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**Construction grammar and creativity: Evolution, psychology, and cognitive science**

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**Abstract:** Creativity is an important evolutionary adaptation that allows humans to think original thoughts, to find solutions to problems that have never been encountered before, and to fundamentally change the way we live. Recently, one important area of creativity, namely verbal creativity, has attracted considerable interest from constructionist approaches to language. The present issue builds on this emerging field of study and adds an interdisciplinary perspective to it by also presenting the view from cognitive literary studies as well as psychology. First, however, this introduction surveys the recent issues arising in constructionist studies of verbal creativity.

**Keywords:** construction grammar, cognitive science, creativity, language evolution, psychology

1 Introduction

About 200,000 years ago, our species, Homo sapiens, evolved in East Africa. Yet, it wasn’t until about 70,000 years ago that the success story of our species started (Harari 2014). Before that, we were one of many species of the genus homo (including, inter alia, homo erectus and homo neanderthalensis). Some of these other species were probably taller and even stronger than us, so why did we outlast them — and even more than that, how did we, arguably, become the most successful species on the planet?

Scientists agree that our species must have been affected by a major evolutionary change that significantly increased our mental abilities — the so-called Cognitive Revolution (Goldberg 2018; Harari 2014). Changes to our brain enabled us not only to plan and carry out more and more complex actions, but also to communicate larger quantities of information to each other. Key to this was, of course, the invention of language, i. e. our ability to communicate through

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symbols (Deacon 1997; Tomasello 1999). Once we were able to communicate with each other through arbitrary and conventional pairings of a form (a string of sounds or letters, a picture, a gesture, etc.) with a meaning (a mental concept), we were able to exchange large quantities of information to each other. Information that not only included facts about the world, but also helped to build and maintain complex social relationships as well as fictional concepts (such as tribal spirits, money, or nations; Harari 2014: 41).

While virtually all linguistic theories acknowledge the fact the knowledge of language comprises form-meaning pairings (such as words), Construction Grammar (Croft 2001; Goldberg 2006, 2019; Hoffmann and Trousdale 2013; Hoffmann 2017a, 2017b) advocates the view that not only words but all levels of grammatical description — from morphemes, words, and idioms to abstract phrasal patterns as well as larger discourse patterns — consist of form-meaning pairings, which are collectively referred to as constructions. Moreover, usage-based constructionist approaches (cf., e.g. Bybee 2006, 2013; Croft 2001; Goldberg 2003, 2006; Lakoff 1987) maintain that the mental construction network of speakers is shaped by the repeated exposure to specific utterances (so-called “constructs”) and that domain-general cognitive processes such as categorization, chunking or cross-modal association play a crucial role in the mental entrenchment of constructions. Under this view, input therefore plays an important role and each construct, that is each individual token of usage that we are exposed to, leaves a trace in our mental grammar.

Early input-driven models of language acquisition, such as behaviourist approaches (such as Bloomfield 1933 or Skinner 1957), were criticised for not accounting for the creative use of language (Chomsky 1957, 1965). One particular point of criticism was that speakers can — and often do — say things they previously had not heard before. In contrast to this, usage-based constructionist approaches highlight that speakers are not merely conditioned by their input, but that they have a whole range of cognitive domain-general principles that allow them to go beyond the input they are exposed to. Take, for example, the sentences in (1):

(1) a. She belched her way out of the restaurant.
   b. He bought his way into the club.
   c. They made their way into the room.
   (Examples from Hoffmann 2017a: 300.)

After observing examples such as (1a–c), analogical thinking will allow speakers to (subconsciously) detect the semantic similarities across these three sentences: in all three sentences, the subject traverses a path while/by carrying out an action expressed by the verb. Moreover, a common property of all instances is that, while the subject slot and the directional PP vary considerably, they all contain the noun
way which has to be preceded by a possessive determiner “POSS$_i$” (that must be co-referential with the subject). Using the domain-general process of schematization, data such as (1) allows speakers to entrench the largely schematic construction in (2):

(2) **Way** construction:

| FORM: [SUBJ$_i$ [V POSS$_i$ way] (PP$_{DIRECTIONAL}$)] |
| MEANING: [“SEM$_i$ traverse the path$_{PP}$ while/by doing V”] |

(Adapted from Traugott and Trousdale 2016:79)

In turn, the construction in (2) enables speakers to creatively express new concepts such as (3):

(3) Meet the man who Tindersurfed his way around Europe for 2 months.$^1$

…in which Tindersurfing is analogically-formed from *Couchsurfing*, and the verb denoting the activity of couchsurfing using the dating app Tinder (see below for a more detailed discussion of this example).

As Goldberg points out, “constructional approaches share with mainstream generative grammar the goal of accounting for the creative potential of language (Chomsky 1957, 1965). That is, it is clear that language is not a set of sentences that can be fixed in advance.” (Goldberg 2006: 22). Yet, a closer look at Construction Grammar research and linguistics in general reveals that what linguists usually mean by “creativity” does not necessarily coincide with how the term is used in other disciplines (see Creativity and construction grammar: central issues). In linguistics, “creativity” is largely limited to productivity, i. e. how established abstract schemas of a language such as (2) can be used to licence novel utterances (Goldberg 2019; Hoffmann 2019). Yet, making “original use of the established possibilities of the language” (Leech 1969: 24) is not the only type of creativity. Sometimes, speakers also go beyond the existing possibilities by creating “new communicative possibilities” (ibid., cf. also Sampson 2016 for a similar distinction of “F[ixed]-creativity” and “E[nlarging/extendi-ng]-creativity;” Hoffmann 2018a: 262–263; Bergs 2018; though see Bergs and Kompa 2020 for a critical assessment of this dichotomy). As Giora (2003) has pointed out, creative utterances that resonate with listeners/readers the most are those that are new but at the same time can be linked to existing linguistic knowledge (i. e. they are “optimally innovative;” see also Veale 2012: 26–28). Consequently, cases where an “utterance is unrelated to

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what is stored in the construction” (Uhrig 2018: 297) will be extremely rare (or perhaps, in the strictest sense, do not exist; see Bergs and Kompa 2020). Still, there are examples that draw on existing constructions while at the same time clearly go beyond the existing constructional means of a speaker: These range from literary examples such as “Bloom looked, unblessed to go. Got up to kill: on eighteen bob a week …” (from *Ulysses* by James Joyce) or “*Thing-um-a-jig!*” (from *The Hunting of the Snark* by Lewis Carroll) to so-called “Hashtag rhymes” (which consist of “a metaphor, a pause, and a one-word punchline, often placed at the end of a rhyme”; c.f., for instance, “*Swimming in the money, come and find me — Nemo*” from Drake’s song *Forever*). (Hoffmann 2019: 2)

Recently, the papers in Hoffmann (2018b) tried to approach the topic of verbal creativity from a Construction Grammar perspective for the first time. In their contributions, the authors, inter alia, explored the following issues of linguistic F- and E-creativity:

- How F- and E-creativity can be interpreted from a Construction Grammar perspective (Bergs 2018; Hoffmann 2018a; Turner 2018; Uhrig 2018).
- The different processes leading to linguistic innovations (such as, e.g. errors and mistakes, extravagance, language contact, priming as well as intentional linguistic mechanisms such as snow clowning, coercion, and aberrancy; Bergs 2018; de Smet 2018) and the various effects these have on the mental network of constructions.
- The incremental and gradual nature of linguistic creativity (Herbst 2018; Uhrig 2018).
- Computational linguistic implementations to model F- and E-creativity within Construction Grammar (Van Eecke and Beuls 2018).
- The similarities and differences of creativity in music and language (Trousdale 2018).
- A critical assessment of all these constructionist approaches from a literature studies perspective (Schneck 2018).

Building on these insights, the present special issue now tries to further our understanding of how creativity can be modelled by constructionist approaches. In line with the multidisciplinary perspective of *Cognitive Semiotics*, the issue adopts a structure that is intended to foster the exchange between scholars with a Construction Grammar background as well as those from other disciplines such as literary studies and psychology: In addition to the present introduction, the issue contains five target papers (Turner 2020; Trousdale 2020; Págán Cánovas 2020; Bergs and Kompa 2020; Uhrig 2020), the claims of which are discussed in corresponding response papers (Herbst 2020; de Smet 2020; Bergs 2020; Cappelle 2020; Hoffmann 2020; respectively). Finally, the issue also incorporates interdisciplinary perspectives from cognitive literary studies (Kukkonen 2020) as well as psychology.
Creativity is an important evolutionary adaptation that allows humans to think original thoughts, to find solutions to problems that have never been encountered before and to fundamentally change the way we live (e.g. Goldberg 2018; Kaufman 2016; Sternberg 1999; Turner 2014). The behaviour of animals in many situations can, of course, often also be considered “creative” (Kaufman and Kaufman 2004), but “human creativity is unique in that it has completely transformed the planet we live on” (Gabora and Kaufman 2010: 279). Yet, what are the key features that mark a product, process, or idea as creative? One widely accepted definition by Simonton (2012) holds that originality/novelty and appropriateness interact in determining whether something is considered creative (see Kaufman 2016: 5): Some ideas might be completely original but deemed inappropriate (such as using a smartphone as a fly swat) while others seem perfectly acceptable but not very original (such as using a fly swat to kill flies). It is only when something is original and appropriate that is seen as creative (and appreciated by the listener/reader; see Giora 2003; Veale 2012).

By this definition, the construct in (3) can be considered (F-)creative: Instead of a long and convoluted utterance (such as Meet the man who is Couchsurfing through Europe for two months, finding places to stay by contacting women via Tinder), (3) draws on the Way construction (2) and an analogical word-formation process (to create Tindersurfing from Couchsurfing) to compress a complex idea into a compact utterance that can immediately be understood by the readers/hearers. As Turner (2020) argues in his contribution, the domain-general process that underlies this creative combination process is Conceptual Blending (Fauconnier and Turner 2002; Turner 2018). In fact, Turner claims that Conceptual Blending, that is the selective combination of two or more input spaces to create a conceptual structure that often has new, emergent meaning, is the sole cognitive mechanism through which constructions (long-term memory information) are combined to create constructs (working memory information; see also Turner 2018; Hoffmann 2019).

As the present issue shows, constructionist approaches allow for a new, cognitively plausible analysis of the mental processes underlying linguistic creativity. At the same time, the question of how we are creative (process) is just one perspective on creativity. Additional questions are: Who is creative (person)\textbf{?}, What counts as creative (product)\textbf{?}, and Where are we creative (place)\textbf{?} (Rhodes
Concerning the factor person, I have pointed out that individual differences also need to be addressed by future constructionist studies on linguistic creativity:

[...] a great body of psychological research has shown that personality traits such as openness and extroversion as well as general and specific intelligence are significantly correlated with the creativity (Kaufman 2016; Kandler et al. 2016). These findings open up exciting new research questions for Construction Grammar (see also Hoffmann 2018a): Different levels of openness and extroversion should crucially affect how fast, how many and which constructions become activated and available for blending in the working memory, thus providing a partial explanation of individual differences in verbal creativity. In addition to this, higher levels of intelligence should lead to a faster integration of seemingly conflicting or unrelated constructions that result in E-creative constructs. Finally, a higher level of extroversion leads people to seek more social contacts, resulting in a higher type frequency of different social, regional as well as age-based varieties (thus considerably expanding the range of constructions in their constructicons). Beyond domain-general cognitive principles shared by all speakers, the F- and E-creative use of language thus requires Construction Grammar to look more closely at psychological traits and abilities that very likely account for the important differences in the mental grammars of individuals. (Hoffmann 2019: 6)

As Uhrig (2020) argues in his contribution, however, sometimes it is not possible to disentangle product and person this easily: An utterance that might count as “creative” if produced by a native speaker might be considered “a mistake” if (someone perceived as) a non-native speaker utters it. Moreover, place and product also interact: Págan Cánovas (2020) shows the unique constraints placed on oral singers when producing complex poems during rehearsed improvisation. As he argues, his data raise important questions for constructionist accounts of the phenomenon.

Besides, a crucial function of language is social interaction and many instances of linguistic creativity can only fully be accounted for when taking into account persons, place, and product. Based on evidence from psycholinguistic and music studies, Trousdale (2020) discusses how pre-fabricated routines used in improvisation are often the result of alignment of individuals during interaction. For the sake of illustration, take the following exchange from an episode of QI (Quite Interesting), a BBC comedy panel television show in which a host asks four guests obscure questions and points are awarded for correct, but also for interesting and humorous, answers. The show is not rehearsed, but similar to oral singers or musicians, we can expect the guests, all of which are comedians or celebrities, to have a stock of pre-fab routines at their disposal. The following excerpt is from series 9, episode 7 Incomprehensible, which features Stephen Fry as host and Sue Perkins, Ross Noble, Professor Brian Cox, and Alan Davies as

guests. About 10 min into the show, the panellists are discussing the moons of Saturn, when Ross Noble asks which one would be the “most likely to be the home to Ewoks?” To this, physicist Brian Cox replies “That would be Titan. [...] It’s got a thicker atmosphere than the Earth so you’d need to be furry.” About another 15 min later, after discussing liquid nitrogen (and the fact that you can shatter a rose once it has been dipped in it), the following exchange takes place (omitting some overlap that occurs between speakers):

1. Brian Cox: The surface of Saturn’s moon, Titan, that’s so cold that…
   Ross Noble: Ooh, hang on. I know a Titan! Titan’s the one where the Ewoks live! Ewok planet! Yay!
   Stephan Fry: You see!
   Ross Noble: So hang on, I’ve got it — so basically, you’re saying you can shatter an Ewok.
   Brian Cox: Yes! It’s got lakes of liquid methane.
   Ross Noble: Wow!
   Brian Cox: Cos it’s so cold. And the methane behaves exactly like water on earth so you get rain — methane rain, you get methane snow, methane ice and lakes of methane. There’s a lake there which is as large as Lake Superior.
   Sue Perkins: Of methane? Which is essentially a fart. Liquid fart.
   Brian Cox: Exactly that.
   Sue Perkins: Sue Perkins I don’t want to go there. Strike it off.
   Ross Noble: If I could stand on a planet and throw an Ewok into a lake of fart that would just be… That’d be…
   Sue Perkins: Smash it into a fart lake.
   Brian Cox: You couldn’t, because it would shatter.
   Ross Noble: Even better!
   LAUGHTER
   Ross Noble: Right, so I could be tossing Ewoks into a lake of fart? Aaah.
   Stephan Fry: Everyone has their own heaven. That’s yours.
   Brian Cox: When you say tossing Ewoks into a lake of fart …?!
   LAUGHTER
   Stephan Fry: Steady.
   Ross Noble: That’s exactly what I meant.
   LAUGHTER

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Stephan Fry: Oh!
Ross Noble: You know what? After this show finishes, I’m off. I don’t care, you’ll never see me again. “Where is he? He’s off tossing Ewoks again. Into his lake of fart. On a pedalo made of smoke.”
(QI, series 9, episode 7, “Incomprehensible,” 0:24:47–0:26:14.)

Even after 15 min, the novel humorous idea of Titan as a potential planet for (the fictional) species of Ewok is still so active that it can become a topic again. Cox adds the information that Titan’s surface is extremely cold, which Noble uses as a stepping stone to point out that Ewoks would shatter. After that, Cox mentions that Titan has lakes of methane — which Perkins calls “liquid fart.” This topic is discussed until Noble exclaims “Right, so I could be tossing Ewoks into a lake of fart?” Noble had only intended to use toss in the sense of “throwing” here, but the utterance is ambiguous in British English, since toss off could also mean “to masturbate a male member of a species.” Cox picks up on this, though not explicitly, as he laughs and asks “When you say tossing Ewoks into a lake of fart…?!” Now, Ross claims “That’s exactly what I meant” — and the audience responds with laughter.

This exchange shows how humour (an instance of a particularly effective creative utterance) can evolve dynamically and collaboratively in discourse: The first time Ross mentioned “tossing Ewoks into a lake of fart,” the sexual connotation would not fit the previous exchange and in all likelihood would not have had the same effect. Once it had been uttered, however, Cox could playfully allude to it and panel and audience broke into laughter. As mentioned above, this example clearly shows how persons, place, and product interact in dynamic discourse settings to produce a novel construct (tossing Ewoks into a lake of fart) that was considered highly appropriate (in a comedy panel show) and, consequently, creative.

3 Outlook

As I have tried to show, verbal creativity is a highly fascinating but at the same time extremely complex issue. Constructionist approaches clearly offer important cognitive explanations for the mental processes underlying verbal creativity. At the same time, the topic is one that can only be fully explored by interdisciplinary collaboration between linguistics, cognitive literary studies, and psychology, as well as other cognitively-oriented research. The present volume hopefully is a first step in bringing these various strands of research together.
References


**Bionote**

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Thomas Hoffmann is Professor and Chair of English Language and Linguistics at the Catholic University Eichstätt-Ingolstadt. His main research interests are usage-based Construction Grammar, language variation and change, and multimodal communication. He is currently writing a textbook on Construction Grammar: The Structure of English for the Cambridge Textbooks in Linguistics series.

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