Introduction

Meaning is a central concept for any translation theory. No matter what our understanding is about the nature of translation, it usually includes an assumed relationship of meaning correspondence—whether partial or complete, distant or even too close—between a translation and its original. For the purposes of translation and interpreting studies (henceforth, TIS), we can define meaning as any mental experience prompted by perceptual inputs associated with a stimulus, when such stimulus is conventionally expected to yield some information in a communication process. That is, meaning is what happens in our minds as we process signs that we perceive through the senses in any communicative intent. Meaning is thus not a thing, it is a process; and meaning happens in our heads, and only in our heads. It never leaves. Words have no meaning, books and libraries have no ideas, only people do (Reddy 1979, 309). That is why we invented natural languages and other communicative codes: we needed some tool to prompt other people to build meanings reasonably similar to the ones we have in our minds. When we do, we communicate. Etymologically, we share.

This view of meaning implies that it is both an individual and a social phenomenon. Meaning is individual in that each one of us infers what inputs mean from their use. In your L1, you were never told what yellow means (or amarillo, jaune, gelb, etc.). You just learned it by looking at yellow things while hearing people describing them as yellow. You may have learned many words in your own language through formal means, like looking them up in a dictionary, but your understanding of new words rests upon many other words whose definition you have only vaguely considered, and you are only partially aware of. Furthermore, your first words in an L2 or an L3 often came as the foreign counterparts of L1 words you knew.

Our communicative history is very personal. Even though, at high levels of abstraction, our experiences are similar and patterned, their details and their combinations make each person unique. What knowledge we have and use to assign meaning to texts and speech is distinctive in its minute details and in the ways we intertwine and perspectivise it. That means that interpretations are personal and differ from each other, although mostly only in their nuances. Even more, since we are constantly building and reorganising
our knowledge, every single reading yields a slightly different interpretation. You cannot step twice into the same river. Understanding—building meaning—really is a one-off, continuous experience.

At the same time, meaning is a social phenomenon. We are able to share our thoughts for several reasons. First, humans tend to think in similar ways and accumulate life experiences that are essentially akin. Second, language underspecifies meaning; that is, our mental experience is far richer than what natural languages codify. When we read the word bicycle, we often represent it visually in our minds. Even if no specific bike was meant, it still has a shape, a colour, a size that often match those of a bike we know. Of course, such characteristics were not intended to be conveyed: they just belong together in our experience. Third, we adjust and fine-tune our language use through trial-and-error. We correct words we mispronounced, learn meanings we had got wrong. New realities bring new words and names, something we really notice when we move far away from home. Each generation favours certain ways of talking, certain idiomatic expressions. And we not only enlarge our vocabulary; it may shrink through lack of use in a process known as language attrition. Fourth, we constantly adapt the ways we use language to our addressees, and that includes negotiating meaning—agreeing on what words and expressions mean. Each act of understanding is unique, and so is the meaning each participant constructs in a communication event, but that does not belittle the fact that most acts of understanding overlap, that the meanings we build are similar. Let us consider how this happens with some detail.

Language units first activate representations in our minds, corresponding to their visual or auditory characteristics, perhaps followed by the activation of amodal (mainly, lexical) representations. Then episodic and semantic knowledge—information related to our previous experience of such units and what they mean, and what we have abstracted away as constant in them—may become activated. There are no limits to the knowledge we activate. When we read a bouquet of flowers, we may evoke a certain smell, a touch, the colours and names of certain kinds of flowers, together with the last time we gave somebody flowers, the vase we have for them at home, or of a beautiful landscape in spring of which we are very fond, etc.

Collins and Loftus (1975) suggested that the knowledge we store in our memory is structured in interconnected units of information. Buy, for instance, is customarily associated to pay, sell, cashier, discount, and the like. These nodes and their links are based on our experience, not (only) on logic. Activating one leads to activating or partly activating the next one. This is called spreading activation. Anderson (1983) argued that the level of activation in the network determines rate and probability of recall. Thus, exposure to a certain language unit causes priming or facilitation effects to recall other units that are directly linked to it. Priming techniques have served to expose organisation and retrieval processes in the mental lexicon (more in Section 5).

According to Van Hell and de Groot (1998), priming effects suggest that links are established between the features of words themselves and not just between complete lexical meanings and lexical representations. Rather than simply linking, say, bird with cat and cage, we can also link it with can sing, can fly, is yellow, but also with third and word, because of the way bird sounds. That is, links are established at sub-symbolic levels and between both meaning and word features. This is crucial for translation, because words from different languages almost never share all their features.

The activated episodic and semantic information may then be integrated into the representation of the situation prompted by the text or the speech. Such integration also entails inhibiting or discarding all non-pertinent information, the elements that do not fit with the
rest. And all this happens in less than half a second! It is so incredibly fast because, thanks to our experience and to spreading activation, we can also predict what is next and activate or semi-activate what information we may need in our next understanding operations. Thus, understanding is far from a passive and automatic experience, as customarily depicted; it is rather a very creative and intense activity in which we constantly engage (Langacker 1987, 72–73). From this perspective, translators and interpreters are but masters of meaning making in several languages.

The encyclopaedic nature implied in this view of meaning links language to culture which, from this perspective, amounts to individually stored knowledge (see variations in Briley, Wyer, and Li 2014, 560). We can establish an analogy between language and money, on the one hand, and goods and culture, on the other. A large number of goods can be bought, sold, and therefore converted into money, the same way words can explain most elements of culture. Crucially, money is a good by itself that can be purchased and sold too, the same way language is part of culture.

Meaning is not limited to language, because all kinds of symbols have meaning, whether linguistic or not. In translation, Ketola (e.g., 2016) elegantly shows that translations may spring from combining verbal and visual information, and Kokkola and Ketola (2015) even challenge the idea of translating as mainly a verbal operation, rather than a multimodal communicative process. Meaning is thus, understandably, more important for TIS than for psychology and linguistics, where some schools have historically disregarded it (e.g., behaviourism, generativism). That is why cognitive theories of translation have also drawn from philosophy to try to understand and fit meaning into TIS. In fact, when it comes to meaning, these disciplines have an interwoven history whose development we can only but sketch in the next section.

**Historical perspectives**

Philosophers were perhaps the first to devote many efforts to elucidate the nature of meaning. In the classical tradition, meaning was thought of as a relationship between signs and the kinds of things they mean. Kinds of things are not things, but rather concepts—generic abstract notions—that are generalised away or categorised from particular instances. Socrates, Plato and Aristotle thought of categories as groups of entities that were similar by virtue of their shared properties. Augustine (307 CE; 1995, 57) would later add the mind to the direct relationship between the word and the thing: ‘For a sign is a thing which of itself makes some other thing come to mind, besides the impression that it presents to the senses.’ This triadic relationship would be elaborated upon through the centuries, up to Ogden and Richard’s (1989, 11) famed triangle of referent, reference and symbol.

At the beginning of the twentieth century, analytic philosophers such as Bertrand Russell turned to language and focused on the meaning of terms and propositions, because they often found grammar misleading and words inexact or vague. Neopositivists thus favoured conceptual analysis and formal logic to clarify arguments and thoughts. Under this scope, entities could only be one thing, so categories were considered mutually exclusive. Shared properties within category members were deemed essential, and thus became necessary and sufficient, binary conditions for category membership. Language statements were only meaningful if they could be verified through empirical observation.

In psychology, John B. Watson (e.g., 1913) dismissed introspection as a way to access consciousness and favoured instead the study of measurable behaviour. Another behaviourist, Burrhus F. Skinner (e.g., 1938) then suggested that the environment also controlled
non-observable events, such as feelings and thoughts, mainly through conditioning. Language was nothing else than a set of habits and associating words to meaning was a consequence of reinforcement. Concepts, in this view, just hinted at behavioural tendencies.

In linguistics, Ferdinand de Saussure (1916) suggested an arbitrary relationship of just two elements for meaning. Signs were composed of a signifier—a language unit—and a signified, the idea or concept. Both were necessary, for there could be no signifiers without meaning, or meaning without a corresponding language element to express it. Since Saussure had removed referents as a way to anchor signs, he suggested that a sign would acquire meaning by virtue of its oppositions to other elements in the self-contained structure of a language. Oppositions could be verified through substitution (paradigm) or combination (syntagm). This made meaning language-bound, and the translator’s task was portrayed as looking for the corresponding language elements in a different language with the closest values in comparable oppositions. Meaning was not too interesting for the structuralists, anyway. In the United States, Leonard Bloomfield (e.g., 1933) argued that grammatical categories could often be described as to their formal features, and that meaning was often vague, so he argued to exclude it from the study of grammar.

The landscape of the studies of meaning in philosophy, psychology and linguistics would change radically with the so-called cognitive revolution in the mid-twentieth century. An emergent cognitive psychology reacted against behaviourism and focused on perception, problem solving, and memory capacity. Researchers such as D. Broadbent, A. Newell, H.A. Simon, J. Bruner and G. Miller gradually converged into a view of the mind as a neutral manipulator of symbols. This idea was fostered by the strategic decision to disregard social, cultural and situational factors, in order to simplify the study of the mind. Meaning was to be mainly referential, and propositional.

In linguistics, Noam Chomsky (1959) rejected the behaviourist notion of the mind as a blank slate. He argued instead (e.g., 1957) that understanding an infinite number of sentences composed by finite sets of elements pointed to the existence of combinatorial, generative rules and innate grammatical categories, such as nouns and verbs. He maintained that people were endowed with a universal grammar and a language-learning device. Formal syntax was the key factor, so meaning and grammar were to be studied separately. Katz and Fodor (1963) added a dictionary to this theory, where different senses of a lexical item would branch out according to defining properties, but they seemed to conflate a mental lexicon—within people’s minds—with a formal dictionary, within a semantic theory. The meaning of a sentence equalled its truth-conditions. Translating, in this view, would be done sentence by sentence. It was a matter of working your way down from one language until you reached the deep (universal) sentence structure and then back up through transformations to a surface structure in a different language (see Hohlein 1984).

After the Second World War, analytic philosophy turned to ordinary language and tackled neopositivist views on meaning from different perspectives. J. Austin (1979 [1940], 30) first criticised their assumption that words had fixed, user-independent meanings: “there is no simple and handy appendage of a word called “the meaning of (the word) x””. Austin (1962) showed that only a small fraction of sentences actually had truth values and that words not only mean, but also do things. H.P. Grice (1975) reasoned that there were meanings apart from those focused upon by formal logic. Such additional meanings, or implicatures, could be inferred in conversation by contrasting any message with what was typically expected in the circumstances, if the participants cooperate. Contrasts could be established from different perspectives, namely whether
the message was true; the amount of information, enough; the (apparent) meaning, relevant for the exchange; and the manner, customary.

Chomsky’s generative grammar had turned linguistics inside out and meaning had been reduced to its rationalistic bare bones in a neopositivist fashion. Several former followers, however, thought that meaning deserved a much more important role in linguistics and that actually syntax played a role in meaning. J.R. Ross, P. Postal, J. McCawley and G. Lakoff (among others) developed a partially alternative account, generative semantics, which soon adopted the arguments from the ordinary language philosophy that had cracked the foundations of the classical edifice of meaning. Since their claims were indisputable but the core generativist notions were still unchallenged, the study of meaning was simply enlarged and divided into a field of semantics, focused on denotation—where generativism would still thrive—and pragmatics, devoted to connotations and context-specific meaning.

Such an arrangement proved to be short-lived. In the classical theory of categories, context was predicted to have no effect on categorisation: something belonged to a category only if it shared a satisfactory number of features with other members. Some evidence against this notion came from experiments by W. Labov (1973) on categorising cups and vases. Labov observed that, when classifying a series of cup-like or vase-like objects, providing participants with additional information—e.g., that they were objects where you would put flowers or pour coffee—changed the ways in which they grouped the objects.

Psychologist E. Rosch (1973; 1975) offered the most convincing argument in support of the influence of context on denotative meaning, through her notion of prototypical categories. Her experiments proved that things are not merely classified into fixed categories through a checklist of criteria. Rather, things are classified into graded structures depending on some degree of perceived similarity. They are compared to the prototype or best example in the category and may be considered not only in or out of the category, but also a best—or more central—member, or a worse or more peripheral one. For instance, robin is often a better example of the BIRD category than penguin or ostrich. But, how does the categoriser decide what the best example is? Is robin the best example for everybody, everywhere? This is where culture comes into the equation, since categorisers shape this graded structure based on their own experience of the world. As a result, the typicality of things varies in different communities. While a robin may be a prototypical bird in England, it is not so in the North Pole.

In very few years, linguistics went from experiencing attempts to rescue meaning out of the ‘pragmatic waste-basket’ (Bar-Hillel 1971) to describing pragmatics as ‘meaning-minus-semantics’ (Levinson 1983, 32). The last leg of the journey from the classical, rationalist, objectivist view of meaning to today’s nearly antipodal views departed from pragmatics and ended in Cognitive Linguistics (and impacted translation studies; see, e.g., Rojo and Ibarretxe 2013). Lakoff and Johnson (1980, 133–167) argued for a third way between a transcendentalist truth, an objective meaning, and scientific realism, on the one hand, and a nihilist, subjective solipsism, on the other: experientialism, or experiential realism, argues that meaning and context are private and unstructured, and that meaning is negotiated in communication. In their theory of conceptual metaphor, Lakoff and Johnson (1980) showed how direct perception may make its way to thought and how figurative language could structure both experience and meaning (more in Section 4). De Mey (1982, 15) noted that context is actually the information supplied by the perceiver to analyse the signal and assign it a meaning (see Muñoz 1994 for differences in notions of context between De Mey and relevance theory).
Critical issues

The classical views on meaning have permeated the relatively scarce reflections on translation before the twentieth century, and their refined versions developed by logical positivism have coloured linguistic and early cognitive approaches within TIS until the end of this century. Many outstanding problems of translation, such as fidelity, literality, untranslatability and equivalence, may be ascribed to the notion of meaning they imply or explicitly entertain. Let us underscore in passing that most debates around them were pre-scientific and definitions were scarce; when considering the whole, they feel like a mess of tangled views.

Through the centuries, there were, roughly, two main understandings of fidelity. In the first one, *fidus interpres*—being faithful—refers to word-for-word translation. In the second one, fidelity relates to keeping the meaning as close to that of the original as possible. The first understanding of fidelity overlaps with literal and form-oriented translation (for the last one, see Lörscher 2010, 157–159); the second one, with free, sense-for-sense or sense-oriented translation (as in Lörscher 2010, 159–161).

Cicero distinguished everyday hack translations from literary translations, and argued that the latter demanded some *inventio*. Jerome (347–420 CE) defended his translation of the Bible with similar arguments, *mutatis mutandis*: some translations are more precious for some reason and should not be done word-for-word, but sense-for-sense. In time, this would be described as free translation. The expression is misleading, because that way of translating is often performed where no literal translation is possible, e.g., with lexical and syntactic gaps that Catford (1965, 94–98) described as instances of linguistic untranslatability. Translators then, have no other choice than to be free. In the West, the notion that fidelity entails faithfulness to meaning may probably be traced back to the ideal of direct interpretation (*sola scriptura*) of the Protestant Reformation. In the midst of political and religious struggles, faithful translations were often those that conformed to the interpretations of the authorities. In some places, they still are. Étienne Dolet was executed for three words in one of his translations: *nothing at all*.

At the other pole, arguments are even more obscure. Literal translation is paradoxically a metaphorical expression—very few one-letter words exist, such as *I*, and letters per se are simply not translated. Many word-for-word proponents accept that translators need to accommodate grammatical differences and even fill lexical gaps. Their arguments, thus, often flatten into a matter of degree and opportunity as soon as they start making their case. For Catford (1965, 93), for instance, ‘SL texts and items are *more* or *less* translatable rather than absolutely *translatable* or *untranslatable*. Lörscher (2010, 161) admits that form- and sense-oriented translating are only two extremes that cannot be found in isolation in his corpus nor in professional translation. Very few think that literal translations may have a positive impact on the readers, such as F. Schleiermacher and L. Venuti, but they are wrong (see Muñoz 1995).

We have argued that the primary aim of language is to let addressees construct meanings in their minds and that words by themselves have none. Under this light, the debate of literal versus free translation seems erred on both sides. On the one hand, from a cognitive perspective—and as far as language (not modality) is concerned—there is no essential difference in the ways texts are processed due to their text types or genres. It is interpretations, not texts or discourses, which are translated or interpreted (Muñoz 2010, 175). Interpretations are tied to single acts of understanding and nuanced differences are inevitable. Beyond that, it is a matter of censorship.
On the other hand, demands of some degree of formal correspondence between originals and their translations are sometimes uncalled-for. Some translations may differ as to the expectations readers place upon them, in that originals are read as relating to the world whereas translations may be expected to relate both to the world and to their respective originals to various degrees. A civil servant reading the sworn translation of a civil status certificate form expects to see not only the category (e.g., married) that was chosen in the form to describe the claimant’s case. She often wants to know what other categories were foreseen in the form, because countries vary as to the kinds of civil status they admit (e.g., separated, domestic partnership) and mismatches may have legal consequences. Readers of literary translations want to feel that they are not only understanding the original, but also getting a glimpse at the author’s style.

This is by no means the usual case, however. In general, as long as a translation has a reasonable correspondence to its original as to the range of meanings it may prompt, imitating the particular symbolic codification of the source text is secondary. In Nida and Taber’s (1969, 4) words, ‘anything that can be said in one language can be said in another, unless the form is an essential part of the message’. Of course, languages differ in the ways they codify and perspective information (see Section 4). And they essentially ‘differ in what they must convey and not in what they may convey’ (Jakobson 1959, 236). Nevertheless, circumlocutions, descriptions, paraphrases, explanations and the like take care of most language-pair gaps. As Mounin (1963, 266) put it, ‘[.] the theory of untranslatability is entirely built upon exceptions’ (our translation).

Catford (1965, 99–103) also identified a cultural untranslatability as that which occurs when ‘a situational feature, functionally relevant for the SL text, is completely absent from the culture of which the TL is a part’. Interestingly, he illustrated it with the impossible translation into English of the Finnish word sauna, whose meaning he did not seem to feel the need to explain! The notion of cultural untranslatability leads to the absurd conclusion that a bilingual who switched languages ‘would have difficulty in explaining in L2 what he had heard or said in L1’, so that he would be able to ‘communicate with speakers of either language but he would have great difficulty in “communicating” with himself’ (Macnamara 1970, 25–26). Today we think that humans have a joint conceptual system that can be accessed by different routes via different languages, and where items are tagged for language membership along with many other features, such as register (Paradis 1998, 50–51; Muñoz 2011, 38–39).

As for equivalence, labels such as Nida and Taber’s (1969) formal correspondence and dynamic equivalence only reproduce the old dichotomy of faithfulness. Equivalence is a notion that human translation inherited from machine translation (MT). Machines do not understand language. They have no bodies to perspectivise their knowledge. They lack accumulated experience to internally organise and link language elements and features of meaning in their lexicons. They take no part in social communication processes and cannot take somebody’s perspective, nor can they adjust their language use and negotiate meaning. They have no needs, no intentions, and set no priorities on their own. Thus, in order to take advantage of the incredible capacities of computers, we need to focus on more or less stable meanings that can be frequently associated to certain language units. But we are simply trying to find tricks to cheat, and pre-assign meaning equivalence between language units when meaning is not there, but only in our minds (see Muñoz 2016b). Current research seems to support these views as well, and will be addressed in the next section.
**Current contributions and research**

Plenty of evidence in psychological and linguistic research currently argues for a healthy and committed relationship between language and culture. Rosch’s notion of prototype did not only challenge the classical theory of categories; it also brought the role of cognitive abilities to the fore, such as attention and information retrieval. Rosch’s prototype is not only the best example in the category, but also the most salient and the one retrieved with less cognitive effort. The salient nature of prototypes has consequences for translation, in what Halverson (2003) has called ‘the gravitational pull hypothesis’. According to this hypothesis, once salient cognitive structures (such as prototypes) are activated, they exert a gravitational pull that may result in the prototypical sense being more present in translations than in originals. This hypothesis can also account for some of the characteristics of translated texts, such as normalisation or conventionalisation. These characteristics—once postulated as translation universals—are now seen as effects from this pull.

The role of cultural knowledge in categorisation is further developed in notions of how we structure knowledge in our minds, such as **schemas** and **frames** (Fillmore 1985). Meaning is an online process resulting from the interaction between schematic, ad-hoc knowledge structures and further cognitive or construal operations. One of the most basic operations is that of profiling a ‘figure’ from a ‘ground’. Positing relevant frames and identifying salient information is no miraculous guarantee to solve translation problems; but directing translators’ attention to the cognitive structures and operations involved in meaning construction can certainly help them re-construct it for readers of translations. Rojo (2002) applied frames to the translation of cultural elements and humour, and showed that they are useful to structure and systematise translation problems, especially beyond sentence level. Jakobsen and Jensen (2008) provide evidence in favour of the non-linearity and non-modularity of translation processes as an upshot of the online nature of meaning construal.

Defining meaning as a process depending on sets of ad-hoc cognitive structures and operations still poses a crucial question on the nature and principles guiding these operations. Once again, the answer may lie in the most basic human processes: our bodily perceptions. According to the ‘embodied cognition thesis,’ conceptual representations and so-called ‘high-level’ processes are firmly anchored on our body and/or sensorimotor (i.e., ‘low-level’) processes. When representing or constructing meaning, we basically ‘simulate’ or recreate the perceptual and motor processes activated during our world experiences (see Valenzuela and Rojo 2016). Experiments illustrating the activation of visual images in sentence comprehension provide extensive empirical evidence for the role of simulation in conceptual representation. Imagine, for instance, an eagle with open wings after reading *I saw the eagle in the sky* or with closed wings after *I saw the eagle in the nest* (Zwaan, Stanfield, and Yaxley 2002; Zwaan and Yaxley 2003). Glenberg and Kaschak (2002) reported higher reaction times when the direction of the action described in a sentence was not coherent with the action needed to respond to the grammaticality of that sentence (e.g., move a joystick away from you when you read *open the drawer*).

As intuitive and basic as the notion of embodiment is, it is not exempt of potential problems. One obvious limitation is abstract thought: how can we perceptually simulate processes for concepts for which we do not have a direct bodily experience, such as *peace* or *love*? Lakoff and Johnson’s (1980; 1999) theory of conceptual metaphor provides a way out of this conundrum: abstract concepts can be anchored to our bodily experiences by
mapping information from concrete—or source—domains onto more abstract—or target—domains. Therefore, when we speak of a warm welcome, we are conceptualising affective processes in terms of temperature. Williams and Bargh (2008) showed that temperature affects informants when reading such expressions. The applications of the notion of conceptual metaphor to translation have already been explored. Rather than focusing on the linguistic expression, reflecting on the cognitive domains activated in metaphor comprehension can help translators recreate the metaphor or convey the relevant meaning in the target language.

Defining metaphor as a basic cognitive process has opened the door to investigate the cognitive effort invested in the different strategies used to translate metaphorical expressions (Sjørup 2011) or in the different developmental stages in translator training (Hegrenæs 2016). Its implications for translation have also been investigated in studies focusing on the cultural and linguistic differences involved in multiple instantiations of the same metaphor in different languages (Stefanowitsch 2004; Rojo and Orts 2010; Rojo 2011). Samaniego (2013) argues that metaphors do not only integrate cultural values, but may also change them through translation or internationalisation processes. This is typically the case when new metaphors are introduced and assimilated into languages where they did not exist before.

In linguistics, the relationship between language and culture has been caught in much of a chicken-or-egg dilemma: does language determine the way we think and view the world? Alternatively, is the language we use determined by our cultural beliefs and experiences? This causality dilemma has been shaped into the principle of linguistic relativity—popularly known as ‘the Sapir-Whorf hypothesis’—and its two famous (or, rather, infamous) versions: a strong version stating that linguistic categories determine cognition, and a weak version claiming that linguistic categories only influence our thought and decisions. For a while, the strong version turned this linguistic predicament into a ‘to be or not to be’ philosophical question in TIS, where the possibility of translation was theoretically questioned (see Section 3): how can translation be possible if cognition is fully determined by linguistic categories? The strong version would unduly tarnish the translator’s work but it has been discredited. After all, alternative conceptual metaphors show that we can think of many things in more than one way; also, we are able to learn foreign languages, and explain and paraphrase meanings.

The weak version, however, may account for some phenomena found in translation. A good example is the loss of manner and path information found in English-to-Spanish translations of motion verbs. The psycholinguist D. Slobin (1996; 2003) showed that, when expressing motion events, language-typological differences may have consequences not only for linguistic online processing (thinking-for-speaking hypothesis), but also for translating (thinking-for-translating hypothesis). Rojo and Valenzuela (2001) analysed verbs of speech in English and Spanish. When translating from a language with a high prominence of manner (such as English) into one with a low manner prominence (as Spanish), they found that translators tend to omit manner approximately in 50 per cent of the cases. Similarly, they also tend to simplify the description of path trajectories in about 24 per cent of the cases. Rojo and Cifuentes (2017) tested the effect that losing manner in translation may have on the audience’s conceptualisation of the described events. In contrast, manner and path information is frequently added information when translating from Spanish into English. We will further discuss these points in the next section, where we review the main research methods used to provide evidence on the encyclopaedic and embodied nature of meaning-making processes.
Main research methods

The evolution from a classical, formalist view of meaning to an embodied approach (outlined in Sections 2 and 4) has gone hand in hand with the adoption and use of empirical and experimental research methods from other cognitive disciplines (see, e.g., Muñoz 2016a; Schwieter and Ferreira 2017). In the classical view, semantic analysis was mainly accomplished by analysing the meaning components or semantic features of words. Inherited from structuralist approaches to language, this type of analysis aimed at identifying the features that a word shared with others and those that differentiate one word from another—e.g., *lion* and *lioness* share the feature [ANIMAL], but the former is [MALE], and the latter is [FEMALE]. This approach seems to work well with simple, concrete words, but problems soon start with terms that are more abstract: What semantic features can be identified in words such as *hatred* or *happiness*? Can we actually capture all the different aspects of our knowledge of these concepts in features? What qualifies as a word feature? Last, but not least, will everyone come up with the same set of features? Valenzuela (2017) reviews the main methods for semantic analysis and the main problems of this particular method.

TIS adopted componential analysis as a suitable method to create semantic domain dictionaries that overcame the limitations of traditional dictionary definitions (Nida 1975), but it soon evolved into a whole way to analyse the source text (de Waard and Nida 1986). However, the drawbacks of componential analysis were shortly even more obvious in TIS, because in our field the meaning-making process requires the reconciliation of two different worldviews, and context—that is, the receiver—becomes the real provider of meaning. The componential analysis of the previous example may be useful to find an equivalent for the word *lioness* in a different language, but it certainly falls short when understanding entails activating different features and domains, as in metaphorical uses of words. In any case, if a translator—or any person, for that matter—does not know all the features in all the words within relevant lexical fields of the source and target languages, she would be unable to succeed in this analysis; and if she did, why would she stop and carry out such time-consuming task? (Muñoz 2013, 83).

The idea of giving language-in-use pride of place in semantic analysis has been the leading principle of corpus analysis techniques that discern ‘meaning in context’ (actually, *co-text*). Corpora have been very practical means to demonstrate the embedded and extended nature of meaning, uncovering the role of the linguistic and cultural milieu in meaning construal. Much of the existing work on conceptual metaphor is based on parallel corpora that facilitate the comparison of metaphors from a given field or genre in several languages, suggesting prospective applications for translation (e.g., Rojo and Orts 2010). However, as fruitful as this type of analysis had been, it soon became obvious that it was besieged by the researcher’s arbitrariness in classifying the metaphors. A solution to minimise subjectivity was to apply automated, corpus-based methods to the analysis of metaphor, like Stefanowitsch’s (2004) Metaphorical Pattern Analysis.

The growing power of computers shortly led to the use of mathematical models to determine the likely meaning of a word from its surrounding *co-text*. One of the renowned computational models of human semantic memory is Latent Semantic Analysis, based on counting the frequency with which a word appears in a *co-text*. This model is quite successful for predicting and mimicking word sorting and category judgements, but it still has problems with more complex phenomena that, in humans, involve activating world knowledge or discriminating senses of the same word. Yet, computational models of human semantic memory have found many practical applications. In translation, they have paved
the way for many Computer-Assisted Translation tools. In general, these tools are efficient in accurately and consistently translating unchanged portions of texts, and time savings are very high. Nevertheless, a different picture emerges when the task involves activating relevant world knowledge, because machines do not understand language. This is the case with MT programs. Statistical methods and neural network techniques have significantly improved MT programs, but they are still most effective in domains characterised by formal or formulaic language.

Many problems computers face when they try to build meaning have surfaced in psycholinguistic experiments exploring the cognitive processes at work in language comprehension and in translation. Evidence of the way our mental lexicon is organised is provided by lexical decision tasks, in which participants tend to recognise pairs of related words (e.g., mother-father) much faster than when they are not related (e.g., mother-bread). The idea is that the first word primes or provides some sort of context for the second word, or ‘target’, where the second word may or may not fit into. Priming techniques have been used to explore the enacted nature of meaning and different phenomena relevant for translation, such as the effects of cognates in finding a word correspondence in the target language (Stamenov, Gerganov, and Popivanov 2010) and the effect of ideology on translating expressions that may be inconsistent with one’s own ideological principles (Rojo and Ramos 2014).

Memory tasks have also proven useful to test the effects of language on cognition, that is, the linguistic relativity hypothesis. Filipović and Geva (2012) have found some effects regarding typological differences in the field of motion, and Boroditsky, Ham and Ramscar (2002), in the expression of tense. Memory tasks are not the only way to study the impact of linguistic framing on cognition; rating scales have also been used to test whether different lexicalisation patterns influence processes such as perception and judgment. Fausey and Boroditsky (2010) found that—as compared to non-agentive descriptions (e.g., The costume ripped)—agentive descriptions (such as Timberlake ripped the costume) result in increased perceived blame and financial liability. Filipović (2013) and Rojo and Cifuentes (2017) have used rating scales to test the effects that the loss of information about manner may have on the reception of English-to-Spanish translations of crime accounts.

The latest methods to research meaning come from neuroscience, and they allow researchers to measure brain activity as participants understand, produce or translate information (see, e.g., Shreve and Angelone 2010; Rojo 2013). They can be classified into those measuring the electrical patterns of neuronal firing, such as electroencephalograms (EEG) and Event Related Potentials (ERPs), and those depending on changes in the blood flow, namely Positron Emission Tomography (PET) and functional Magnetic Resonance Imaging (fMRI). EEGs have been particularly useful to measure the effects of semantic congruency and coherence or lack thereof, and fMRIs have been better to test the embodied view of cognition. For example, fMRI studies show that understanding action words actually activates areas of the motor cortex responsible for the real movement of the body parts involved (e.g., Hauk, Johnsrude, and Pulvermüller 2004). Rydning and Lachaud (2011) applied EEG coherence analysis to measure differences in brain activity between primary and complex conceptual metaphors. Kruger et al. (2016) are currently using EEGs to measure the audience response to subtitles.

The previous methods focus on the central nervous system. Other methods use the peripheral nervous system—including skin conductance, cardiovascular responses, and eye movements. Eye-trackers are devices designed to trace the saccadic movements and measure the gazes and pupil dilations of subjects as they are performing a given task. They record different parameters of their eye behaviour, such as fixations, backtracks, etc., as likely
indicators of cognitive effort. Spivey and Geng (2001) used eye tracking and showed that informants constructing mental images almost ‘acted them out’ with their eye movements, and that mental searches in memory are accompanied by oculomotor searches in space (i.e., participants’ direction of saccades coincided with the motion descriptions they listened in a series of stories). In TIS, eye-trackers have been used on their own or in combination with keystroke logging. Among other things, some experiments provided evidence of the encyclopaedic nature of the meaning-making process. For example, Rydning and Lachaud (2010) explored the role of co-text and expertise in translating polysemy words. Sjørup (2011) studied the strategies used to translate metaphorical expressions.

Measuring cardiovascular responses is less common than tracing eye movements, but it has also been used in TIS to measure differences in the audience’s emotional response between a metaphorical and a non-metaphorical translation of the same phraseological unit (Rojo, Ramos, and Valenzuela 2014), and between a more and a less ‘objective’ versions of an audio description script (Ramos 2014; 2016). Such reception studies provide evidence of the embodied and affective nature of meaning by showing that differences in conceptualisation processes may cause physiological changes triggered by emotional processes. What is more interesting, the influence seems to work both ways, since there is also evidence suggesting that emotional states may also affect conceptualisation processes in translation (Rojo and Ramos 2016).

**Recommendations for practice**

Any research discipline must, eventually, face the challenge to validate its results, so as to be of use in the real world. The practicalities of translation research have a most direct impact upon translator practice and training. Here we will provide some suggestions for practice derived from the investigation of meaning in translation.

The most obvious recommendation derives from the enacted nature of meaning. It is the need to challenge so-called literal interpretations, by looking for implicit meanings and inference making. Meaning is not locked up in the words of the source text; quite the opposite, meaning arises from the interaction between participants in the communicative act. Thus, to get the fullest picture possible, translators need to be aware that words are only partial clues that they must interpret in combination with their own knowledge (culture) and needs, and their assumptions about what the author of the original wants and knows, and what the audiences of both texts also want and know. Here, both language command and ethical standards are assumed as a given.

The above recommendation leads to the next point, which is the need for contextualisation. If meaning is selectively created in line with the principles of the physical and socio-cultural environment, then dictionary definitions and other documentation procedures are no longer the philosopher’s stone of translators. Rather, hypothesised context has the final say and these instruments mainly serve as the additional input we rely on to make up for knowledge gaps and, crucially, to lower cognitive effort.

We have seen that communication is a joint activity shaped by the human instinct for collaboration. Translating certainly is the most collaborative of all language tasks, since it requires translators to hypothesise the common ground shared between source text authors and their audiences, and between themselves and target text audiences. Moreover, they must also attempt to identify the inferential processes that both the source text and the target text
audiences must perform to reconstruct meaning, and decide on the best way to reconcile the differences. Understanding is creative, and getting close to the meaning we build from the original—with a view of the authors’ intent, the understanding of the former audiences, the clients’ interests, the translation readers’ expectations, and one’s own knowledge, bias, needs and ethics—in order to re-express it in another language is all but a passive exercise.

The most immediate tools translators have at hand to reconcile such differences are so-called translation shifts, i.e., the possibility of expressing the closest meaning with different language arrangements. Once they have detected the potential knowledge profile of their intended audience, they can decide on the changes they will need to implement in their text to facilitate their meaning making process so that it results in something reasonably similar to that which the translators think should be achieved, which should also be reasonably similar to the meanings translators built from the original. Changes may be at a conceptual or at a linguistic level and often involve variations both in the linguistic structure and in the patterns of relevant schemas.

Future directions

Meaning is definitely a mesmerising subject. Most constructs reviewed above cannot be directly observed and yet, they lie at the root of communication. Our belief in schemas and prototypes is grounded on the same principles that enable us to accept the existence of genes or any other scientific constructs that, despite not being visible or tangible, are useful to explain and predict natural phenomena. On these grounds, many scholars subscribe now to the view that meaning is enacted in communication, embedded in the physical and cultural context, and embodied in human physical processes. Meaning construal processes influence cognitive mechanisms, such as attention and memory; they integrate affective processes and extend thinking to the environments on which they rely.

There is now plenty of evidence on how meaning is stored and accessed in the human lexicon, and on how it interacts with our cognitive abilities and bodily functions; but it probably still amounts only to the tip of a gigantic iceberg whose main part remains deep below surface, awaiting to be brought to light. If much is yet to be found on meaning in monolingual communication, it is all the more difficult when it comes to bilingual communication and translation. Findings on meaning-making processes in translation have taught us several important points: (1) this process is not modular nor linear; (2) it develops with increasing expertise (e.g., the automatic retrieval of information improves with experience); and (3) it is affected by the translator’s cognitive makeup—e.g., her background knowledge, cognitive abilities and affective processes—in conjunction with other contextual and environmental factors, such as the co-text, the historical and cultural setting, and the working environment.

As enriching as these findings may be, there are still crucial challenges ahead on the investigation of meaning in translation. The first one concerns the need to make existing evidence converge. Results are provided from different sources and disciplines applying different research methods (for instance, we have evidence from the study of the translation product and from the study of the process, from studies using corpus-based methods, psycholinguistic methods and even ethnographic ones). Nevertheless, more attempts at aligning these findings are still needed if we want to further our knowledge of meaning-making processes in translation. Triangulating evidence is the key to generate sound theoretical explanations for existing empirical phenomena.
Further reading

A collection of empirical research papers that attempt to re-situate or re-embed the acts of translating and interpreting within what is known about the brain, the powerful relationship of brain and body, and the complex interaction between cognition and the environment.

A timely introduction to research design and methods in TIS, and also to explaining and publishing results. It assists novel researchers in providing step-by-step guidance on preparing, elaborating and writing a research paper.

A collection of essays at the interface between cognition, linguistics and TIS. It provides an overview of the different theoretical and applied models that originate at the crossroads between these disciplines, suggesting ways in which they can take advantage of the synergy between them.

A widening update of Shreve and Angelone (2010), this volume offers a panorama of perspectives on and within cognitive translation studies. It explores a variety of challenging topics related to translator and workplace characteristics, and lays out future directions for cognitive translation studies.

A pioneering, state-of-the-art set of investigations within cognitive approaches to TIS focusing on methodological innovation, the evolution of research design, and the continuing integration of translation process research results with the core findings of the cognitive sciences.

Related topics
Defining culture, defining translation; translation, style and poetics; translation as a creative force; cultural translation in language teaching.

References


