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**UNIVERSIDAD  
DE GRANADA**





UNIVERSIDAD  
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Departamento de  
Filologías Inglesa  
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*Facultad de Ciencias  
Económicas y Empresariales*  
Universidad de Granada



**SECONDS**  
Semantic Conceptual Development Systems



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## WEDNESDAY 3 JULY 2019

9:15 – 9:45	Registration (Salón de Grados Hall)
9:45 – 10:00	Opening act (Salón de Grados)
Salón de Grados	<b>Chair: Ángel Felices Lago</b>
10:00 – 11:00	<i>ARTEMIS from a constructionist perspective: Reassessing constructional structures for a NLU environment</i> <b>Francisco Cortés-Rodríguez</b>
11:00 – 11:30	<i>The positional behaviour of peripheral constituents in the Airbus Corpus</i> <b>Carolina Rodríguez-Juárez</b>
11:30 – 12:00	<i>Parsing constructions in the English-based controlled natural language ASD-STE100: Formalizing constructional meaning in ARTEMIS</i> <b>María del Carmen Fumero Pérez and Ana Díaz Galán</b>
12:00 – 12:30	COFFEE BREAK
Salón de Grados	<b>Chair: Carolina Rodríguez Juárez</b>
12:30 – 13:00	<i>Parsing subordination in ARTEMIS: The case of adverbial complex sentences in STE</i> <b>Marta González Orta and María Auxiliadora Martín Díaz</b>
13:00 – 13:30	<i>Level 3 constructions in FunGramKB: The case of “requesting”</i> <b>Rocío Jiménez Briones and Alba Luzondo Oyón</b>
13:30 – 14:00	<i>A principled account of coercion in the English benefactive construction: Constraints on subsumption</i> <b>Pilar Guerrero Medina</b>
14:00 – 15:30	LUNCH BREAK
Salón de Grados	<b>Chair: Ángela Alameda Hernández</b>
15:30 – 16:00	<i>An experimental methodology for the description and analysis of the phenomenon of syntactic ambiguity</i> <b>Fredy Núñez Torres</b>
16:00 – 16:30	<i>Linguistic empathy in structuring the sentence meaning</i> <b>Irina Ivanova-Mitsevich</b>
16:30- 17:00	COFFEE BREAK
Salón de Grados	<b>Chair: Fredy Núñez</b>
17:00 - 17:30	<i>The representation and meaning of hate through humour: The case of memes</i> <b>Carmen Aguilera Carnerero</b>
17:30 – 18:00	<i>A morphosemantic study of affixoids/semiwords</i> <b>M<sup>a</sup> del Rosario Tortosa Martínez</b>
18:00 – 18:30	<i>Brain adaptation for three stage digital evolution of linguistic information</i> <b>Kumon Tokumaru</b>

## THURSDAY 4 JULY 2019

Salón de Grados	<b>Chair: María Beatriz Pérez Cabello de Alba</b>
9:30 – 10:00	<i>Implications of terminological meaning extension in shaping verb frame semantics</i> <b>José Manuel Ureña Gómez-Moreno and Pedro Ureña Gómez-Moreno</b>
10:00 – 10:30	<i>The role of incongruity and inconsistency in advertising</i> <b>M<sup>a</sup> Sandra Peña Cervel</b>
10:30 – 11:00	<i>Amalgams of cognitive operations: a case study</i> <b>M<sup>a</sup> Sandra Peña Cervel and Carla Ovejas Ramírez</b>
11:00 – 11:30	<b>COFFEE BREAK</b>
Salón de Grados	<b>Chair: María Sandra Peña Cervel</b>
11:30 – 12:30	<i>Figurative thinking and grammar: A view from the perspective of the Lexical Constructional Model</i> <b>Francisco Ruiz de Mendoza Ibáñez</b>
12:30 – 13:00	<i>Entering through the back door or the backdoor: figurative language in shaping digital society</i> <b>Inna Skrynnikova</b>
13:00 – 13:30	<i>Metaphors we love by</i> <b>Nella Trofimova, Svetlana V. Kiselyova and Irina Rubert</b>
13:30 – 14:00	<i>English and Urdu middle constructions: Pretense or not pretense?</i> <b>Mahum Hayat</b>
14:00 – 15:30	<b>LUNCH BREAK</b>
Salón de Grados	<b>Chair: José Manuel Ureña Gómez-Moreno</b>
15:30 – 16:00	<i>A cognitive pedagogical grammar proposal for the explicit instruction of directive speech acts</i> <b>Mahum Hayat and Lorena Pérez Hernández</b>
16:00 – 16:30	<i>Conceptual blending in investment terminology</i> <b>Svetlana V. Kiseleva</b>
16:30 – 17:00	<b>COFFEE BREAK</b>
Salón de Grados	<b>Chair: Carmen Aguilera Carnerero</b>
17:00 – 17:30	<i>Complexity in irony: Echoic cognitive operations in the Lexical Construction Model</i> <b>Inés Lozano Palacio</b>
17:30 – 18:00	<i>The metonymic and echoic exploitation of scenarios in meaning making</i> <b>Alicia Galera Masegosa</b>
19:30 – 21:00	<i>Free walking tour through the old Muslim district: “EL ALBAYCÍN”</i>

## FRIDAY 5 JULY 2019

Sala de Grados 2	<b>Chair: Carlos Periñán Pascual</b>
9:00 – 10:00	<i>Bibliometric tools for discovering information in science</i> <b>Enrique Herrera Viedma</b>
10:00 – 10:30	<i>Using a lexical bridge in a conceptual framework for a conversational software agent</i> <b>Kulvinder Panesar</b>
10:30 – 11:00	<i>Chatbots and conversational artificial intelligence (AI) - critical success factors</i> <b>Kulvinder Panesar</b>
11:00 – 11:30	<b>COFFEE BREAK</b>
Sala de Grados 2	<b>Chair: Pedro Ureña Gómez-Moreno</b>
11:30 – 12:00	<i>Functional neurolinguistics and clinical computing</i> <b>Ricardo Mairal Usón and María Beatriz Pérez Cabello de Alba</b>
12:00 – 12:30	<i>Speech acts in public textual cyberbullying</i> <b>Aurelia Power</b>
12:30 – 13:00	<i>A linguistically-aware model for microtext geocoding</i> <b>Nicolás Fernández Martínez, Carlos Periñán Pascual and Ángel Felices Lago</b>
13:00 – 13:30	<i>The functional-semantic status of lexical-grammar discursive markers (on the material of Modern English)</i> <b>Sabina Nedvailik</b>
13:30-13:45	<b>Closing act (Sala de Grados 2)</b>
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## **ARTEMIS from a constructionist perspective: Reassessing constructional structures for a NLU environment**

Francisco José Cortés Rodríguez  
Universidad of La Laguna, Tenerife (Spain)  
[fcortes@ull.es](mailto:fcortes@ull.es)

The goal of this talk is to assess the status of constructions and other grammatical objects in ARTEMIS (Automatically Representing Text Meaning Via an Interlingua Based System), a Natural Language Understanding prototype that seeks to provide the syntactic and semantic structure of a given fragment from a natural language; in its present state it is gradually being implemented for English and ASD-STE100 ('Simplified Technical English for Aerospace and Defense', a Controlled Natural Language specification originally created for aerospace industry documentation).

ARTEMIS forms part of a set of tools for different NLP tasks, built around a Knowledge Base, namely FunGramKB (Functional Grammar Knowledge Base). Both the structure of FunGramKB and the components of ARTEMIS are grounded on a linguistic model, the Lexical Constructional Model (LCM), in which constructions are a central tool for the linguistic description of languages.

However, since ARTEMIS is a computational device, there are many formalization requirements which involve the adaptation of the LCM, a process which necessarily leads to reconsidering a number of issues, as are: (i) what counts as a constructional structure; (ii) how constructions contribute in parsing operations in ARTEMIS; and (iii) where constructional patterns should be located and which format they should have.

Even though there are some works that have dealt with some of these questions especially in relation to the LCM and descriptive construction grammars (Periñán-Pascual 2013, Luzondo and Ruíz de Mendoza 2015, Díaz-Galán and Fumero-Pérez, 2016; Fumero-Pérez and Díaz-Galán 2017), I believe that it is still necessary to address them jointly in an overall review of ARTEMIS within the framework of other constructionally oriented formal grammars.

## **Bibliometric Tools for Discovering Information in Science**

Enrique Herrera Viedma  
University of Granada, Granada (Spain)  
[viedma@decsai.ugr.es](mailto:viedma@decsai.ugr.es)

In bibliometrics, there are two main procedures to explore a research field: performance analysis and science mapping. Performance analysis aims at evaluating groups of scientific actors (countries, universities, departments, researchers) and the impact of their activity on the basis of bibliographic data. Science mapping aims at displaying the structural and dynamic aspects of scientific research, delimiting a research field, and quantifying and visualizing the detected subfields by means of co-word analysis or documents co-citation analysis. In this talk we present two bibliometric tools that we have developed in our research laboratory SECABA: H-Classics to develop performance analysis by based on Highly Cited Papers and SciMAT to develop science mapping guided by performance bibliometric indicators.

## **Figurative thinking and grammar: A view from the perspective of the Lexical Constructional Model**

Francisco Ruiz de Mendoza Ibáñez  
University of La Rioja, Logroño (Spain)  
[francisco.ruizdemendoza@unirioja.es](mailto:francisco.ruizdemendoza@unirioja.es)

The *Lexical Constructional Model* (LCM) accounts for the way meaning construction processes take place, at all descriptive levels, in preparedness for syntactic realization (Ruiz de Mendoza and Mairal 2008, Mairal and Ruiz de Mendoza 2009, Ruiz de Mendoza 2013). It incorporates pragmatic and discourse meaning dimensions, thus taking sides with functional approaches with a broad understanding of the goals of grammar (e.g. Dik 1997, Halliday and Matthiessen 2004). However, the LCM goes beyond these theories since it fully integrates the pragmatic and discourse dimensions into the explanatory system in two ways: one, by exploring how linguistic production and comprehension result from the crisscrossing of coded linguistic mechanisms (i.e. socially conventional and cognitively entrenched lexico-grammatical categories) and language-based inferential procedures; the other, by finding parallel cognitive and pragmatic processes across different domains of linguistic description (Ruiz de Mendoza and Galera 2014).

At the basis of this two-dimensional integrative venture lies a common set of analytical and explanatory tools derived from the principles of cognitive modeling, i.e. the dynamic process whereby we represent and construe the world of our experience. The LCM claims that language-based inferential activity is grounded in the same kind of cognitive activity that allows for the organization of the lexico-grammar. This presentation will provide evidence for parallel cognitive processes being at work at various levels and in various domains of linguistic description. It will thus examine the effects on grammar of metaphor, metonymy and other figures of speech, both in isolation and in various interaction patterns. It will also relate the resulting findings to parallel ones coming from other levels of linguistic description. For example, the EFFECT FOR CAUSE metonymy acts as a constraining factor for several figurative uses of language. It is active in the interpretation of “pig” as immoral or abusive. This meaning results from the integration of the metaphor IMMORALITY IS FILTH into PEOPLE ARE ANIMALS, which is licensed by the EFFECT FOR CAUSE metonymy. This metonymy allows us to equate unrelated causes on the basis of the similarity of their corresponding effects: a person’s immorality can be felt to be as revolting as a pig’s stench and filthiness. The same metonymy is active in synesthesia. Thus, we can say that a sound and a color are “dull” because they both have a similar effect: the lack of intensity. Since an effect can provide metonymic access to its cause, the similarity of effects can make their corresponding causes exchangeable across conceptual domains (loudness and brightness, in this example). The metonymy EFFECT FOR CAUSE also underlies the expression “a sad novel”, which is a case of hypallage or transferred epithet. Novels cannot be literally sad, but they can cause sadness. The speaker names the effect to refer to the cause. Now, in grammar, an action can be presented as if it were a process by backgrounding the agent. For this reason, the EFFECT FOR CAUSE metonymy underlies the so-called inchoative construction, as illustrated by the sentence *The door opened suddenly*, where “opened” is treated syntactically as an intransitive verb denoting a process (Ruiz de Mendoza and Peña 2008). From a conceptual perspective, this pretended process stands for the action of some agent or external force opening the door.

This presentation further traces the conceptual makeup and grammatical layout of other lexico-grammatical phenomena to figurative thinking. Among such phenomena, we find lexical genericity, constructional underdetermination, categorial and subcategorial conversion, nominalizations, conversions of verbs into idiomatic phrases, the use of the object construction to express states, and several constructional alternations within the domain of transitivity. This view of figurative thought as a licensing and motivating factor of grammatical phenomena places

grammar within the broader picture of cognition and establishes the bases for an integrative approach of the different domains of linguistic description.

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## **The representation and meaning of hate through humour: the case of memes**

Carmen Aguilera-Carnerero  
University of Granada (Spain)  
[carmacar@ugr.es](mailto:carmacar@ugr.es)

In the realm of Internet communication, memes are a very commonly used resource. Usually conceived as vehicle of humour, memes are digitally created and shared images that frequently identify current events using popular culture references. However, memes are usually used to reinforce social bonding rather than to share information, in a way in which one solidifies the ingroup via the ridiculation of others (Zappavigna, 2012).

Memes (Milner 2012: 22) often reinterpret dominant discourses but this act of reappropriation does not mean they are completely independent from them. In some cases, they are even restricted to certain ‘virtual communities’ (Rheingold 1983) specially when we talk about humour and their interpretation since memes are heteroglossic (Bakhtin, 1981) and their meaning is negotiable (Sharifian 2011, 2017).

From a discourse perspective, Milner (2012: 11) states that memes, as networks of mediated cultural participation, are “*multimodal artifacts*, where image and text are integrated to tell a joke, make an observation or advance an argument”. As multimodal artifacts, or linguistic signs, made by signifier and signified the memes’ interpretation or decodification by speakers is culturally dependent or in other words, the correlation sign-meaning is not a fixed value (Eco, 1976). In this sense, Zappavigna (2012: 100) states that “culture is formed via natural selection as memes compete for semiotic survival”.

This paper will discuss the meaning of memes as potential tools that divert from humour (one of their original discursive features) to be mere channels of hate or extreme speech. Our corpus of analysis is a collection of 250 islamophobic memes, memes that convey a message of hate towards Islam or Muslims, collected from 2014 to 2017 from Internet. Our aim is twofold: a) to check how the meaning of memes is a feature highly dependent of the community of readers that decodify them b) to analyse the semiotic representation of ideology in this new form of Internet communication.

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### **A linguistically-aware model for microtext geocoding**

Nicolás José Fernández-Martínez  
University of Granada (Spain)

[njfm0001@red.ujaen.es](mailto:njfm0001@red.ujaen.es)

Carlos Perrián-Pascual  
Universitat Politècnica de València (Spain)  
[joepas3@upv.es](mailto:joepas3@upv.es)

Ángel Miguel Felices-Lago  
University of Granada (Spain)  
[afelices@ugr.es](mailto:afelices@ugr.es)

Geocoding social media microtexts such as tweets corresponds to the area of Geographic Information Retrieval (GIR), a very hot topic that requires interdisciplinarity among research areas such as Computational Linguistics (CL), Natural Language Processing (NLP), and Knowledge Engineering (KE). Also called location detection or extraction, geocoding deals with the identification of place names in unstructured text through Machine Learning (ML), Deep Learning (DL) and/or NLP techniques (Hu, 2018). Its practical applications range from health surveillance and disease tracking (Dredze et al., 2013), location-based services for crisis and emergencies in natural or human-made disasters (e.g. floods, earthquakes, storms, civil unrest, crime...) (Zhang et al., 2019), marketing and advertising purposes (Inkpen et al., 2017), to traffic incident detection and road traffic control (Gonzalez-Paule et al., 2019). Most geolocalization models, though performing relatively well with a few, minor or even without linguistic features, still miss out on the rich linguistic contextual knowledge that permeates natural language texts. For instance, locations references in text are typically introduced by location-bearing prepositions (e.g. in, at, near...) and location-indicative words (e.g. street, avenue, city of, province, school, road...) that signal the presence of place names (Hoang & Mothe, 2018). One particular challenge in the identification of location mentions in tweets is related to the linguistic peculiarities of the microtext genre, which is full of non-standard forms, misspellings, capitalization errors, abbreviations, and acronyms (Baldwin et al., 2013).

In this sense, we present a linguistically-aware model for microtext location detection that leverages rich linguistic knowledge through part-of-speech (POS) tagging, n-gram-based matching with the geographic database GeoNames, regex-based lexico-syntactic patterns and rules, and the WordNet lexicon. It can automatically capture any kind of location type in tweets: administrative places or geopolitical entities (e.g. towns, cities, states, regions, countries, neighborhoods, districts, etc.), natural features and landforms (e.g. lake, river, mountain, park, ridge, beach, etc.), addresses and their abbreviations (e.g. street, st, avenue, av, boulevard, blvd, turnpike, tpke, tpk, etc.), points of interest (POIS) and buildings (e.g. school, church, cinema, garden, tavern, museum, commercial center, police station, etc.), and road sections and highways (e.g. route X, I-X, M-X, etc. where X represents a given number). To the best of our knowledge, this is the first model that leverages a WordNet-based gazetteer of location-indicative words and that implements a fine-grained detection of any location type. This research originates with the purpose of implementing this microtext geo-detection module into CASPER (Perrián-Pascual & Arcas-Túnez, 2019), a multi-domain problem detection system for tweets that targets environmentally-related issues. For now, our model works for English tweets only, though a functional prototype that projects its functionalities into Spanish is currently under development. An evaluation phase has already been conducted on a test corpus of 800 English tweets, achieving state-of-the-art performance ( $F1 = 0.8052$ ) and without the significant time and computational resources that are invested in ML and DL location detection approaches.

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### **Parsing constructions in the English-based controlled natural language ASD-STE100: formalizing constructional meaning in ARTEMIS**

María del Carmen Fumero- Pérez  
 Instituto de Lingüística Andrés Bello, Universidad de La Laguna (Spain)  
[mfumero@ull.edu.es](mailto:mfumero@ull.edu.es)

Ana Díaz Galán  
 Instituto de Lingüística Andrés Bello, Universidad de La Laguna (Spain)  
[adiazgal@ull.edu.es](mailto:adiazgal@ull.edu.es)

Currently, ARTEMIS (Automatically Representing Text Meaning via an Interlingua-based System), is being adapted to the parsing of the controlled language ASD-STE100 (the Aerospace and Defence Industries Association of Europe Simplified Technical English). As is the case with Natural English, in order to arrive at the adequate syntactic and semantic underlying representations of this simplified language, apart from the information provided by the Grammar Development Environment and the Lexicon, the parser will also need information which cannot be retrieved from either of these components because it is not of compositional nature. We refer to constructional meaning, the information which cannot be derived from the lexical entries of verbs but may influence its syntactic behaviour or alter its core meaning. In these cases, ARTEMIS resorts to the knowledge base FunGramKB, in which constructional structures are stored in the Grammaticon. The aim of this work is twofold: firstly, we will confirm the existence in the Airbus corpus (a collection of texts written in ASD-STE100) of the four different constructional levels put forward by the Lexico-Constructional Model; secondly, we will offer the formal encoding of some of these structures which at present stage are not included in the Grammaticon for natural English.

## The metonymic and echoic exploitation of scenarios in meaning making

Alicia Galera Masegosa  
University of Almería (Spain)  
[agm011@ual.es](mailto:agm011@ual.es)

The *Lexical Constructional Model* (LCM) is a usage-based approach to language engaged in the study of the relationship between mental processes and language use. The LCM explores meaning construction at four descriptive levels (predicational, implicational, illocutionary, and discursive; cf. Ruiz de Mendoza and Mairal, 2008, 2011; Mairal and Ruiz de Mendoza, 2009).

LCM researchers have recently devoted some of their works to the study of cognitive operations that participate in meaning construction and interpretation, going beyond metaphoric and metonymic processes (Ruiz de Mendoza and Galera, 2014; Peña and Ruiz de Mendoza, 2017; Ruiz de Mendoza, 2017, among others). *Echoing*, which was initially proposed as a pragmatic explanation for irony in Relevance Theory (cf. Wilson and Sperber, 2012), is here regarded as a cognitive operation in that it constitutes the mechanism that allows language users to access conceptual material through the repetition of an utterance or attributed thought.

In the context of the LCM, we examine how the exploitation of different situational cognitive models (scenarios) yields different results in terms of meaning construction. We follow Ruiz de Mendoza and Galera's (2019) subdivision of scenarios into *descriptive*, *attitudinal*, and *regulatory* scenarios. We examine the inferential patterns that are at work when we exploit each of these scenarios metonymically. In addition, we argue that scenarios may be accessed and activated through echoing operations. By way of illustration, let us take an example of attitudinal scenario. Attitudinal scenarios (e.g. 'showing anger when a situation goes wrong') capture the speaker's emotional or otherwise attitudinal response to concrete situations and events.

Consider the sentence "So much for the *You can drive it, but don't tell Rachel* plan!" Monica (the speaker) had agreed to lend her Porsche to her friends on the condition that they would not tell Rachel, as Monica feels that she is not a reliable driver and would not want her to drive it. Monica utters this sentence in after her friends tell Rachel that they have all driven Monica's car. The echoic mention affords metonymic access to the echoed scenario: a past situation in which the group of friends gathered and agreed to keep a secret from Rachel. The actual situation, which is also reflected in Monica's sentence 'So much for', is that the plan of keeping the information from Rachel has come to an end. An operation of comparison takes place between the echoed and the observed scenarios: the echoed and the observed scenarios bear a contrasting relation. Monica expresses an emotional response to the actual state of affairs by bringing into attention the contrast between what was agreed and what has actually happened. We contend that this contrast activates an attitudinal scenario: the 'someone has done something wrong' scenario.

It is our aim to illustrate how each of the three types of scenario can be both exploited metonymically and also accessed through echoing operations.

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### **Parsing subordination in ARTEMIS: the case of adverbial complex sentences in STE**

Marta González-Orta  
University of La Laguna (Spain)  
[maorta@ull.es](mailto:maorta@ull.es)

María Auxiliadora Martín-Díaz  
University of La Laguna (Spain)  
[mmartind@ull.edu.es](mailto:mmartind@ull.edu.es)

One of the main objectives of Natural Language Processing (NLP) is the simulation of natural language understanding. Within the different applications designed for this purpose, the ARTEMIS (Automatically Representing TExt Meaning via an Interlingua-Based System) prototype follows the paradigm of unification grammars (Sag, I, Wasow, T. & Bender, E. 2003), and unlike other trending computational resources, it is theoretically grounded in Role and Reference Grammar (RRG - Van Valin & LaPolla 1997 and Van Valin 2005). The syntax-to-semantics linking algorithm proposed in this functional grammar lies at the basis of a parsing process that starts with a natural language sentence, extracts its morphosyntactic features and provides a representation of these in terms of the so-called layered structure of the clause (LSC).

A fundamental component in our parser is the Grammar Development Environment (GDE) where feature-based production rules (syntactic, lexical and constructional) are stored and ready to allow the generation of the enhanced layered structure of the clause of natural language expressions (Periñán-Pascual 2013: 222). Syntactic rules that account for phrasal constituents and simple sentences have already been described (Cortés-Rodríguez 2016, Cortés-Rodríguez and Mairal 2016, Díaz-Galán and Fumero-Pérez 2015, Fumero-Pérez and Díaz-Galán 2017, Martín-Díaz 2017 and Martín-Díaz 2018), but it is now turn to focus on the study of adverbial complex sentences. In an attempt to validate these syntactic rules and to avoid some of the common problems that may arise in parsing applications, our research will concentrate on the analysis of RRG's juncture-nexus combinations as found in a Controlled Natural Language (CNL) such as ASD-STE100 (AeroSpace and Defence Simplified Technical English).

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## **A principled account of coercion in the English benefactive construction: constraints on subsumption**

Pilar Guerrero Medina  
University of Córdoba (Spain)  
[ff1gumep@uco.es](mailto:ff1gumep@uco.es)

This paper tackles the issues of meaning construction and meaning interpretation in the English benefactive double object construction (eg *Sally baked her sister a cake*), where the beneficiary “has to be involved as the intended recipient of the direct object” (Colleman 2010: 222).

In Goldberg’s 1995 constructionist account, the benefactive construction, represented as “X intends to cause Y to receive Z”, is associated with verbs of three semantic classes: verbs of obtainment, verbs of creation/preparation and verbs of performance (see also Pinker 1989). However, accounting for the integration of verbal predicates into the beneficiary construction exclusively in terms of generally defined verb classes is not fully satisfactory, as there are verbs belonging to the same semantic class which differ in their behaviour:

- (1) a. Joe *baked*/\**iced* Mary a cake. (Goldberg 1995: 121)  
 b. John bought/\**purchased* Mary a CD. (Shibatani 1996: 322)

On the other hand, verbs that do not denote creation, preparation or obtainment can be easily accommodated into the construction, as shown by Langacker's example in (2), where *clearing someone a place to sleep on the floor* makes him a prospective possessor:

- (2) I *cleared* him a place to sleep on the floor. (Langacker 1991: 360)

In Goldberg's constructional approach to argument structure, "the semantics of the verb classes and the semantics of the constructions are integrated to yield the semantics of particular expressions" (1995: 60). However, as Ruiz de Mendoza and Mairal (2011: 73) note, verb classes cannot be created *ad hoc* on the mere basis of constructional needs and the principle of *coercion*, as understood in Construction Grammar, is not fully satisfactory. In this paper I aim to offer a more systematic account of constructional coercion in English benefactives, adopting a usage-based approach within the framework of the Lexical Constructional Model (LCM; Ruiz de Mendoza 2013, Ruiz de Mendoza and Galera 2014).

Using the explanatory tools of the LCM, I first explore in some detail the *internal* constraints that determine the conceptual compatibility between verbal and constructional semantics in the benefactive construction. Following Ruiz de Mendoza (2013: 256), two main types of internal constraints on lexical-constructional integration (or *subsumption*) are considered: (i) *vertical* constructional constraints on lexical structure on the basis of lexical class ascription and event structure specification, and (ii) *horizontal* lexical constraints on the instantiation conditions of constructional variables.

As Shibatani (1996: 163) points out, benefactives are not categorically definable in terms of lexical information and we need to put emphasis on the construal of the situation. In order to offer a principled account of lexical-constructional subsumption in the benefactive construction, I also explore the effect of high level metonymy and metaphor as *external* licensing factors on constructional coercion. Less frequent examples such as (3), where internal constraints are overridden through metaphorical reconstrual, can be put on a par with other better examples of the beneficiary construction, being naturally meaningful and "potentially replicable by other competent speakers" (Ruiz de Mendoza 2013: 238):

- (3) Cry me a river. (Green 1974, in Goldberg 1995: 150)

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### **A cognitive pedagogical grammar proposal for the explicit instruction of directive speech acts**

Mahum Hayat  
 Universidad de La Rioja (Spain)  
[mahum.hayat@unirioja.es](mailto:mahum.hayat@unirioja.es)

Lorena Pérez-Hernández  
 Universidad de La Rioja (Spain)  
[lorena.perez@unirioja.es](mailto:lorena.perez@unirioja.es)

The line between pragmatic and semantic issues in speech act production and understanding is a narrow one. Which aspects of speech act performance belong to either of these two disciplines has often been a matter of controversy. The degree of politeness needed in the production of an offer or a request, the optionality that a given speech act allows the hearer to decide upon the realization of the predicated action, the mitigation that is necessary for a speech act to be felicitous in a given context... All these are issues are pragmatic in as much as they are speaker and context-dependent, but they are also part of the knowledge needed to perform the speech act, and, therefore, part of its semantics. Within Cognitive Linguistics the division of labor between pragmatics and semantics is not clear-cut. For this reason, instructing students in the pragmatic, semantic and linguistic elements involved in the performance of a speech act in a given context is essential in order to facilitate their learning of illocutionary acts in a foreign language.

This paper offers an explicit instruction proposal on the teaching of directive speech acts from the perspective of Cognitive Pedagogical Grammar (De Knop, 2016). In so doing, we first consider the nature of the notion of illocutionary construction and its differences with the argument structure constructions that have already been amply dealt with within the general framework of Cognitive Linguistics and the more specific one of Construction Grammar (Goldberg, 2006). Second, we offer an exhaustive description of the formal and semantic components of illocutionary constructions. Third, we carry out a contrastive study between requestive constructions in English and Spanish. Finally, we argue for the need of an explicit instruction approach to the teaching of illocutionary constructions at higher levels of foreign language learning.

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### English and Urdu middle constructions: Pretense or not pretense?

Mahum Hayat  
Universidad de La Rioja (Spain)  
[mahum.hayat@unirioja.es](mailto:mahum.hayat@unirioja.es)

This study compares English and Urdu middle constructions, understood as entrenched form-meaning pairings (Goldberg 2006). It analyses the licensing factors underlying the use of these constructions from a cognitive-linguistic perspective within the framework of the Lexical Constructional Model. A few studies have taken this perspective for the study of English middles in contrast with Spanish (e.g. Ruiz de Mendoza and Díez, 2004; Ruiz de Mendoza and Peña, 2008). However, more cross-linguistic research on these constructions is necessary. Although members of the Indo-European family, Urdu and English are conceptually and grammatically very distant languages. The motivation for some of the differences in the configuration of middles in both languages becomes evident through a careful analysis of cognitive and typological factors. The present analysis focuses on the “meaning pole” of constructions, which, as noted by Boas (2010: 14-15), is “the primary basis for comparisons of constructions across languages.”

Middles describe a telic event without an explicit agent in which an entity goes through a change of state or position with an evaluative component (Kemmer 1993, Radden and Dirven, 2007). Constructions of this type involve a re-construal of the agent of the action, thus falling under the category of agent-deprofiling constructions (Goldberg 2006). These are a type of pretense constructions, i.e. those that involve the re-construal of states, situations, and events (Ruiz de Mendoza and Miró, 2017), where re-construal often takes the form of metaphor and metonymy (cf. Panther and Thornburg, 2009).

Ruiz de Mendoza and Peña (2008) argue that underlying the English middle *This bread cuts easily* there is a double metonymic shift from process to action to the result of the action. As a precondition to this double metonymy, the construction treats an action as if it were a process (which then is made to stand for the action). The English middle thus falls under the category of a pretense construction. In Urdu, the equivalent middle is illustrated in (1):

- (1) Urdu  
*Saib*                    *asaani-se*            *kat-ta*                    *he*  
Apple-SBJ    easily-ADV            cut-MID                    is-AUX  
‘The apple cuts easily’

While in English the construction involves the intransitivization of the verbal predicate with metonymically motivated syntactic object-to-subject “promotion”, in Urdu the middle nature of the verb is marked through morphological mechanisms affecting the root of the verb. Metonymy has no role in Urdu middles:

- (2) Urdu  
*Kat-ta*  
Cut - MID  
‘to cut’

Moreover, in contrast to English, Urdu middles have their corresponding inchoative variants (Chandra, 2014):

- (3) \*This bread cut
- (4) Urdu  
Saib            kata  
Apple-SBJ cut-INCH  
'The apple cut'

The English middle construction cannot take the verb cut because this verb, unlike break, close, and open, does not designate a pretended process. However, Urdu kat can be used inchoatively because the marked Urdu inchoative is more focused on the result of the action than on presenting it as a process. We discuss other examples along the same lines and explore how the reorganization of the semantic and syntactic function of constructional elements produces specific meaning implications with cross-linguistic variation, which can be motivated metaphoric and metonymic shifts.

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## Level 3 constructions in FunGramKB: The case of "requesting"

Rocío Jiménez-Briones  
Universidad Autónoma de Madrid (Spain)  
[rocio.jimenez@uam.es](mailto:rocio.jimenez@uam.es)

Alba Luzondo-Oyón  
Universidad Nacional de Educación a Distancia (Spain)  
[aluzondo@flog.uned.es](mailto:aluzondo@flog.uned.es)

Drawing on Jiménez-Briones (2016), the aim of this paper is to further develop the computational treatment of illocutionary constructions within the knowledge-base known as FunGramKB (see [www.fungramkb.com](http://www.fungramkb.com)). Following Luzondo-Oyón and Mairal-Usón (in prep.), among others, we argue for a distinction between conventional or standardized requests (e.g. Could you pass the salt, please?), whose illocutionary force is directly connected with their form, and non-conventional or inferred requests (e.g. This soup is tasteless), where world knowledge and contextual information are the ones responsible for the request interpretation. Only the former will be the focus of our attention here. To this end, we shall concentrate on the grammatical level or Grammaticon of FunGramKB, in particular, on the Level-3 Constructicon, which, in line with the construction-types put forward by the Lexical Constructional Model (LCM; cf. Ruiz de Mendoza, 2013, 2014; Ruiz de Mendoza and Galera, 2014), houses illocutionary constructions such as Could you X, (please)?

Before delving into how conventionalized requests are approached within the computational environment of FunGramKB, and following, among others, Panther and Thornburg (1998), Stefanowitsch (2003), Ruiz de Mendoza and Baicchi (2007), Del Campo (2012), and Pérez Hernández (2013), this study provides a brief description of these requestive structures as constructions or entrenched form-function pairings (Goldberg, 2006). The purpose of such a review is to grasp their distinct linguistic properties that are essential for any Natural Language Processing (NLP) application intended to understand such nuances of language. Broadly speaking, a speech act scenario for requests would present the generic structure in (1):

- (1) (a) A (speaker) is in need of something.
- (b) A makes B (hearer) aware of his/her need.
- (c) A makes B aware of his/her ability to provide for his/her need.
- (d) A wants something.
- (e) A makes B (hearer) aware of what s/he wants.
- (f) A appeals to B's willingness to help.
- (g) A increases B's optionality by being polite.
- (h) B may be persuaded to help or not.

In the second part of the paper, we devote our attention to the computational treatment of the features in (1). In other words, this study details the costly process of codifying the semantic and pragmatic properties in (1) through COREL, which is the formal language shared by all the FunGramKB modules (cf. Perinán-Pascual and Mairal-Usón, 2010; Jiménez-Briones and Luzondo-Oyón, 2011). To this aim, we propose three constructional domains, that is, three illocutionary expressions grouped under different, yet related, COREL schemas or machine-readable definitions: REQUESTING-TYPE-1, REQUESTING-TYPE-2, and REQUESTING-TYPE-3. As a way of example, (2) displays the COREL schema of REQUESTING-TYPE 2, which would be realized by configurations like *Would you mind X?*, *Will you X (please)?*, etc., and interpreted as follows: “the speaker says that he needs something from the hearer. As a result, the hearer may help the speaker or not”:

- (2) +(e1: +SAY\_00 (x1: <SPEAKER>)Theme (x2: (e2: +NEED\_00 (x1)Theme (x3: (e3: +DO\_00 (x4: <HEARER>)Theme (x5)Referent))Referent))Referent (x4)Goal (f1: (e4: pos +HELP\_00 (x4)Theme (x1)Referent) | (e5: pos n +HELP\_00 (x4)Theme (x1)Referent))Result)

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### **Conceptual blending in investment terminology**

Svetlana V. Kiseleva  
 Saint-Petersburg State University of Economics (Russia)  
[svkiseljeva@bk.ru](mailto:svkiseljeva@bk.ru)

Nowadays the state of cognitive science reflects such a stage in its development, when language is considered as a leading cognitive mechanism of human consciousness. Language data provide the most obvious and natural access to cognitive processes and mechanisms. It is universally recognized that the human cognitive world is studied by its behavior and activities, the vast majority of which take place with the participation of the language. The relevance of this paper is supported by the fact that recently, under the influence of cognitive linguistics, terminological studies are aimed not only at the system-structural description of terms and terminological systems, but also at the study of the internal, semiotic nature of the term, which is due to the connection with professional activities, and cognitive approach allows to reveal the causes and mechanisms of dynamic processes in the field of professional terminological nomination and create a more complete understanding of the term. The paper is focused on a metaphor, which being a cognitive phenomenon actively influences the thinking process. The conceptual integration theory and the mental space theory have provided many opportunities for a more thorough investigation of a metaphor theory. Since a number of significant works on cognitive science, for example, the works of G. Lakoff and M. Johnson, J. Fauconnier and M. Turner, has

been presented, metaphor is considered as a cognitive phenomenon participating in the conceptualization processes and forming the semantics of the derived words. It is known, that the mechanism for creating a conceptual metaphor consists of transferring semantic characteristics from the conceptual area of one object to the conceptual area of another object. The research is aimed at identifying the conceptual metaphors of the investment term system of the English language, because many investment terms are formed from the words of general vocabulary through a process of metaphorizing their meaning. The analysis of semantic methods of term formation showed that metaphorical transfer is one of the most productive in investment terminology. Many investment terms were formed from the words of the common vocabulary as a result of metaphorization of their meaning. The study of metaphorical word usage in the investment sphere allowed to identify a number of metaphorical models: COMPANY IS ANIMAL, INVESTOR/TRADER IS ANIMAL, MONEY IS WATER/LIQUID, STOCK MARKET IS A HUMAN BEING. Thus, in the process of mapping conceptual areas a blend is formed that allows to metaphorically present professional concepts as simple and well-known realities. Based on the analysis of the articles from the field «Investments», an attempt was made to agree with and illustrate the statements of representatives of cognitive linguistics that metaphors penetrate human thinking and are tools for conceptualizing and categorizing the world. Basic concepts are actively used in the language of finance, serve as association vectors, encoding and transforming information.

### **Complexity in irony: echoic cognitive operations in the Lexical Construction Model**

Inés Lozano-Palacio  
University of La Rioja (Spain)  
[ines.lozano@unirioja.es](mailto:ines.lozano@unirioja.es)

In previous treatments of irony in the Lexical Constructional Model (LCM), irony is seen as the result of a clash between an echoed and an observed scenario (Ruiz de Mendoza and Galera 2014, Ruiz de Mendoza 2017a). This approach has the advantage over previous ones of making explicit the inferential mechanisms involved in irony, which are not different from those accounting from other linguistic phenomena. Thus, non-ironic echoes are attested in reported speech. Contrastive operations, in turn, are abundant in complex syntax and in discourse marking. However, the LCM has not examined the workings of complex echoic operations in creating subtle ironic effects. This is a gap that has to be filled in, especially in view of the emphasis of this model on the analysis of conceptual complexity (cf. Ruiz de Mendoza & Galera 2014, Ruiz de Mendoza 2017bc, Miró 2018). The present study proposes five linguistic strategies to create ironic subtlety through echoic complexity: (i) through the degree of elaboration of the cultural and sociohistorical references in it; (ii) through echoic compounding; (iii) through echoic chains; (iv) through cumulative echoes; and (v) through multi-operational echoes, which incorporate the cognitive operations involved in other figurative uses of language. The first strategy addresses the contextualized content of the ironic echo. The other strategies focus on its conceptual structure. As a largely context-based figure of thought, ironic effects rely on the speaker's assumptions on the hearer's knowledge, which are used to create conceptually sophisticated ironies. Swift's satires, for instance, demand very specific knowledge about the political context of Ireland and England at his time. Echoic compounding is illustrated by the remark *Yeah, sure, I sleep siesta while you do all the work*, uttered in a situation where the speaker, a hardworking person, has been called the opposite by her lazy workmate. The two echoes refer to different aspects of the ironic event and are linked syntactically. Ironic chains are formed when an echo is built completely or partially on a previous echo or on the meaning implications arising from it. In a context where A believes Trump could win the next election, B ironizes *Yeah, sure, Trump could win the election, and I could win the lottery!* B wins the lottery and A says *Yeah, right, and you*

could win the lottery. B's first utterance echoes A's words, whilst B's second utterance is ironic towards the meaning implications arising from A's logical reasoning about Trump's odds to win the election. Cumulative echoes are formed by multiple echoic terms appearing consecutively and referring to the same ironic target, as in *Mary is an angel, a gem, a real treasure!* where all three terms refer to Mary's goodness. Finally, other figures of thought such as metaphor, metonymy or hyperbole may be used to reinforce the attitudinal element (e.g. *Mary is a real treasure!*). The resulting approach fills a gap in the LCM approach to irony, endowing the study of irony with greater descriptive delicacy and explanatory systematicity.

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## Functional Neurolinguistics and Clinical Computing

Ricardo Mairal-Usón  
Universidad Nacional de Educación a Distancia (Spain)  
[rmairal@flog.uned.es](mailto:rmairal@flog.uned.es)

M. Beatriz Pérez Cabello de Alba  
Universidad Nacional de Educación a Distancia (Spain)  
[bperez-cabello@flog.uned.es](mailto:bperez-cabello@flog.uned.es)

Drawing on the initial work of Mairal (2017), the aim of this talk is to present an updated picture of the research agenda of what has been termed the Functional Neurolinguistics program which is being developed by Seconds and FunGramKB groups. The focus of this program is on the human brain and more specifically the linguistic deficits associated to the presence of either neurodegenerative diseases or brain tumors located in the linguistic eloquent area at the left hemisphere of the brain.

Firstly, in the case of neurodegenerative diseases, namely Alzheimer and Parkinson, mild cognitive impairment together with a gradual semantic memory loss is one of the most notorious manifestations (Boschy et al., 2017; Mairal and Pérez, 2017; Mortamaisa et al., 2017; Mueller et al., 2016; Pérez Cabello de Alba, 2017). In connection with this and based on our previous research in the area of theoretical linguistics (e.g. the work on the Lexical Constructional Model, Ruiz de Mendoza and Mairal, 2008; Ruiz de Mendoza and Galera, 2014, Ruiz de Mendoza, 2017 etc.) and in the framework of computational linguistics and text mining (see DAMIEN in the FUNK Lab project at [www.fungramkb.com](http://www.fungramkb.com)), I would like to raise the following issues:

- a) Can semantic memory loss be quantified? Can we provide a fine grained analysis of this gradual loss?
- b) Moreover, can this gradual decline be mapped and correlated with *fMRI* (*functional magnetic resonance imaging*)?
- c) Can we prevent and early diagnose semantic memory deficits?

As a first experiment, with the aim of providing a qualitative approach as to the process of semantic memory loss, the responses of Parkinson patients to the Hayling test have been analyzed using text mining techniques (DAMIEN). Interestingly enough, there seem to be a number of regular patterns that illustrate a more fine-grained picture than the all-or-nothing evidence obtained in a quantitative approach.

The second area of research, that related to oncological brain tumor resection in eloquent areas of the brain (Barcia et. al., 2012; Rivero-Rivero et. al. 2016; Duffau, 2017), opens a very stimulating research horizon for linguists since this involves addressing the fascinating topic of the plastic nature of the brain. In this regard, the following questions constitute our focus:

- d) In the area of brain tumor resection, if it is possible to replicate the linguistic capacities in the right hemisphere of the brain so that patients after surgery can speak, what is the format of this new reinvented or rediscovered linguistic module?
- e) What type of compensatory mechanisms can we provide so that the patient does not lose his linguistic capacity after a tumor has been resected?
- f) In our endeavor to replicate what is potentially lost in one of the brain hemispheres, can we ascertain any differences between a monolingual and a bilingual brain or else between a child and an adult, both with a brain tumor?

The answers to these research questions are the core of and constitute the first step towards a more ambitious research program in Neuroscience using the linguistic and computational tools developed in previous projects, namely Lexicom and FunGramKB, together with neuroimaging studies (*fMRI: functional magnetic resonance images*).

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### **Linguistic empathy in structuring the sentence meaning**

Irina Ivanova-Mitsevich  
Independent Researcher (Poland)  
[irinka.ivanova@tut.by](mailto:irinka.ivanova@tut.by)

Sentence generation presupposes subjective attitude of the speaker/writer to the fragment of the picture of the world to be described in this sentence which is determined by the fact how the speaker conceptualizes this fragment and what he/she believes important in it. Thus, the speaker's position is manifested both by what he/she models and how he/she does it. This phenomenon in linguistics is named "empathy" (Kuno 1987; Kuno, Kaburaki 1976).

Linguistic empathy is based on the idea of how a linguistic structure fixes the speaker's attitude to the components of the fragment of the picture of the world (to its animate and inanimate entities). In this case the importance is given not only to the structural properties of the sentence itself but also to the mechanism identifying the speaker with a certain entity reflected in the sentence.

This mechanism is determined not only by semantic and syntactic but also by pragmatic, cognitive and psychological factors. To present a fragment of the picture of the world in a sentence the speaker should be able to observe it through the eyes of one of its participants (psychological constituent of empathy), to create an abstract model of this fragment, i.e. a denotational field in accordance with the accepted perspective (cognitive constituent of empathy) and to formalize it as a sentence (semantic-syntactic constituent of empathy) so that the speaker's vision of this fragment can be transferred the partners of communication (pragmatic constituent of empathy). Presupposition of unity of psychological, cognitive, semantic-syntactic and pragmatic constituents of a sentence functioning as a part of a speech act in defining the concept of empathy gives the possibility to describe the algorithm of selecting from the set of correct linguistic means

the speaker possesses those that present adequate reflection of some fragment of the picture of the world.

In particular, a possibility appears to answer several questions concerning variability of sentences. 1) Are there any limitations of the choice of the empathy center for certain fragments of the picture of the world (and if they exist what they are determined by – grammatical, pragmatic, cognitive factors - or by the factors outside the linguistic reality)? What explains the existence of sentences built according to grammatical rules and rules of selection of the lexical components but still treated as communicative acceptable only in certain limited contexts.

For example, why in reflecting the fragment of the picture of the world showing similarity of two objects preference is given to the variant *She looked like a ragdoll* but not to the variant *The ragdoll looked like her*; why the perspective of presenting “mirror” relations is possible only from the point of view of the definite participant of such relations *Jane married a stranger* while the reverse variant with the focus on the referentially indefinite participant (*A stranger married Jane*) demands a specific context; why in presenting psychological state the active construction *I like John* is correct while its passive transform *John is liked by me* is not.

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## The functional-semantic status of lexical-grammar discourse-text “transitions” in Modern English

Sabina Nedvailik  
Institute of Foreign Languages (Russia)  
[snedvailik@mail.ru](mailto:snedvailik@mail.ru)

As it is known, every discourse-text presents a kind of coherent system, functioning as a complex unity, i.e. a linear, regular structure, possessing its own content and organized by one of existing abstract models, characterized by some distinctive features. Its communicative integrity is expressed in the relations of succession between forming components, micro-segments, or super-phrasal units (SPU). Otherwise, each following sentence of SPU (micro-text) is supported communicatively by a preceding one, what produces various theme-rhematic chains, structuring a discourse-text statement informatively in the direction: from a known fact to a new one. As a matter of fact, all sentences, entering a (micro)text, are interlinked not only by their thematic unity and the principle of communicative progression, but also by various external signals, indicating that components can form together some structural complex. The system of these left/right side sin-semantic signals being rather large and non-uniform by cast, they can be classified into several main groups by their inner semantics: 1) ‘pure’ grammar elements, or copulas; 2) ‘pure’ lexical elements; 3) lexical-grammar elements, or discursive markers. It’s quite comprehensible, that the first units group comprises conjunctions, prepositions, particles of different types, linking verbs, articles, some parallel constructions, etc.; the second group is formed of antonyms, synonyms, doublings, emphatic elements, etc.; the third group includes various nature conjunctives: prepositional-substantive, parenthesis-modal units, fixed phrases, parts of sentences, etc. Besides, the existing necessity of expressing numerous and various logical-semantic nuances and accents while linking independent sentences, paragraphs and fragments in the frame of text unities causes

a wide use of various combinations and whole chains of elements, such as: conjunction + conjunctive adverb, conjunctive adverb + parenthesis element (sentence part), etc.

The specificity of multi-type lexical-grammar discursive markers, or so called 'transitions' functional-semantic status, making them an object of special interest and various interpretations in the theory of modern linguistics, is expressed in hybrid features and non-ordinary manifestations. In fact, they provide logical-contextual connections between syntactic complexes segments, also bringing various lexical-semantic nuances into their general meaning, i.e. playing the role of modal modifiers and logical-emotional accentors at once. This functional polyphony allows discursive elements to focus most relevant communicative information, i.e. participate in actual structuring of text statements, thus greatly facilitating their perception and comprehension. Such a large scope of characteristics makes quite possible their integration and differentiation with/from usual and occasional bearers of 'conjunction', 'relativity' semantics, in particular: with so called 'pure' grammar copulas (conjunctions and prepositions), as well as with various multi-category elements (adverbial, substantive, adjective, verbal, parenthesis-modal, etc.). Existing at the junction of auxiliary and full-semantic lexical systems as a mobile complex functional heterogenic group with open borders, they show large migration abilities and a high transformation potential, giving the reason for treating them as a constant ground for auxiliary words corps forming. Of course, their actual functional charge highly depends on positioning in syntactic units and on text-discourse utterances style, gender and composition particularities. Thus, lexical-grammar discursive markers can be differentiated by their stylistic universality/specialization and occasional/usual use character.

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## **An experimental methodology for the description and analysis of the phenomenon of syntactic ambiguity**

Fredy Núñez Torres  
Pontificia Universidad Católica de Chile (Chile)  
[fnunez@uc.cl](mailto:fnunez@uc.cl)

From a classical perspective, the definition of linguistic ambiguity corresponds to the fact that situations in which an expression is used can lead its meaning in different directions (Ducroc and Todorov, 1972). Therefore, it will consider a proposition as ambiguous if it has potentially two senses for referring to different states of affairs, which respond to two different elections from the speaker as much as if the result were the production of two completely different expressions. Consequently, linguistic ambiguity corresponds to the property of an expression which may have more than one meaning (Escandell, 2004).

In general terms, Cognitive Semantics predominantly addressed the problem of ambiguity based on ad-hoc cases, in which the phenomena of multiple possible meanings occur in a group of deliberately created structures. This methodology for the treatment of linguistic phenomena makes clear the close link established between Philosophy and Semantics. However, authors such as Jackendoff (2010) suggest that a coherent methodology to the semantics approach should consider the description of the interface between conceptual meaning and authentic syntactic structures. Thus, the study of interfaces would require the analyst to observe how linguistic expressions located in an authentic production context are capable of projecting patterns at the level of meaning. In this sense, the phenomenon of ambiguity offers a valuable entry point to introduce an experimental perspective in the analysis of predominantly semantic aspects.

The objective of this proposal is to describe the constructions that a particular group of speakers is capable of producing, derived from some structurally ambiguous linguistic expressions in Spanish. Finally, regarding the analysis of the process of disambiguation, the aim is to verify, through a controlled experiment, the relevance and/or predominance of each of the general proposals that have tried to explain the phenomenon of linguistic ambiguity: the hypothesis of reference assignment (Michelena, 1972) and the hypothesis of selective restrictions (Murphy, 2010).

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## Using a lexical bridge in a conceptual framework for a conversational software agent

Kulvinder Panesar  
School of Art, Design and Computer Science (UK)  
[k.panesar@yorksj.ac.uk](mailto:k.panesar@yorksj.ac.uk)

The paper presents a detailed conceptual framework in response to a complex technical issue of a semantic gap at the interface between language and knowledge representation – a dilemma instigated during the implementation of a linguistically orientated conversational software agent (LING-CSA) (Panesar 2017).

From a natural language processing (NLP) perspective, a CSA must respond appropriately to the user's utterance via three phases: (1) interpret the utterance, (2) determine the actions (logic) that should be taken in response to the utterance, and (3) perform actions replying with text. A long-standing issue within NLP CSA systems is refining the accuracy of the interpretation of meaning to provide a realistic dialogue to support the human-to-computer communication.

Role and Reference Grammar (RRG) (Van Valin Jr 2005) is a mature, functional linguistic theory that facilitates the extraction of the meaning, and can adequately explain, describe and embed the communication-cognitive thinking in conversation, in a computational form (Panesar 2017).

LING-CSA constitutes three phase models: (1) a linguistic model underpinned by RRG and speech act constructions (Nolan 2014), (2) an Agent Cognitive Model with two inner models: (a) knowledge representation model employing conceptual graphs serialized to Resource Description Framework (RDF); (b) a planning model underpinned by BDI concepts (Wooldridge 2013) and intentionality (Searle 1983) and rational interaction (Cohen and Levesque 1990); and (3) a dialogue model employing common ground (Stalnaker 2002).

Our dilemma is within the Agent Cognitive Model and lower level computational mappings. Languages are semantically more expressive than ontologies which mean that there is a major challenge, in translating NL semantic to ontology semantics, leading to a significant meaning loss, and characterised in terms of morphology, lexical and syntactic – semantic gaps. Our response is to reduce this semantic gap, by a lexical bridging solution (Bimson, Hull, and Nieten 2016) between the NL semantic (RRG rich representation) and ontology semantics, with an aim to capture more of the meaning, by attempting to ‘lexicalize the ontology’.

This algorithmic solution demonstrates significant benefits to our deployed CSA’s semantic solutions, and further supports the LING-CSA phase models.

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## Chatbots and conversational Artificial Intelligence (AI) - critical success factors

Kulvinder Panesar  
School of Art, Design and Computer Science (UK)  
[k.panesar@yorks.ac.uk](mailto:k.panesar@yorks.ac.uk)

This paper aims to demystify the hype about Chatbots and how they are slowly emerging as real presences in our lives, owing to impressive technological developments in deep learning, machine learning and natural language understanding, however, what is under the hood, and how far can

these Chatbots work, until we need to delve into strong artificial intelligence (AI) and conversational software agents (CSA).

In order to react intelligently to the user, natural language applications enable other factors such as context, memory, intelligent understanding, previous experience, and personalized knowledge of the user to be taken into consideration ("www.artificial-solutions.com" 2019).

Natural language (NL) is the most easily understood knowledge representation for people, but certainly not the best for computers because natural language is inherently ambiguous, complex and dynamic. Historically, CSAs link to the concept of intelligent machines and the question 'can machines think' (Turing 1950). Turing worked on a proposal of how to test this using the imitation game (Turing Test) and used dialogue testing, as means to work out whether or not the computer program was intelligent. This question has inspired exciting competitions (such as the yearly Loebner prize) to demonstrate human-like conversation with four times winner 'Mitsuku' Chatbot (Worswick 2018). But, what is the accuracy and intelligence profile of Mitsuku and comparative products?

Further investigating cognitive science - 'can machines think' and strong AI challenge, Searle (1980) introduces the Chinese room argument (experiment). It demonstrates that the computer program may very well look like it understands Chinese, but it only simulates that knowledge which is not a form of intelligence. Subsequently, there is a need to address the differences between a human brain and computer program, and being able to think and understand. This "understanding" implies both the possession of mental (intentional) states and the truth (validity and success) of these states (Searle 1980). The dialogue system (DS) component is a more refined "intelligent" version of a Chatbot, where the NL input must be constrained and unexpected, requiring a robust complex framework, with an integrated knowledge base (KB). Further a CSA has a deep strategic role to hold a conversation and enable the mechanisms to focus on the conversation on achieving a goal, via NL dialogue (O'Shea, Bandar, and Crockett 2010). There is a need to plan, and to decide what to do next, and manage the conversation - requiring dialogue management (DM) (Treumuth 2011). The CSA's role is that of a linguistically aware and knowledge aware process simulating an empowered human to take part in the conversation (Panesar 2017).

The paper derives a range of critical success factors based on-going research (Panesar 2017) and the spectrum of Chatbot to strong AI – conversational software agents.

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### **Amalgams of cognitive operations: a case study**

M<sup>a</sup> Sandra Peña Cervel  
University of La Rioja (Spain)  
[sandra.pena@unirioja.es](mailto:sandra.pena@unirioja.es)

Carla Ovejas Ramírez  
University of La Rioja (Spain)  
[carlaovejasramirez@gmail.com](mailto:carlaovejasramirez@gmail.com)

The great number of works devoted to the issue of film title translation have contributed to unravelling many of the intricacies of this burgeoning field of research but they are mainly descriptive (Baicchi 2003, 2013, Luján 2010, Leonardi 2011, Mei 2010, Chang 2012, Santaemilia and Soler 2014, Jutronic and Karabatic 2015, Peña 2016, Gabrić et al. 2017). The analysis of film title translation in terms of cognitive modeling has proved very useful, especially because it goes beyond descriptive adequacy and endows translation with explanatory adequacy (Peña 2016). Without ignoring the important role played by cultural aspects and marketing issues, this kind of analysis provides a principled explanation for the translation of film titles. This proposal draws on the most recent findings in cognitive modeling (Ruiz de Mendoza and Galera 2014). One of the key notions within this framework is that of cognitive operation, a mental mechanism aimed at constructing a semantic representation from linguistic input in order to make it meaningful in context. A distinction has been drawn between formal and content cognitive operations (Ruiz de Mendoza and Peña 2005, Ruiz de Mendoza and Galera 2014). The former are related to the structural manipulation of concepts and provide the blueprint for the latter to construct meaning. By virtue of formal operations, speakers are able to access, select, abstract, integrate, and substitute conceptual material. Content cognitive operations help speakers make inferences in the process of meaning construction. They are in turn classified into two main groups: identity relations (correlation, comparison – resemblance and contrast –, strengthening, mitigation, and echoing) and stands-for relations (expansion, reduction, parameterization, generalization, and saturation). Our corpus of analysis consists of 200 Anglosaxon drama film titles retrieved from the *Internet Movie Database* (IMDb) and *filmsite.org* and their translated counterparts into Spanish. They mainly cover the timespan between 1990 and 2018. The analysis of our corpus has revealed that the cognitive operations which underlie the translation of film titles show a clear tendency to fruitfully combine into amalgams rather than to appear in isolation. Thus we have identified and analyzed different patterns of combinations of content cognitive operations such as expansion, double reduction and echoing, expansion plus correlation, expansion and strengthening, expansion and generalization, or parameterization plus resemblance. For instance, the Spanish counterpart of the film title *Forgetting Sarah Marshall* is *Paso de ti* ('I couldn't care less about you'). Within the domain of a failed love relationship, forgetting someone (Sarah Marshall) is a subdomain of and provides a point of access to the broader conceptual domain of a failed love relationship. This expansion operation combines with two reduction operations and with a non-ironic echo. The amount of conceptual material in the matrix domain is narrowed down by means of a reduction operation whereby another subdomain, that of the ex-lovers, is highlighted. In turn, another metonymic reduction operation is at work here, since one of the two ex-lovers becomes the source domain for one of the things that this person says or thinks when a love relationship comes to an end, *Paso de ti*, which is a non-ironic echo.

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## The role of incongruity and inconsistency in advertising

M<sup>a</sup> Sandra Peña Cervel  
University of La Rioja (Spain)  
[sandra.pena@unirioja.es](mailto:sandra.pena@unirioja.es)

The key role played by metaphor and metonymy in advertising has been widely explored, especially in terms of multimodality (Forceville 1996, 2008, Pérez-Sobrino 2017). However, little attention has been paid to other forms of figurative language that contribute to persuading the consumer to buy, with the exception of Barbu-Kleitsch's (2015) work on visual hyperbole in advertising and Pérez's (2011) analysis of strengthening and mitigation, which usually trigger hyperbolic uses, as effective mechanisms for the success of brand names. This proposal analyzes 500 Facebook advertisements taking into account the latest developments in research on hyperbole (Barnden 2018, Peña and Ruiz de Mendoza 2017), paradox and oxymoron (Ruiz de Mendoza forthcoming) to show how the incongruity triggered by verbal hyperbole and the inconsistencies underlying verbal paradox and oxymoron are powerful commercial strategies which are making their way into advertising. Our proposal is framed within the Lexical Constructional Model, a theoretical strand that draws on functional projectionist theories and constructional approaches (Ruiz de Mendoza and Mairal 2008, 2011, Mairal and Ruiz de Mendoza 2009) and is very much in line with the most recent advances in cognitive modeling

(Ruiz de Mendoza and Galera 2014). In hyperbole, the hearer engages in a descent or increase on a purported scale to adjust the speaker's utterance to real-world proportions (Peña and Ruiz de Mendoza 2017). This brings about an emotional response on the part of the hearer, which in the case of advertising might be surprise or amazement, among others. Paradox and oxymoron involve reframing an apparent contradiction (Ruiz de Mendoza 2014: 198) and also trigger emotional reactions like astonishment. Moreover, these three figures have been shown to be mappings across domains. Regarding hyperbole, three complementary aspects should be considered: the plausibility of the hyperbolic scenario, the hyperbolic load of the expression and the degree of emotional impact on the addressee. In *Tradewinds is giving away a piece of paradise*, the tea brand Tradewinds gives customers the chance to win a Sea-Doo spark in an idyllic beach, which is metaphorically compared to a piece of paradise. The expression depicts a scenario in which the source domain, a hypothetical state of affairs in which the consumer gets a piece of paradise by buying Tradewinds tea, is mapped onto the target domain, the real-world situation whereby a potential consumer will have a wonderful experience. The discrepancy between the imaginary and real-world scenarios is meant to arouse the consumer's feelings so that they get the product. The hyperbolic scenario is highly implausible, which correlates with the great hyperbolic load of the expression and the high emotional impact on the potential consumer. In connection with paradox and oxymoron, the degree of inconsistency of the expression and of emotional arousal are also taken into account. In *Buy more, save more* (an advertisement for iPhone cases), the clash between an inconsistent scenario in which buying more involves saving more and the default interpretation whereby purchasing more leads to spending more is solved by reframing (the more iPhone cases customers buy, the bigger the discount they get) and is expected to create a great emotional impact on the customer.

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## Speech acts in public textual cyberbullying

Aurelia Power  
Technological University Dublin (Ireland)  
[aurelia.power@itb.ie](mailto:aurelia.power@itb.ie)

One of the most common types of cyberbullying is public textual cyberbullying. The severity of its negative effects on the victims' mental and emotional wellbeing draws from its pervasive nature, that is, from the fact that textual content can remain in the public domain for an indefinite period (Lagos 2012, Sourander et al. 2010). For instance, a single offensive message or post has the potential to quickly spread across the web and become an instance of public humiliation. Therefore, identifying the linguistic aspects responsible for the realisation of public textual cyberbullying is an essential step in mitigating its effects.

One such aspect that has been entirely overlooked by previous research is the set of speech acts that characterise public textual cyberbullying. Consequently, we set out to identify in this paper the types of speech acts that are more likely to occur in public textual cyberbullying. Using a dataset from Ask.fm<sup>1</sup> and Searle's taxonomy of speech acts (1976), we found mostly instances of assertives (such as *You are ugly*), directives (for example, *Fuck off!*) and commissives (e.g., *I will box the head of you*), but also few instances of expressives (for instance, *I hope you rot in hell*). On the other hand, we found no instances of declarations.

We then employ Searle's definition (1969) of the illocutionary force as the communicative intent of the speech act which he described as a function of two essential elements:  $F(S, p)$ , where  $F$  is the illocutionary force,  $S$  represents the speaker, and  $p$  is the propositional content. Thus, we formalise each type of public textual cyberbullying speech act by using not only cyberbullying specific information, but also general purpose predicates intended to capture the respective illocutionary points, as well as their propositions:

1.
  - a. Assertive: BELIEVE( $B, p$ ).
  - b. Directive: WANT( $B, V$  does  $p$ ).
  - c. Commissive: INTEND( $B$  does  $p$ ).
  - d. Expressive:  $P(B, p)$ .

where  $p$  stands for proposition,  $V$  for the victim – the receiver<sup>2</sup> of the message, and  $B$  for the bully – the sender<sup>3</sup> of the message, while *BELIEVE*, *WANT*, and *INTEND* represent the typical psychological states of the bully associated with assertives, directives, and commissives, respectively. For example, the instance *She is ugly* is an assertive that can be formally described as *BELIEVE*( $B, V$  is ugly), where *V is ugly* is the proposition<sup>4</sup>, while the predicate *BELIEVE* indicates that this is only the opinion of  $B$  (the bully). The directive *Shut up!* can be formalized as *WANT*( $B, V$  shut up), whereas the commissive *I'll cut your throat* can be formalized as *Intend*( $B$  cut  $V$ 's throat). Finally, the expressive *I hope your mum dies* can be formalized as *Hope*( $B, V$ 's mum dies).

We then analyse each speech act according to the stylistic type of textual cyberbullying (explicit, negation-based and animal metaphors), as well as in terms of the underlying cyberbullying

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<sup>1</sup> We employed this dataset to carry out experiments that we described in previous papers (Power et al 2017, 2018).

<sup>2</sup> We replaced the term *hearer* with the term *receiver* since in the context of online communication it more accurately describes not only hearing, but also viewing messages.

<sup>3</sup> Similarly, we replaced the term *speaker* with the term *sender* since in the context of online communication it more accurately describes not only speaking, but also typing and sending messages.

<sup>4</sup> The proposition must be able to be evaluated as true or false from a logical point of view. On the other hand, from a pragmatic perspective, its truthfulness is dependent on many extraneous facts, such as whether one can identify who the pronoun *she* refers to, and what constitutes *ugliness*.

constructions: (1) full cyberbullying constructions where all three elements (the personal marker/pointer, the dysphemistic element, and the link between them) are explicitly present, (2) personal marker inferable (type II) constructions where the dysphemistic element and the cyberbullying link are explicitly present, but not the personal marker/pointer, which can be inferred from the imperative sentential structure, (3) cyberbullying link inferable (type III) constructions where the personal marker and the dysphemistic element are explicitly present, but not the cyberbullying link verb, which is inferable from the implicit copular structure.

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## The positional behaviour of peripheral constituents in the Airbus corpus

Carolina Rodríguez-Juárez  
Universidad de Las Palmas de Gran Canaria (Spain)  
[carolina.rodriguez@ulpgc.es](mailto:carolina.rodriguez@ulpgc.es)

This presentation is part of a longitudinal research project which started with the revision and proposal of Díaz-Jorge's (2017) updated typology of adjuncts and the analysis of the positional preferences of the different types of adjuncts in English. We also looked into the types of adjuncts that can be located at the different peripheries that are outlined in Van Valin's (2005) enhanced Layered Structure of the Clause (LSC) and presented scales of peripheral and positional preferences of adjuncts (Cortés-Rodríguez and Rodríguez-Juárez, in press). In the same paper, we conducted a brief study of the use of adverbs in a sample selection of the Airbus corpus, which is a small corpus for the aircraft maintenance instructions that has been written in the ASD-STE100 controlled natural language (CNL).

In the second phase of this research project, we aim to expand the study of adjuncts to the whole corpus of Airbus ASD-STE100 by carrying out a quantitative analysis of adverbials that will allow us to accurately describe the positional behaviour of peripheral constituents in the LSC in this CNL. The analysis will be restricted to the three central positions that adverbs can occupy

within the clause, i.e. initial, medial and final positions, which means that the subvariants that were identified as possible sub-positions within these main positions will not be taken into account. We also intend to test the hierarchies of peripheral preferences and positions that were proposed in Cortés-Rodríguez and Rodríguez-Juárez (in press) in this CNL, with a view to checking whether Airbus ASD-STE100 may imply reductions on these scales as a result of the nature of the texts written in this controlled language. Finally, we will design the computational parsing rules that will account for the peripheries and positional preferences registered within each level of the abstract LSC. These syntactic rules have to be incorporated in the Grammar Development Environment module within ARTEMIS<sup>5</sup> so that it can effectively provide the syntactic and semantic representation of adjuncts.

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## Entering through the back door or the backdoor: Figurative language in shaping digital society

Inna Skrynnikova  
Volgograd State University (Russia)  
[i.skrynnikova@volsu.ru](mailto:i.skrynnikova@volsu.ru)

Recent years have seen unprecedented growth in national governments’ numerous endeavours to gain ubiquitous access to encrypted data which IT specialists and privacy advocates fiercely oppose. The parties to this ongoing conflict, generally referred to as “Crypto Wars”, resort to figurative language to effectively frame the resulting disagreement with their adversaries. The most powerful framing tool employed in the digital discourse is metaphor, generally known to perform the explanatory, interpretative

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<sup>5</sup> ARTEMIS is an NLP prototype that has been implemented as a parsing device within the multiple lexico-conceptual knowledge base FunGramKB (Periñán-Pascual, 2012, 2013; Periñán-Pascual & Arcas-Túnez, 2014) and has been designed to obtain the syntactic and semantic representation of linguistic structures.

as well as transformative and manipulative functions (Kupers 2013, Skrynnikova et al. 2017) in uncovering the essence of abstract and frequently ambiguous concepts.

The most pervasive and yet contested term (Jenner 2018) within a long series of conflicts and power struggles over encryption technologies between national security agencies and privacy advocates is the “backdoor”. The aim of the present study is to reveal the role of the “backdoor” metaphor both as an interpretative mechanism enabling to make sense of this obscure term and as a framing tool foregrounding certain intended aspects of this phenomenon while deliberately ignoring other ones. Based on the four-step metaphor analysis procedure (Lakoff 1993) and drawing evidence from the corpus of textual and visual data (IT-related journals, professional security and IT blogs, forums, political debates, cartoons, memes, etc.), the paper examines the challenges of unpacking its meaning resulting from the contested nature of the backdoor.

I argue that diverging interpretations of the backdoor derive from the lack of the clear and comprehensive definition of the term. The analysis undertaken suggests that at its core lies the original and most basic understanding of the “back door” as the rear door to a building. Further metaphoric extension, exemplified in the phrase “*by the back door*”, consists in stressing indirect and illicit means of achieving something. The latter, in its turn, results in understanding the backdoor as a mechanism for bypassing security (and more narrowly encryption). The twofold usage of the term “backdoor”, literal and metaphorical, as the corpus data suggest, should not be treated merely as a pun but rather highlight the multiple facets of metaphorical meaning encoded in the “backdoor” as viewed by IT security experts. While tech and privacy experts keep pushing the term “backdoor” to the forefront, security agencies, on the contrary, avoid using the term as it reveals their efforts to gain access to computer systems or encryption. As is seen from Apple CEO [Tim Cook’s open letter](#) addressing the FBI’s demands for a backdoor, “uncovering” something as a backdoor seems to have become an argument of its own. Another argument the paper puts forward is that relating the backdoor in encryption to the back door of a building immediately creates some sort of basic understanding of this technical concept, even for those less advanced in information technology. This makes the backdoor metaphor particularly useful and powerful, on the one hand, but potentially misleading, on the other hand, as creating imperfect analogy can also translate into false assumptions, oversimplification or even an instrumentalisation of the term.

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## A morphosemantic study of affixoids/semiwords

M<sup>a</sup> del Rosario Tortosa Martínez  
University of Granada (Spain)  
[mariarosariotm@correo.ugr.es](mailto:mariarosariotm@correo.ugr.es)

The present paper presents a synchronic morpho-semantic study of the notion of *affixoids/semi-words* as an intermediate morphological category in Present Day English. In the words of Stevens (2010), the linguistic notion of affixoid refers to a morphosyntactic category situated developmentally between a full word and a traditional derivational affix. For that reason, the inclusion of this intermediate category would entail a reconsideration of morphological structural system.

Due to the lack of systematic studies in English morphology, this research contributes not only to the mainstaying dichotomy of word formation processes (derivation *vs.* compounding); but also to morphological categories with different grammatical status (affix *vs.* lexeme) are examined. Most scholarly work on affixoids is in German linguistics in the 1970s and 1980s (Höle, 1982; Szymanek, 1988). However, the treatment and grammatical status of the morpheme (affixes) has been the basic classifying feature for English model of morphological structure. In that line, the morphemic and paradigmatic models' view on the (non)existence of intermediate categories (*affixoids/semi-words*) was reviewed (Marchand, 1969; Dalton-Puffer & Plag, 2000). Completely opposed views on the topic have been proposed by the recognition of their existence (Marchand, 1969; Dalton-Puffer & Plag, 2000; Stevens, 2005 & Dixon, 2014) in contrast to the *anti-semiaffix* view. (Schmidt, 1986)

Consequently, the research primary goal of this proposal is to (dis)prove *semiaffixation* as a morphological word formation processes itself. For that reason, we aim at a criterion for affixoid identification and characterization aims to be provided. Regarding methodology, this research is framed within corpus linguistics, and resorts to the British National Corpus (BNC) for empiricism, plausibility and replicability was used for it to be scientifically-based, plausible and replicable. The formatives studied (*-ful; -type; -wise; -(wo)man; -like; -way; -worth; -wright; -monger; ex-; top-*) have been the ones considered along the morphological tradition (Marchand, 1969; Dalton-Puffer & Plag, 2000; Dixon, 2014) without conclusive results as their affixoid character.

The resulting concordances containing the formatives object of study were examined in order to construct a diagnostic model. Up to now, the existence and the (lack of) connection with their free lexical counterpart and free parent morph (Stevens, 2010) have been regarded as determinant factors. The role of *semantic shift* and *productivity* is part of the ongoing investigation.

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### **Brain adaptation for three stage digital evolution of linguistic information**

Kumon Tokumaru (Japan)  
[tokumarukumon@gmail.com](mailto:tokumarukumon@gmail.com)

Digital linguistics (DL) identifies human language as a digital evolution of mammalian analog vocal communications, which is operated by the spinal sign reflex mechanism. (Tokumaru 2018a) Analog signs are unique with their physical waveforms, while digital signs are constructed as permutations of logical phonemes.

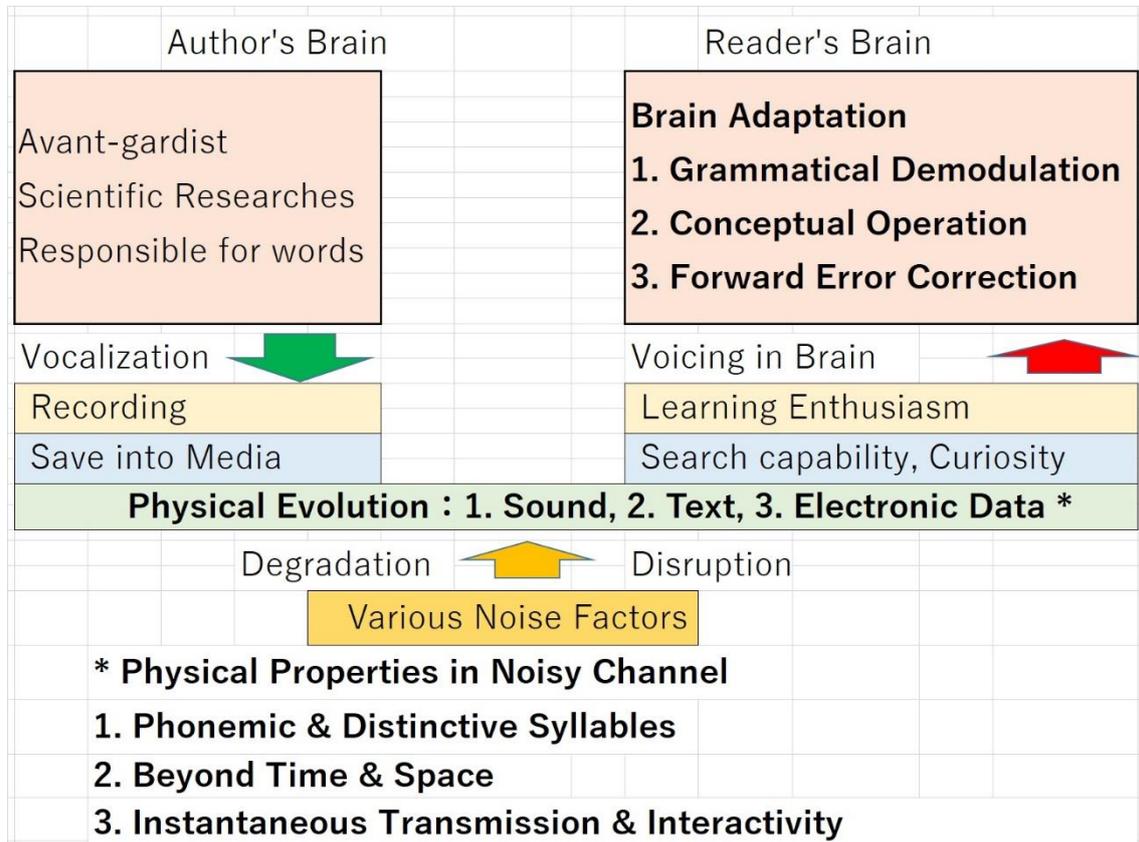
There are three breakthroughs in the physical layer (Figure-1): (i) acquisition of syllables (66,000 years ago in South Africa), (ii) the invention of a character set to write in text format (5000 years ago in Mesopotamia), and (iii) an electronic data (now, worldwide). As the digital evolution took place in physical layer, linguistic humans invented special brain adaptation to take full benefit of syllabic, written and electronic linguistic information.

With the acquisition of syllables, grammatical modulation started. DL analyzed that the microphysical structure of human speech sound is a sequence of alternately aligned grammatical and word sign syllables. Two different types of syllables are sent to the listener's ear and processed by neuro-immunal logic of dichotomy and dualism. It is plausible that grammatical processing is a dualistic integration of a word sign and grammatical sound vector at the brainstem auditory nuclei exploiting the sound localization function.

Written text helped create civilization and sciences. Schooling started with the invention of cuneiform. Written language is translated into inner speech inside the brain with the help of memorized orthography. Dictionaries are the building blocks of a linguistic society used to standardize spelling and the way to use words. Both monasteries and universities are low noise environment to allow deep and thorough thoughts, where scientific concepts were generated. Vygotsky (1935) stated that “the concept is not simply a collection of associative connections learned with the aid of memory. We know that the concept is not an automatic mental habit, but a complex and true act of thinking that cannot be mastered through simple memorization. The child's thought must be raised to a higher level for the concept to arise in consciousness.” DL identifies that the breakthrough from word signs to concepts is in applied logics: word signs are operated by logic of dualism, “If A then B” one to one connection, whole concepts require logic of generalization or groups. Concepts function as groups to which five conditions of “combinativity, reversibility, associativity, general operation of identity, tautology or special identities” (Piaget 1947) are applicable. (Tokumaru 2018b)

Electronic linguistic information is interactive and searchable with keywords. We can obtain or find the location of relevant information within seconds through the internet. It is necessary to

enhance our learning ability to read carefully and in depth interdisciplinary scientific documents. Concepts are the key for interdisciplinary integration of sciences: (i) identifying concepts specifying the same phenomenon, such as “instinct” in animal ecology is “reflex” in brain science, and (ii) verifying the birth of concepts: why “entropy” in information theories are opposite to that of thermodynamics. The author envisages to establish error-corrected collective human intellectual genomes so that future generation can easily inherit human intellectual efforts. (Tokumaru 2018c)



(Figure-1)

- (I) Combinativity:  $x + x^1 = y; y + y^1 = z; \text{etc.}$
- (II) Reversibility:  $y - x = x^1$  or  $y - x^1 = x$ .
- (III) Associativity:  $(x + x^1) + y^1 = x + (x^1 + y^1) = (z)$ .
- (IV) General operation of identity:  
 $x - x = 0; y - y = 0; \text{etc.}$
- (V) Tautology or special identities:  
 $x + x = x; y + y = y; \text{etc.}$

Figure-2 Piaget's five conditions to fulfill the requirements for groups.

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## Metaphors we love by

Nella Trofimova  
St. Petersburg state University (Russia)  
[n.a.trofimova@spbu.ru](mailto:n.a.trofimova@spbu.ru)

Svetlana Kiselyova  
St. Petersburg state University (Russia)  
[svkiseljeva@bk.ru](mailto:svkiseljeva@bk.ru)

Irina Rubert  
St. Petersburg state University (Russia)  
[irleru@mail.ru](mailto:irleru@mail.ru)

The paper examines a group of German lexemes that act as pet names – philonyms – in intimate communication between lovers.

The creating of philonyms for a partner has no boundaries, their diversity is based on semantic derivation (metaphorical transference), namely on associative connection between color, form, taste, functions of objects, and has the widest range of pragmatic possibilities.

The greatest number of philonymic metaphors are the faunonyms like *Hähnchen*, *Igelchen* etc. On the one hand, they are chosen as “new names” for the partner because of certain factual parameters (partner’s size, his/her unique body and behavior, hair or eye color, etc.), and on the other, they give a subjective emotional (positive) estimation of the partner.

The subjectivity of the estimation allows a possible discrepancy between the basis of the positive metaphorical name of the partner and the archetypical idea about a particular animal species. The choice of motivational trait is not essential; it depends on the degree of visibility and individual perception of this trait by the lovers.

Therefore, among the petting faunonyms there are words that nominate small animals, birds and insects that we don’t normally associate with positive axiological and emotional characteristics: *Käfer*, *Laus*, etc. They are used as names for lovers due to situational and contextual factors, i.e. a particular detail that attracts the most attention or is of big importance: for example, the natural unrest of the addressee (*Wurm*, *Motte*), poisonous sarcasm (*Cobra*), etc.

In addition to the faunonyms, the private code of lovers includes petting words coming from sweets, erotically attractive body parts, mythological heroes, fairy-tale creatures, names of celestial bodies, of precious stones and metals, names of plants, names of a soft material or its elements – villi, threads, fluff, etc.

Metaphorical transformations of meaning are often accompanied by active word-formation processes, since the transfer of a name from an object or animal to a person's designation is often insufficient to express a positive attitude to the subject of estimation. In such cases, the emotional impact of the metaphor is enhanced by “multiplying” positively charged semes in a pet name (*Goldplätzelperlchen*) and using the diminutive suffixes, introducing to the semantic structure of the word an emotional assessment of a positive property (*Mausi, Tigerchen*).

However, the presence of a diminutive suffix does not limit the semantics of the philonyms with a “reduction” of the partner's size (*Tigerchen* ≠ *a little tiger*), in words with diminutive suffix, the philonymic meaning is firstly realized.

Composite faunonyms include specific vocatives that are based on metonymic transference and come from a part of an animal – its paw, tail, ear, or even a tooth (*Hasenöhrchen*). The use of such philonyms reflects the very “infinite metonymy” of tenderness, when every part of the body of a loved one causes amazement and adoration.

Thus, philonyms are metaphors we love by, they represent a specific element of the private language code of lovers, “clothed” in truly heartwarming forms, and their creation uses the whole word-making potential of a language.

### **Implications of terminological meaning extension in shaping verb frame semantics**

José Manuel Ureña Gómez-Moreno  
University of Granada (Spain)  
[jmurena@ugr.es](mailto:jmurena@ugr.es)

Pedro Ureña Gómez-Moreno  
University of Granada (Spain)  
[pedrou@ugr.es](mailto:pedrou@ugr.es)

By disabling two traditional constraints on general-language one-verb subevents, Goldberg's (2010) shows that: (i) a verb can specify both manner and result or change of location; (ii) the profiled event of one verb need not be causally related to the evoked background frame event. This study develops Goldberg's claims further to show that a single verb can meet (i) *and* (ii) at the same time. For this purpose, two polysemic terminological verbs (*cement* and *scour*) and their arguments were analysed as they occur in concordances extracted from a corpus of naturally running texts from the specialised knowledge domains of marine biology and sedimentology (subdisciplines of the environmental science). The meaning of these verbs and of their arguments were formalised in the Environmental Event Frame (Faber et al. 2006, 2012). This complex procedure allowed us to verify whether or not the verbs fulfil Goldberg's (2010) manner and result criterion, to identify the number of sub-events in their semantic frames, and to determine whether the background and profiled events in single semantic frames are temporally and causally unrelated.

The basic senses of the verbs in ordinary language were compared with their extended terminological meanings to determine how meaning extension structures and constrains the event-based semantic

frame evoked by each of the sub-senses of the verbs. Striking differences were found in the nature and composition of the semantic frames of the pairs of senses compared. Specifically, the results obtained make another contribution to Goldberg's (2010) theory by revealing fundamental differences in the number of sub-events activated by the general and the specialised language senses of verbs. Specifically, it was found that a terminological verb can lexicalise both the profiled event and the causally unrelated background event within the same semantic frame, whereas the general-language usage of the same verb can only lexicalise the profiled event (e.g. *cement*). Interestingly, the reverse phenomenon was also shown to be true (e.g. *scour*).

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