

Is Figurative Language the Final Frontier, or a Pit Stop Along the Way?

Bilingual Figurative Language Processing

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One of the most interesting aspects of human communication is that people do not always mean what they say. Indeed, a big part of a listener's job is to understand an utterance even when its literal meaning is false. How do people do that? Nonliteral expressions constitute an important part of everyday language. Because of this, the mechanisms and processes involved in the processing of nonliteral language have attracted increasing study over the past several decades. Not surprisingly, the breadth of the topic has motivated researchers to move beyond the general matter of figurative language to focus on specific subtopics (e.g., idioms, metaphors, hyperbole, irony) or on specific subdomains of language users (e.g., clinical populations, children). The collection of research reviewed here represents the current state of work on one such subdomain: bilinguals.

This is the fifth edited volume that Roberto Heredia has been a part of and the first to focus entirely on bilingual figurative language processing. His co-editor, Anna Cieślicka is a colleague at Texas A&M International University and fellow language

researcher. Between the two of them, they have notable expertise on bilingualism (in general) and figurative language (in particular). Their view is that research on figurative language processing by bilinguals and second language learners will bring us closer to some answers to questions that have long vexed those pursuing them from a monolingual perspective. To that end, they have brought together an international team of researchers whose work covers a range of topics, from idioms and metaphors to humor and irony, specifically as occurs in bilingual or second language learning situations. The resulting volume provides a fresh perspective on the production and comprehension of figurative language and how people acquire, store, and process it in multilingual settings.

What is figurative language?

We often use the word “literal” to refer to the meaning of a word stored in the lexicon (e.g., “context-free”). This definition is based on Searle (1978, 1979), who argued that the components of sentences carry their literal meanings individually. But how do listeners differentiate between the meaning of an entire utterance and the single words within it? One way to approach this question is by appealing to the principle of compositionality, by which the meaning of a complex expression, whether mathematical or linguistic, is determined by the meanings of its constituent expressions and the rules used to combine them. In the case of a linguistic expression, if the core lexical components are removed from the sentence, what remains will be the rules of composition. This issue of compositionality is at the heart of the debate over how figurative language is processed (e.g., Gibbs, 2002; Recanati, 1995). How does the combination of literally represented individual words into an utterance lead to a

nonliteral interpretation? Are literal and figurative meanings binary, in the sense that everything that is not literal is figurative? Or are literal and figurative meanings better thought of as end points on a scale along which the different figurative phenomena (e.g., metaphor, metonymy, irony, idioms) are arranged? Suffice it to say that answers to these questions are hard to find. One might imagine they would be even more so when bilingualism is added to the mix, but that has not prevented the emergence of a subfield of research focused on just that.

Understanding Idioms across Languages

A good portion of the early work on figurative language processing focused on the most canonical of figurative forms, idiomatic phrases (or idioms). That research pointed to what seemed like relatively straightforward answers along the lines of idioms being non-decomposable (fixed) phrases and thus exceptions to the principle of compositionality. In the process, however, the many other forms of figurative language—and the different varieties of idioms themselves—were noted for challenging any one-dimensional, non-decomposable explanation (e.g., Cutting & Bock, 1997; Gibbs & Nayak, 1989; Gibbs et al., 1989). Some idioms are frozen, some are flexible, and ultimately, compositionality appears to be a matter of degree. It was this variability that prompted Wulff (2008) to develop a quantitatively oriented approach for determining degrees of compositionality of different phrases by working across large text corpora. The research questions have likewise broadened to include various other ways people do not mean what they say. Of the many forms, sarcasm might be the *sine qua non* that any theory of figurative language processing must account for, in its ability to implicitly negate that which is stated explicitly. A chapter by Katarzyna Bromberek-

Dyzman on irony understanding across the first and second language (L2) implicates affect and attitude continua rather than the literal-figurative one as the basis for such gradations in meaning. Regardless of how the various forms of figurative speech are classified, it is fair to say that figurative language research has become substantially more varied since researchers first tackled the issue of how idioms are understood (e.g., Bobrow & Bell, 1973; Swinney & Cutler, 1979; Gibbs, 1980).

Which is not to say that idiom processing is simple nor that there is a unified account of how it is done, even in a single language. Suffice it to say that idioms are well represented in this volume. Of the twelve chapters, six focus on idioms. This is probably as it should be, given that the subdomain of bilingualism introduces enough variability on its own; narrowing the subtopic to idioms simplifies matters. Debra Titone, Georgie Columbus, Veronica Whitford, Julie Mercier, and Maya Libben have a chapter on contrasting bilinguals' and monolinguals' processing of idioms, Anna Cieślicka on idiom acquisition by foreign-language learners (L2), John Liontas on methodological considerations when testing idioms on non-native speakers, and Frank Boers and Stuart Webb on the semantic transparency of idioms. Omar García, Cieślicka, and Heredia's chapter on methodological considerations when testing figurative language beyond idioms provides a useful overview of the different methods used in work on different figurative language subtopics. And different forms of figurative language are represented as well, from Zoltán Kövecses, Veronica Szelid, Eszter Nucz, Olga Blanco-Carrión, Elif Arika Akkök, Szabó, and Réka Szelid's chapter on anger metaphors across languages, Albert Katz and Andrea Bowes' chapter on embodiment in metaphor, Jyotsna Vaid, Belem López and Francisco Martínez's chapter on humor, and Silke

Paulmann, Zainab Ghareeb-Ali, and Claudia Felser's chapter on neurophysiological markers of phrasal verb processing. In other words, despite an emphasis on idioms, other forms of figurative language are represented.

In truth, idioms remain the go-to example of what figurative language is and, consistent with the bilingual/L2 subtheme, idioms can present a particularly effective way to break into a second language as a non-native speaker. They provide a learner with a native-sounding way to refer to something in a relatively complex way and without having to think about the grammaticality of the phrase used to say it. On the other hand, their misuse is one of the most telling signs of a non-native speaker and, as is noted in the volume's foreword, they "are good candidates for revealing the repertoire of strategies for making sense of linguistic expressions in L1 as well as in L2." The chapters that specifically address this issue highlight a number of contradictory observations about idioms, among them a between-language transfer function that helps in their interpretation (on the positive side) and a compositionality-bias that leads to misinterpretation (on the negative side). Particularly elegant is the chapter by Istvan Kecskes that examines a small corpus of speech between what he refers to as "English as lingua franca speakers" (non-native English speakers communicating in English, their second language). His analysis of the importance and prevalence of formulaic language among native speakers is meant to underscore the particular difficulty such language poses to non-native speakers. This interpretation is supported by his corpus analysis, which shows that the number of formulaic expressions in lingua franca communication is far lower than that documented in communication between native speakers. This is not to say that the amount or type used is uniform across non-native

speakers. Kecskes cites data demonstrating that less proficient learners overuse a small number of formulaic expressions, while more advanced learners are more likely to generate new sequences based on ones they know, something that can get them into trouble given the often arcane grammatical structures manifested in fixed phrases. These observations are consistent with my own findings on communication between native and non-native speakers (Bortfeld & Brennan, 1997), in which useable phraseology was collaboratively developed and maintained across the course of a challenging communication task. Where this work piqued my interest in idioms and took me down the figurative language rabbit hole (e.g., Bortfeld, 2002, 2003), I am now of the view that collaborative communication as mediated by prior knowledge, whether mutual or not, is the best lens through which to examine this issue.

Natural Language Processing

Although occurrences of figurative language are in abundance in natural discourse, recognition of the complexities underlying how it is used and understood registered on a grand scale when it became clear that these constitute the hardest problems for a variety of natural language processing tasks, including machine translation, text summarization, and question answering. With natural language processing at its current, unprecedented stage of development (see <http://www.theverge.com/2016/5/9/11639992/viv-digital-assistant-ai-artificial-intelligence-siri>), it is all the more pressing that the bottleneck presented by figurative language be addressed. Machine-based natural language processing is used in a diverse set of computer applications (see Bird et al., 2009), ranging from small,

relatively simple tasks (e.g., short commands issued to robots), to highly complex ones (e.g., full comprehension of newspaper articles or poetic prose).

Of course, many real world applications fall between these two extremes. In-depth understanding of text is not required to classify emails for routing through a corporate hierarchy when a relatively superficial form of automatic analysis will do. In turn, such routing is more complex than managing queries to database tables with fixed frameworks. But insofar as figurative language communicates more complex meanings than does literal language, it presents a serious problem to machine learning. When humans understand literal language, they combine the meanings of individual words into larger units in a compositional manner, whereas understanding figurative language involves at the very least an interpretive adjustment to those individual words. Given the ubiquity of this type of language (e.g., in web content), its automatic processing entails a substantial challenge both theoretically and pragmatically. In other words, any complete model of language processing needs to account for the way normal words' meanings can be profoundly altered through combination (Wulff, 2008). This is well beyond the "fixed phrase" take on idiom comprehension.

As with the subtopics of figurative language, different subtopics of natural language processing are more or less challenging to get a handle on (but see Jurafsky & Martin, 2009 for a comprehensive overview). For example, there is considerable—and growing—commercial interest in natural language understanding because of its application to news-gathering, text categorization, voice-activation, archiving, and large-scale content-analysis. Because natural language understanding deals with machine comprehension, a process of disassembling and parsing input, it is substantially more

difficult than the reverse process of assembling output (e.g., natural language generation). Where they can be pre-determined when outputting language for natural language generation, problems emerge in natural language understanding when unknown or unexpected features appear in the input and force the parser to determine which syntactic and semantic schemes to apply. Increasingly, probabilistic approaches are being deployed to address such problems, as exemplified by statistical learning systems for metaphor (e.g., Shutova et al., 2012; Shutova, 2015). Another approach is to model rational communication between speakers and listeners.

Common Ground

Given the importance of how natural language processing systems handle figurative language, one might wonder whether basic research from cognitive psychology has helped in the development of current systems. While the premise of compositionality appears to be taken at face value by computational modelers (e.g., Veale et al., 2016), a new generation of computational linguists is embracing the notion that people understand nonliteral language as such when they realize the purpose of the communication (Grice, 1989). In other words, modelers are beginning to bypass debates about what the various forms of figurative language are to focus instead on how to represent the reasoning behind a speaker's words (e.g., Kao et al., 2014).

When listeners try to understand the superficial content of communication as well as the underlying subtext, they are better able to understand the speaker's intended meaning. It also doesn't hurt to have a good amount of common knowledge about what is being described or expressed. As Herb Clark and his colleagues observed (e.g., Brennan & Clark, 1996; Clark & Marshall, 1978, 1981; Isaacs & Clark, 1987; Schober &

Clark, 1989), speakers and listeners assume that individuals are rational agents who use common ground to best maximize information. If we focus on what listeners know about one another's knowledge states and how that influences language production and comprehension, we can get a long way towards understanding how figurative language is processed as well. In natural language processing circles, it has become increasingly clear that a computational model that integrates empirically measured background knowledge, communication principles, and reasoning about communicative goals will go much further than one that stores pre-identified linguistic chunks or phrases in template form. Where the latter approach can really only accommodate idioms, newer probabilistic approaches seem to handle a range of metaphoric language rather handily (see Veale et al., 2016).

The push to account for meaning through probabilistic intention (e.g., noisy-channel comprehenders, Levy, 2008) encompasses all forms of language and represents a ground shift in the field. Researchers whose focus is on how humans process figurative language would likewise benefit from such a broadening of approach. It seems there is no other way that a model (whether of machine or human processing) can encompass metaphor, irony and the many other forms of figurative language without this higher level perspective. Indeed, there are many points at which the researchers who have contributed to Heredia and Cieřlicka's collection acknowledge that a speaker's intention is a critical part of figurative language processing (e.g., Kecskes). Thus, we appear to be working towards an overall framework of natural language processing that takes into account context, intention, and other subtle shades of meaning, ultimately bridging the literal-figurative divide. Whether that approach

constitutes the best way to characterize what humans do when they process figurative language remains an open question. Regardless, adding the dimension of mutual knowledge to the mix may provide the most coherent view of what figurative language is and why it matters, however many languages it is being processed in.

Nonetheless, the volume does an admirable job addressing the intersection of two topics (figurative language and bilingualism) that historically have been—even in isolation—considered somewhat “fringy” in the field of cognitive psychology. Finding clear answers to how people not only understand what is *not* said but do so across multiple languages might seem overly ambitious, but the volume’s appearance is well-timed. How people understand language that means something other than what it says has been attracting interest from researchers with notably different perspectives on why it is worth answering. Where successful machine processing of even the most literal language seemed out of reach until relatively recently, advances in the past decade have pushed computational “understanding” of the full range of possible interpretations, from literal to figurative and everything in between, to new levels (see Bird et al., 2008 for (already outdated) examples). These advances in natural language processing, built in large part on advances in computational linguistics, should likewise help cognitive psychologists think about their approaches to the topic in new ways.

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