Implicit Arguments and Verbal Polysemy

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*This study deals with the inference of implicit arguments in the direct-object position of polysemous verbs. Polysemy is understood here to comprise not only different meanings of a verb (e.g. produce 'to bring into existence', 'to bring (a performance) before the public', 'to produce or come up with the goods, money, or results' etc.; cf. OED), but also different conceptualizations of an activity which are induced by modifiers (e.g. eat ∅ with chopsticks/with friends/mindfully). Since the distribution of complement omission over different readings of English verbs has been largely neglected so far, the aim of this article is to systematize the interpretation of detransitivized verbs and their implicit arguments with special consideration of polysemy. To that purpose, three interacting ways of accessing unexpressed arguments will be distinguished, namely interpretation by default, cue-based interpretation, and pragmatically determined interpretation. Interpretation by default applies on the basis of frames (in the sense of Fillmore's Frame Semantics) and abstractions over selectional preferences if the implicit argument remains unspecified (e.g. John has been reading ∅ all afternoon). As far as cue-based interpretation is concerned, the context provides cues which help the hearer or reader to identify a referent for the implicit argument or to figure out a contextually relevant meaning of the verb (e.g. Brosnan, who also produced ∅, got behind the movie the minute he read the script and his effort has paid off). Pragmatically determined verbal meanings may differ considerably from the semantics of well-established intransitive variants (e.g. Roy located an Italian doctor out in the Bronx who would write ∅). However, if pragmatically determined meanings unfold in scripts, referents for implicit arguments are readily identified (e.g. We open at 9 am and close at 5 pm vs. John opened *(the parcel)).*

Keywords: *implicit arguments, detransitivized verbs, polysemy, Frame Semantics, proto-roles, targeting*.

1 Introduction

It is a well-known fact that certain arguments of verbs and other lexical items are not always expressed syntactically. For example, just as the subject argument and hence the participant bearing the role of the Proto-Agent (Dowty 1991) may be left unexpressed in the passive construction (e.g. *The house was built in 1900*), there are many contexts in which the complements of verbs – especially those related to the direct-object position – remain implicit. While verbs like *eat*, *drink*, *read*, *write*, *cook*, or *bake* have well-established intransitive variants (e.g. *John has been reading ∅ all afternoon*), verbs which usually require their object argument to be syntactically realized may be detransitivized in contexts that license null instantiation (e.g. *Man makes, God creates*; Lemmens (1998)).

Four basic types of null instantiation are distinguished in the pertinent literature (e.g. Fillmore 1986; Lambrecht & Lemoine 2005; Ruppenhofer et al. 2016), namely definite, indefinite, generic, and constructional. The distinction between the first two types is based on whether or not a referent for the unexpressed argument is available in the context. While Definite Null Instantiation (DNI) creates an anaphoric relation between the implicit argument and an antecedent, Indefinite Null Instantiation (INI) leaves the referent of the omitted argument

unspecified. Since the indefinitely null-instantiated argument is not eliminated, but remains conceptually present, it is useful to adopt the notion of 'deprofiled object' from Goldberg (2006a). Generic Null Instantiation (GNI) results in a generic or habitual reading of the activity denoted by the verb. As far as Constructional Null Instantiation (CNI) is concerned, the omission of an argument is structurally licensed. Classical examples of CNI are imperatives, passive sentences, the experiential perfect, or the middle construction. As pointed out by Ruppenhofer et al. (2016: 30), this type does not affect the interpretation of the implicit arguments involved, which may be either anaphoric (i.e. definite) or existential (i.e. indefinite). The four types of null instantiation are exemplified in (1a–d), respectively.[1]

(1) a. That sofa-table in the window. When would you be able to **deliver**? (DNI)
b. His wife and business partner, Lois, is the kind of natural beauty who dwells in Lauren's imagination when he **creates**. (INI)
c. The poor **sewed**, the rich **bought**. (GNI)
d. Have you ever **fostered** before? (CNI)

Null instantiation of arguments has been discussed from a variety of perspectives. These include syntax (e.g. Roeper 1987; Bhatt & Pancheva 2017), lexicalism (Fillmore 1986; Rice 1988), pragmatics (e.g. Goldberg 2001; Ruppenhofer & Michaelis 2010), information structure (Goldberg 2001; Lambrecht & Lemoine 2005), psycholinguistics (e.g. Mauner & Koenig 1999, 2000), Construction Grammar (e.g. Goldberg 2006a; Chaves, Kay & Michaelis 2021), frame semantics (Boas 2017; Baeskow, to appear), and computational linguistics (e.g. Roth & Frank 2015; Schenk 2019).

While these approaches provide valuable insights into the factors which determine the omission of arguments, a problem which has not yet been sufficiently dealt with is the distribution of null instantiation over different readings of English polysemous verbs.[2] The fact that polysemous verbs may allow for complement omission in one reading, but not in others, renders the already complex phenomenon of null instantiation even more complicated. For example, while Rice (1988: 207) points out that *open* does not allow for object omission because it belongs to a set of verbs which "take too broad a range of possible objects", a sentence like *We open at 9 am* is perfectly acceptable. On the other hand, a sentence like *John opened *(the parcel)* is well-formed only if the direct object is syntactically realized. Moreover, as shown in (2), the interpretation of implicit arguments is not unambiguous either if the intransitive use of the verbs which license them is well-established.

(2) a. When my tongue was paralyzed I couldn't **eat** or **drink**. (Fillmore 1986: 96)
b. As a teen-ager he began **drinking**, and he was convicted a number of times for driving while drunk. (Concretely Annotated English Gigaword)
c. Have you **eaten** yet? (García Velasco & Portero Muños 2002: 5)

While the implicit arguments of *eat* and *drink* are interpreted as FOOD and BEVERAGE (respectively) in sentence (2a), which conveys an 'ability' reading, sentence (2b) prompts a more spe-

[1] These examples were taken from the *Oxford English Dictionary* (1a), the Concretely Annotated English Gigaword (1b), (1c), and Ruppenhofer et al. (2016: 30) (1d). Throughout this article, verbs displaying null instantiation of arguments are represented in boldface in the examples.

[2] See Jacobs (e.g. 1994), Engelberg (2002), and von der Becke (2021) for analyses of selected German verbs.

cialized interpretation according to which the referent of *he* began to consume alcohol habitually. In this context, the implicit argument is interpretable as a semantic subtype of the more general type BEVERAGE (i.e. ALCOHOL), and the otherwise neutral verb *drink* assumes a negative connotation. In (2c), the deprofiled argument refers to a meal rather than to an apple or to food in general (Fillmore 1986: 97; García Velasco & Portero Muños 2002: 5). Moreover, as observed by Resnik (1993: 94), a question like *Have you eaten?*, which he argues to imply the question "Do you want to go get lunch", assumes yet another interpretation if it is part of an exchange between a doctor and a patient. These examples show that even verbs denoting simple activities like eating and drinking unfold different facets of meaning if they are used intransitively in different contexts. The aim of this article is to systematize the interpretation of detransitivized verbs and their implicit arguments with special consideration of polysemy. To that purpose, three interacting ways of accessing unexpressed arguments will be distinguished, namely (1) interpretation by default, (2) cue-based interpretation, and (3) pragmatically determined interpretation.

Interpretation by default applies if no referent for the implicit argument is available in the context, so that this argument remains unspecified (Indefinite Null Instantiation). In this case, the interpretation is guided by frames in the sense of Fillmore's Frame Semantics[3] and refined by the verbs' selectional preferences. While frames such as the 'Ingestion' frame evoked by *eat* and *drink* are "script-like structure[s] of inferences, which are linked to the meanings of linguistic units (lexical items)" (Fillmore et al. 2002), selectional preferences can be conceived of as abstractions over collocations which typically occur in the direct-object position of verbs. For example, a Word Sketch generated by Sketch Engine for *drink* shows that this verb typically collocates with nouns like *water*, *beer*, *alcohol*, *coffee*, *tea*, *wine*, or *milk*, which are of the semantic type BEVERAGE.[4]

The second criterion, cue-based interpretation, applies if abstract information as encoded in frames and selectional preferences is not sufficient for the interpretation of a detransitivized verb, and more specific information about the complement is required, e.g. *When will you be able to deliver ∅?*. In this case, the decoder (i.e. the hearer or reader) will look for cues in the linguistic (or extra-linguistic) context that help him or her to identify a referent for the locally unexpressed argument (cf. example (1a)). Since the notion of 'cue' is rather vague by itself, it is largely used here in the sense of Talmy's (2017, 2020) innovative theory of targeting in language which aims at a unification of anaphoric and deictic reference. Although cue-based interpretation primarily provides access to targets (i.e. referents) which are located in the preceding discourse context (anaphoric relation), the following discourse context (cataphoric relation), or in the extra-linguistic environment (deictic relation), it will be shown that cues also provide access to indefinitely null-instantiated arguments and hence to unexpressed targets. While cues to referents located in the discourse context or the extra-linguistic environment bear information comparable to that of pronouns (e.g. *Can I join* [*you*]*?*), cues providing access to unexpressed targets help the decoder to identify the currently activated meaning of a polysemous verb. Examples to be discussed highlight the role or name of the Proto-Agent (e.g. *The violinist Anne-Sophie Mutter plays ∅ with zest* […]) and prepositional phrases or adverbs which directly modify the detransitivized verb (e.g. *eat with chopsticks* vs. *eat mindfully*).

Finally, null instantiation is pragmatically determined if it is restricted to particular genres like recipes or sports reports (Ruppenhofer & Michaelis 2010), registers (e.g. slang), or

[3] Cf. for example Fillmore (1977), Fillmore & Baker (2009), or Ruppenhofer et al. (2016).

[4] Rice (1988), Jackendoff (1990), and Resnik (1993) already recognized the relevance of selectional preferences for the inference of the meanings of implicit arguments.

jargons (e.g. the religious jargon). Selected examples will show that register- or jargon-specific meaning components of detransitivized verbs may differ considerably from well-established intransitive meanings (if available). Moreover, it will be shown that there are polysemous verbs which allow for object deprofiling only in contexts dealing with (rule-based) social interaction. In such contexts, the frame-based information evoked by the verb may be enriched by script knowledge (Schank & Abelson 1975, 1977; Irmer & Mueller-Reichau 2018), which takes temporal ordering of subevents into account. The intransitive use of the German verb *geben* 'give' in the context of card games (Jacobs 1994) is a case in point.

The article is structured as follows: Section 2 presents some preliminary considerations regarding argument structure, the theoretical framework, and the exclusion of certain verbs from the analyses. In section 3, the three criteria which contribute to the interpretation of detransitivized verbs and their implicit arguments will be addressed successively. In section 3.1, the default interpretation of implicit arguments will be discussed on the basis of frames and selectional preferences. Section 3.2 is concerned with the cue-based interpretation of detransitivized verbs and their implicit arguments. The analyses comprise lexical core cues that help to identify relations of co-reference between null arguments and potential targets (section 3.2.1), lexical co-form cues provided by the quantifiers *many*/*much* and by deictic expressions (section 3.2.2), and cues which guide the identification of contextually activated meaning components in the case of polysemy (section 3.2.3). Cues of the latter type go beyond Talmy's theory of targeting in that they do not require the presence of a syntactically realized target (i.e. a referent) in the context. Thus, they are also involved in Indefinite Null Instantiation. In section 3.3, some aspects of pragmatically determined null instantiation will be discussed. The article ends with a summary and outlook in section 4.

The examples discussed in this study come from the *Oxford English Dictionary* (OED), the Concretely Annotated English Gigaword, the English Web 2021 (enTenTen21) provided by Sketch Engine, and from previous studies on argument omission. Attached to this article are two appendices. In Appendix 1, the top thirty collocations typically occurring in the direct-object position of the verbs *eat*, *devour*, and *ingest* are represented. These collocations were generated using the Word-Sketch tool provided by Sketch Engine (cf. section 3.1). Appendix 2 displays 150 contexts in which the polysemous verb *produce* is used intransitively. Although the present study concentrates on formal aspects of argument omission, Appendix 2 is intended to provide an impression of the readings an inherently causative verb can assume under different types of null instantiation. The data were automatically extracted from the Concretely Annotated English Gigaword (henceforth abbreviated as Gigaword). This corpus contains 4.5 billion words from 10 million English newswire articles published between 1994 and 2010, and it allows users to state search patterns over syntactic structures.[5] In order to search the corpus for intransitive uses of transitive verbs, the software tool Tgrep2 which runs on Unix was used. Results were obtained by restricting the search to strings in which the only daughter of the VP is a word-form of *produce*. Thus, contexts in which the verb is followed by a complement were automatically excluded. The results had to be manually postprocessed in order to remove irrelevant material such as multiple representations of the same sentence, occasional occurrences of the result nominal *produce*, and a large number of relative clauses which lack overtly expressed relative pronouns.[6] Moreover, since the semantic patterns observed for the detransitivized verb *produce* are recurrent, Appendix 2 was restricted to 150 contexts.

[5] A complete overview of the sources is provided at https://catalog.ldc.upenn.edu/LDC2011T07

[6] Since relative clauses (e.g. *Paychecks were big enough to allow us to buy all the goods and services we produced*) are structurally licensed, they do not help to make predictions regarding verb-specific null instantiation.

2 Preliminary considerations

Before we proceed to the inference of implicit arguments, it should be pointed out that approaches dealing with null instantiation are based on the assumption that the argument structure of verbs is first and foremost lexically determined. This assumption is not shared by all scholars. In models which can be subsumed under the label of 'Neo-Construction Grammar', i.e. Distributed Morphology (e.g. Marantz 1997; Harley & Noyer 2000; Embick & Marantz 2008; Embick 2021) and Borer's (e.g. 2005a, 2005b, 2013) exoskeletal model, argument omission does not actually exist because argument structure is exclusively determined by the syntactic configurations in which category-neutral roots are inserted. This view, however, is not without problems. On the one hand, representatives of Neo-Construction Grammar agree that the compatibility between abstract roots and structural configurations is determined by encyclopaedic knowledge. On the other hand, this interaction has not been elaborated so far. Thus, the derivation of pragmatically marked or semantically ill-formed sentences like ?*The dog boated three sinks* or **The sinks dogged the boat* (Borer 2005a: 29), which at best signal transitivity, cannot be ruled out. Moreover, these models as they stand fail to explain why semantically similar verbs like *eat*, *devour*, and *ingest* differ in their disposition to occur without a complement (cf. Boas 2017; Baeskow, to appear, and section 3.1 of this article).[7] If argument structure was determined syntactically, an intransitive use should be available for each of these verbs.

Cognitive Construction Grammar (Goldberg 1995, 2006b, 2019), which is based on frames, does not face the problem of uncontrolled overgeneration because it requires compatibility between the meaning of a construction and the semantics of the Lexical Units that instantiate it. At the same time, constructions allow for a certain degree of syntactic flexibility because they have the potential to add arguments which are not part of the verb's argument structure (Goldberg 1995: 50–55). For example, a sentence like *He sneezed the napkin off the table* is licensed by the caused-motion construction, which adds a theme and a goal argument to the inherently intransitive verb *sneeze*. Although there is a mismatch in the number of roles, this sentence is not as arbitrary as *The sinks dogged the boat* because it adheres to the Semantic Coherence Principle. According to this principle, the participant role(s) provided by the verb must be fused (or unified) with semantically compatible role(s) in the construction. As far as Goldberg's example is concerned, the single participant role of *sneeze*, i.e. the 'sneezer', can be construed as an instance of the Agent role provided by the caused-motion construction, which contributes the Theme and the Goal and which in combination with the verb yields a semantically well-formed expression.

However, as shown by Boas (e.g. 2008: 121), even Goldberg's model is not fine-grained enough to account for the incompatibility of semantically similar verbs with a certain construction, such as the resultative construction (e.g. *Miriam talked*/**spoke*/?*whispered*/**murmured herself blue in the face*). Although these verbs belong to one semantic class, namely that of communication verbs, only the participant role of *talk* (i.e. the 'talker') can be fused with the Agent of the construction. In order to account for the different syntactic behaviour of semantically similar verbs, Boas (e.g. 2003a, 2003b, 2010, 2021) developed so-called mini-construc-

[7] See also Levin & Rappaport Hovav (2022) for a critical discussion of neo-constructivist approaches. Lieber (2006) and Baeskow (2010a, 2010b) evaluate these models with respect to word-formation.

tions which can be conceived of as direct pairings of frame-specific verb meanings with valence patterns. In the present article, it will be shown that mini-constructions are suited to model Indefinite Null Instantiation because they account for the conceptual presence of implicit arguments.

The frame-based mini-constructions are supplemented by selectional preferences, which are predicted by collocations in the direct-object position of the verbs in their transitive readings. Experiments performed by Resnik (1993: 76) have shown "that strong selectional preference is in fact a requirement for verbs that participate in implicit object alternations, and that strength of selectional preference is connected with how easily properties of arguments can be inferred." Moreover, psycholinguistic experiments performed by Mauner & Koenig (1999, 2000) convincingly show that implicit agents are derived from lexical rather than conceptual sources. Especially rationale clauses following short passive sentences are significant indicators of verb-inherent argument structure because they reveal that arguments which remain unexpressed – here the Agent – may nevertheless be 'syntactically active'. More recently, the relevance of selectional requirements has been emphasized by Pustejovsky & Batiukova (2019: 37–38, 153, 190), who provide a comprehensive account of lexical structure, the representation of lexical information, and the relation of the lexicon to the grammar.

As far as the empirical analyses are concerned, it should be pointed out that null instantiation of complements does not apply to constructions in which verbs are optionally complemented by constituents which according to M.A.K. Halliday define the 'Range' or 'domain' of the activity; cf. for example Halliday (1967); Halliday & Matthiessen (2004); Davidse & Rymen (2008). Such inanimate 'pseudo-participants' surface for example as cognate objects, which typically (though not necessarily) constitute nominalizations of a process or hyponyms of lexical cognates, e.g. *sing a song*, *dance a (clumsy) waltz*. The Range element may also specify the scope of an activity, as in *climb (the mountain)*, *run (a mile)*, *row (the lake)*, or a certain behaviour, as in *weep (copious tears)*, *breathe (fresh air)*. Unlike true Patient arguments, these constituents are always optional, and their referents are in no way affected by the Agent's activity. Note further that the Range elements may themselves require adjectival modification, as their introduction would otherwise result in redundancy (e.g. ?*to dream a dream,* ?*to weep tears*, ?*to breathe air*). Since verbs like *sing*, *dance*, *climb*, *run*, *row*, *weep*, or *breathe* do not require complements, there is no null instantiation if constituents which optionally specify their range are not present. A further phenomenon which is excluded from this study is Constructional Null Instantiation, which comprises for example imperatives, the passive voice, the experiential perfect, or the middle construction. As pointed out in section 1, the omission of arguments is structurally licensed in these cases.

3 Three routes to the interpretation of implicit arguments

Intuitively, transitive English verbs can be subdivided into verbs which display well-established variants with implicit objects (e.g. *eat*, *drink*, *read*, *write*, *bake*, *play*; cf. Levin 1993) and verbs whose direct object is typically spelled out but which allow for complement omission in certain contexts (e.g. *open*, *close*, *give*, *take*, *create*, *win*). This classification, however, is idealized for at least two reasons. First, even simple activity verbs with established detransitivized variants display flexibility as to the interpretation of their implicit arguments – as exemplified in (2) for *eat* and *drink*. Further examples are presented in (3) – (5).

(3) a. Jane has been **baking** all afternoon.
b. We need a lot of bricks for the construction job but no one is **baking** these days. (Condoravdi & Gawron 1996)

(4) a. "By 3, he was **reading** on his own," said his mother, Magnolia Monroe-Gordon of Dorchester. (Gigaword)
b. Organist required for a 9-day period at Christmas. Must be able to **read**. (OED)

(5) a. In one, Steinbrenner apologized for **writing** in pencil but said that he could not afford a pen and that his roommates wanted to charge him $ 1 to use theirs. (Gigaword)
b. Roy located an Italian doctor out in the Bronx who would **write**. (OED)

While the a.-sentences convey the expected, canonical readings of the verbs *bake*, *read*, and *write*, respectively, the same verbs assume context-dependent interpretations in the b.-sentences. In (3b), an interpretation of the implicit argument of *bake* as some kind of pastry is ruled out because the sentence provides a very specific antecedent for this argument, namely the noun *bricks*. The job offer in (4b) does not exclude illiterates, but requires the applicants to be able to sight-read music. As far as (5b) is concerned, the meaning component 'to issue prescriptions to addicts' associated with *write* is restricted to drug users' slang and hence register-specific.

Secondly, any classification of verbs according to their behaviour with respect to null instantiation is distorted by the fact that there are verbs which have very general meanings and allow for null instantiation only in one reading. Examples are provided below.

(6) a. John received a parcel and **opened** *(it).
b. We **open** at 9 am.

(7) a. Paul **made** *(breakfast/a mistake/an appointment).
b. Man **makes**, God **creates**. (Lemmens 1998)

(8) a. He **won** *(the first prize). (Fillmore 1986: 100)
b. She signed up to go to a national dance contest in Boston, where she made it to the semifinals. Her new friend, Smiles, wished her "Ganbatte!" a combination of "Good luck" and "Knock 'em dead" in Japanese. But she didn't **win**. (Gigaword)

Given the apparently unpredictable distribution of null instantiation over different readings of inherently transitive verbs, the following subsections will propose three methods for the interpretation of detransitivized verbs and their implicit arguments – namely interpretation by default, cue-based interpretation, and pragmatically determined interpretation.

3.1 *Interpretation by default: frames, mini-constructions, and selectional preferences*

A default interpretation applies if the object argument of a transitive verb is neither realized syntactically nor retrievable from the discourse context, as illustrated in (3a), (4a), and (5a) above. Indefinite Null Instantiation (INI) is a common practice if the omitted argument is irrelevant for the discourse. From an aspectual point of view, INI shifts the focus of attention from the direct object to the activity itself and gives rise to an atelic, unbounded reading (Rice 1988; Goldberg 2001, 2006a; Lambrecht & Lemoine 2005). However, since the meaning of an unspecified argument is supposed to be 'understood' by the hearer or reader, the question where this kind of knowledge comes from arises. Since frames as essential components of Fillmore's Frame Semantics (cf. for example Fillmore & Baker 2009; Ruppenhofer et al. 2016) provide schematic representations of the basic knowledge speakers of English have about sets of Lexical Units and their valence patterns, they are considered here an appropriate starting-point for the retrieval of implicit information. For example, the verb *eat* evokes the 'Ingestion' frame, according to which "[a]n Ingestor consumes food or drink (Ingestibles), which entails putting the Ingestibles in the mouth for delivery to the digestive system."[8] Each frame is composed of a configuration of Frame Elements (FEs) which differ with respect to their relevance for the meaning of the frame. For example, while the INGESTOR and the INGESTIBLES have the status of core FEs because they are essential to the meaning of the 'Ingestion' frame, modifiers such as Instrument, Manner, or Place constitute non-core FEs. Significantly, pairings of Frame Element Configurations and valence patterns can be used to establish 'mini-constructions' in the sense of Boas (e.g. 2003a, 2003b, 2010, 2021), i.e. verb-specific constructions which are more fine-grained than though compatible with Goldberg's (e.g. 1995, 2006b, 2019) Argument Structure Constructions. Apart from Frame Elements and valence patterns, mini-constructions also specify thematic roles, which display a higher level of abstraction than the Frame Elements that instantiate them (Boas 2017: 56). Following Dowty (1991), thematic roles are conceived of here as proto-roles (i.e. a Proto-Agent and a Proto-Patient) which are defined over the following sets of verb-specific entailments.

(9) Contributing properties for the Agent Proto-Role:
- a. volitional involvement in the event or state
- b. sentience (and/or perception)
- c. causing an event or change of state in another participant
- d. movement (relative to the position of another participant)
- e. exists independently of the event named by the verb

(10) Contributing properties for the Patient Proto-Role:
- a. undergoes change of state
- b. incremental theme
- c. causally affected by another participant
- d. stationary relative to movement of another participant
- e. does not exist independently of the event, or not at all

[8] This information is provided by FrameNet, the comprehensive lexicographic database developed by Charles Fillmore and colleagues on the basis of Frame Semantics; cf. https://framenet.icsi.berkeley.edu/

A significant advantage of the frame-based, constructional approach is that Frame Elements and thematic roles can be either profiled or deprofiled. While profiled participants are syntactically realized and "function as focal points within the scene" (Goldberg 1995: 44), deprofiled participants are conceptually present but remain unexpressed. By convention, profiled participants are represented in boldface, whereas optional and hence non-profiled participants are represented in normal font style in Construction Grammar. In Figure 1, a mini-construction for the detransitivized variant of the verb *eat* is displayed.

	NP.Ext	--
	Proto-Agent	Proto-Patient
eat *ingestion-frame*:	**INGESTOR**	INGESTIBLES
	'control'	'change of state'
	'sentience + perception'	'incremental theme'
	'causation'	'causally affected'
	'movement'	'stationary'
	'independent existence'	'existence not independent of event'

Figure 1: Mini-Construction for the detransitivized variant of the verb *eat*

As shown in Figure 1, the verb *eat* implies the entire sets of Proto-Agent and Proto-Patient entailments for its arguments, and its core-FEs INGESTOR and INGESTIBLES are mapped onto these two proto-roles, respectively. However, since we are concerned here with the detransitivized variant of *eat*, only the INGESTOR and its thematic content are profiled and linked to syntactic information. In this case, the FE is realized as an NP, and its grammatical function is that of the subject (or external argument; cf. Fillmore et al. 2003: 237). As we shall see in section 3.2, Proto-Agent entailments are located at the interface between semantic information and information that is grounded in the Proto-Agent's mental and bodily experience. Since the properties of deprofiled objects remain implied, the mini-constructions of detransitivized verbs can be distinguished from those of genuinely intransitive verbs like *sneeze* or *run* (cf. sec. 2)

Although frames signal that non-expressed arguments remain conceptually present, they are not fine-grained enough to account for subtle semantic contrasts between Lexical Units that evoke the same frame. In particular, Frame Semantics does not explain why semantically similar verbs behave differently with respect to object deprofiling. For example, as far as ingestion is concerned, Rice (1988) observes that verbs like *devour*, *ingest*, *gobble*, or *nibble* – unlike *eat* – generally do not allow for null instantiation.[9] Although Rice does not provide empirical evidence, she claims that "[v]erbs that conflate action and manner tend to resist omission, while synonymous yet more neutral verbs tend to allow it." (1988: 204) In order to test this hypothesis, according to which increasing semantic specificity is an obstacle to object deprofiling, it is useful to take the verbs' selectional preferences into consideration.[10] A state-of-the-art tool for analysing selectional preferences is the Word Sketch provided by Sketch Engine, which generates collocations and grammatical relations such as 'modifiers of X', 'objects of X', 'subjects of X', 'X and/or…' etc. for lexical units on the basis of the 52-billion-word corpus

[9] Instances of contrastive focus (Goldberg 2006a: 231) constitute exceptions, e.g. *He did not eat, he devoured*.
[10] Cf. Resnik (1993) for a detailed discussion of selectional preferences.

enTenTen21 (English Web 2021).[11] Apart from frequencies of co-occurrence, Sketch Engine also calculates the typicality (or collocational strength) of combinations. Typicality is calculated using the LogDice score, which indicates how strong the collocation is and which – unlike other statistical association measures (e.g. the MI score or the T-score) – is restricted to the maximal value 14.[12]

The 'objects-of-X' relations for *eat*, *devour* and *ingest*, which are indicative of these verbs' selectional preferences, are represented in Appendix 1. The Word Sketch generated for *eat* reveals that most of the first 30 collocates in the verb's direct-object position are related to food and meals.[13] The Word Sketch for *devour* displays different results. Among the top 30 collocates, there are only three which denote food items, namely *sandwich*, *pizza*, and *burger*. Moreover, the collocational strength between *devour* and these nouns is relatively low. While the maximal LogDice score is 14, the values for these nouns are restricted to 5.18 (*sandwich*), 4.96 (*pizza*), and 4.79 (*burger*). The remaining collocates either refer to matter ingested by animals or beasts (e.g. *flesh*, *prey*, *corpse*, *carcass*) or yield metaphorical readings in the context of *devour* (e.g. *flame*, *soul*, *Frida*). Since the collocates specified for the object position of *eat* are semantically much more coherent than those specified for *devour*, a default interpretation for the implicit object of *eat* is more readily available. The incompatibility of *ingest* with object deprofiling can be explained in a similar fashion. A Word Sketch generated for this verb shows that its complements typically denote harmful substances, some of which are absorbed unintentionally, e.g. *poison*, *fluoride*, *toxin*, *microplastic*, *cannabis*, *gluten*. The verb *ingest* dramatically contrasts with *eat* in that none of its top 30 collocates refers to foodstuff. Thus, its very specific direct object is discourse relevant and has to be syntactically realized.

Significantly, relations other than 'objects of X' may also be indicative of a verb's behaviour as to null instantiation. Contrastive analyses performed by Baeskow (to appear) have shown that the verb *construct* – unlike *build* – hardly allows for object deprofiling although both verbs evoke the 'Building' frame and share some collocates in the direct-object position (e.g. *house*, *bridge*, *building*, *church*). In this case, the contrast results from the 'modifiers of construct' relation, which reveals a striking accumulation of manner adverbs not attested for *build*, namely *carefully*, *cleverly*, *beautifully*, *meticulously*, *elaborately*, *artfully*, *intricately*, *thoughtfully*, and *brilliantly*. The above observations confirm Rice's (1988) postulate that more specialized verbs require their direct object to be overtly expressed.

Although further contrastive analyses are required, we may state that default interpretations of implicit objects are available if the collocations in the verbs' direct-object position form a semantically homogeneous set from which selectional preferences can be abstracted and if the verb does not convey a specialized meaning. If, by contrast, the verb's complementation is unpredictable, the direct object is discourse relevant and has to be overtly expressed.

[11] Hanks & Može (2019: 259) refer to Sketch Engine as a "sophisticated statistical corpus tool" whose use ultimately results "in a full account of the semantic and syntactic behaviour exhibited by the analysed lexical items".

[12] An advantage of this restriction is that the LogDice score is independent of the corpus size, so that it can be used to compare scores between different corpora.

[13] Results such as heads of compounds (e.g. *eating disorder*, *eating habit*) or collocates occurring in proper nouns (e.g. *the Devouring Gold Silkworm*, *the Devouring Power Upanishad*) are not representative of the verbs' selectional preferences.

3.2 *Cue-based interpretation*

As shown in the preceding section, the interpretation of implicit arguments remains abstract in the case of Indefinite Null Instantiation (INI). If a speaker utters "When I came into the kitchen John was eating", the implicit argument of *eat*, which is understood to be of the semantic type FOOD, does not require further specification because it is irrelevant for the discourse. Matters are different for Definite Null Instantiation (DNI), e.g. *They delivered ∅ yesterday*. In this case, frame information associated with the verb, i.e. "A Deliverer hands off a Theme to a Recipient or (more indirectly) a Goal location, which is accessible to the Recipient", is not sufficient for the interpretation of the implicit argument. Selectional preferences which might help to specify the Frame Element THEME are not available either. A Word Sketch generated for *deliver* shows that the collocations occurring in the verb's direct-object position form a rather heterogeneous set (*service*, *speech*, *message*, *performance*, *solution*, *result*, *good*, *product*, etc.) and thus render the verb highly polysemous. As pointed out by Fillmore (1986: 96), "One test for the INC/DNC distinction has to do with determining whether it would sound odd for a speaker to admit ignorance of the identity of the referent of the missing phrase."[14] While it is not odd to say "John has just eaten, but I don't know what he ate", an utterance like "They delivered yesterday, but I don't know what" is strange. Given this distinction, Definite Null Instantiation establishes an anaphoric relation between the verb's implicit argument and a specific referent which must have been mentioned before and which is still accessible to the decoder at the moment of utterance (cf. section 3.2.1). Specifically, the null argument of a verb like *deliver* has the function of an anaphora that causes the decoder to look for a 'cue' to a potential referent.

Since the notion of *cue* is rather vague by itself, it is largely used here in the sense of Talmy's (2017, 2020) theory of targeting in language which is innovative in that it aims at a unification of anaphoric and deictic reference. Although Talmy (2017: 180–181) only deals with argument omission in passing, his theory of targeting is assumed here to be well suited to account for relations of co-reference between implicit arguments and potential referents in the preceding discourse context (anaphoric relations), in the following discourse context (cataphoric relations), or in the extra-linguistic environment (deictic relations). A basic assumption made by Talmy is that in order to direct the hearer's attention towards a speech-internal or speech-external *target*, the speaker places a lexical *trigger* (e.g. a pronoun) in the discourse. The trigger causes the hearer to look for cues, which provide the relevant information as to the speaker's target. Once the hearer has identified the target, he or she maps the concept back onto the trigger in accordance with the trigger's syntactic relation to the sentence. In this three-stage process, the interlocutors' attention is directed towards the same (anaphoric or deictic) referent.

For illustration, consider the following scenario depicted by Talmy (2020: 3–4): A speaker allows the hearer to peer into his lab in which a woman and several machines are located. If the speaker says "She is new here", the personal pronoun *she* is the trigger which indicates that the target is uniplex, an entity, animate, female, and third-person. When looking around in the lab, these cues will help the hearer to identify the woman as the target and to exclude the speaker. If, by contrast, the speaker says "These are new here", the pronoun *these* signals that the target is multiplex, proximal, inanimate, third-person, and refers to more than one entity. Thus, the machines represent the target to which the speaker intends to direct the hearer's attention.

[14] The abbreviations INC and DNC stand for "indefinite null complements" and "definite null complements", respectively.

In the following sections it will be shown that of the five major cue categories introduced by Talmy (2017, 2020), namely lexical, bodily, collateral, background, and temporal cues, lexical and temporal ones as well as background cues are of particular interest for null instantiation if the complement of a verb remains locally unexpressed. A complement is locally unexpressed if it is not realized as the direct object, but introduced earlier or later in the discourse context.

3.2.1 *Lexical core cues*

Lexical core cues are directly provided by a trigger. In Talmy's examples *"She* [i.e. the woman] *is new here"* and *"These* [i.e. the machines] *are new here"*, the lexical properties 'uniplex/multiplex', 'entity/entities', 'animate/inanimate', etc. constitute core cues because they are provided by the pronouns *she* and *these* in their function as triggers. Transferred to null instantiation, cue-based interpretation is relevant especially for the identification of anaphoric relations between unexpressed arguments and potential referents introduced in the preceding discourse context (Definite Null Instantiation).

Although lexical triggers are predominantly closed-class elements such as pronouns, adverbs, or tense markers, null arguments '∅' have trigger status, too, because they prompt the decoder to look for appropriate referents. However, as far as Definite Null Instantiation is concerned, the trigger is 'ellipsized' (Talmy 2017: 180) and has to be supplied by the decoder. Since Talmy discusses argument omission only marginally, this observation allows for further elaboration. Let us begin by looking at the following sentences.

(11) a. I walked up to some friends at a table and asked if I could **join** [them]. (Talmy 2020: 181)
b. That sofa-table in the window. When would you be able to **deliver** [it]? (OED)
c. Image submission deadline is SEPTEMBER 21st. We need to see 2-3 images representative of the drinking vessels you will provide in March (NOT the actual pieces...you still have plenty of time to **create** [them]) (enTenTen21)

These sentences are examples of Topical DNI in the sense of Lambrecht & Lemoine (2005). According to these authors, a prerequisite for Topical DNI is that the entities to which the implicit arguments refer are discourse-active in that mental representations thereof have already been formed in the hearer's mind at the moment of utterance. Moreover, the speaker must ensure that the relation of these topical constituents to the propositions are predictable at the time of utterance. An important observation made by Lambrecht & Lemoine (2005: 31) is that "the pragmatic force of the Topical DNI complement is closely related to that of an unaccented personal pronoun."[15] In the above examples, the null arguments are replaceable by the unaccented pronouns *them* (cf. (11a), (11c)) and *it* (cf. (11b)). Like unaccented pronouns (cf. Lambrecht 1994: 324), definitely null-instantiated arguments in the direct-object position of verbs carry a feature 'established topic' because their referents are not only discourse-active, but also relatable to the proposition.

If pronouns are syntactically realized, they function as overt triggers which provide 'lexical core cues' in the sense of Talmy (2017, 2020). Lexical core cues – such as 'uniplex/multiplex', 'animate/inanimate', 'male/female' etc. in the case of personal pronouns – are

[15] The topic status of unaccented constituents is discussed in more detail by Lambrecht (1994: 223–225).

directly provided by a trigger and help the decoder to identify corresponding referents. If implicit arguments in the direct-object position of verbs function as ellipsized triggers which are pragmatically comparable to unaccented pronouns, the only lexical core-cue they can provide is the feature 'established topic' introduced by Lambrecht (1994: 324).

Ellipsized triggers are assumed here to be recognized by the decoder if frame information and selectional behaviour are not sufficient to (mentally) complement the verb, and further specification is required. Given Lambrecht & Lemoine's (2005) observation concerning the pragmatic force of Topical DNI complements, the decoder has to look for a referent in the preceding context which has the status of an established topic and which could be picked up by an unaccented pronoun.[16] Thus, anaphoric relations between the ellipsized triggers and *some friends* in (11a), *that sofa-table in the window* in (11b), and *the actual pieces* in (11c) become discernible in the absence of overtly expressed pronouns. If the decoder maps the concepts of the targets thus identified back on the ellipsized triggers, they will be integrated "into the overall conception expressed by the sentence" (Talmy 2020: 4). As indicated above, an advantage of Talmy's theory of targeting in language is that it aims at a unified description of anaphoric and deictic reference. This advantage becomes obvious if we replace sentence (11a) by the question *"Can I join [you]?"*. If this question is uttered in a situation in which the speaker approaches a table where some of his friends are sitting, the overt trigger *you* or the corresponding ellipsized trigger ∅ targets a group of people in the extra-linguistic environment and hence a speech-external Patient.

Significantly, a referent for an implicit argument may also surface later in the discourse and thus establish a cataphoric relation with this argument. As observed by de Beaugrande & Dressler (1981: 65), cataphoric relations can be used to attract the reader's interest and hence to cause him or her to continue reading. In the following extract from Star Wars, the referent of the phrase *the best Starfighter engine ever* is introduced as new information and has the status of a focal entity.

(12) The transparisteel lid popped open, the Korpil sat up, blabbered in Basic, "I need to get back to the Roche Asteroid Field! The Roche Asteroid Field! Quickly! Quickly! I have a great idea! A great idea! **Build! Construct!** Engineer! Great idea!" Then the Verpine fell onto the deck, alive but unconscious. […] The Verpine ignored them and started hurriedly walking from wall to wall, chattering to himself, "Roche! Roche Asteroid Field! That's my home! I'm late! I need to get home! I have an idea! It's the Kyromaster! I'll call it the Kyromaster! It'll be the best starfighter engine ever! I'll build this engine in Roche!" (enTenTen21)

What is particularly interesting about this example is that a relation of co-reference between the implicit object of *build* and *construct* (both of which evoke the 'Building' Frame) and the unaccented pronoun *it* is established already before the reader has access to the concrete referent. According to Talmy's (2017, 2020) theory of targeting, the pronoun *it* functions as a trigger which indicates that the referent of the implicit argument shared by *build* and *construct* is uniplex, an entity, inanimate, neuter, and third-person. Given these anticipated properties, the phrase *the best starfighter engine ever* is readily identified as the 'postcedent'. The delayed introduction of this referent is obviously intended to keep the reader in suspense.

[16] In a similar fashion, Talmy (2017: 181) states that there are verbs which allow ellipsized triggers to be personal pronouns.

The examples in (11) and (12) show that 'chronal cues', which constitute a temporal cue category (Talmy 2017: 30–31; Talmy 2020: 8), also play a role in the identification of implicit arguments. As far as anaphoric relations are concerned, the cues required for targeting precede the trigger by some moments. Once the hearer or reader perceives the trigger and associated cues, he or she has already processed the target-denoting phrase (e.g. *some friends* in (11a), *that sofa-table in the window* in (11b), or *the actual pieces* in (11c)). Thus, he or she retroactively recognizes the phrase as displaying targetive cues. According to Talmy (2017: 30–31), such 'pre-cues' are accessible only in the hearer's working-memory. Transferred to null instantiation, this observation is in line with Lambrecht & Lemoine's (2005) postulate that the entities to which implicit arguments refer in the case of Topical DNI are discourse-active. As far as cataphoric relations like the one in (12) are concerned, the cues required for targeting follow the trigger by some moments and hence constitute 'post-cues'.

The relevance of selectional preferences and co-reference in discourse raises an important question: If implicit arguments are genuinely part of the lexical/grammatical representation of a verb's meaning, should we not expect pronouns or ellipses to pick them up systematically and consider sentences like ??*Max is reading but it/this/that is not a book* to be well formed? The answer is 'no' because selectional preferences as abstractions over collocations allow us to predict the *type* of complement preferred by a verb (e.g. FOOD in the case of *eat* or TEXT in the case of *read*) rather than concrete *instances* thereof. As a consequence, indefinitely null-instantiated arguments in the direct-object position of verbs like *eat* or *read* cannot function as discourse antecedents for pronouns. However, they have the potential to introduce new discourse referents which can be resumed by a definite NP later in the discourse (e.g. *Max was reading, but the book seemed to bore him*); cf. Groefsema (1995: 147), Mauner & Koenig (1999), Goldberg (2001: 511), and Engelberg (2002: 387–388) on this point.

3.2.2 *Lexical co-form cues*

While lexical core cues are directly provided by a trigger (e.g. an overt or ellipsized pronoun), co-form cues are linguistic constituents located around a trigger which additionally help to identify and to specify the target (Talmy 2020: 4). In this section, it will be shown on the basis of two quantifiers and deictic expressions that co-form cues also contribute to the identification of targets for implicit arguments. Consider for example the following sentences in which the quantifiers *many* and *much* function as co-form cues in the context of the verb *produce*.

(13) a. I asked him once if it was true that we produced missiles as fast as others produced sausages. His father replied, "It doesn't matter how many we **produce**, because we don't plan to start a war. […]" (Gigaword)
b. Productivity is a measure of how much a worker, with modern tools and machinery, can **produce** in an hour (Gigaword).

The polysemous verb *produce* is a verb of creation which typically requires its direct object to be syntactically realized. Nevertheless, sentences from Gigaword show that object deprofiling is possible in three domains, namely ECONOMY, ENTERTAINMENT, and SPORTS (cf. Appendix 2). In quite a few contexts related to the first domain, object deprofiling directs the focus of attention towards the quantity of what is produced. The quantifiers *many* in (13a) and *much* in (13b) can be conceived of as co-form cues which signal the "individuation" (Hopper & Thompson 1980: 252) of the referents of the implicit arguments. Specifically, the quantifier *many* signals that the referents of the locally unexpressed argument are discrete, countable entities

and that a corresponding antecedent is required to be available in the preceding context (Definite Null Instantiation). Otherwise, a sentence like *It doesn't matter how many we produce* cannot be interpreted by the reader. The quantifier and co-form cue *much*, by contrast, signals that the referent of the implicit argument is a physically unbounded entity or mass. In examples like (13b), Indefinite Null Instantiation is acceptable because a further specification of the unexpressed Frame Element, namely the PRODUCT, is not required for the definition of the abstract concept of productivity. Next, consider the following examples, which illustrate the function of deictic expressions as co-form cues.

(14) a. „**Gib** ∅ schon her, oder wir stehen morgen noch hier!" (Külpmann 2019)
"Give [it] to me, or we'll still be here tomorrow!"

b. Auch sein wichtigster Geschäftspartner, die Simson Zweirad GmbH in Suhl, stellte in jenem Jahr die Mopedproduktion ein. "**Hör** endlich **auf**!", drängte ihn seine Frau damals. (deTenTen20)
'His most important business partner, Simson Zweirad GmbH in Suhl, also stopped producing mopeds that year. 'Stop doing it!' his wife urged him at that time.'

c. A lady named Sally visited the zoo. She saw a pink gorilla. Next to the cage was a sign that said, "Do Not **Touch**! DANGEROUS!" (enTenTen21)

Example (14a) depicts a situation in which a couple – Hans and Else – have lost their way while travelling to Berlin by car. They stop at the right-hand side of the road, and Else tries to read the map. However, since she has forgotten her reading glasses, she struggles with this task. When her husband realizes that she is holding the map upside down, he tells her to give it to him. In this example, the German adverb *her*, which expresses movement towards the speaker (the deictic centre), is an important lexical co-form cue because it signals to the hearer that the contextually omitted THEME of the highly polysemous verb *geben* 'give' must be in her possession at the moment of utterance. Since the map she is currently holding in her hands is a discourse salient entity, Else will be able to identify it as the appropriate target.

In sentence (14b), the omitted complement of the aspectual verb *aufhören* 'stop' is not a concrete entity, but a state of affairs and hence a 'non-first order entity' in the sense of García Velasco & Portero Muños (2002: 15). A cue to this complement is the adverb *endlich* 'finally', which signals that the activity to be stopped must have continued for a while before the moment of utterance. In addition, this adverb – like *schon* in (14a) – conveys a connotative nuance in that it reveals impatience on the part of the speaker.[17] In combination with the preceding context, the reader is able to infer that it is the addressee's professional activity which the referent of *seine Frau* 'his wife' wishes to stop.

Finally, a co-form cue also contributes to the interpretation of example (14c). Here, the deictic expression *next to the cage* signals that the warning refers to the animal that is kept in the cage and hence to the referent of *a pink gorilla*.[18] Significantly, *a pink gorilla* is also the referent or target of the implicit argument of the adjective *dangerous*. As pointed out by Talmy (2020: 46–47), targets may be accessed at different levels of abstraction, which range from the literal-semantic level via the immediate-pragmatic level to the further-knowledge level. As far as example (14c) is concerned, the reader interprets the sequence *Do Not Touch! DANGEROUS!*

[17] Cf. the entries for *endlich* and *schon* in the DWDS (https://www.dwds.de/wb/endlich)

[18] Note that the cage is introduced by means of the definite article *the* although it has not been mentioned before. Obviously, definite reference is acceptable in this context because cages are part of the zoo script. The relevance of scripts for the interpretation of implicit arguments will be discussed in section 3.3.

compositionally and via targeting at the literal-semantic level. At the immediate-pragmatic level, the additional information that touching the animal requires putting one's hand through the bars of the cage is filled in. Finally, general knowledge added at the further-knowledge level enables the reader to infer that touching the gorilla is dangerous because the animal is likely to bite if someone tries to touch it.

While the interpretation of the implicit argument of *touch* is mediated by the co-form cue *next to the cage* in (14c), which is a passage from a text, this argument would have exophoric reference in a concrete situation in which a zoo or museum visitor spots a sign with the warning *Do not touch*. In such a context, the negative imperative would cause the visitor to look for a visually perceptible target in the speech-external domain. Specifically, the intransitive use of the otherwise transitive verb *touch* reduces the total environment (i.e. the zoo or museum) to a particular subenvironment in which the target must be located. By searching this subenvironment, the visitor will identify the exhibit that is located in the immediate vicinity of the warning as the target and hence – at the linguistic level – as a filler for the direct-object position of the verb *touch*. According to Talmy (2020: 6-7), any piece of information that is provided by a component of the environment and helps the hearer to determine the target is an environmental locating cue, which belongs to the category of background cues.

3.2.3 *Cues to unexpressed targets*

Going beyond Talmy's theory of targeting, which requires an anaphoric or deictic referent and hence a target to be present in the speech-internal or speech-external domain, it will be argued in this section that lexical cues also help a decoder to detect the contextually salient meaning of a detransitivized verb if the verb's object argument remains indefinite (Indefinite Null Instantiation). Two types of cues that contribute to the interpretation of polysemous verbs will be discussed successively, namely the role or name of the Proto-Agent and modifiers as expressed by adverbials and prepositional phrases.

The role or name of the Proto-Agent

Psycholinguistic experiments reported by Elman (2009) have shown that the choice of the Agent may help to anticipate the interpretation of the activity denoted by a verb and that different Agents combining with the same verb give rise to very different interpretations. For example, as far as the verb *cut* is concerned, a sentence beginning with *The surgeon cuts…* will raise different expectations regarding the activity of cutting than a sentence beginning *The lumberjack cuts…* The experiments further revealed that the choice of the Agent even influences the plausibility of potential Patients, e.g. *The journalist / ?The mechanic checked the spelling of his latest report*. Significantly, contexts from Gigaword suggest that the name or the role of the Proto-Agent also functions as an important cue to the interpretation of implicit arguments in the context of polysemous verbs. Consider the following examples [underlining and boldface by HB].

(15) a. The violinist Anne-Sophie Mutter **plays** with zest and conducts the Trondheim Soloists in lively performances of two Bach violin concertos 1041 and 1042.
b. He pointed to a shaded bench under a tree where two haggard men sat, watching several children **play**.

(16) a. To help architects get their designs right before they **build**, the French Center for Scientific Building Research came up with a Microsoft Excel spreadsheet to simulate airflow.
b. While the Big Three [Honda; HB] look to close factories, foreign automakers **build**.

(17) a. Brosnan, who also **produced**, got behind the movie the minute he read the script and his effort has paid off.
b. The state still sets the price -- but the more the farmers **produce**, the more they sell.
c. Allowing the yuan to float is a necessary first step in rebalancing a global economy that has become dependent on the United States **consuming** much more than it **produces** and China **producing** more than it **consumes**.

A Word Sketch generated for the verb *play* shows that the complements this verb takes in its transitive use are typically assigned to three semantic categories, namely MUSICAL INSTRUMENTS, GAMES, and SPORTS. If this verb is used intransitively, the context must provide cues as to the contextually salient interpretation. In (15a), it is the agent noun *violinist* which functions as a co-form cue to the contextual interpretation of the polysemous verb *play* and its implicit argument. Here we are dealing with an Individual-Level Nominal (or 'role-defining' nominal) in the sense of Pustejovsky (1996: 229–230), which as such is defined generically. Unlike Stage-Level Nominals (or 'situationally-defined' nouns) such as *customer*, *passenger*, or *pedestrian*, Individual-Level Nominals denote occupations or social roles. While Individual-Level Nouns (ILNs) define the role of an individual independently of the activity performed at the time of reference, the interpretation of Stage-Level Nominals (SLNs) requires the actual performance of characteristic activities. For example, as pointed out by Pustejovsky (1996: 229), a violinist just eating a sandwich is still a violinist, but an individual will be in the extension of the noun *pedestrian* only if there is an actual walking event, which is existentially bound. In terms of qualia structure, the activities that define ILNs are represented at the TELIC quale of these nouns, which specifies functional relations (e.g. a violinist's professional 'function' is to play the violin). By contrast, activities that define SLPs are represented at the AGENTIVE quale, which specifies the 'coming into being' of entities or individuals. Thus, for example, it is a walking event which temporarily causes an individual to assume the status of a pedestrian. Returning now to sentence (15a), the agent noun *violinist* and the qualia information associated with it signal to the reader that the verb *play* in this context requires the activation of the 'Performing_arts' frame, whose Frame Element MEDIUM, which corresponds to the null argument, can be specified as *violin*. Of course, the agent noun is not the only co-form cue to the context-specific interpretation of *play* in (15a). A further cue-bearing element is the proper noun *Anne-Sophie Mutter*. According to Pang (2010), a proper noun functions not only to uniquely identify an individual, but also provides access to a set of "life-narratives" which make up the referent's biography (or macronarrative). Of this set, only one life-narrative is usually salient in a given context.[19] In (15a), it is the information "world-famous violinist" which – along with the definite NP *the violinist* – contributes to the interpretation of the implicit argument of the verb *play*. In sentence (15b), by contrast, the noun *children* functions as a co-form cue which determines the interpretation of the polysemous verb *play*. This co-form cue

[19] According to Pang (2010), a life-narrative from a (well-known) person's biography can serve as a starting-point for eponymy, e.g. *She* [i.e. Judy Garland; HB] *is the Maria Callas of pop music*.

signals that *play* contextually activates the 'Activity' frame, according to which the Agent is engaged in an activity for some time.

Analogously, the nouns *architects* (16a) and *automakers* (16b) can be classified as co-form cues. As shown in Baeskow (to appear), the null-instantiated argument of *build* is typically interpreted as 'buildings' rather than as 'cars', 'bicycles', or 'computers'. In (16a), this default interpretation is reinforced by the co-form cue *architects* which – like *violinist* in (15a) – has the status of an Individual-Level Nominal. Thus, the activity of designing and building houses is part of its qualia information (TELIC). As far as (16b) is concerned, the default interpretation 'buildings' is not available because the co-form cue *automakers* prompts a different reading for the implicit argument of *build*, namely 'cars'.

The polysemy of the verb *produce* is revealed in (17). Since this verb evokes a variety of frames, as shown in FrameNet, cues are very important for sense disambiguation. In example (17a), the co-form cue is again a proper noun. Although this sentence involves a cataphoric relation, the proper noun *Brosnan* and the life-narrative associated with the name bearer allow the reader to activate the 'Behind_the_scenes' frame even before the referent of the implicit argument of *produce* (i.e. *the movie*) is introduced. Sentences like (17b), in which the noun *farmers* provides a cue to the interpretation of *produce* and its implicit argument are abundant in the Gigaword corpus. In this context, the occupation of the Proto-Agent signals that the 'Intentionally_create' frame is being activated and that the Created_entity is of the type AGRICULTURAL PRODUCT. Sentence (17c) displays an interesting parallelism, i.e. a structure which is repeated and filled with new elements (de Beaugrande & Dressler 1981).[20] If *produce* and *consume* co-occur in parallel structures of the type *X consumes more than it produces, and Y produces more than it consumes*, they convey the impression of economic imbalance. In such contexts, which are recurrent in Gigaword, the names of countries are used metonymically to refer to the inhabitants as consumers and producers, e.g. *the United States* and *China* in (17c). In combination with the symmetry of the pattern and frame information, these highly abstract and anonymized Proto-Agents anticipate the very general interpretation of the implicit arguments of *produce* and *consume* as the total of all goods and services supplied by the countries (*produce*) and resources consumed by their inhabitants (*consume*).

Modifiers as cues to the properties of implicit arguments and to cognitive states

As indicated in the introduction to section 3, even simple activity verbs with well-established intransitive variants like *eat* or *drink* display flexibility as to the interpretation of their implicit arguments. Apart from the role or name of the Proto-Agent, further important cues that guide the interpretation of detransitivized verbs whose implicit arguments remain unspecified are modifiers as expressed by prepositional phrases (PPs) or adverbs. To begin with, modifiers – which constitute non-core Frame Elements because they do not uniquely characterize a frame – have the potential to render optional information such as the Instrument used to perform an activity or the manner in which the activity is performed contextually more salient than the Proto-Patient. At the same time, modifiers predict certain properties of the implicit object ar-

[20] Parallelisms typically though not necessarily highlight antonyms such as *produce* vs. *consume* in (17c), *build* vs. *destroy* (Baeskow, to appear), or *buy* vs. *sell*. Because of their symmetry and iconicity, parallelisms can be used to persuade the reader of their content via the aesthetics of the pattern (Turner 1998: 51). This is most obvious for parallelisms involving an antithesis, e.g. *"While our government **builds**, the armed opposition **destroys** and we have been in this struggle: **build** and **destroy**," he said* (Gigaword).

gument or highlight the Proto-Agent's (physical or mental) involvement in the event. The following sentences from enTenTen21 ((cf.18), (19a–c)) and Gigaword (cf. (19d)) illustrate different conceptualizations of an eating event obtained by direct modification, i.e. modification without the intervention of an overt object argument [underlining and boldface by HB].

(18) a. We were sitting on the floor of the restaurant **eating** with chopsticks.
b. Every year on the fourth Thursday in November, Americans sit down to **eat** with family and friends.
c. "Creating the habit of **eating** in the morning is something you can build towards," says dietitian Alison Hornby.
d. Many of us **eat** healthily, exercise regularly and follow the "rules" for living a long life.

(19) a. Regis arrived about ten minutes later, and we sat down and **ate** happily.
b. I like to make sure I exercise regularly and try to **eat** mindfully!
c. He slept well on Monday night, and **ate** with relish the next morning.
d. "When you **eat**, you **eat** with your eyes AND with your taste," Pip says, pausing for emphasis.

In sentence (18a), the instrumental PP *with chopsticks* allows us to specify the default type INGESTIBLES of the 'Ingestion' frame evoked by *eat*. It predicts that the referent of the implicit argument must be of the semantic subtype ASIAN_FOOD. Similarly, PPs like *with a spoon* or *with the fingers* provide cues to the consistency of the food substance, which must be liquid, soft or composed of small pieces in the first case and solid in the latter case. In other words, there is a correlation between the 'affordances' (Gibson 1979) of the objects denoted by the heads of the PPs (e.g. chopsticks are designed for the interaction with Asian food, and the anatomy of the fingers allows us to pick up solid food and put it in the mouth) and the properties of the implied object referents.[21] In (18b), the PP *with family and friends* indicates that the implicit argument of *eat* is a meal rather than ice cream or a cake. Additionally, this adjunct conceptualizes the social aspect of the eating event. In example (18c), the temporal adverbial *in the morning* restricts the meaning of the implicit argument to 'breakfast'. As far as (18d) is concerned, the phrase *eat healthily* does not imply a specific diet, but conveys an idea of what kind of food might be included in the diet (e.g. fruit, vegetables, wholegrain products) or excluded from it (e.g. foods that contain too much sugar or salt).

While the modifiers in (18) function as cues to the properties of the implicit arguments, those in (19) (i.e. *happily*, *mindfully*, *with relish*, *with your eyes* AND *with your taste*) reveal something about the Proto-Agent's mental and/or bodily involvement in the eating event. More precisely, these modifiers make explicit the cognitive states experienced by the Proto-Agent when performing the activity denoted by the verb. As shown by Barsalou (2020: 2), cognition is not an autonomous module, but grounded in four domains which comprise the body, the modalities, the physical environment, and the social environment. The domain of the modalities is subdivided into 'External Perception' (vision, audition, haptics, gustation, olfaction) and 'Internal Perception' (proprioception, interoception, affect, reward, introspection). As far as the examples in (19) are concerned, the modalities and the body seem to be of particular interest, but how should information from these domains be related to the semantics of *eat*? Recall

[21] The notion of 'affordance' was introduced by Gibson (1979) for the properties of objects which are designed for or lend themselves to an agent's goal-directed use. Thus, it emphasizes the agent-related interaction rather than the properties or functions themselves.

from section 3.1 (Figure 1) that the Proto-Agent role associated with the INGESTOR of the 'Ingestion' frame is defined over a set of entailments in the sense of Dowty (1991). As proposed by Baeskow (to appear), these entailments fall into a 'mental sector' (comprising 'control', 'sentience', and 'perception') and a 'physical sector' (comprising 'causation', 'movement', and 'independent existence'). Significantly, these lexical entailments can be conceived of as being located at the interface between semantics and information grounded in the Proto-Agent's mental and bodily experience. Thus, for example, the entailment 'perception' readily provides a link to the modalities, whereas 'movement' provides a link to the body or, more precisely, to the parts of the body used to perform particular activities (e.g. eating requires movement of the arms, hands, and the mouth, whereas kicking involves leg and foot movement). In sentence (19a), the Proto-Agent is expressed by the pronoun *we*. The manner adverb *happily* provides a lexical cue to the Proto-Agents' positive emotion experienced while eating and hence to a mental state which cognitively specifies the lexical entailment 'perception'. In (19b), the adverb *mindfully* provides the link between the semantic entailment 'perception' and introspection, which Barsalou (2020: 2) classifies as a form of Internal Perception. In contrast to *happily* in (19a), *mindfully* additionally emphasizes the Proto-Agent's 'control' of the eating event. In sentence (19c), the interpretation of intransitive *eat* is contextually guided by the phrase *with relish*, which makes reference to the modality of taste (or gustation) as a form of External Perception. Example (19d) is of particular interest because it emphasizes the interaction of taste and vision in the eating event. Although *eat with your eyes* is a metaphor, it nicely illustrates that the seemingly simple activity of eating is in fact a complex, multi-modal experience.

The construction in Figure 2 is an extension of the mini-construction represented for *eat* in section 3.1. It visualizes different conceptualizations of the eating event to which modifying *with*-PPs provide the cues (e.g. *eat with one's taste*, *eat with one's eyes*, *eat with chopsticks*). Significantly, information regarding the modalities and body parts involved in the eating event is not part of the construction as a grammatically relevant form-meaning pattern, but mediated by the Proto-Agent entailments 'perception' and 'movement', which are located at the interface between semantics and embodied information, i.e. information that is grounded in bodily and mental experience.

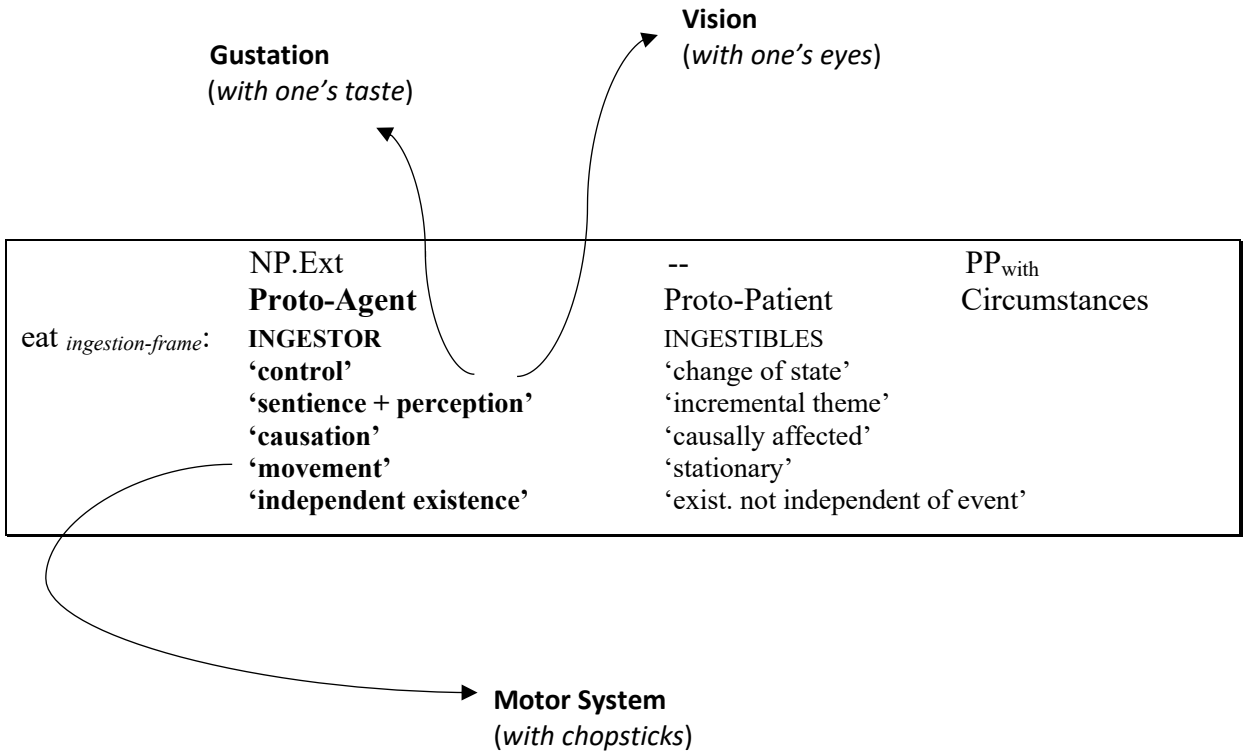

Figure 2: Thematic entailments at the interface between semantics and information grounded in the Proto-Agent's bodily and mental experience

To summarize, each of the examples in (18) and (19) highlights a particular facet of the activity denoted by the verb *eat*. These facets are contextually more salient than the Proto-Patient, which remains unexpressed. Nevertheless, the modifiers may provide cues to the properties of the implicit argument – as shown in (18). In (19), this argument is interpreted by default (i.e. as FOOD), while the focus of attention is on the Proto-Agent's cognitive involvement in the eating event. Since the observations presented in this section also apply to other detransitivized verbs (e.g. *build ∅ with cement*, *cook ∅ deliciously* vs. **open ∅ with a key*, **repair ∅ with a hammer*), we may add two further factors which license Indefinite Null Instantiation.[22] First, the Proto-Agent must be sentient, and secondly the event denoted by a detransitivized verb must be modifiable without the intervention of an overt object argument.

3.3 *Pragmatically determined interpretation and script knowledge*

Null instantiation is understood here to be pragmatically determined if it is restricted to a particular genre, register or jargon. Genre-based argument omissions have been analysed in detail by Ruppenhofer & Michaelis (2010). Their analyses comprise instructional imperatives (e.g. *serve ∅ cold*), labelese (e.g. *∅ contains alcohol*), diary style (e.g. *∅ read Michelet*), match reports (e.g. *He hammered ∅ wide of Gary Walsh's exposed net*), and quotative clauses (e.g.

[22] Recall from section 3.1 that Indefinite Null Instantiation is possible if the verb is not too specific and displays clearly discernible selectional preferences.

Nice work, boys, she praised ∅ with a light smile). Genre-based omissions are structurally determined and usually provide an antecedent for the implicit arguments.

If meaning components of detransitivized verbs are restricted to particular registers or jargons, they may be rather idiosyncratic and differ from well-established intransitive uses (if available). The register of slang is a case in point. In this register, the transitive use of a verb tends to be avoided if the activity performed on a referent of the direct object is illegal or considered taboo. The following examples from the OED illustrate this point.

(20) a. Roy located an Italian doctor out in the Bronx who would **write**.
b. There is something crazy in his eye that I have only seen in Max. I wonder if he **uses**.
c. Suppose the cop is honest and won't **take**... Well, all the guy has to do is find somebody higher up that will **take**.

According to the OED, the examples in (20a) and (20b) are typical of drug users' slang. While intransitive *write* usually implies an argument of the type TEXT, the meaning component 'to issue prescriptions to addicts' is register-specific. The transitive verb *use* is common in the context of nouns denoting stimulants like tobacco or drugs (e.g. *I started a relationship with a boy who used heroin and began to smoke it myself*; OED). The sentence in (20b) and further examples provided by the OED suggest that argument omission has the function of a euphemism in such contexts because the speaker avoids naming the stimulant explicitly. In this respect, intransitive *use* is comparable to the intransitive variant of *drink* that refers to the habitual consumption of alcohol. In sentence (20c), the NP *the cop* and the adjective *honest* function as lexical cues which signal to the hearer that the unexpressed argument of *take* must be some kind of bribe.

Pragmatically determined argument omission can also be observed for the religious jargon. For example, according to FrameNet, the polysemous verb *believe* evokes six frames in which it conveys different readings, namely

- Awareness ('feel sure of the truth of')
- Opinion ('have an opinion about a topic')
- Trust ('accept the statement of (someone) as true')
- Religious_belief ('have religious faith (in the truth or existence of)
- Certainty ('feel sure of the truth of'), and
- Taking_sides ('to have a favorable opinion (of an issue)').

However, complement omission can only be observed for this verb in a religious context, as exemplified in (21a). In such a context, the cognitive state ascribed to the Experiencer, which can be classified as Internal Perception (cf. section 3.2.3), is more relevant than the superior power this participant believes in. Similarly, the verb *adore*, which evokes the 'Experiencer_focused_emotion' frame, conveys the impression of transcendence in its intransitive reading 'to display profound reference; to worship God' (OED). Again, complement omission is restricted to the religious domain (cf. (21b)). As shown in detail in Baeskow (to appear), the causative verb *create* mainly displays null instantiation in contexts which evoke a creative setting, or in religious contexts. In contexts of the first type, the creative process or the Proto-Agent's (mental) involvement in such a process is more discourse relevant than the result of the creative activity, which may be open to imagination (e.g. *When I work and I create, I am not very approachable*; Gigaword). As far as religious contexts such as (21c) are concerned, the verb

create – if used intransitively – exclusively refers to the divine creation process. While God creates, human beings are engaged in less sublime activities as expressed by *make*, *organize*, *produce*, *develop*, *implement*, or *build*.

(21) a. He who **believes** trusts in the mercy of God. (OED)
b. Those gathered respond, "Come let us **adore**," then kneel and **adore** in silence. (enTenTen21)
c. Wrong, he said: "I learned many years ago from Sister Suzanne, when I was in the fifth grade that only the Lord **creates** ... Human beings **produce**, **develop**, **implement** and **build**. (Gigaword)

Moreover, sentences from the Gigaword corpus reveal intransitive readings for the causative verbs *produce* and *create* which typically surface in the sports jargon. The following examples show that there is a subtle contrast between these two verbs if they describe the effort made by athletes in a competitive event.

(22) a. If their bench **produces**, the Spurs can be the toughest team to overcome.
b. Beckham actually **produced**.
c. "Clark is a very impressive, high-skilled player," Berry said. "He is the Albert Pujols of fantasy sports, a player who consistently **produces**, a player who is money in the bank."

(23) a. As they say in basketball, he **creates**.
b. He's explosive, he **creates**, he's so strong going to the basket," the Lakers star said.
c. "I don't feel you can sit back and let him [i.e. Roger Federer; HB] **create**, that's when you get in trouble," he said.

In these examples, *produce* and *create* convey a reading which is comparable to that of intransitive *perform*. The intransitive variant of *create* in (23) might additionally convey the nuance of being creative by finding options or finding an advantage. While *create* seems to be restricted to the sports jargon (especially to basketball) in this reading, intransitive *produce* also surfaces in contexts related to politics, finance, or business. Examples from Gigaword are provided below.

(24) a. The voters are telling the Republicans that unless they **produce**, they too will be ousted.
b. People's main concern is that we make a lot of money, and you better **produce** or they'll run you out of town.
c. If he **produces**, reward him with a long-term deal.

As pointed out by Maren Michel (personal communication), someone who *produces* achieves his goals, gets the job done, or performs at the highest level. Likewise, the corresponding agent noun *producer* (e.g. *He's a producer*) expresses that someone achieves a great deal. Interestingly, a similar meaning is conveyed by the German verb *(ab-)liefern* (lit. 'deliver'), which is typically transitive, but does not take a direct object either if a colloquial 'achievement' reading is intended. The following examples from the DWDS (25a) and deTenTen20 (25b) illustrate

the meaning ‘perform well (especially in sports or artistic endeavors)’ conveyed by the verb in its relatively recent reading.[23]

(25) a. Heute gegen Österreich müssen sie *[die Spieler der Nationalmannschaft]* noch einmal **abliefern**: Denn nur mit einem Unentschieden oder Sieg ist Platz 1 und damit das Halbfinale und die Olympia-Quali sicher.
‘Today against Austria they [the national team players] have to perform well once again: Because only a draw or a win will secure first place and thus the semi-finals and Olympic qualification.’
b. Wer als Tänzer und Choreograf erfolgreich sein will, muss **liefern** […].
‘If you want to be successful as a dancer and choreographer, you have to perform well […]’

Significantly, the criteria which help to infer the meanings of polysemous detransitivized verbs do not operate independently of each other. Contexts in which the verb meaning is restricted to a particular jargon (e.g. religion) or register (e.g. ‘colloquial’,‘slang’) may additionally provide lexical cues to the interpretation of implicit arguments. Especially the role or name of the Proto-Agent (e.g. *the Lord* vs. *human beings* in (21c), or *Beckham* in (22b)) is an essential co-form cue which encodes not only information as to the unexpressed argument, but also has the potential to introduce the hearer or reader to the setting in which the activity unfolds. Similarly, knowledge as to the default interpretation of the detransitivized verbs is required in order to recognize extended meanings. For example, in a context related to tailoring, the verb *build* assumes an interpretation which is very different from its default reading, namely ‘make clothing’ (e.g. *Is it still Skinner who builds for you?*; OED).

Finally, it should be pointed out that the pragmatically determined interpretation of verbs with null-instantiated complements also interacts with script knowledge in the sense of Schank & Abelson (1975, 1977). According to these authors, “a script is a predetermined, stereotyped sequence of actions that define a well-known situation”, like eating in a restaurant (1975: 151). Scripts are very similar to Fillmore’s frames, which, however, lack the aspect of temporal ordering. More recently, Irmer & Mueller-Reichau (2018) made two important observations. First, a frame (*F*) constitutes an event type which has to be instantiated by a concrete event (*e*). This event token is referred to by a finite verb. Secondly, scripts can be conceived of as being composed of sequences of frames. Each frame of a script must have been instantiated by an event in order to enable the next event to take place, i.e. an event instantiating a frame provides an *occasion* for the next event to happen. Formally, Irmer & Mueller-Reichau (2018: 610) define this relation as follows:

(26) **Occasion**
Let F_1, F_2 be event frames and e_1, e_2 events.
If $occasion(F_1, F_2) \wedge \text{INST}(e_1, F_1) \wedge \text{INST}(e_2, F_2)$, then $\exists s : final\text{-}state(e_1, s) \wedge initial\ state(e_2, s)$.

Leaving further technical details aside, Irmer & Mueller-Reichau’s conception of frames as temporally ordered parts of scripts is assumed here to account for null-instantiation in social contexts. For illustration, consider the intransitive variant of the German verb *geben* ‘give’, which according to Jacobs (1994) is restricted to the dealing of playing cards, e.g. *Wer gibt?* (lit. ‘Who gives?’). Like games in general, card games can be considered as scripts because they follow a series of rule-based actions, or subevents, which constitute the frames. From this

[23] https://www.dwds.de/wb/abliefern#d-1-2

perspective, the 'Giving' frame as part of the cards-game script has to be instantiated by a concrete event (which is referred to by a finite form of the verb *geben*) in order for the game to proceed. The point to be made here is that the intransitive variant of *geben* is not idiosyncratic if it instantiates the 'Giving' frame within the scope of a script which is known to all players and which restricts the set of potential complements to playing cards.

Script knowledge generally seems to play a role if argument omission occurs in contexts related to social interaction. For example, unlike **John received a parcel and opened*, which lacks the social aspect, a sentence like *We open at 9 am and close at 5 pm* is perfectly interpretable because speakers know that shops, offices, or service providers open in the morning and close in the afternoon or evening (business script).[24]

The aspect of social interaction also accounts for Fillmore's (1986) observation that the verbs *win* and *lose* only allow for null instantiation if the implicit argument refers to a competition, e.g. *He won (the Eurovision Song Context)*/*(*a million pounds*). Like games, competitions involve human participants who act according to fixed rules that manifest themselves in temporally ordered subevents – each of which is represented by a frame. Thus, the competition script – like scripts in general – raises certain expectations which help hearers or readers to fill in information that remains implicit. Beyond a contextually activated script, the arguments of *win* or *lose* are unpredictable and need to be introduced into the discourse as new information, e.g. *Peter lost **(his wallet/his glasses/his keys*).

On a larger scale, script knowledge is also required to understand more complex issues such as economic relations. For instance, a sentence like *It is necessary to enable these countries to use the intellectual property system to help them **produce**, **trade** and **compete**, he added* (Gigaword) evokes a script which consists of three frames – 'Intentionally_create', 'Exchange', and 'Competition' – each of which has to be instantiated in order to enable the subsequent one to occur. The production of goods necessarily precedes trading, and trade makes a country competitive. Further examples are provided in Appendix 2.

4 Summary and outlook

Since the aspect of polysemy has been largely neglected so far in studies on null instantiation in English, the present article makes a contribution to fill this gap. Although there are transitive verbs which have well-established intransitive variants (e.g. *eat*, *write*, *bake*) and others which typically require their object argument to be syntactically realized (e.g. *open*, *produce*, *use*), a corresponding classification would be bound to fail. The reason is that the former may assume

[24] From a syntactic point of view, it is interesting that the verb *open* also has an unaccusative (or ergative) variant, e.g. *John opened the window* vs. *The window opened*. A generalization formulated by Lemmens (2006), which takes the transitivity-ergativity paradigm into consideration, predicts that transitive verbs like *kill*, *pull*, or *make* may leave their complement unrealized, whereas transitively used ergative verbs (*break*, *burst*, *open,* etc.) do not, e.g. *John broke the glass*/*The glass broke*/**John broke* ∅. Significantly, however, Lemmens relativizes the correlation between transitivity/ergativity and null instantiation by pointing out that although the objectless construction is an exclusively transitive phenomenon, it is not equally likely with all transitive verbs. According to Lemmens, the reason is that the omissibility of complements also depends on the semantics of the verbs which enter this construction, and on usage. Even if a verb is typically transitive or ergative, it may "oscillate" between both models – depending on the context. This is especially true of verbs which convey different readings in their transitive and ergative variant (e.g. *The mission for peace aborted when one of the negotiators was shot dead*).

different facets of meaning in their intransitive uses and that the latter do allow for null instantiation in particular contexts. In order to systematize the behaviour of verbs with respect to null instantiation, it was proposed to distinguish between (1) interpretation by default, (2) cue-based interpretation, and (3) pragmatically determined interpretation. Interpretation by default is in principle independent of the context and applies on the basis of the verbs' frames (in the sense of Frame Semantics) and selectional preferences as revealed by Word Sketches.

If more specific information concerning the interpretation of an implicit argument is required, the decoder will look for cues in the speech-internal or speech-external context which allow him or her to identify anaphoric, cataphoric, or deictic relations. The notion of 'cue' was adopted from Talmy's (2017, 2020) innovative theory of targeting in language, which aims at a unification of anaphoric and deictic reference. According to this theory, the null argument can be conceived of as an 'ellipsized trigger'. This trigger has the status of a pronoun for which a speech-internal or speech-external referent (or target in Talmy's terminology) has to be identified, e.g. *I walked up to some friends at a table and asked if I could join* [*them*] vs. *Can I join* [*you*]?. Talmy's observation is in line with the statement made by Lambrecht & Lemoine (2005) that the pragmatic force of an implicit argument is closely related to that of an unaccented personal pronoun in the case of Topical DNI.

Beyond Talmy's targeting, it was shown in the present study that cues also play a role in the interpretation of polysemous verbs and their implicit arguments if no target is available. These comprise for example the role or name of the proto-agent, which guides the selection of a verbal meaning component (e.g. *The violinist played ∅ with zest* vs. *the children were playing ∅ in the street*). They also comprise modifiers, which have the potential to specify the meaning of an implicit argument (e.g. *eat ∅ with chopsticks* → ASIAN FOOD) or to reveal the Proto-Agent's mental and/or bodily involvement in the event (e.g. *eat ∅ with one's eyes*/*mindfully*). The interaction between grammatical information as encoded in constructions and information grounded in bodily or mental experience was shown to be mediated by the verb's Proto-Agent entailments, which are composed of a mental sector ('control', 'sentience', 'perception') and a physical sector ('movement', 'causation', 'independent existence').

Finally, null instantiation is pragmatically determined if it is restricted to particular genres, registers, or jargons. On the one hand, register- or jargon-specific interpretations of detransitivized verbs may deviate considerably from established intransitive readings (e.g. *write ∅* 'to issue prescriptions to addicts' or *build ∅* 'make clothing'). On the other hand, a pragmatically determined interpretation becomes much more transparent if the frame evoked by the verb is part of a script which encodes (rule-based) social interaction (e.g. a game or competition). Although this point cannot be further discussed here, it is compatible with a very recent account of scripts presented by Eickers (2024). This author takes a much broader view of the term 'script' in that he allows scripts to include knowledge as to social norms, social interaction, and social identity. Thus, these models of knowledge representation are no longer restricted to the representation of stereotypical situations.

On the whole, the present article has shown that the retrieval of implicit arguments is a very complex process which involves the interaction of lexical information, the discourse context, the communicative situation as well as pragmatic factors. However, since the study is theory-driven and primarily based on qualitative corpus analyses, additional empirical support for the three inference strategies (i.e. interpretation by default, cue-based interpretation, and pragmatically determined interpretation) is required. Moreover, experiments designed to test the inference of extra-linguistic targets might be of particular interest because environmental cues, which help to establish deictic relations in concrete communicative situations, are not

found in corpora. As far as the speech-internal domain is concerned, a further point of interest is the retrieval of targets which are located beyond the sentence in which the null argument occurs. Since a referent is sometimes introduced in the headline or at the beginning of a text and resumed by the null argument with considerable delay, it would make sense to test whether the inference of this element takes longer than the resolution of a direct anaphoric relation. For example, in the extract from a news article presented in footnote 25, there is no direct anaphoric relation between the implicit argument of *build* and an antecedent. Nevertheless, the interpretation of the implicit argument is not arbitrary because the NP to which it refers – namely *prisons* – is introduced in the headline and hence textually accessible.[25] Quantitative analyses and/or psycholinguistic experiments are left to future research.

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[25] LESS CRIME IS BETTER THAN MORE **PRISONS**. Something important is afoot on the topic of Florida's prisons. A growing group of prominent Floridians is questioning whether we can just keep building more of them. Is this group, the Coalition for Smart Justice, made up of whiny, hand-wringing, soft-on-crime liberals? No. Here's some who have endorsed the effort: The president of the business lobby Associated Industries of Florida; the president of Florida TaxWatch; the executive vice president of the Florida Chamber Foundation; […] They are among the signers of a document titled, "An Open Letter to the Governor, Legislature and People of Florida," urging the state to do more than just *build*. (Gigaword)

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English Web 2021 (enTenTen21) – 52 billion words, genre annotation and topic classification, provided by Sketch Engine: https://www.sketchengine.eu

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FrameNet: https://framenet.icsi.berkeley.edu/

German Web 2020 (deTenTen20) – 17.5 billion words, genre annotation and topic classification, provided by Sketch Engine. http://www.sketchengine.eu

Oxford English Dictionary: http://www.oed.com

Appendix 1

Top 30 collocates ('objects of X') for *eat*, *devour*, *ingest*

Source: English Web 2021 (enTenTen21) – 52 billion words, genre annotation and topic classification, provided by Sketch Engine: https://www.sketchengine.eu

	OBJECTS OF *EAT*			OBJECTS OF *DEVOUR*			OBJECTS OF *INGEST*		
Collocate	**Frequency**	**LogDice score**		**Collocate**	**Frequency**	**LogDice score**	**Collocate**	**Frequency**	**LogDice score**
food	277857	10,4		flesh	1425	7,17	poison	1409	7,72
meat	95790	9,65		prey	891	6,71	fluoride	643	7,48
meal	88850	9,38		Upanishad	221	6,17	toxin	871	7,06
disorder	69485	9,23		flame	698	6,11	microplastic	363	6,88
lunch	63072	9,08		morsel	216	5,96	substance	2136	6,77
breakfast	55101	8,91		soul	1634	5,73	plastic	1112	6,74
fruit	56074	8,79		corpse	371	5,68	caffeine	416	6,57
dinner	52849	8,79		carcass	222	5,67	carbohydrate	392	6,41
diet	47753	8,68		adversary	238	5,64	chemical	1161	6,14
habit	44252	8,51		silkworm	119	5,29	cannabis	426	6,1
fish	43842	8,38		clan	224	5,29	cocaine	317	6
bread	26348	7,86		beast	432	5,27	gluten	316	5,98
vegetable	24226	7,78		earth	847	5,26	calorie	641	5,94
cake	22048	7,6		sandwich	328	5,18	marijuana	515	5,94
flesh	18426	7,43		whole	382	5,06	bacterium	727	5,91
sandwich	17896	7,4		sheep	285	5,04	particle	813	5,89
egg	20945	7,39		pizza	283	4,96	pill	645	5,83
pizza	17371	7,36		mouth	609	4,94	spore	234	5,83
anything	43660	7,2		insect	259	4,86	dose	1240	5,83
apple	15209	7,15		entrails	89	4,85	alcohol	801	5,8
chocolate	14927	7,12		burger	183	4,79	mg	342	5,73
grass	13927	7,01		Son	197	4,78	mushroom	347	5,71
cream	13796	6,92		dunum	82	4,74	quantity	956	5,67
chicken	13563	6,91		usury	81	4,71	larva	241	5,64
calorie	12625	6,88		serpent	108	4,67	gram	327	5,59
lot	57384	6,87		cock	214	4,6	capsule	301	5,55
snack	12124	6,84		slice	212	4,5	mercury	200	5,55
salad	11755	6,8		palace	162	4,5	pesticide	274	5,53
animal	16003	6,79		cedar	75	4,49	nicotine	169	5,53
insect	11499	6,77		Frida	67	4,48	drug	2060	5,52

Appendix 2

Null Instantiation attested for the inherently transitive verb *produce*

Source: Ferraro, Francis, et al. Concretely Annotated English Gigaword LDC2018T20. Web Download. Philadelphia: Linguistic Data Consortium, 2018.

All instances of the verb *produce* (and co-occurring transitive verbs which also display object deprofiling) are represented in boldface, whereas referents – if available – are highlighted by underlining.

SUBJECT: ECONOMY

Definite Null Instantiation

Making semiconductors is not a labor intensive process so I don't think it matters that much where they **produce**.

I asked him once if it was it was true that we produced missiles as fast as others produced sausages. His father replied, "It doesn't matter how many we **produce**, because we don't plan to start a war."

Pure Drinks still bottles a small amount of Campa Cola in Haryana, a state neighboring New Delhi, though Singh declined to say how much they **produce**.

"If China and India develop like people hope they will, it won't be possible to have made too much bourbon," he said. "No matter how much you expand it and how much you **produce**, it won't be enough."

But Stefan Jacoby said the eventual location is not as important as the decision to build new vehicles in the U.S. "The most essential change which is coming up for us is that we **produce** locally here in the United States," Jacoby told members of the Greater Washington Board of Trade.

Indefinite Null Instantiation

Both the ruling Labour Party of Prime Minister Gordon Brown and the main opposition Conservative Party are now trying to capitalize on public anger about the excesses of that sector in the wake of a grinding recession, promising to restore balance to an economy that now **consumes** more than it **produces**.

The only way we were able to **consume** more than we **produced** was that the rest of the world was eager to lend us the balance, knowing that we'd use it to buy their sneakers, cars, computers.

Allowing the yuan to float is a necessary first step in rebalancing a global economy that has become dependent on the United States **consuming** much more than it **produces** and China producing more than it consumes.

Since the strength of the U.S. economy depends, in part, on the confidence of foreign investors, some economists believe that those investors will eventually get nervous about a country that **buys** so much more than it **produces**.

Americans enjoy the inestimable privilege of **consuming** much more than they **produce** and financing the difference with the currency they alone can lawfully print.

Changes in the way industry **produces**, the way people live, and their modes of transportation "is really the key thing", he says.

"The second half depends on how well we **produce** and the Australian dollar exchange rate."

With organizational loyalty low and the risk of being downsized high, many workers feel increased pressure to **produce**, **produce**, **produce**, and that is especially true of telecommuters, says Christene Nippert-Eng, an Illinois Institute of Technology sociologist who is finishing a book, "Transition to Telecommuting."

The suit is an example of how business dealings can sour even the closest friendships, but it also has spurred debate about several delicate issues, including the age-old conflict-of-interest question raised by managers who **produce**.

Now Kunze's work can be found at three stands, while he himself can be found at home. "Let them **sell**. I **print**, I **produce**, they **sell**," he said.

Indonesian companies until recently were the engine of Indonesia's economic growth. They **produced**, they **exported** and **imported**.

It is necessary to enable these countries to use the intellectual property system to help them **produce**, **trade** and **compete**, he added.

After six months, the partners **produced**, and Gaetani came through with more stores.

The bet is that independent farmers will do better on their own than toiling for state-run agricultural enterprises, which suffer from red tape, bad planning and lack of funding. "The authorities, they leave you alone and let you **produce**," said Aristides Ramon de Machado, who got permission to plant bananas, papaya and guava in a lot by his home in Boca Ciega, east of Havana.

"The lack of foresight to make those areas **produce** has affected us," Rognoni said.

"We are **buying** far more than we **produce**, and the extra purchases come from **importing** more than we **export**, financed by net borrowing from abroad," Kohn said .

The United States, in fact, **consumed** more than it **produced**, but China enabled this by accumulating $ 2.3 trillion in reserves and plowing much of it back into U.S. government bonds.

For years, the United States has **consumed** more than it **produced**; Germany, Japan and China have done the opposite.

By effectively replacing their currencies at a puffed-up rate, the German - underwritten monetary union enabled Greece and other southern European countries, plus Ireland, to **consume** more than they **produced**.

We are a society that **spends** more than it **produces** and we are trying to make up for it through privatisations, donations, reprogramming and taking out new loans," said prominent Serbian economist Miodrag Zec.

One advantage is that it buoys the value of the dollar and encourages foreign investment in the United States, which is crucial to a nation **consuming** and **borrowing** much more than it **produces**.

"At first sight it looks like we're **exporting** more than we **produce**," said David Philpotts, U.K. economist at Stone & McCarthy Research.

At a major speech honoring the revolution in July, Castro smacked his hand on the podium and announced: "The land is there, and here are the Cubans! Let's see if we can get to work or not, if we **produce** or not, if we keep our word.

Those contributions will be credited to the Hillraiser's account, and the campaign Web site will maintain a running total of how much each person **produces**.

Fu Chun and her mother, like the other women here, earn money according to how much they **produce**.

The NAPM indexes don't measure how much factories **produced** or prices rose or fell.

That saw the EU move to the principle of a fixed subsidy based on the size of farms, rather than how much farmers **produce**.

"We're in the middle of technical expansion in which we are changing the way we work and how much we **produce**," said Donald Ratajczak, a professor at Georgia State University in Atlanta.

But Lincoln is nearly unique among large American companies, paying all shop-floor workers according to a formula based on how much they **produce**, how much they contribute to the team effort and how much the company earns.

The EU is phasing out payments to farmers for how much they **produce** and shifting to subsidies based on environmental, land management and food safety standards.

Ministers said the proposal was little changed from one put forward a year ago by the EU's executive Commission, which called for an end to paying farmers based on how much they **produce**.

Create an open market for ideas, capital and talent. Begin with low-risk experiments. Divide big companies into cells. Be generous toward people who really **produce**.

The voters are telling the Republicans that unless they **produce**, they too will be ousted.

Indefinite Null Instantiation (cataphoric relations)

His interest in a "framework for sustainable and balanced growth" is rooted in reality: For many years, Germany, Japan and China have grown by **producing** more than they **consume** and by exporting their goods to the United States, which has chronically **consumed** more than it **produces**.

However much the Bosnians **produce**, sljivovica earns little export income for the impoverished country because local people drink it all.

Generic Null Instantiation

Cardoso said exports should increase immediately. "This favors those who **invest**, who work, who **produce**," Cardoso said at the signing ceremony.

We **produce**, they **sell**.

They market first before they **produce**.

"People go, **pay**, sit down, and you **produce**," he said.

Productivity is a measure of how much a worker, with modern tools and machinery, can produce in an hour. The more each **produces**, the greater the nation's over-all economic growth.

China **produces** and we **consume**;

We **spend** more than we **produce**.

Yes, we've heard it all for years now: We **consume** far more than we **produce**.

Americans continue to **buy** more than they **earn**, and to **consume** more than they **produce**.

You **produce**, you make a lot of money. Or you move on.

When a country **consumes** and **invests** less than it **produces**, it is bound to have a current-account surplus.

SUBJECT: ENTERTAINMENT (FILM AND MUSIC PRODUCTION)

Definite Null Instantiation

When we meet her in "Miss Potter," Beatrix Renée Zellweger, who also **produced** is an unmarried woman in her early 30s, living with her parvenu parents in turn-of-the-century London.

There are a couple of terrific performances in the film, from James Woods who also **produced** as Mel and Melanie Griffith as Sid, who hitch up with a young teenage couple, Bobbie Vincent Kartheiser and Rosie Natasha Gregson Wagner.

The film is very much in the stylistic tradition of Rudolph's better work "Choose Me, Trouble in Mind", as well as the work of his mentor Robert Altman who also **produced**.

Penn, Pfeiffer, Nelson and co-writer Kristine Johnson often went there before making the movie, and Nelson, who also **produced**, hired two men there to play Sam's friends.

In their home office in Sherman Oaks, they write screenplays together, make deals together and make movies together – he **directs**, she **produces**.

Based on the best-selling books, the animated series' first release is voiced by Frankie Muniz and William H. Macy both of whom also **produced**, plus Lacey Chabert, Felicity Huffman and Daryl Sabara.

The pilot was written by Conan O'Brien and his former head writer, Jonathan Groff, who also **co-executive produces**.

There's no major complaints about "Birthday Girl," a sophomore effort from the Butterworth brothers Jez **directs**, Tom **writes**, Stephen **produces**.

"FARGO" was a family affair: brothers Joel and Ethan Coen wrote the script, Joel **directed**, Ethan **produced**, and Joel's wife, Frances McDormand, starred as a small-town police chief, Marge Gunderson.

Thomas and Nava wrote it; she **produced**, he **directed**, and they earned an Oscar nomination.

The documentary is an East-West collaboration -- pairing the Hong Kong-born Yang, who **directed**, and the New York-based Lennon, who **produced**.

Amiably acted and leavened with caustic one-liners, "The Brothers McMullen" is a family movie in the truest sense of the word – Burns' dad **produced**, his mom catered, it was shot in their house -- and it's easy to feel a part of this warm and lively household.

"Four Dogs and a Bone" is a big-name affair. Opening Oct. 19, it features four stars in its cast: Martin Short, Brendan Fraser, Elizabeth Perkins and Parker Posey. Lawrence Kasdan **directs** and Gilbert Cates **produces**.

It stars Naomi Watts, who also **produces**, and while it offers that most physical of actresses plenty of screaming and running-snot crying opportunities, you have to wonder what she was thinking.

"Smilla's Sense of Snow" is a release of Fox Searchlight, 20th Century Fox's subsidiary for prestige films. Bernd Eichinger and Martin Moszkowicz **produced**, Ann Biderman wrote the screenplay. The film is now playing in New York and Los Angeles.

The event also promoted the film "Redline," a comedy about sports cars, in which Griffin acted and Sedek **produced**.

Hence , "Vampire in Brooklyn," an only semi-comedic picture directed by low-budget horror master Wes Craven, in which Murphy who also **produced** plays a sexy vampire and straight man to comedians Kadeem Hardison and John Witherspoon.

After its 1962 debut, Sinatra, who also **produced**, pulled it from circulation in the wake of the 1963 assassination of his close friend President Kennedy.

Ironically, the real-life movie has come under the same knife as the fictional one: Lucas and Scott who **executive produced** seem to have succumbed to suggestions that they soften the film's ending.

A number of top musicians came together for "Invincible Summer" (Warner Bros.), including guitarists Greg Leisz and Wendy Melvoin, plus longtime collaborator Ben Mink on strings and keyboards and avant-garde trumpeter Jon Hassell. Damian leGassick, who has worked with Madonna producer William Orbit, **produced**.

"City Island" PG-13, 100 minutes: Vince Rizzo played by Andy Garcia, who also **produced** is a corrections officer, would-be actor and beleaguered husband.

Showing at 5 p.m. and again at 7 and 9 p.m. Sunday on TNT, this "Riders" finds Madigan and Harris who also **executive produced** displaying some sizzling on-screen chemistry that is as subtle as it is palpable.

"Johnson Family Vacation" asks its star to go in a different direction from his established persona _ which is probably intentional since Cedric also **produced**.

Indefinite Null Instantiation (cataphoric relations)

Brosnan, who also **produced**, got behind the movie the minute he read the script and his effort has paid off.

To his credit, Costner, who also **produced**, clearly wants this movie to be about the Kennedys.

The Coens – Joel **directs**, Ethan **produces**, and they both **write** – tend to populate their intricate, unnerving fables with boldly outlined cartoon characters.

As put together by Dana Ranga and Andrew Horn – she **directed**, he **produced**, they **co-wrote** –, the film examines how these unlikely epics came to life in the face of serious obstacles.

As actually **produced**, the tonal shift is more subtle than that.

Co-scripted by Joel, who **directed**, and Ethan, who **produced**, the unconventional crime drama will have you laughing one minute and recoiling in horror the next.

Kelley, who **writes** as well as **produces**, said he had been convinced that "The Sopranos" would take the drama prize.

Jackson who also **produced** has the showiest part, but "Eve's Bayou" is really an old-fashioned "women's picture," and he's more of a catalyst, almost an outsider to the movie.

With help from her many friends, including the Blasters' Dave Alvin, who **produced**, Peter Buck and Mike Mills of REM, Syd Straw and Rhett Miller, McWilson offers finely wrought versions of her worldly-wise songs.

Generic Null Instantiation

The duties of Team Enya break down this way: The artist writes the melodies and sings; Nicky **produces**; Roma, his wife, writes the lyrics.

The cause was a heart attack, said a spokesman for Hyena Records, the last of a string of record companies where Dorn **produced**.

Valli still **performs**. Gaudio still **produces**.

Movie critic and historian David Sterritt said Pollack's "main importance was as a kind of hyphenate -- someone who **produced**, **directed** and sometimes acted."

He writes scripts, he acts, he **produces**, he's even taken a crack at directing, with 1998's "The Players Club."

PUFFY BIO: He writes songs, he raps, he **produces**, he oversees an entertainment empire.

Not only that, he's creative, he **produces** and he's got a great musical ear.

That is why he **produces**, he said, to be around writers and directors.

But anyone who has managed people understands the double-edged drama of handling difficult personalities who **produce**. They drive you nuts. They make you look good. They drive you nuts. And so on.

Indefinite Null Instantiation

By the time they finish, they'll know how to **write**, **edit**, **direct**, **produce** and **budget**.

I would firstly like to thank my son, who **produced**, **directed** and **edited**, and I would like to thank Cabrillo for choosing us.

So I **direct**, **write, script**, act, **produce**.

Nimit, who **performs** as well as **produces**, is the first to admit that his company is suffering from low attendance rates.

Kevin Spacey **produced**, **wrote**, **directed**, stars in, sings in, swings in and probably handled the catering, too, for this tribute to 1960s crooner Bobby Darin.

Husband-wife filmmaking team Charles Shyer and Nancy Meyers – he **directs**, she **produces**, they **co-write** – have carved out a nice Hollywood career making the kinds of movies older people complain don't get made anymore, and younger ones generally don't want to see.

“Perform, to do TV the way I want to do it, and **executive produce** -- I can't do both.

Jackson, the son of television actor John M. Jackson JAG, initially will share time at first base with Tony Clark, although the job figures to gradually become Jackson’s alone if he **produces**.

Zwerin told The New York Times that she had quit working with the Maysleses because they would not let her **produce**.

SUBJECT: SPORTS (*produce* “perform well”)

If the gaffer believes in you and you are happy then you **produce**.

Troubles in the past included a rift between the offense and the defense, a team that talked more than it **produced** and a head coach, Jim Fassel, who was being relatively ignored by all around him.

And until Brown or Maddox or maybe third-stringer Stan White **produces**, they won't be a good offensive football team.

If their bench **produces**, the Spurs can be the toughest team to overcome.

Davis has always had his “projects” _ players he thought could be developed because of special abilities who somehow never developed the necessary skills _ but it didn't matter in the championship years because the Raiders had plenty of players who **produced**.

Valentine even poked fun at his reputation for being a meddlesome manager by joking that he might try to incite another argument if it helps the players **produce**.

Even when the offense **produces**, Game 7 has not been kind to Colorado in recent years.

But Rodriguez cares, he plays hard and he **produces**, and for all those things, he deserves props.

You want guys who **produce**, and Reuben did a great job of **producing** for us, both in the running game and in the pass protection.

Some players **produced** and some didn’t, but as a team we played well.

The team wins, Edmonds **produces** and everybody is happy.

The marginal players are forced out and the players who **produce** earn more.

Beckham actually **produced**.

His players bought his philosophy because the rules were simple: work hard, **produce**, and you'll play.

The offensive line **produced**, but the offense did not.

All sorts of oddball and deviant behaviors are tolerated as long as you **produce**.

But the Pirates won just four of their first 10 games, and it isn't clear how long Ross will stick around no matter how much he **produces**.

This year, with Pennington out with a fractured and dislocated left wrist, Edwards watched as the Jestaverde completed 25 of 43 passes for 264 yards, but the measure of any quarterback is how his offense **produces**, and this one isn't **producing** much.

She **produced**, but her team didn't: 14-14 in the innaugural season and 12-18 last year.

If the bench **produces**, it might mean more playing time in the next game.

With only rookie Dale Polley available in middle relief, Torre had to stick with Hutton, and the Australian **produced**.

Game in and game out he just **produces**," Yankees owner Georger Steinbrenner said in a statement.

The bench not only **produces**, but it eats up valuable minutes.

This year I think I've shown people that when I'm given the minutes, I just **produce**.

Now you add second base to it, and I think our infield **produces** as well as any infield.

If they do a good job, if Martin **produces**, a trip to the Super Bowl will be all the more likely for New England.

"He is the Albert Pujols of fantasy sports, a player who consistently **produces**, a player who is money in the bank."

Bottom line: When the Bears needed a spot performance, Grossman **produced**.

Cashman has seen an intangible benefit of having young players **produce**.

He became a beloved player while he was with the Rangers because he played hard, many times while injured, and because he **produced**.

And when you **produce**, you win basketball games.

Concentrate on getting players who **produce**, not those who are merely faster or bigger than other players.

When they **produce**, we're going to win.

They are 10th in the league in runs scored 541 and teams will likely pitch around right fielder Shawn Green unless catcher Paul Lo Duca, left fielder Brian Jordan and first baseman Eric Karros **produce**.

But Canseco was activated Tuesday, pronouncing himself fit just before game time, and when his opportunity came, he **produced**.

If everyone **produces**, that's when you can have a good run.

At a time of the season when coaches are shortening their benches, Byron Scott went 10 players deep on Sunday in the 99-93 victory over the Hornets, and all of them **produced**.

On offense, quarterback Chris Chandler is 10-4 in games he has finished; when healthy, he **produces**.

"He's a dead-game player who **produces**," La Russa said.

When he plays extended minutes, he **produces**.

Say what you will about him, but when Canseco played only 60 percent of the time during his stay in Boston, he **produced**.

If the Giants acquire a quality power hitter and everybody **produces**, Bonds said, "then you can look at it as a positive trade."

"Boy, you guys really **produce**," Bush told Weyrich.

Considering Griese is due a base salary of $ 3.5-million in 2006, the Bucs will think long and hard about his status if Simms **produces**.

Anytime a manager receives an award, it's a direct reflection on the way the ballclub played and the way players **produced**.

How often Hollandsworth gets an opportunity to play could hinge on how he **produces**.

Assuming Rammrez is still on the team and back in the lineup Friday night, you can bet he'll been greeted like Charles Lindbergh when he takes his place in left field on the Fenway lawn - proving again that it's impossible to insult Red Sox fans as long as you **produce** .

The notion was that not everyone marches to the same tuba, and if Sprewell **produces**, then let him walk backwards, if he wishes.

But to be part of it now, to be part of this offense, to help this team **produce** means a lot to me.

The book on Canseco is pretty simple: He wants to get the star treatment, but when he plays, he **produces**.

With the left-handed hitting Strawberry available as a pinch-hitter and the hardly imposing Guetterman in the bullpen, Showalter remained with Velarde, and he **produced**.

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