'to sit' [contact]] or *estar* [< Latin *stāre* 'to stand' balancing against a [force = gravity]) or the negation in French to the denying of a [motion], such as to not take a step (*ne . . . pas* 'not a step'), etc. (Stroebel, 2011, 2016a, b). The psychological reality of all of these examples rests on the activation of the same sensorimotor cortex, regardless of whether an action is carried out or simply imagined, (Gallese & Lakoff, 2005). This is exactly what makes sensorimotor concepts so suitable for rendering abstract entities as less abstract by connecting them to concrete bodily actions (Stroebel, 2014a, b, c, 2016a, b).
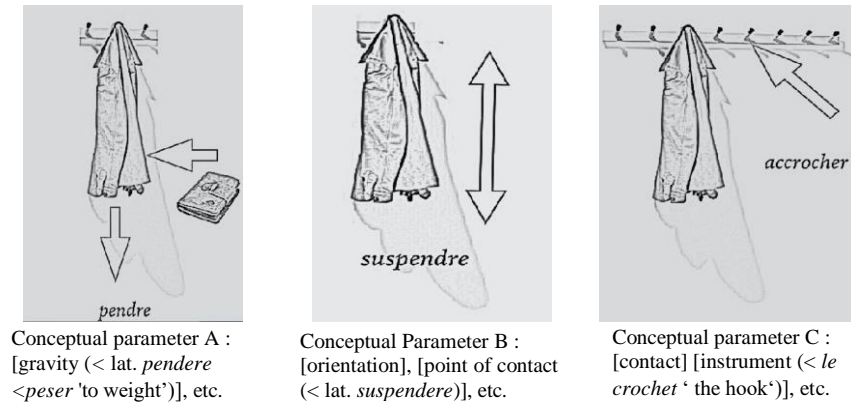
The link between perception and linguistic encoding has been explored from several different angles. Psycholinguistic studies support the claim that different sensorimotor experiences directly shape the use and comprehension of complex situations and metaphorical statements. These findings are in sync with research in neuroscience (Bach–y–Rita et al., 1969; Engel et al., 2001). Neurological studies using neuroimaging techniques (e. g. fMRI, EEG) and patient studies (Grossman et al., 2008) have yielded additional pieces of the puzzle of auditory language perception, reading and language production, and have produced valuable insights into this highly developed cognitive function. The linguistic perspective is covered by theories in cognitive science (Wilson, 2001; Gibbs, 2005; Barsalou, 2008; Pezzulo et al., 2011). Sensorimotor experiences, as stated above, also are the basis for embodiment, as well as for enactivism, a closely related theory (Varela et al., 1993, Wilson & Foglia 2011, Shapiro 2011). While the embodied approach focuses more on the close link between bodily action and neuronal representations (Gallese & Lakoff, 2005; Goldman & de Vignemont, 2009; Gallese, 2010; Nuñez 2010; Goldman, 2012), the enactivist centers on the active side of this phenomenon, and largely on perceptual experience (O'Regan & Noë, 2001; Thompson & Varela, 2001; Noë, 2004; Bottineau, 2008; De Jaegher, Di Paolo, & Gallagher, 2010; Thompson & Cosmelli, 2011). While for embodiment the dominant premise is that the particularities of our bodies influence how we think (Wilson, 2002; Gibbs, 2005; Spivey, 2007; Casasanto & Lupyan, 2015), Maturana & Varela (1987) focus more on the so-called «structural coupling» between an organism and its environment. In comparison to embodiment, enactivism is more action-based and process-aware (Varela, Thompson, & Rosch, 1991; Noë, 2004; Thompson, 2007; Di Paolo, 2009; Froese & Ziemke, 2009).

This contribution will focus on how our perceptions are turned into linguistic knowledge. This process will be illustrated with the help of perceptual and conceptual parameters.

3. The interaction or close link between perceptual and conceptual parameters

One might say that language is nothing more than the opaque result of originally more or less transparent strategies to transform perceptual parameters into conceptual parameters. This in turn constitutes the foundation of our concepts, and allows us to communicate with each other. But there is more to this than meets the eye. Let us begin with a simple example. In order to transfer the global perception of « a jacket hanging on a wardrobe » into the linearity of language, we must separate our percept, in this case, the complex image shown below, into simpler perceptual parameters, such as [static] action, of an [inanimate] object, in [contact], with an [instrument], that is offering [support] to the object against [gravity]. The [point of contact] is on the upper third of the object. The object is made of a certain [material]. The [position] of the object involves a vertical [orientation] and (due to gravity) implies an upward [direction]. Given the fact that the object is [inanimated], the established contact can be regarded as the [result] of another action, etc. One of the consequences of the parametric

complexity is that the percept of « a jacket is hanging on the wardrobe » can be expressed using at least three verbs in French, distinguished by their highlighting of different conceptual parameters out of the potential group of perceptual parameters :

Conceptual parameter A : [gravity (< lat. *pendere* <*peser* 'to weight')], etc.

Conceptual Parameter B : [orientation], [point of contact (< lat. *suspendere*)], etc.

Conceptual parameter C : [contact] [instrument (< *le crochet* ' the hook')], etc.

Figure 3. Different conceptual parameters of « A jacket is hanging on the wardrobe »

Although these verbs can function as synonyms (Fig. 3), they focus on different parameters : *pendre*, derived from lat. *peser* 'to weigh', underlines that the hanging object possesses a certain [weight], that pulls the object towards the ground [force = gravity]. This process has consequences for the synchronic conceptual uses of this verb, implying [weight] and [gravity]:

(2a) fr. Au jardin, les feuilles des arbustes pendent toutes droites et languissent après

la pluie. (Gracq, 1974)

'In the garden, the leaves of the bushes hanging straight a limp after the rain'.

(2b) fr. Une cape pend de ses épaules.

'A coat hangs down from his shoulders'.

(2c) fr. Une épée est pendue à sa taille (...). (Perec, 1978)

 'A sword hangs from his belt (...)'[5].

(2d) fr. On a pendu le nain à la potence.

'They hung the garden gnome'.

Suspendre shares the source concept 'weight' with *pendre*, but highlights the fact that the object is hanging in a more or less [static] position, on a vertical axis [orientation], facing downwards [direction] and that the [point of contact] is in the upper part of the object (Kopecka, 2004). These parameters are dominant in (3a) and in the figurative or *ad hoc* readings in (3b) and (3c), whereby the combination of them also implies a certain hierarchy [degree of control & force external to the object] :

(3a) fr. La lampe est suspendue au-dessus de la table.

'The lamp hangs over the table'.

---

[5] In contrast to Kopecka (2004), who argues that the reason for choosing *pendre* in (2c) is that the sword can swing, it is assumed here that *pendre* is used to focus on the fact that the sword has a certain weight [gravity = force inherent to the object] that can be a hindrance in walking.

(3b) fr. On a suspendu la séance.

'The seance has been canceled'.

(3c) fr. Il est suspendu à ses lèvres.

'He is hanging upon her lips'.

Accrocher, derived from fr. *crochet* 'hook', focuses on how [contact] is established via an [instrument[6]] (*crochet* 'hook') that holds the object against a [force = gravity] (Stroebel, 2014). In contrast to the other two verbs, it is not limited to readings that only refer to the vertical axis, but can be used in an *ad hoc* manner in which the parameter [contact = force against gravity] leads to consequences such as those in (4c and d) :

(4a) fr. Le téléphone est accroché au mur.

'The telephone hangs from the wall'.

(4b) fr. Le wagon est accroché à la locomotive.

'The wagon is attached to the train' (Kopecka, 2004 : 91)

(4c) fr. On s'accroche à cet espoir.

'We hook onto this hope'.

(4d) fr. Il a accroché sa veste à un clou.

'He ripped his jacket on a nail'.

To sum up: Even though we are unaware that the linguistic encoding of our perception is based on concrete perceptual and conceptual parameters, this primary encoding mechanism still plays an important role in the synchronic uses of these lexemes, and influences not only their conceptual readings, but also their *ad hoc* potential.

4. Beneath the morphologic border : Submorphemes

4.1   Submorphemes – phonetic relics of perceptual & conceptual parameters

In the previous chapters, we focused on the synchronic relevance of morphologically inherent perceptual and conceptual parameters. In this section, we move one level down and analyze the impact of perceptual and conceptual parameters beneath the morphological boundary, namely in the area of submorphemes. By virtue of their sheer numbers, submorphemes almost force us to ask inconvenient but nevertheless necessary questions, such as how arbitrary language really is. This question in particular, far from being new, dates back to Socrates (Plato 360 B.C.: 302) who speculated as to whether language might not be more iconic than we thought. A purely symbolic construal of language can only be entertained from a synchronic perspective. When examined diachronically, language seems far less random, instead appearing to be directly connected to concrete body-specific sensorimotor actions. If this is the case, one might ask why different languages make different choices, but this line of reasoning is a red herring since « [N]o one of course would pretend that there was only one way of expressing the same sense perception » (Jespersen, 1922 : 397).

A typical example used in introduction to linguistic courses is that the concept of « book » is expressed in different languages family strings in different, apparently unconnected ways, e.g.

---

[6] Similar : fr. *clouer* (< fr. le *clou* 'nail'), *coller* (< fr. *la colle* 'glue'), *scotcher* (< fr. *le scotch* 'sticky tape'), etc.

Engl. *book* and Ger. *Buch*, Fr. *livre* and Sp. *libro* or Russ. *книга*. The choice of lexemes across different languages may seem arbitrary, but it is not. Instead, it appears to be rather iconic. For example, Engl. *book* and Ger. *Buch* (both derived from PIE **bokiz* « beech ») can be traced to perceptual parameters [origin] or [type], as both display the inherent information that a beech is or was regarded as a prototypical tree used to produce a book. French *livre* and Spanish *libro* take as a base a similar perceptual parameter, namely [material], given that they both stem from *liber* « bast ». Finally, Russian *книга* contains the submorpheme *kn-*, which can also be found in *knee, knob, knife, knit, knot etc.*, this submorpheme capturing the perception that these objects consist of two flexible parts [shape] (Philps, 2000, 2012; Bottineau, 2008).

In conclusion, languages make language-specific choices, different languages now focus on different perceptual anchorage points, and these, in turn, originate in one or more concrete perceptual parameters. Given that we have already examined perceptual parameters anchored in the stem or root of a lexeme, we will now continue further down the morphologic hierarchy and focus on perceptual parameter relics in submorphemes. Similarly to those in lexemes, submorphemes can be considered relics of perceptual parameters in how they display perceptual features. The most common submorphemes of the English language, for example, focus on concrete bodily actions :

The polysemy exhibited within that lexical subset of [Modern English] '*kn*-words' having meanings that refer to certain parts of the human body is one consequence of a self-referential cognitive modeling activity motivated by the unconscious, kinesthetically transmitted perception of invariant metaphorical and metonymic relations characteristic of the conceptual domain in question, namely that of the human body. (Philps, 2000 : 227)

Similarly to Varela's theory of perception (Varela *et al.*, 1993), perceptual parameters present a strategy in which perceptual information is transformed into language :

sn [nasality]

sk [dynamic], [cutting], [speed][7]

sp [pointed], [centrifugation], [projection]

spr [spreading], [centrifugation] [control]

st [static], [(standing) position], [contact]

str [streching], [static], [control], [tension]

sw [pendulation]

tw [slight torsion], [pendulation], [speed] (Bottineau, 2008 ; Philps, 2000, 2012)

The analysis of submorphemes can be traced to Firth (1930), who first introduced the term « phonæstheme » to describe correlations of specific phonemes. Other authors referred to submorphemes as secondary sound symbolism, whereby they rather synchronically differentiated opaque submorphemes from synchronically more transparent onomatopoeia (primary sound symbolism). In contrast to the less problematic (at least from a synchronic perspective) primary sound symbolism (Hinton *et al.*, 1994; Rhodes, 1994; Langacker, 1987), submorphemes or secondary sound symbolism require a more detailed examination. Submorphemes are often describes as consonant clusters that trigger « a vague feeling of 'aptness' within a given speech community » (Reay, 1994 : 4064), i.e. that « the outer and

---

[7] The majority of /sk-/ words is probably derived from Scandinavian, e.g. *skip*.

inner affinity between such vocables is intuitively felt by the ordinary members of the speech community » (Jakobson & Waugh, 1987 : 201).

In short, submorphemes can be regarded as « (..) [a] pattern in a language linking sound structure of a group of words to what is called an 'embodied conceptual schema' that characterizes a significant part of word meaning, though by no means all word meaning » (Lakoff, 2016 : np).

Submorphemes are functional morphemes that :

> activate recorded patterns of connections whose effect is to relate notions to one another and to the currently experienced situation in terms of time, space, determination and so on; the outcome is the formation of the hyper-network required to achieve a 'mental scene' that is correlated with the ongoing experience, both material and psychological, both verbal and non-verbal. (Bottineau, 2008: 20)

This sound symbolism or image schema is described by Nuckolls as follow : « (...) a sound unit such as a phoneme, syllable, feature, or tone is said to go beyond its linguistic function as a contrastive, non-meaning-bearing unit, to directly express some kind of meaning. » (Nuckolls, 1999 : 228).

English alone displays dozens of these sound-symbolic patterns (Rhodes & Lawler, 1981) that Bergen defined as « frequently recurring sound-meaning pairings that are not clearly contrastive morphemes » (Bergen, 2004 : 290). Submorphemes, « even though they display a range of different meanings (e.g. *knead, knee, knop, knuckle, etc.*) » (Argoud, 2007), can be traced to one common underlying perceptual parameter (Marchand, 1969; Philps, 2000, 2012; Crystal, 2003; Bottineau, 2008). For example, /*st-*/ refers either to the perceptual parameter [static] in English *stand, stay, still, stop, etc.* or to [dynamic], as in *step, stomp, stray, stride, stroll* (Bolinger, 1965). The extended combination « sibilant + plosive + liquide » /*str*/, such as *strip, strole strap, string, streak,* etc. lead directly to the perceptual parameter [shape] with the association of «long, thin straight, narrow, etc. » (Bottineau, 2008).

Even though specific patterns of submorphemes can share the same inherent perceptual information, this does not mean that they are necessarily derived from the same etymological stem. The combination /*gl*/, for example, can be regarded as a relic of the underlying perceptual parameter [vision], even though it can be derived from at least four different (pre-) Teutonic roots :

*glô- (weak grade **gla-*): *glass, gloaming, gloom,* etc.

*glim-: *gleam, glimmer, glim, glimpse,* etc.

*glint-/glant-: *glint, glent,* etc.

*ghlei(d)-/ghli(d)-: *glitter, glisten, glise,* etc. (Lawler, 2003; Bottineau, 2008)

Interestingly, submorphemes, as opaque as they might seem from a synchronic perspective, can still evoke associations etc., and can therefore be used to manipulate the listener. The combination /*cr*/ as in *crank, cross, criss-cross, crick, crack, cramp, crumple, crag, crook, crib, crate, crazy, crimp, cringe, cripple, crutch,* etc., that focuses on the perceptual parameter [shape], has recently been used in the United States presidential election by Donald Trump and his followers to pejoratively rename Hillary Clinton as « Crooked », which even served to emphasize the existing /*cl*/ sound, the « mental image » of two things coming together in *clench, clasp, clap,* etc. (Bottineau, 2008; Lakoff, 2016) : « CRooked CLinton ».

4.2 How submorphemes may have had an impact on recent presidential elections

Secondary sound symbolism is considered to occur subconsciously. That said, it is likely that it activates certain associations. In addition, there is increasing experimental evidence that speakers are not only aware of sound-symbolic structures, but that they may be influenced by such structures. These findings support the arguments made in the previous sections, namely how much subconscious knowledge about perceptual parameters highly influences the synchronic usage of a concept, such as « clambering », « going up » or « hanging ». Unfortunately, the manipulating potential of these (subconscious, albeit to some extent, still active links) so far has only been studied in advertisement (Lowrey & Shrum, 2007; Shrum *et al.*, 2012), but not in political discourse.

Nevertheless, Lakoff made a blog posting on October 7, 2016 about the article « Understanding Trump's Name », that referred to the use of sound symbolism as an « unnamed » but « central issue » in this presidential campaign. He begins by describing that it had actually been Donald Trump's father who changed the name from Drumpf to Trump, and continues by exploring the actual status of the name as a brand or a product. He then suggests that if the name had been changed to Twimp, Trump would not have had the same chances of winning the United States presidential election. For Lakoff it is especially the */tr-/* [force] sound with its « forceful press and a forceful release » or, in other words, « a forceful tension followed by a forceful motion » that helped Trump to win. He lists a number of words with a wide range of meaning that all display this particular sound-symbolic pattern. They all have in common that an initial [force] is part of their meaning : *TRy ([force], [telicity]), TRip ([force], [telicity], [path]), TRap ([force], [telicity], [instrument]), TRuck, TRactor, TRolley, TRam ([force], [dynamic], [instrument]),* etc.

According to Lakoff, the sound pattern *-ump* « expresses entities of low or no energy having a 3-dimensional shape that can be traced over time as a rise and then a fall ». In putting the two dominant parameters together, Lakoff posits that « a causal force (the *tr-*) is followed by a person or object (the *-ump*) that the force acts on and affects. The person or object either already is an *–ump* or is made into an *–ump* by the force ». His argument leads to the conclusion that « a person's name, *tr-* followed by *-ump* symbolizes a person who acts with force on existing chumps or creates them by his exertion of force. In short, it names someone who has the power to take advantage of others. In business, it names a person who can profit by taking advantage of others ». This association is supported by the fact that the name Trump also evokes the role of a trump in a card game : a trump is a very powerful card that will always win the game (Lakoff, 2016).

Submorphemic sound patterns implying [force], e.g. */(s)t(h)r/*, also played a role in his speeches in 2016. In general, they contained an average of 100 tokens (20% more than in Clinton's) : *TRade, counTRy, conTRast, conTRol, TRemendous, TRillions, Truth, TRies, diSTRact, deSTRoy, etc.* He often combined */str/* and */tr/* when he was forcefully attacking Hillary Clinton :

(5) They are THRowing money at her because they have total conTRol over everything she does.

She is their puppet, and they pull the STRings. (Donald Trump, 21st of July 2016, nomination acceptance speech)

The following examples are taken from his August 8th speech in Detroit, Michigan (https ://www.youtube.com/watch?v=eMLs9XkrVj0). A conglomeration of forceful */(s)t(h)r/* sounds inundate passages where he either forcefully attacks Clinton and Obama (6a-e), or

presents himself as the force that has the power to change what, in his eyes, is wrong in the United States (7a-d):

(6a) That's why she TRies to diSTRact us with TiRed political rhetoric that seeks to label us,

   divide us, and pull us apart.

(6b) (…) and the immigration policies that have STRained local budgets and the TRade deals like

   NAFTA, signed by her husband, that have shipped your jobs to Mexico and other counTRies.

(6c) Hillary Clinton has supported the TRade deals STRipping this city, and this counTRy, of its

jobs and wealth. She supported Bill Clinton's NAFTA, she supported China's enTRance into the World TRade Organization, she supported the job-killing TRade deal with South Korea, and she supports the TRans-Pacific Partnership.

(6d) Our exports to South Korea haven't increased at all, but their imports to us have surged more

than $15 billion – more than doubling our TRade deficit with that counTRy.The next beTRayal will be the TRans-Pacific Partnership.

(6e) The Obama-Clinton AdminisTRation has blocked and deSTRoyed millions of jobs through

their anti-energy regulations, while raising the price of elecTRicity for both families and businesses.

(7a) It will present a night-and-day conTRast to the job-killing, tax-raising, poverty-inducing

Obama-Clinton agenda.

(7b) A TRump AdminisTRation will end this war on the American worker, and unleash an energy

revolution that will bring vast new wealth to our counTRy.

(7c) One of my first acts as President will be to repeal and replace disaSTRous Obamacare

(7d) American cars will TRavel the roads, American planes will connect our cities, and American

ships will paTRol the seas.

Although it may be very difficult to understand to what extent we are aware of these relics and what impact their underlying connotations (e.g. [force]) might have, they support and reinforce (the evoked by his behavior and the media) prefabricated image of Donald Trump.

Similarly, in the French presidential campaign, the forceful combination of a bilabial unvoiced plosive /p/ and voiced vibrant /r/ was used 2,627 (2,6%) times by Emmanuel Macron in a sample of his speeches (1/17-5/17) in order to convey and reinforce the image of a competent leader with clear direction, willpower and a vision for the future. A tentative (and so far only chronological [/pro/ & /pre/] and not combinatory [e.g. /por/, /per/, etc.]) analysis of Emmanuel Macron's speeches revealed that he used the sound pattern /pr-/ implying [force] frequently in combination with /o/ (1,272 times / 48%), as in *projet* 'project', *proposer* 'to propose', *progresser* 'to progress', *progress* 'progress', *promesse* 'promise', etc. to underline his commitment and vision, and with /e/ (869 times / 33%), as in *prendre* 'to take',

preserver 'to preserve', *oppresser* 'to oppress', *prevenir* 'to prevent', etc. to implicitly highlight his willpower and strength.

In his talks, he frequently used the combination of two forceful /pr/ sounds *PoRter un PRojet* 'to carry a project'. *Porter* 'to carry' and *projet* 'project' (> Latin *pro-iacere* 'throw forth'), imply both (besides other parameters) [path] and [force]. Furthermore, they suggest a corporate feeling and convey a vision, e.g. *Mais nous sommes cinq mille à vouloir porter un projet (...)* (14/1/17, lit. trad. 'We are five thousand that want to carry this project'). The evocation of the corporate feeling is based on the experience that the act of carrying an object (or, in this case, an abstract project) of a certain weight [gravity = force] over a distance [path] becomes easier by transforming an individual act into a collective one. Furthermore, with this strategy, Emmanuel Macron is projecting himself and his vision into the future :
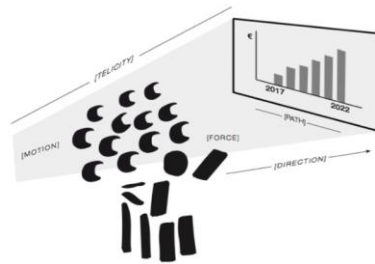
Figure 5. Mental image of « porter un projet »[8]

By repeatedly evoking this mental image and anchoring it via a repetitive sound pattern, Emmanuel Macron is strengthening the belief in his audience that everything is possible as they picture themselves on a path to reaching their goal.

5. Conclusion

We began with the assumption that « [A] word is a powerful madeleine » (Robert, 2003), that in fact its meaning consists of much more than dictionary definitions. We attempted to illustrate that even on a synchronic level, words might be far more transparent than previously considered when taking into account that not only do they display inherent perceptual properties in their stems, but that certain words also contain phonetic relics, or submorphemes, of the original underlying perceptual and conceptual parameters.

Even though it may be very difficult to understand to what extent we are aware of these relics in everyday life, and what impact their underlying associations might have on our actions, even a cursory examination suggests that these relics might still hold the power to subconsciously influence us. This mere possibility surely merits further corpus and experimental research into these « not so innocent parameters ».

References

ARGOUD, Line (2007). Approche lexico-cognitive des 'mots en kn-' du vocabulaire anglais. *Anglophonia*/*Sigma*, *22*, 129-143. Toulouse : Presses Universitaires du Mirail.

---

[8] Drawing by Vicente Ballero Flores.

AVEYARD, Mark E. (2012). Some consonants sound curvy: Effects of sound symbolism on object recognition. *Memory & Cognition, 40,* 83-92.

BACH–Y–RITA, Paul, COLLINS, Carter C., SAUDERS, Frank, WHITE, Benjamin, & SCADDEN, Lawrence (1969). Vision substitution by tactile image projection. *Nature, 221*, 963-964.

BARSALOU, Lawrence W. (2008). Grounding symbolic operations in the brain's modal systems. In Gün R. Semin, & Eliot R. Smith (Eds.), *Embodied grounding : Social, cognitive, affective, and neuroscientific approaches* (p. 9-42). New York, NY, US : Cambridge University Press.

BERGEN, Benjamin K. (2004). The psychological reality of phonæsthemes. *Language, 80*(2), 290-311.

BOLINGER, Dwight L. M. (1965). Rime, Assonance and Morpheme Analysis. In : Bolinger, Dwight L. M. *Forms of English : Accent, Morpheme, Order*. Cambridge : Harvard University Press, 203-229.

BOTTINEAU, Didier (2002). Les cognèmes de l'anglais : principes théoriques. In : Lowe, Ronald (dir.), en collaboration avec Pattee, Joseph et Tremblay, Renée, *Le système des parties du discours, Sémantique et syntaxe, Actes du IXe colloque de l'Association internationale de psychomécanique du langage*. Québec, Canada : Les Presses de l'Université Laval, 423-437.

BOTTINEAU, Didier (2003a). Les cognèmes de l'anglais et autres langues. In : Ouattara, Alassane (éd.), *Parcours énonciatifs et parcours interprétatifs, Théories et applications*, Actes du Colloque de Tromsø organisé par le Département de Français de l'Université, 26-28 octobre 2000, Gap, France : Ophrys, 185-201.

BOTTINEAU, Didier (2003b). Iconicité, théorie du signe et typologie des langues. In Ph. Monneret (dir.), *Le mot comme signe et comme image : lieux et enjeux de l'iconicité linguistique Cahiers de linguistique analogique, 1,* Dijon : ABELL, 209-228.

BOTTINEAU, Didier (2007). Language and enaction. In J. Stewart, O. Gapenne & E. Di Paolo (eds). *Enaction : towards a new paradigm for cognitive science*. Cambridge : MIT Press.

BOTTINEAU, Didier (2008). The submorphemic conjecture in English : towards a distributed model of the cognitive dynamics of submorphemes. In *Lexis – Revue de lexicologie anglaise, 2,* 19-42.

CARSTON, Robyn (2002). *Thoughts and Utterances : The Pragmatics of Explicit Communication*. Oxford : Blackwell.

CASASANTO, David, & LUPYAN, Gary (2015). All concepts are Ad Hoc Concepts. In E. Margolis & S. Laurence (eds.). *The Conceptual Mind : New directions in the study of concepts* (p. 543-566). Cambridge : MIT Press.

DE JAEGHER, Hanne, DI PAOLO, Ezequiel & GALLAGHER, Shaun (2010). Can Social Interaction Constitute Social Cognition? *Trends in Cognitive Sciences, 14(10)*, 441-447. DOI:10.1016/j.tics.2010.06.009.

DI PAOLO, Ezequiel (2009). Extended Life. *Topoi*, *28*, 9-21.

DRIJVERS, Linda, ZAADNOORDIJK, Lorjin, & DINGEMANSE, Mark (2015). Sound-symbolism is disrupted in dyslexia: Implications for the role of cross-modal abstraction processes. In *Proceedings of the 37th Annual Meeting of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

ENGEL, Andreas K., FRIES, Pascal, & SINGER, Wolf (2001). Dynamic predictions : Oscillations and synchrony in top-down processing. *Nature Reviews Neuroscience*, 2, 704-716.

FIRTH, John R. (1930) *Speech.* London : Ernest Benn Ltd.

FODOR, Jerry A. & PYLYSHYN, Zenon W. (1988). Connectionism and cognitive architecture : A critical analysis. *Cognition*, *28*, 3-71.

FROESE, Tom & ZIEMKE, Tom (2009). Enactive Artificial Intelligence : Investigating the Systemic Organization of Life and Mind. *Artificial Intelligence*, *173*(3-4), 466-500.

GALLESE, Vittorio, & LAKOFF, George (2005). The brain's concepts : the role of the sensory-motor system in conceptual knowledge. *Cognitive Neuropsychology, 22*(3-4), 455-479.

GALLESE, Vittorio (2010). Embodied Simulation and its Role in Intersubjectivity. In : Thomas Fuchs, Heribert C. Sattel, and Peter Henningsen (eds.), *The Embodied Self. Dimensions, Coherence and Disorders* (p. 78-92). Stuttgart : Schattauer.

GEUDER, Wilhelm & WEISGERBER, Matthias (2006). Manner and Causation in Movement Verbs. In Ch. Ebert & C. Endriss (eds). *Proceedings of «Sinn & Bedeutung 10", ZAS Papers in Linguistics, 44*. Available at <http://www.zas.gwz-berlin.de/index.html?publications_zaspil>.

GEUDER, Wilhelm (2009). 'Descendre en grimpant' : Une étude contrastive de l'interaction entre déplacement et manière de mouvement. *Langages, 175*, 123-139.

GIBBS, Raymond (2005). Embodiment and Cognitive Science. New York : Cambridge University Press.

GOLDMAN, Alvin (2012). A Moderate Approach to Embodied Cognitive Science. *Review of Philosophy and Psychology, 3*(1), 71-88.

GOLDMAN, Alvin & DE VIGNEMONT, Frédérique (2009). Is Social cognition Embodied ?. T*rends in Cognitive Sciences, 13(4)*, 154-159.

GROSSMAN, Murray, ANDERSON, Chivon, KHAN, Alea, AVANTS, Brian, ELMAN, Lauren, & MCCLUSKEY, Leo (2008). *Impaired action knowledge in amyotrophic lateral sclerosis. Neurology, 71*(18), 1396-1401.

HINTON, Leanne/ NICHOLS, Johanna/ OHALA, John (1994) : Sound-symbolic processes. In Hinton, Leanne/ Nichols, Johanna/ Ohala, John. *Sound symbolism*. Cambridge [u.a.] : Cambridge Univ. Press, 1-12.

JESPERSEN, Otto (1922). *Language, its nature, development and origin*. London : Allen & Unwin.

KOPECKA, Anetta (2004). *Etude typologique de l'expression de l'espace : localisation et déplacement en français et en polonais*. Thèse de doctorat en sciences du langage. Université Lumière Lyon 2.

LAKOFF, George (2016). Understanding Trump's Name. Article on the personal website. Available at https ://georgelakoff.com/2016/10/07/understanding-trumps-name/.

LANGACKER Ronald W. (1987). *Foundations of cognitive grammar*. Stanford : Stanford University Press.

LANGACKER, Ronald W. (2008). *Cognitive Grammar. A basic introduction.* Oxford : Oxford University Press.

LOCKWOOD, Gwilym & DINGEMANSE, Mark (2015). Iconicity in the lab: A review of behavioral, developmental, and neuroimaging research into sound-symbolism. *Language Sciences, 6,* 1246-1259.

LOWREY, Tina M. & SHRUM, L. J. (2007). Phonetic symbolism and brand name preference, *Journal of Consumer Research*, *34*, 406-414.

MALDONADO, Ricardo (1999). *A media voz : problemas conceptuales del clítico se*. México : Universidad Nacional Autónoma de México.

MARCHAND, Hans (1960). *The categories and types of present-day English word-formation. A synchronic-diachronic approach*. Wiesbaden : Harrassowitz.

MATURANA, Humberto R. & VARELA, Francisco J. (1987). *The tree of knowledge*. Boston : Shambhala.

NOË, Alva (2004). *Action in Perception. Cambridge*, MA : MIT Press.

NUCKOLLS, Janis B. (1999). The Case for Sound Symbolism. In *Annual Review of Anthropology, Annual Reviews, 28,* 225-252.

NÚÑEZ Rafael (2010) Enacting Infinity : Bringing Transfinite Cardinals into Being. In J. Stewart, O. Gapenne & E. Di Paolo (eds.) *Enaction : Towards a New Paradigm in Cognitive Science*, (p. 307-333). Cambridge, MA : MIT Press.

O'REGAN, Kevin J., & NOË, Alva (2001). A sensorimotor account of vision and visual consciousness. *Behavioral and Brain Sciences, 24*(5), 883–917.

PEZZULO, Giovanni (2011). Grounding Procedural and Declarative Knowledge in Sensomotor Anticipation. In *Mind & Language*, *26*(1), 78-114.

PHILPS, Dennis (2000). Le sens retrouvé ? De la nomination de certaines parties du corps : le témoignage des marqueurs sub-lexicaux de l'anglais en <CN->.*Anglophonia/Sigma, 8*, 207-232.

PHILPS, Dennis (2012). Submorphemes : backtracking from English '*kn-* words' to the emergence of the linguistic sign. In D. Philps (ed.) *Ceramics / Submorphemics*, *Miranda*, *7*. Avaliable at https://miranda.revues.org/4244.

RAMACHANDRAN, Vilayanur S., & HUBABRD, Edward M (2001). Synaesthesia: A window into perception, thought and language. *Journal of Consciousness Studies, 8,* 3-34.

REAY, Irene E. (1994). Sound symbolism. In R. E. Asher and J. M. Simpson (eds.) *The Pergammon Encyclopaedia of Language and Linguistics.* Oxford : Clarendon Press.

RECANATI, François (2004). *Literal Meaning*. Cambridge : Cambridge University Press.

RHODES, Richard & LAWLER, John (1981). Athematic Metaphors. In R. Hendrik, C. Masek & M. F. Miller, (eds.) *Papers from the 17th Regional Meeting*, *Chicago Linguistic Society*, 318-342. Available at http://www-personal.umich.edu/~jlawler/Rhodes-Lawler-1981-cls17.pdf.

RHODES, Richard (1994). Aural Images. In L. Hinton, J. Nichols & J. Ohala. *Sound symbolism.* Cambridge : Cambridge Univ. Press, 276-292.

ROBERT, Stéphane (ed.) (2003). *Perspectives synchroniques sur la grammaticalisation*. Peeters : Louvain-Paris.

SHAPIRO, Linda (2011) *Embodied Cognition*. New York : Routledge.

SHRUM, L.J., LOWREY, Tina M., LUNA, David, LERMAN, Dawn & LIU, Min (2012). Sound symbolism effects across languages: Implications for global brand names, *International Journal of Research in Marketing*, *29*(3), 275-279.

SPERBER, Dan & WILSON, Deidre (2008). A deflationary account of metaphor. In R.W. Gibbs (ed.) *Handbook of Metaphor and thought*, 84–108. New York : Cambridge University Press.

SPIVEY, Michael (2007). *The Continuity of Mind*. Oxford : Oxford University Press.

STEFANOWITSCH, Aanatol (2002). *Sound symbolism in a usage-driven model*. Unpublished manuscript, Rice University, Houston, TX. Available at http://www.stefanowitsch.de/anatol/fu-berlin/p/ms-stefanowitsch2002-ssudm.pdf

STROEBEL, Liane S. (2011). Invisible, visible, grammaticalization. In M. Callies, A. Lohöfer, & W. Keller (eds.), *Bi-Directionality in the Cognitive Sciences : Avenues, challenges, and limitations*, (vol. 8, p. 211-234). New York/Amsterdam : John Benjamins.

STROEBEL, Liane S. (2014a). Grenzen und Spielräume der Wahrnehmung - eine typologische Analyse von Bewegungs-, Kontakt- und Lokationsverben. In T. Krefeld & E. Pustka (Hrsg.), *Perzeptive Linguistik : Phonetik, Semantik, Varietäten. Zeitschrift für Dialektologie und Linguistik* (ZDL) (p. 166-186). Stuttgart : Franz Steiner Verlag,.

STROEBEL, Liane S. (2014b). Sprache & Gedanken – Spurensuche nach einem gemeinsamen Ursprung. In L. Melchior *et al.* : *Spuren.Suche (in) der* Romania (p. 59-72). Frankfurt/Main : Peter Lang.

STROEBEL, Liane S. (2014c). Sensomotorische Strategien & Sprachwandel. In E. Pustka & S. Goldschmitt (Hrsg.) *Emotionen, Expressivität, Emphase* (p. 139-154). Berlin : Erich Schmidt Verlag.

STROEBEL, Liane S. (2016a). L'influence du concept de source – une analyse contrastive des extensions et des restrictions sémantiques du verbe « monter ». In A. Pamies, Ph. Monneret & S. Mejri (eds.) *Analogie, Figement et Polysémie. Language Design*, Special Issue, 343-370.

STROEBEL, Liane S. (ed.) (2016b). *Sensory-Motor Concepts- at the Crossroads between Language & Cognition,* Düsseldorf University Press. Available at http://dup.oa.hhu.de/527/1/PilaC_Vol.%201_finale%20Druckdatei%20Inhalt.pdf.

THOMPSON, Evan & COSMELLI, Diego (2011). Brain in a Vat or Body in a World? Brainbound versus Enactive Views of Experience. *Philosophical Topics*, *39*, 163-180.

THOMPSON, Evan, & VARELA, Francisco (2001). Radical embodiment : Neural dynamics and consciousness. *Trends in Cognitive Sciences*, *5*, 418-425.

THOMPSON, Evan (2007). Mind in Life. *Biology, Phenomenology, and the Sciences of Mind*. Cambridge, MA : Harvard University Press.

THOMPSON, Patrick D., & Estes, ZACHARY (2011). Sound symbolic naming of novel objects is a graded function. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology, 64*, 2392-2404.

TORRES CACOULLOS, Rena, & SCHWENTER, Scott A. (2008). Constructions and pragmatics : variable middle marking in Spanish subir(se) 'go up' and bajar(se) 'go down'. *Journal of Pragmatics*, *40*, 1455-1477.

VARELA, Francisco J., THOMPSON, Evan, & ROSCH, Eleanor (1991). *The embodied mind : Cognitive science and human experience*. Cambridge, MA : MIT Press.

WILSON, Deidre & Robyn Carston (2007). A unitary approach to lexical pragmatics : Relevance, inference and ad hoc concepts. In N. Burton-Roberts (ed.), *Pragmatics,* np, 230-259. Basingstoke : Palgrave Macmillan.

WILSON, Robert A. & FOGLIA, Lucia (2011). Embodied Cognition. In E. N. Zalta (ed.) T*he Stanford Encyclopedia of Philosoph (Fall 2011 Edition),* np. Available at http ://plato.stanford.edu/archives/fall2011/entries/embodied-cognition/.

WILSON, Margaret (2002). Six views of embodied cognition. *Psychological Bulletin and Review, 9*(4), 625-636.

Corpora

GRACQ, Julien (1974). *Lettrines 2*. Paris : Editions Corti.

PEREC, Georges (1978). *La vie mode d'emploi.* Paris : Hachette.