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COMPLEX MAPPING OF WORDS
AND GESTURES IN TED TALKS

Abstract

The article explores the interdependence of the verbal and the physically embodied – here gesture-related – subsystems in the creation of meaning in a sample of TED Talks (*www.ted.com*), an increasingly popular genre for scientific popularization largely exploited in education. My goal is to identify and illustrate possible indices of complexity in the mapping of words with gestures, thus paving the way for a better understanding of the role of different semiotic resources in the talks and, ultimately, contributing to the development of multimodal literacy. In fact, the hybrid nature of the genre legitimises a holistic approach to the analysis of its discourse as a complex multisemiotic system. Multimodal ensembles (Kress 2003; 2009; 2010) are viewed as a special case of complex systems, and modal density (Norris 2009) and modal coherence (cf. Valeiras Jurado 2017) as indices of complexity therein. Data description is based on multimodal transcription through an integrated method (Lazaraton 2004), which makes it possible to advance hypotheses about the interpretation of different gestures (NcNeill 1992). Indeed, several gestures in the talks under analysis complement verbal information in no redundant ways and appear to serve various functions on different discourse levels, both locally and more globally, and in more or less predictable (hence more complex, context-dependent) ways.

Keywords: TED Talks; gestures; multimodality.

Introduction

This contribution focuses on the interplay of words and gestures in the creation of meaning in the TED Talks (Technology, Entertainment and Design), a nonprofit organisation devoted to knowledge dissemination through short, powerful talks on various topics and in more than

100 languages. A website hosts the videos of the talks[1], thus also enabling asynchronous access. They display extensive coverage of different semiotic resources including gestures (van Edwards 2015) and are an example of how the use of digital technologies reshapes genre conventions (Jewitt 2013).

The talks are enjoying considerable online success, probably due to an appetite for ideas communicated in inspirational ways (Meza and Trofin 2015), and are also increasingly being exploited in educational settings (Takaesu 2013; Carney 2014; among others)[2]. In fact, the hybrid nature of the genre legitimises a holistic approach to the analysis of its discourse as a complex multisemiotic system. My goal here is to identify and illustrate possible indices of complexity in the mapping of words and gestures, thus paving the way for a better understanding and detailed coding of different semiotic resources in this genre of popularisation and ultimately contributing to the development of multimodal literacy.

Background and methodology

The present study draws on past research on co-speech gestures and on TED Talks. On the one hand, research on gestures, especially in SLA and foreign language learning and teaching (cf. Littlemore and Low 2006; McCafferty and Stam 2008; Macedonia and von Kriegstein 2012; Taleghani-Nikazm 2008; Littlemore, MacArthur, Cienki, Holloway, 2012; O'Halloran, Tan, Smith 2016; Church, Alibabi, Kelly 2017) has underscored their roles in helping comprehension, memorisation and production, among other functions.

On the other hand, research on TED Talks so far (cf. Caliendo 2012; Laudisio 2013; Caliendo and Compagnone 2014; Compagnone 2014; Scotto di Carlo 2013; 2014a,b,c; 2015; D'Avanzo 2015; Rasulo 2015; Mattiello 2017; Anesa 2018; *inter alia*) has devoted relatively little attention to non-verbal aspects (for some exceptions, see Meza and Trofin 2015; Sugimoto *et al.* 2013) and to gestures in particular, despite their pervasive presence in the genre (for some more exceptions, see Masi 2016; Valeiras Jurado 2017; Masi 2018).

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[1]   *www.ted.com*.
[2]   Also cf. *Keynote*, i.e. a multi-syllabus ELT course, National Geographic Learning (Dummett, Stephenson, Lansford 2016), the Learn English with TED Talks app, National Geographic Learning (2018), *https://ngl.cengage.com/sites/support/app-resources/learn-english-ted-talks* (last accessed April 23, 2016), and TED-Ed, lessons worth sharing, *https://www.ted.com/watch/ted-ed* (last accessed June 28, 2017).

As for complexity, and closely-related difficulty, these notions are of crucial importance in language learning and teaching, most obviously in the grading of the materials students are to be exposed to. As the TED Talks, along with other audiovisual products (Crawford and Bonsignori 2015), are largely used in contemporary educational settings, the contribution of non-linguistic aspects to the complexity of such materials should be taken into account too. Indeed, non-linguistic aspects like gestures can enhance understanding but could also locally represent an obstacle to comprehension.

Several references to complexity can be found in the literature on multimodality. A useful notion is Norris's (2009) modal density, which can manifest itself through modal intensity or through modal complexity, the latter being referred to in terms of intricacy of intertwined multiple modes (pp. 82-83). As for gesture, this is regarded as a complex system (Adolphs and Carter 2013: 158), and more precisely, "the gesture and its synchronized co-expressive speech express the same underlying idea but do not necessarily express identical aspects of it. By looking at the speech *and* the gesture, jointly, we are able to infer characteristics of this underlying idea unit that may not be obvious from the speech alone" (McNeill 1992: 143; in Larsen-Freeman and Cameron 2008: 170, emphasis in the original).

The notion of complexity here taken into account is indeed indebted to theories of complex dynamical systems as employed in empirical sciences (Elman 1995; Collier and Hooker 1999) and as applied to different linguistic fields of research and phenomena[3]. Following Bertucelli Papi and Lenci (2007), two interdependent variables that account for the complexity of a system (e.g. language at large or a more specific linguistic phenomenon) are the amount of information necessary to describe the system at a given time of its development and organisational properties of the system itself. The more regular and predictable the organisation, the lower the quantity of information necessary to describe its status, i.e. the lower its complexity.

For the purposes of the present investigation, multimodal ensembles (Kress 2003; 2009; 2010) are viewed as a special case of complex systems, and modal density as an index of complexity therein. In more detail, modal density refers to the quantity of modes involved at a giv-

[3]   Cf. applied linguistics (Larsen-Freeman and Cameron 2008), second language development (Verspoor, de Bot, Lowie 2011) and construction learning (Baicchi 2015). For examples of application to diverse phenomena, cf. esp. lexical complexity (Bertuccelli Papi and Lenci 2007), as well as preceding research on text complexity (Merlini Barbaresi 2003).

en time in the meaning-making process of a given ensemble. An even more revealing index of complexity taken into consideration is modal coherence (cf. Valeiras Jurado 2017), referring to the way these modes are orchestrated, i.e. organised into meaningful ensembles. Indeed, the contribution realised by different modes may be at times 'aligned', complementary or contradictory / in tension (Jewitt 2013: 255), which can be interpreted as involving patterns whose coherence is progressively less predictable or directly identifiable, thus correlating with higher complexity levels.

The analysis of the variables mentioned above (esp. modal coherence) covered fifteen talks by American and British English speakers, recorded during the period 2012-2017 and centred on different topics within the domains of Business and Economics, Law, Medicine, Political Science and Technology. It was of a qualitative type and especially focused on deictic and metaphoric gestures (McNeill 1992). Modes can in fact be viewed as forms of organisation (within ensembles) which involve norms that realise well-acknowledged regularities within any one community at a given time (Jewitt 2013: 253). Indeed, among gestures, emblems (McNeill 1992) display a conventional, hence regular and predictable mapping with their meaning (within a given community or across several communities). Other types are iconic, deictic and metaphoric gestures, whose interpretation tends to be progressively more context-dependent, and in the case of metaphoric gestures in particular, meaning is less transparent to grasp due to their abstract referents. As for the methodology employed, I used a multimodal transcription through an integrated method (Lazaraton 2004), which made it possible to advance hypotheses about the conceptual schemas represented by metaphoric gestures (Cienki and Müller 2008) and the interpretation of their functions in the talks (for more details about the methodological framework, see Masi 2016).

Findings and some illustrative examples

The findings highlight a variety of functions of gestures (e.g. representational, social, parsing, performative, cf., e.g. Kendon 2004; Müller 2008), many of which are fulfilled simultaneously in dense ensembles (cf. Masi 2016). A range of examples are provided below. They show a more or less obvious mapping with words, also depending on the scope of the analysis. In the examples, the words accompanied by relevant gestures are in italics and are followed by the description of the gesture, the speaker's name, the time at which the segment occurs within the talk and its domain (in parentheses).

A broad distinction can indeed be made between co-expressive ('aligned') gestures and complementary gestures involving only a partial overlap or no overlap at all, i.e. in tension with concurrent words, in which the mapping is locally less consistent or obvious. The first set (from the same talk) displays co-expressive patterns with a representational function on the semantic-referential level:

1. Politicians find it easier to *throw* the red meat out to the base (Right hand moves outward from the body, from left to right, loosely open hand facing audience); (Bynum, 03:50, Political Science)[4];

2. To win an election you have to *dumb it down* and play to your constituencies' basest, divisive instincts (Open right hand palm facing down and slightly moving down at front); (Bynum, 03:57, Political Science).

The excerpts above illustrate metaphoric gestures which have the potential of assisting in the comprehension of opaque linguistic expressions, i.e. an idiom referring to demagogic rhetoric and a phrasal verb, via embodied schematic representations (motion away from the centre of the body and vertical motion, respectively).

The next case, instead, shows slightly higher modal density with a complementary effect:

3. Actually health of employees is something that business *should treasure* (Both arms are half-raised at front, hands closed in fists, tension involved; speaker bends over slightly); (Porter, 11:28, Business and Economics)[5].

Here the closed configuration of hands can be interpreted as representing the act of keeping or preserving something valuable (i.e. health), and the tension involved appears to complement the mapping with emphasis on evaluation (i.e. high value of health). Body posture and prominent prosody (especially accompanying the words in bold) also add to the effect.

[4]   Bynum, G. T., "A Republican mayor's plan to replace partisanship with policy", *https://www.ted.com/talks/g_t_bynum_a_republican_mayor_s_plan_to_replace_partisanship_with_policy*, last accessed July 15, 2017.

[5]   Porter, M., "The case for letting business solve social problems", *https://www.ted.com/talks/michael_porter_why_business_can_be_good_at_solving_social_problems*, last accessed July 15, 2017.

The example below displays a complementary pattern where a deictic gesture endorses the evaluative statement of the speaker via an act of visual self-mention (a simile as if to say 'like myself'):

4. We know that the Criminal Justice System disproportionately affects *people of color* (Both hands turned towards speaker); (Foss, 05:17, Law)[6].

In the following passage, a metaphoric gesture is inserted in between words and visually represents an idea (drug-drug interactions) fully expressed verbally only at a later stage in the talk:

5. How much have we studied (two different pillboxes, held by speaker in each hand, repeatedly hit each other high at front) these two together? (Altman, 01:18, Medicine)[7].

In the next case, the gesture co-occurs with a silent pause after the following:

6. Let's take pollution (left arm is bent at front, with thumb supporting chin, index and middle finger touching mouth; right arm folded around chest and supporting left elbow); (Porter, 10:39, Business and Economics).

Rather than represent referential content, the configuration appears to have a pragmatic-performative function. It is reminiscent of the emblem used to call for silence (upright index across mouth, lip rounding) but signals the act of pausing and thinking about the subject that is being introduced, thus leading into its discussion.

Another case of gesture complementing the message with a performative interpretation is offered by the next excerpt:

7. And really *is there any role for business* (Both hands are open at front, moving repeatedly from right to left) and if so, *what is that role*? (Approximately same configuration and motion as before) (Porter, 01:23, Business and Economics).

Repeated motion sideways appears to visually hint at indecisiveness, which is compatible with a search for answers (verbally expressed through questions and supported by intonation).

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6   Foss, A., "A prosecutor's vision for a better justice system", *https://www.ted. com/talks/adam_foss_a_prosecutor_s_vision_for_a_better_justice_system*, last accessed July \5, 2017.
7   Altman, R., "What really happens when you mix medications?", *https://www. ted.com/talks/russ_altman_what_really_happens_when_you_mix_medications*, last accessed July 15, 2017.

In the following passages (accompanied by screenshots), the gestures appear to be locally in tension with the meaning of words they co-occur with, although the tension soon disappears as a plausible interpretation can be identified thanks to the co-text. The next case is subdivided into two parts (8a, 8b):

8a. *Businesses* (Fingers of both hands are first closed in bunches touching speaker's head) (Porter, 14:48, Business and Economics).

Fig.1. Example of gesture co-occurring with 'businesses'

8b. *got trapped* into the *conventional wisdom* (Speaker's hands repeatedly move at front, away from the body); (Porter, 14:50, Business and Economics).

Fig. 2. Example of gesture co-occurring with 'got trapped'
and 'the conventional wisdom'

The metaphoric gesture in 8a, if taken in isolation, is momentarily obscure as it anticipates, and emphasises thereby, the representation of businesses as 'a mental condition' (viz. their incapacity to adopt a different perspective), which is then verbally expressed through the metaphor of a trap in the passage in 8b. The gesture in 8b then physically locates businesses to the front of the speaker as the site of the trap-conventional wisdom.

In the final excerpt below, outward motion (implying unbounded space) is used for the representation of the concept of reduction, which appears to be somehow counterintuitive if compared, for instance, to inward motion (bounded by the speaker's body):

9. We've learned today that actually *reducing pollution* and *emissions* is *generating profit* (Left arm repeatedly turns over outward from the speaker's body); (Porter, 10:41, Business and Economics).

Fig. 3. Gesture co-occurring with 'reducing pollution',
'emissions' and 'generating profit'

In fact, the same gesture is used in the talk to represent the positive ideas of profit and progress. The gesture thus superimposes the idea of positive value with pollution reduction through the visual equivalence with the motion representing those concepts elsewhere.

Concluding remarks

Although limited in number, the selected cases above show the potential of gestures to variously enrich and assist in discourse comprehension in the talks, for instance by illustrating possibly unknown phraseology, placing emphasis on and conveying evaluation (more or less directly) along with other speech acts (for more examples – also of multifunctional configurations, see Masi 2016). However, the understanding of a complex mapping which involves a dense configuration, abstraction and especially complementarity or local tension may require more inferential work. Experimentation is obviously needed to corroborate this claim. Indeed, further research is needed on the evaluation of the complexity of multimodal teaching materials in general, and on the basis of analyses of apparent mismatches between verbal and nonverbal signs in particular, also by taking into account a broader perspective (see Masi 2018) and other interdependent modes.

Acknowledgments

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