

Research Article

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Effects of Animacy in Grammar and Cognition: Introduction to Special Issue

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Abstract: Most, if not all, languages exhibit “animacy effects”: grammatical structures interact with the relative animacy of noun referents, as represented on various versions of animacy scales, with human discourse participants at one end and inanimate objects at the other. Cross-linguistic evidence attests to a range of linguistic phenomena conditioned by animacy, with complex effects requiring (a) subtler distinctions than a binary contrast [\pm animate] and (b) more sophisticated analyses than mapping higher animacy to higher grammatical role.

This paper introduces the Special Issue, “Effects of Animacy in Grammar and Cognition”, in which the linguistic interest in grammatical effects of animacy is aligned with broader questions concerning animacy in cognition, including the origins of animacy in language, the biases underlying how we attend to animacy distinctions and how animacy affects discourse. Recent work in cognitive science and adjacent fields has contributed to the understanding of the role of animacy across linguistic domains. Yet, despite the consensus that sensitivity to animacy is a property central to human cognition, there is no agreement on how to incorporate animacy within linguistic theories. This SI focusses on the cognitive construal of animacy, aiming to extend our understanding of its role in grammar(s) and theory.

Keywords: Linguistic theories; Language typology; Psycholinguistics

Most, if not all, of the world’s languages exhibit “animacy effects”, whereby grammatical structures interact with the relative conceptual animacy of nominal referents. Animacy is taken to be represented on hierarchies or scales of varying degrees of granularity, with human discourse participants at one end and inanimate and abstract referents at the other (Silverstein 1976; Comrie 1989; Corbett 1991, 2000, 2012; Dixon 1994; Lockwood & Macaulay 2012). Animacy has been shown to interact with a number of linguistic and extra-linguistic features, which in turn are also represented as scalar properties, including scales of individuation (Dahl & Fraurud 1996; Yamamoto 1999), person (Siewierska 1993), and empathy (DeLancey 1981), as well as reference, e.g. the scale proposed in (1) by Foley & Van Valin (1984):

(1) Speaker/addressee > 3rd person pronoun > human proper noun > human common noun > other animate > inanimate

In its most economical form, the animacy hierarchy can be condensed to a tripartite distinction (see Comrie 1989, Aissen 2003, Yamamoto 1999, 2006). Much important work on animacy converges on some version of the General Animacy Scale shown in (2):

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(2) General Animacy Scale

human > animate > inanimate

Language-specific variations on the scales may also interact with gender, definiteness, politeness, and a host of other categories (see, e.g. Dahl 2008, Lockwood & McCaulay 2012). Profuse cross-linguistic evidence demonstrates that animacy, mediated by these hierarchies, conditions a wide range of linguistic phenomena, including case and agreement, word order, form of reference (including pronoun selection), “inverse” alignment and affixation, argument structure patterns, thematic structure and noun class systems.

The pervasive presence of animacy as a semantic category driving grammatical distinctions derives from the human experience of the world. For one thing, speakers’ egocentric perspective means that human activity is their central object of concern, and this is reflected in linguistic systems, as shown by Dahl’s discussion of egophoricity (2008; see also the special issue edited by Gardelle & Sorlin, 2018). Moreover, on a more objective level, events in the world tend to be initiated by animate creatures, as inanimate objects are less likely to move autonomously or cause changes in their environment: relevant traits associated with animate beings include sentience or volitionality (Dowty 1991, Primus 2012, Weisman, Markman & Dweck 2015) and self-propelled, non-contingent motion (Hurford 2007: 41-45, Opfer 2002, Premack & Premack 1995). Hence, animate beings are likely to be viewed as potential and actual agents, and to be expressed as subjects (Hopper & Thompson 1980). The typical alignment between grammatical subjects, pragmatic topics and referential form (DuBois et al. 2003) can be seen to also support a strong tendency for subjects and topics to refer to animate beings, especially humans (see, e.g. de Hoop & Lamers 2006). Likewise, the preference to structure clauses according to a ‘human first’ principle (Meir et al. 2017) can be seen to derive from the typical structure of events humans are interested in talking about. This translates into most languages on some level, be it grammatical restrictions or simply statistical tendencies in naturally occurring speech – and this in turn affects language processing. The tendency to associate subjects with animate agents, for instance, affects the ease of processing relative clauses with typical vs atypical subject and object animacy configurations (Wu, Kaiser & Anderson 2012).

Linguistic approaches often account for some of the grammatical reflexes of animacy along the following lines of reasoning, appealing to communicative goals: (1) effective communication requires a distinction between grammatical roles (e.g. subject and object) and (2) the prototypical occurrence of animate referents as agents, expressed in active clauses by clausal subjects, and inanimate referents as patients, expressed by transitive objects, can be exploited for effective communication. Hence, non-prototypical relations and constituent order are often signalled through overt marking: e.g. animate objects are marked differentially from the more prototypical, unmarked inanimate objects in Spanish and other languages (Bossong 1985, 1991, Aissen 2003, Naess 2004), and inanimate subjects can also be marked differentially, though this is cross-linguistically rarer (de Hoop & de Swart 2009, Fauconnier 2011).

While communicative efficiency accounts for a number of phenomena crosslinguistically, in fact we also witness more complex linguistic effects of animacy than the signalling of grammatical roles. Psycholinguistic evidence has revealed that animacy plays a central role in the interpretation of transitive clauses, over and above mapping to syntactic roles (Demiral, Schlesewsky & Bornkessel-Schlesewsky 2008, Bornkessel-Schlesewsky & Schlesewsky 2009), which may also account for the frequent alignment, cross-linguistically, of animacy, grammatical roles, and information structure. Animacy can have probabilistic effects, for example in the choice between synonymous grammatical alternatives in possessive (Rosenbach 2008) or passive voice constructions (e.g. Ferreira 1994, Fox & Hopper 1994, Branigan et al. 2008).

Animacy plays a part in many gender and noun class systems, with nouns referring to humans often distinguished from other nouns, and allowing more differentiation among humans than animals. One such system is the Dyirbal noun classes alluded to in Lakoff’s book title, *Women, Fire, and Dangerous Things* (1987). As shown in the simplified illustration of the four Dyirbal noun classifiers in (3), animacy and gender interact: humans are clearly split by gender between the first two noun classes, which also include non-human nouns. The other two classes, however, are difficult to align with cross-linguistic hierarchies or

biological taxonomies; we see animacy playing a role, while interacting with other semantic factors (Dixon 1972: 306-311).

(3)	<i>bayi</i>	men, various animates, most insects, some spears, the moon, storms
	<i>balan</i>	women, some animates (dogs, birds), some spears, the sun, water, fire
	<i>balam</i>	edible fruit and fruit trees, wine, cake, honey, cigarettes
	<i>bala</i>	most inanimates, some spears, but also bees, wind, language

Note that human classes also include natural forces and storms, showing a sensitivity to agency, motion and force, and that bees (animate) and wind (natural force) are exceptional in being classed together with inanimates. As shown by Dixon (1982), and also discussed in Lakoff (1987), this system suggests a categorisation based partly on animacy, which is further shaped by particularities of human experience and belief. Birds are believed to be the spirits of dead women, and so are in the same class as women; the property of harmfulness often leads to a shift from the expected noun class. Similarly complex noun class systems are seen elsewhere, for example in Archi (Chumakina & Corbett 2015), where animacy again interacts with culture-specific factors. As we often see cross-linguistically, animacy cross-cuts the linguistic categories, while at the same time informing the classification system.

As indicated above, the role of animacy in the grammars of the world's languages is extremely diverse. However, while there is a broad consensus that sensitivity to animacy is a property central to human cognition, there is no clear consensus on how to incorporate animacy within linguistic theories. Under cognitive-functional approaches to linguistics, animacy is often seen as a functional primitive which plays a part in structuring human grammars; these theories appeal to perceptual biases and other functional properties of cognition as forces which shape the form of the world's languages, along the lines discussed above (Yamamoto 1999, Croft 1990, Dahl 2008, Kittilä, Västi & Ylikoski 2011). In generative linguistics, on the other hand, animacy effects have usually been seen as external to the narrow grammar and derivable from other (domain-general, thematic and cultural) phenomena. Generative analyses of animacy typically invoke (binary) feature specification, determined either through lexical semantics or compositionally (e.g. Chomsky 1965; Woolford 1995, 1999; Folli & Harley 2008), or they incorporate markedness hierarchies (Aissen 2003, but see also Carnie 2005 for an alternative view that rejects hierarchies).

In this Special Issue, we align the linguistic interest in the grammatical effects of animacy with broader questions concerning animacy in cognition, including the origins of animacy as a central linguistic concept, the biases which shape how we attend to animacy distinctions, and the ways in which animacy affects discourse structure and narrative.

Although the notion of the animacy hierarchy itself appears to be restricted to the field of linguistics, research in adjacent disciplines has contributed much to the understanding of why animacy plays such a central role across linguistic domains (see also Gardelle & Sorlin 2018). Psycholinguistic research has shown that animacy plays a significant role in online language processing and production tasks (e.g. Mak et al. 2006, Bresnan & Hay 2008, Branigan et al. 2008, Bornkessel-Schlesewsky & Schlesewsky 2009). Animacy and closely related concepts have effects on language acquisition, and have been shown to provide a semantic cue for children to use as leverage into the syntactic system (Prat-Sala et al. 2000, Clancy 2003, Narasimhan et al. 2005, Bittner 2006, Buckle et al. 2017). Very young infants demonstrate sensitivity to properties relevant to animacy, such as the presence of eyes and self-propelled motion (Rakison & Poulin-Dubois 2001), yet the distinction between animate and inanimate entities is claimed to undergo refinement and reorganisation over the course of cognitive development, e.g. in the scope and specificity of the animacy distinction and in the understanding of causality (Opfer & Gelman 2011). This process interacts with the acquisition of linguistically encoded animacy in little-understood ways.

An interdisciplinary approach is crucial to access the multiple levels on which animacy is relevant to human experience and cognition, and how that translates to linguistic and behavioral differences. In addition to the psycholinguistic and developmental perspective mentioned above, animacy is also important in literary, cultural, and anthropological studies. The emerging discipline of Cognitive Stylistics (Stockwell 2009) views texts, including fiction and poetics, through a linguistic lens, focusing on the roles

of empathy and point of view in the construction of reference; animacy is central to both of these concepts. Another interdisciplinary approach, Psychonarratology (Bortolussi & Dixon 2003), seeks to draw together cognitive psychology, linguistics and discourse in the processing of narrative texts. Recent work in narrative studies has turned attention to deviant narrators and the role of non-human entities such as the earth or the climate in the 'Anthropocene', playing a role in genres like climate fiction, or 'cli-fi' (Caracciolo 2018). Some anthropologists and ethnobiologists interested in the way human cultures establish taxonomies to classify the natural world (Atran et al 2001) see "folkbiology" as an innate property of human cognition and a cultural universal. In evolutionary terms, animacy may be closely related to the conceptualisation of an individual conspecific, or fellow human, who persists through time, the recognition of which may have yielded an adaptive advantage in primates (Dahl 2008, Leopold & Rhodes 2010). Whether or not the understanding of animacy is equivalent throughout these disciplines, it is clear that the concept invoked overlaps with the one used in linguistic approaches.

In the past decade, the linguistics literature has witnessed a surge in interest in the notion of animacy and its role in the world's languages. A special issue of *Lingua* on animacy and argument encoding, edited by Lamers, Lestrade and de Swart (2008), engaged several prominent lines of research in this field, including the origins of animacy in grammar (Dahl 2008), accounting for grammatical variation and asymmetries conditioned by animacy (Folli & Harley 2008, Malchukov 2008, Rosenbach 2008), and psycholinguistic processing (Branigan et al. 2008). A volume edited by Lamers and de Swart (2012) investigated the interaction between animacy and related semantic features with grammatical function marking (case and word order), particularly with respect to online processing.

More recently, a special issue in the *Journal of Language and Culture* (Gardelle & Sorlin 2018) focussed on anthropocentrism, egocentrism and the Animacy Hierarchy in language and discourse; the papers collected in that issue focus not on animacy as a grammatical feature, but on its role in conceptualisation and culture as humans approach each other and other species. In an important recent paper, de Swart and de Hoop (2018) distinguish between the gradient nature of *conceptual* animacy and the *linguistic encoding* of animacy, which tends to invoke binary feature specification. They argue that animacy reflects ontological categories, and that languages use differing marking strategies to deal with type mismatches between verbs and the animacy of arguments they select: type-shifting morphosyntax has no effect on the semantics of the predicate, while unmarked arguments in mismatched predicates undergo a change in conceptual animacy. In several commentaries on de Swart & de Hoop's target article, their type-theoretical approach is expanded on, especially with an appeal to the centrality of semantic (proto-)roles (García García, Primus & Himmelmann 2018) and agentivity (Schumacher 2018) in animacy-related grammatical phenomena, and discussions of the complexity of animacy-grammar relations (López 2018, Malchukov 2018:48, Nelson & Vihman 2018, Ritter 2018). The liveliness of recent research on animacy, a decade after the 2008 special issue, reveals many still unresolved questions and a persistent interest in the topic.

The current special issue draws primarily on papers presented at the Workshop on Animacy in Language and Cognition, which we organised at the University of Leeds in 2015. These papers take a variety of theoretical and empirical approaches to investigate key questions about the cognitive status of animacy and the mapping of scalar, conceptual animacy to grammar. Cross-linguistic data is drawn from experimental studies, spoken and written corpora, and narrative. The papers highlight the interplay between conceptual and linguistic animacy on the one hand, and theoretical treatments of animacy on the other, in order to extend our understanding of its role in grammar(s) and discourse.

Four papers address theoretical considerations in accounting for animacy effects in linguistic systems. **Shiva Bayanati** and **Ida Toivonen** consider "mismatches" between animacy effects in the grammar and biological animacy. Focusing on Persian and Inari Saami, where animacy interacts with number to condition subject-verb agreement, they show that the two systems can be modelled within Lexical-Functional Grammar using formal feature specification, which also captures optionality effects. They conclude that the reflection of animacy in grammatical systems only makes sense if we consider carefully the tripartite distinction between grammatical animacy, our cognitive construal of animacy and biological animacy in the world. **Jens Fleischhauer** investigates differential marking of the undergoer argument in verbs of contact by impact in Germanic. He re-evaluates the role of animacy by refining an approach

to the semantics of affectedness: while inanimate undergoers can only be affected physically, animate undergoers can be affected psychologically, and this yields the observed marking asymmetries. **Peter de Swart** and **Geertje van Bergen** report on an eye-tracking study in which participants heard V2 sentences which presented the verb before any arguments, and saw pictures of animate and inanimate argument referents. Their results suggest that Dutch speakers anticipate an animate referent to be the subject, but this preference is attenuated by lexical information from the verb. Overall, the pattern of results lends support to the cross-linguistic operation of an animacy constraint, even for languages in which it is not encoded grammatically. **Elif Krause** and **Klaus von Heusinger** investigate the role of animacy in Turkish direct object encoding. While Differential Object Marking in Turkish has been seen as one-dimensional, depending only on the definiteness of the object referent, their study investigates the effects of animacy of the object referent in a grammaticality judgment task, and find an interaction of animacy and definiteness, as well as effects of finer-grained distinctions among animacy levels.

Three papers address the origins of animacy distinctions, on ontogenetic and diachronic levels. **Jana Gamper** investigates how monolingual and bilingual children develop sentence interpretation strategies in German. The results of her forced-choice comprehension task show that case-animacy coalitions (where morphological case and animacy cues align to signal grammatical roles) are used to overcome assumptions by Dutch-German bilinguals and German monolinguals, who tend to rely on word order for comprehension, but not Russian-German bilinguals, who are sensitive to morphological information earlier. Gamper's study emphasises both group-level and individual differences in interpretation strategies, and finds that age and L1 morphology influence the process of cue strength adjustment in German comprehension. **Iván Igartua** and **Ekaitz Santazilia** show that animacy reveals itself as a significant, sometimes even determinant factor in diachronic processes, specifically the reduction of morphological complexity. They present diachronic case studies from Slavic, Cappadocian Greek and Chamorro to show that animacy offers a transparent semantic criterion that helps substantiate several formal distinctions in languages, thereby reducing the amount of morphological complexity or unpredictability inherited from earlier stages in the development of different linguistic systems. **Virve Vihman, Diane Nelson, and Simon Kirby** explore animacy as a cognitive bias that conditions learnability and complexity in the transmission of an artificial grammar. In an iterated learning experiment, participants learned affixes for a set of nouns with referents at different points along an animacy continuum. They find that over generations, languages retained morphological complexity, yet became more learnable through reorganisation around animacy; this suggests that languages may have functional motivations to capitalise on the basic semantic distinctions of animacy.

Finally, three papers focus on how the construal of animacy mediates the relationship between biological animacy and linguistic encoding. **Rea Peltola** addresses the intermediate position of non-human animals on the animacy scale. She investigates data from a Finnish radio programme where listeners call in observations about nature, frequently adopting the viewpoint of animals. The use of modal and open reference constructions, which have been assumed to require human referents, is shown to be acceptable with non-humans in situations where speakers are drawing on and encoding intersubjective, shared experience. The use with human referents is thus shown to represent a typical association but not a grammatical property of these constructions. In a similar vein, **Elsi Kaiser** investigates perspective-taking by humans and animals in narrative fiction. Animal protagonists occur in many narratives, including fables and young-adult novels, but their role in perspective-taking phenomena is not well understood. Using data from Finnish novels, the paper shows that the logophoric pronoun *hän* 's/he' – normally regarded as a human-referring pronoun in Standard Finnish – can be used for animals, even in the absence of personification, if the animal is the perspectival center of the discourse. **Thijs Trompenaars, Lotte Hogeweg, Wessel Stoop** and **Helen de Hoop** use a corpus study to compare the language of first person narration in two novels by the same author, one with an animate narrator and one with an inanimate narrator, taking a novel twist on the myriad ways in which an entity's conceptual animacy may be expressed. Their results show that the animacy of the narrator has surprisingly little effect on grammatical encoding in the text, but does condition the thematic role of the referent and the type of verbs used. Their paper supports the view that conceptual animacy is a more important determining factor than the objective referential properties of the narrator.

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