



# ***The linguistic influence of perceptual and conceptual parameters***

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## **Abstract**

This contribution focuses on the close link between perception and language. The interaction between perceptual and conceptual parameters will be illustrated in detail and from different perspectives via specific examples. Three questions will be tackled: 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 ad hoc readings of a given word.

**Key words:** perceptual parameters, conceptual parameters, concepts, *ad hoc* readings

## **1. Perceptual and conceptual parameters**

It is often said that senses are our windows into the world, and that they provide the raw material for building our understanding of the environment and transferring it into language. But how do we perceive “the world” and what parameters are at work when we transfer what we see into a given linguistic code?

Arbitrariness is one of the key features of the linguistic sign (de Saussure, 1967). Nevertheless, a purely symbolic construal of language can only be entertained from a synchronic perspective. When examined diachronically, language seems far less random; instead, it appears to be directly connected to our perception and our experience. A perceived action, such as “to fall”, can be defined with the help of perceptual parameters, as a [motion] with a downward [direction] and a vertical [orientation]. Out of a global perspective this [motion] describes a [path] with a [contact point] on a [surface = end point of the motion] and a [sound] and/or a [change of state] associated with reaching this end point:

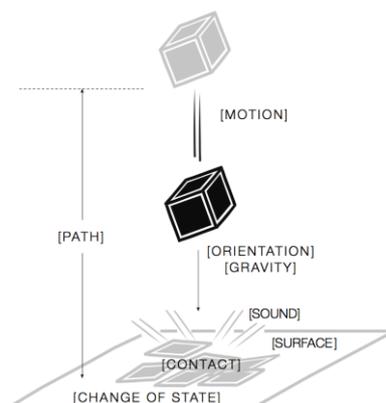


Fig. 1: Perceptual parameters of the action “to fall”<sup>1</sup>

In order to communicate we use a repository of concepts that are stable across time and shared across individuals (Evans, 2009; Hampton, 2012; Machery, 2009; Margolis & Laurence, 2008; Prinz, 2002; Rogers & McClelland, 2004; Smith & Samuelson, 1997; Spivey, 2007; Taylor & Zwaan, 2009; Weiskopf, 2009). These concepts are represented by sets of features or in other words, parameters.

To linguistically encode the perception of “falling”, French, for example, has chosen [sound] as salient conceptual parameter, i.e. fr. *tomber* ‘to fall’ is an onomatopoeicon (<\**tumb*) imitating the sound of an object hitting the [surface]<sup>2</sup>.

In each context, a different parameter or subset of parameters might be activated to encode a given perception (Lebois, Wilson-Mendenhall, & Barsalou, 2015; Yee & Thompson-Schill, 2016). As a consequence, an activated parameter can be regarded as a cue to construct the *ad hoc* reading for a given instantiation (Elman, 2004; Recanati, 2004; Assimakopoulos, 2008; Sperber & Wilson, 2008; Wilson & Carston, 2010; Casasanto & Lupyan, 2015):

- (1) Cette année Noël tombe un dimanche ‘Christmas this year falls on a Sunday’ [contact] with an abstract [surface (date on a calendar)] or
- (2) *tomber en amour* ‘to fall in love’ (derived *ad hoc* reading of an involuntary [motion] with a [path] towards [gravity] and a point of [contact] resulting in a [change of (an emotional) state]).

The contextual reading in (2), an “event, that comes by chance”, inherent in

<sup>1</sup> All drawings in this contribution are by Vicente Ballero Flores (RWTH, IfAAR, ©viba).

<sup>2</sup> The etymologies of the analyzed words in this contribution have been reconstructed with the help of the following sources: For the PIE roots see Knausen (2012), Roberts & Pastor (2017) or <http://www.koeblergerhard.de/idg/idg.html>, for the etymology of the modern languages, see [www.cnrtl.fr/etymologie/](http://www.cnrtl.fr/etymologie/), [www.etymonline.com](http://www.etymonline.com), <https://www.dwds.de/wb/>.

the concept of “to fall”, is still vivid in *accident* and *occasion*, which are both derived from Latin *cadere* ‘to fall’ (< derived from the PIE root *\*kad(1)*), which also forms the base for sp. *caer* ‘to fall’.

Since language can be regarded as the result of a continuous string that began with the first input (perception) transformed via a different encoding mechanism (parameters) into concepts, it can be predicted that we should find relics of this process in synchronic usage. 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).

The perceptual parameters contain all potential anchorage points for the encoding of the perceived action. At face value, the linguistic encoding mechanism between different language groups, or even between different languages, cannot be correlated, since even though they are based on the same perception and therefore grounded in the same perceptual parameters, the speakers are rather free to choose the conceptual parameters (or anchorage points) to encode their perception in a given speech community.

A typical example used in introduction to linguistics courses is that the concept of “book” is expressed in different language family strings in different, apparently unconnected ways, e.g. 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 captures the perception that these objects consist of two flexible parts [shape] (Philips, 2000, 2012; Bottineau, 2008). In other words, languages make language-specific choices, different languages focus on different perceptual anchorage points, and these, in turn, originate in one or more concrete perceptual parameters (Stroebel, 2017).

The link between perception and linguistic encoding has been explored from several different angles (for a philosophical perspective see Piaget, 1967; Poincaré, 1907; Heidegger, 1962; Merleau-Ponty, 1963; for an analysis of artificial intelligence robotics see Beer, 2003; Brooks, 1991; Harvey et al., 1997; Nolfi & Floreano, 2000; Winograd & Flores, 1986; for the role of perception in evolutionary biology see Oyama, 2000; for neuroscience experiments see Bach-y-Rita et al., 1969; Skarda & Freeman, 1987; Engel et al., 2001; Grossman et al., 2008; and for psychology see Barsalou, 2008; Gibbs, 2005; Pezzulo et al., 2011; Wilson, 2002). For embodiment and enactivism theories in particular, the close link between perception and language plays a central role (Varela et al., 1991; Wilson & Foglia, 2011; Shapiro, 2011). While the embodied approach focuses more on the close link between bodily action and neuronal representations (Goldman & de Vignemont, 2009; Gallese, 2010; Goldman, 2012; Gallese & Lakoff, 2005; Lakoff & Johnson, 1999; Nuñez, 2010), the enactivist centers on the active side of this phenomenon, and largely on perceptual experience (O’Regan &

Noë, 2001; Noë, 2004; Thompson & Varela, 2001; Thompson & Cosmelli, 2011; De Jaegher, Di Paolo & Gallagher, 2010; Bottineau, 2008). While for embodiment the dominant premise is that the particularities of our bodies influence how we think (Casasanto & Lupyan, 2015; Wilson, 2002; Gibbs, 2005; Spivey, 2007), Maturana & Varela (1987) focus more on the “structural coupling” between an organism and its environment. In contrast to embodiment, enactivism is more action-based and process-aware (Noë, 2004; Varela, Thompson & Rosch, 1991; Thompson, 2007; Di Paolo, 2009; Froese & Ziemke, 2009).

In the following sections, we will concentrate on the role of perceptual and conceptual parameter, in order to illustrate that language is nothing more than the opaque result of originally more or less transparent strategies to transform perceptual parameters into conceptual parameters, the foundation of our concepts<sup>3</sup>.

## 2. Perceptual and conceptual parameters

### 2.1 Same perceptual parameters, different conceptual anchorage points of potential synonyms in one language

This chapter deals with the most prominent relation between perceptual parameters and conceptual anchorage points in one language, namely near-synonyms. The adjectives

- a) *beautiful* (< lat. *bellus* ‘pretty’ [quality]), *attractive* (< lat. *ad* ‘to [direction]’ + *trahere* ‘to draw’ [directed action]), *lovely* (< *love*, < PIE root *\*leubh-* ‘to love’ [emotion]), *stunning* (< lat. *tonāre* ‘to thunder’ [overwhelming force], similar to fr. *étonner* ‘to astonish’), etc. or
- b) *diligent* (< lat. *legere* ‘to collect, read’, < PIE root *\*leg-* ‘to collect’ [action]), *determined* (< lat. *de* ‘down/off’ [direction] + *termināre* < PIE root *\*ter-* ‘(go to the) end’ [end point]), *industrious* (< lat. *in* ‘in’ + *struere* ‘to build’, < PIE root *\*ster-* ‘stiff’ [material]), *enterprising* (< lat. *inter* ‘among/in between’ + *prehendere* ‘to take’ [directed action]), etc.,

in a given context, due to semantic bleaching through frequency, can be regarded as synonyms for *pretty* or *hardworking*, even though *pretty* originally refers to “a diminutive beauty, without the higher qualities of gracefulness (...)” (Century Dictionary, 1900, see [www.etymonline](http://www.etymonline)), and *hardworking* puts the focus more on the physical than the mental effort.

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<sup>3</sup> The French examples in this contribution, unless otherwise mentioned, are taken from Dubois, Dubois-Charlier (1997).

Similarly, the concept of “X is hitting Y” in French can be linguistically encoded with the following verbs:

- a) *(se) batter* ‘to beat/fight’ (<lat. *batt(u)ĕre* ‘to hit sb. in the face’, focusing on the [(point of) contact], the [direction], and the [transfer] of [force]),
- b) *lutter* ‘to fight/combat’ (<lat. *lŭctāre/lŭctāri* ‘to wrestle’, focusing on [motion] and [contact]),
- c) *frapper* ‘to hit/strike’ (< onomat. root *\*frap-* “sound of a sudden and fast fulfilled hit”, similar to the less forceful fr. *taper* ‘to hit’ (<onomat. root *\*tapp-* “short and quiet sound”), both referring to the [sound] associated with the fulfilling of a directed [motion], implying the [transfer] of [force] due to a [contact],
- d) *bâtonner* ‘to beat’ (< lat. *bastun* ‘stick’), focusing on a potential instrument necessary to fulfill the action of hitting, and finally
- e) *cogner* (< lat. *cuneāre* ‘to chock/wedge’, focusing on the impact of the fulfilled [motion], when entering into [contact] with another person or object (Y)):

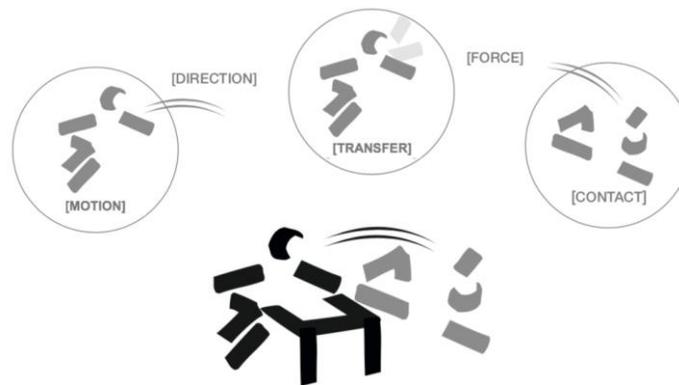


Fig. 2: Different conceptual parameters of “X is hitting Y”

Nevertheless, it is clear that they all display relics of their parametrical anchorage process in synchronic usage.

This will be illustrated in the following with the help of the percept of “a jacket hanging on a wardrobe”. The linguistic encoding in French, for example, can be expressed using at least three verbs: *pendre*, *suspendre*, and *accrocher*:

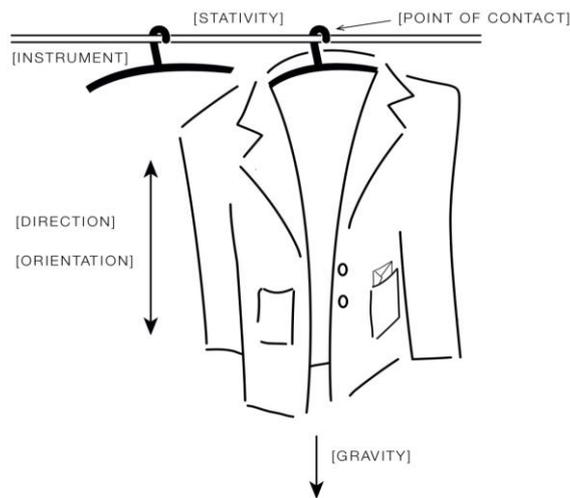


Fig. 3: Perceptual parameters of “A jacket is hanging on the wardrobe”

Although these verbs can function as synonyms, they focus on different perceptual parameters:

- a) *pendre*, derived from lat. *peser* ‘to weight’, underlines that the hanging object possesses a certain [weight] that pulls the object towards the ground [gravity],
- b) *suspendre*, highlights that the object is hanging in a more or less static position [stativity], on a vertical axis [direction], facing downwards [orientation] and that the point of contact is in the upper part of the object [point of contact] (Kopecka, 2004), and
- c) *accrocher*, derived from fr. *crochet* ‘hook’, focuses on how [contact] is established via an [instrument] (similar: fr. *clouer* [< fr. le *clou* ‘nail’], *coller* [< fr. la *colle* ‘glue’], *scotcher* [< fr. le *scotch* ‘sticky tape’], Stroebel, 2014, Stroebel 2017).

The focus on a given perceptual parameter, e.g. [weight] in the case of French *prendre*, leads to dominant conceptual parameters (< lat. *peser* ‘to weight’), with [weight] as an inherent conceptual parameter. This process has consequences for the synchronic conceptual uses of this verb, e.g. fr. *Une cape pend de ses épaules* ‘A coat hangs from his shoulders’ or *Au jardin, les feuilles des arbustes pendent toutes droites et languissent après la pluie* (Gracq, 1974, Lettrines) ‘In the garden, the leaves of the bushes hanging straight and limp after the rain’.

*Suspendre* shares the conceptual parameter [weight] with *pendre* (< lat. *sub* ‘(from) below’ + *pendre* ‘to weight’), but focuses on the [point of contact = upper part of the object]. As a consequence, in the majority of the cases fr. *suspendre* is associated with a punctual contact implying a (potential) maximum range of [motion], or in other words the swinging of the object after an external impact, e.g. fr. *La lampe est suspendue au-dessus de la table* ‘The lamp hangs over the table’ and in the *ad hoc* reading, e.g. fr. *On a suspendu la séance* ‘The screening has been canceled’, whereby the canceling of the screening is caused by an external impact.

*Accrocher* has [contact] as a salient perceptual parameter. This leads to the choice of a contact-orientated source concept (< à ‘to/on’ + le *crochet* ‘the hook’), that focuses on the conceptual parameters [contact] and

[instrument]. In contrast to the other two verbs, it is not limited to readings that only refer to the vertical axis (fr. *Le wagon est accroché à la locomotive* ‘The wagon is attached to the train’, Kopecka 2004: 91), but can be used in an *ad hoc* manner in which [contact] leads to consequences, such as fr. *Il a accroché sa veste à un clou* ‘He ripped his jacket on a nail’ (Stroebel, 2017).

In Spanish, nearly all these examples can be expressed with the help of sp. *colgar* (<lat. *cum* ‘together’ + *locāre* (<*locus* ‘place’)), based on the semantically vague conceptual parameters [contact] with a [surface]: sp. *En el jardín, después de la lluvia, las hojas de las plantas cuelgan hacia todas partes* ‘In the garden, the leaves of the bushes hanging straight and limp after the rain’, sp. *La lámpara está colgada sobre la mesa* ‘The lamp hangs over the table’, sp. *Ha colgado su americana en un clavo* ‘He ripped his jacket on a nail’, etc. Interestingly, the *ad hoc* reading implying a [direction] and an external impact, e.g. fr. *On a suspendu la séance* ‘The screening has been canceled’, requires a similar encoding in Spanish, with the verb sp. *suspender*, e.g. *La sesión se ha suspendido* ‘The screening has been canceled’.

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 not only influences their conceptual readings, but also their *ad hoc* potential.

## 2.2 When different perceptual and different conceptual parameters lead to different linguistic encodings in different languages

In section 2.1 we focused on the interaction between perceptual and conceptual parameters, and analyzed cases in which the same perception, or in other words, the same quantity of perceptual parameters, led to different concepts with the help of conceptual parameters that functioned as filters. In this section, we focus on particular scenarios in which different perceptual and conceptual parameters lead to different concepts and illustrate the extent to which the parametric differences still play an important role in, or can also be responsible for, the synchronic restrictions of these concepts.

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 to sensorimotor parameters (e.g. motor abilities, dealing with [contact] and [force]):



Fig. 4: Perceptual parameters for “to climb”

Nevertheless, in order to better illustrate the interaction between the parameters and the synchronic usage, we will focus on a similar upwards orientated movement, as French, German, and Spanish have chosen different anchorage points to describe the perception of “going up”:

- a) in French, a prototypical (natural) object (a mountain) is associated with the action,
- b) in Spanish, the vertical distance between the point of departure (e.g. the valley) and the end point of the intended motion (e.g. the summit) is used as an anchorage point, and
- c) in German, the motion itself (the lifting up and putting down of the foot) is used to encode the concept:

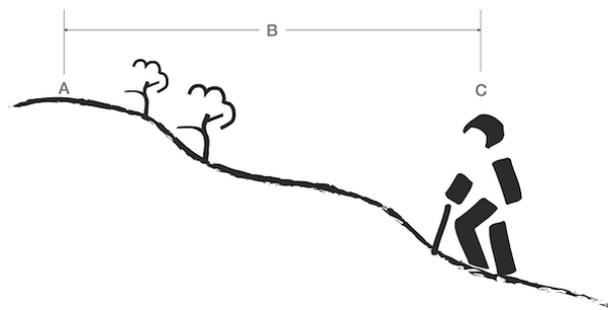


Fig. 5: Perceptual parameters for “to go up”

Therefore, the French verb *monter* (< Latin *mons, montis* ‘mountain’) focuses on the object involved in the action. A mountain can be described as an [inanimate], [static], [natural] object, characterized by a dominant [orientation] on the vertical axis and an inherent upward [direction] (A in Fig. 5). Furthermore, it possesses a certain horizontal [extension], a summit [telicity], a certain height [value], and from a global perspective, a mountain is prototypically associated with a triangular [shape].

In its prototypical [path] and [extension] readings (*Ce plongeur monte vers la*

*surface* ‘The diver ascends to the surface’ [path] vs. *La bruit monte jusqu’au 5e étage* ‘The noise went up to the fifth floor’ [extension], TLFi, Levin, 1993; Kleiber, 1990; Yune, 2009), *monter* describes a gradual process along a vertically oriented scale. The [value] reading, e.g. *Le prix/la température monte* ‘The price/temperature rises’, can be regarded as a directly derived reading and is characterized by the fact that the figure (e.g. ‘price/temperature’) is a functional noun (Löbner, 1979), indicating the type of value change ([value], e.g. price/temperature) *monter* refers to<sup>4</sup>.

In addition to prototypical readings, *monter* also indicates non-prototypical readings, such as [composition, e.g. *Le bijoutier monte un diamant sur l’anneau* ‘The jeweler sets the diamond on the ring’ [composition = [orientation], [direction], [extension], [shape] & [telicity]]. Furthermore, the uses of *monter* can, in certain *ad hoc* readings, be associated with a specific somatic position. In these uses, *monter* fulfills the requirements of [manner<sup>5</sup>] verbs (Rappaport Hovav & Levin, 2010), because it allows a resultative interpretation of a punctual event. It marks not only the beginning of an action (*Pierre monte dans le train* ‘Peter gets onto a train’ [inchoative]), but is also able to highlight a specific somatic position associated with the result of the motion, e.g. *Pierre monte à cheval* ‘Peter rides (= is sitting on a horse [resultative] and moving [epistemic])’, or *Pierre monte [resultative] contre ses parents* ‘Peter stands up to his parents = revolts’. *Monter* here refers to the typical posture of protesters. In order to be seen or remarked protesters must stand up or even climb onto something in order to get attention, e.g. Speakers Corner, soapbox.

Sp. *subir* is derived from the Latin *subīre* (< *sub* + *ire* ‘down + go’) and focuses on the spatial distance or change of location implied in fulfilling the

<sup>4</sup> The intensional use is characterized by a metaphorical interpretation of the verb and the functional noun that involves a total change of the figure (= functional noun) as opposed to the partial change of the extensional use, whereby the figure stays the same and the change takes place on the vertical axis. The TLFi dates the first appearance of *monter* with the meaning of ‘become (more) expensive’ to 1690, after the beginning of the use of graphs in geometry to judge velocity (da Vinci 1452-1519), or the invention of the thermometer by Galileo in 1592 (Yune, 2009). In contrast to the extensional examples, the intransitive uses of the intensional readings of *monter* only allow a dynamic reading, e.g. vertical motion upwards on a (price, temperature, etc.) scale (metaphor).

<sup>5</sup> Normally, *monter*, as a member of the verb-framed pattern, should only display [path], while [manner] is added with an adjunct, as in *Marc monte [path] les escaliers sur la pointe des pieds* [manner] ‘Marc goes up the stairs on tiptoes’. Talmy (1985) has suggested a dual typological framework dividing languages between satellite (e.g. English, German, etc.) and verb-framed (e.g. French, Spanish, etc.) types depending on how they structure motion dimensions in language. According to his distinction, satellite-framed languages tend to express the path of motion in a verb particle and the manner of motion in the verb, while verb framed languages express the path in the verb and the manner (if necessary) is added with the help of an adverbial, e.g. *Pierre monte [motion & path] sur la table* vs. ‘Peter climbs [motion] up [path] onto the table’ (Choi-Jonin & Sarda, 2007). The assumption that *monter* can be regarded as a [manner] verb is supported by the fact that the examples (*Pierre monte à cheval* ‘Peter rides’ and *Pierre monte contre ses parents* ‘Peter stands up to his parents’) cannot be paraphrased with *être* ‘be’ (Aurnague 2008).

action. The source concept ‘direction of motion’ displays the parameters [animated], [dynamic], [motor capacities], [orientation], [direction] and [value], but lacks information concerning the [shape], [extension] or [telicity] of the action. Because the Spanish *subir* lacks the parameters [shape], [extension] and [telicity], Spanish must use the verb *montar* (derived from French *monter*) to encode certain target readings, e.g. [manner] sp. *Pedro monta a caballo* ‘Peter is riding’ [resultative] vs. [inchoative] sp. *Pedro sube al caballo* ‘Peter gets on a horse’ or [composition] *Montamos la academia de baile* ‘Let’s set up a dance academy’ (Adesse, Hombre: 055, 22). Another difference is that sp. *subir* refers to the entire trajectory, e.g. *Ximena subió la escalera* ‘Ximena climbed the stairway’, without indicating an [end point] (Torres Cacoullós & Schwenter, 2008), while the reflexive *subirse* marks a particular point or the endpoint of the [path] reading (Maldonado, 1999), e.g. fr. *Ximena monta sur la table*. [end point/telicity] vs. sp. *Ximena se subió/\*subió a la mesa* (lack of [end point/telicity]) ‘Ximena climbed onto the table’.

Ger. *steigen* focuses on the subject fulfilling the action, and can be traced to Proto-Indo-European *\*steigan*, which refers more to a manner of motion, similar to *die Füße kräftig aufsetzend* (DWDS) ‘to lift and then to vigorously put down the feet again’ or ‘to lift the foot in order to step over something’. *Steigen* can be regarded as the equivalent of *monter* in cases such as *Pierre monte sur l’échelle* vs. *Peter stieg auf die Leiter* ‘Peter stepped/climbed onto the ladder’ [path] or in more figurative examples such as *Le vin rouge me monte à la tête* vs. *Rotwein steigt mir zu Kopf* ‘Red wine goes to my head’ [extension], and *Die Temperatur ist um 5 Grad gestiegen* ‘The temperature has risen by 5 degrees’ [value], but no [manner] (only inchoative, but no resultative interpretations, e.g. *Er stieg aufs Pferd* ‘He got on the horse’) or [composition] readings. Furthermore, given the fact that the parameter [animated] is very dominant in ger. *steigen* (as well as in engl. *to go*), the sentence fr. *Pierre monte les bagages* ‘Peter takes the luggage upstairs’, cannot be translated ger. *\*Peter steigt die Koffer nach oben*. Similar, in fr. *La tour monte à 300 mètre* ‘The tower [lit. goes up to 300 meters] is 300 meters high’, a translation with ger. *steigen* is blocked (ger. *\*Der Turm steigt auf 300 Meter*, as the original meaning of ger. *steigen* ‘to lift and then to vigorously put down the feet again’ does not directly imply that the end point is on a higher point than the starting point of the fulfilled action. Nevertheless, ger. *steigen* also disposes over exclusive readings, such as ger. *Er stieg in die Pfütze* ‘He stepped in the puddle’ (Geuder & Weisgerber, 2006; Geuder, 2009), as it lacks the parameter [direction], in contrast to fr. *monter*, which only allows an upwards reading, e.g. fr. *\*Il monte dans la flaque* ‘\*He goes up in the puddle’.

In other words, different source domains as well as different perceptual and conceptual parameters still play an important role in the synchronic usages and restrictions of these concepts.

### 3. 3. Conclusion

This contribution focused on the close link between perceptual and conceptual

parameters. Two scenarios were illustrated. First, different conceptual anchorage points of the same perceptual parameters led to different concepts and *ad hoc* concepts. In the second case, different perceptual and different conceptual parameters led to different linguistic encodings and restrictions. These cases showed that although we are unaware that the linguistic encoding of our perception is based on concrete perceptual and conceptual parameters, these primary encoding mechanisms continue to play an important role in the synchronic uses of these lexemes, influencing not only their conceptual readings and restrictions, but also their *ad hoc* potential. In short, words are never „innocent”, but opaque relics of formerly transparent perceptual parameters.

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DWDS: <https://www.dwds.de/wb/>

ETYM: [www.etymonline.com](http://www.etymonline.com)

PIE: <http://www.koeblergerhard.de/idg/idg.html>

RAEI: Real Academia Española, <http://www.rae.es/rae.html>

TLFI: Trésor de la langue française, <http://atilf.atilf.fr/TLFi.htm>