

Quotation, Formal Grammar, and Type Theory

The data in (1) show that pure quotation concerns a variety of aspects of a given linguistic form, on the phonological, syntactic, and semantic dimensions:

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| (1a) ‘Bo’ is a noun. | (1a’) ‘Bo left’ is a declarative sentence. |
| (1b) ‘Bo starts with b. | (1b’) ‘Bo left’ consists of two monosyllabic words. |
| (1c) ‘Bo’ is used to refer
to a person named ‘Bo’. | (1c’) ‘Bo left’ predicates leaving
of a person named ‘Bo’. |

To capture this one requires a data structure that represents these aspects in parallel, all the way down to word level constituents of the form. An entity that corresponds to these requirements is the *sign*, the fundamental theoretical entity of the grammatical framework HPSG (Pollard & Sag, 1994), or in its more recent manifestation SBCG (Michaelis, 2009). These frameworks, apparently, possess an ontology ready made for analyzing quotation. Indeed, Bonami & Godard, 2008 offer an HPSG account for direct quotation constructions in French. Their account attempts to incorporate into a formal grammar the view of quotation developed in Clark & Gerrig, 1990—*quotation as demonstration*. Bonami and Godard’s account captures in a precise way a number of fundamental facts about such constructions: first, they treat quotation complements as canonical complements. This accounts for their word order, their ability to be embedded and pseudo-clefted, and the fact that they can be selected by direct quotation verbs such as *dire* (‘say’; any quotative utterance), *affirmer* (‘assert’; declarative utterances), *demander* (‘ask’; interrogative utterances), *faire* (‘go’; any quotation, including non-linguistic.).

Nonetheless while Bonami and Godard’s account is significant in its attempt to incorporate quotation into a formal grammatical framework, technically it is, as they admit, problematic (B&G, pp.16-17.). This is, primarily, due to an intrinsic problem in the formalism standardly used to formalize HPSG and SBCG: the formalism provides *typed feature structures*, entities exclusively on the level of types—signs are thus construed as *utterance types*—there is no provision of entities at the token level. In fact, as we argue below, both utterance types *and* tokens are necessary for any formalization of direct quotation (cf. Potts, 2007).

In this paper, we argue that the problems for formal grammatical accounts like that of Bonami & Godard, 2008 can be eliminated if one combines the recasting of HPSG in the formalism of Type Theory with Records (TTR) (Cooper, 2005, 2012) with a view of utterance processing, drawn from the dialogue framework KoS (Ginzburg, 2012). TTR is a model-theoretic descendant of Martin-Löf Type Theory (Ranta, 1994). What is crucial for current purposes about this formalism, which takes situation semantics as one of its inspirations, is that it provides access to both types and tokens at the object level. Two key entities in the ontology of TTR are records and record types. A record is a set of fields assigning entities to labels of the form (2a), whereas a record type is simply a record where each field represents a judgement rather than an assignment, as in (2b). A record r is of type T iff each field f_i in r satisfies the corresponding typing restrictions placed in T on f_i . (Cooper, 2005) shows how to model eventualities as records. (Ginzburg, 2012) develops a version of HPSG in which utterance types (‘signs’) are modelled as record types, whereas actual utterance tokens—speech events—are modelled as records. This underpins a theory of metacommunicative interaction: in the immediate aftermath of a speech event u , a dialogue context gets updated with a record of the form (2c) of type *locutionary proposition* (LocProp). Here T_u is a grammatical type for classifying u that emerges during the process of parsing u . The relationship between u and T_u is utilized in providing an analysis of when an utterance can be grounded (Clark, 1996) and of the range and content of available clarification questions. Thus, clarification questions such as (2e) require reference to the utterance token under clarification—they involve reference not to anyone named ‘Bo’, but to the intended referent:

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| (2a) $\left[\begin{array}{ll} \text{runner} = & \text{bo} \\ \text{time} = & \text{2pm, Dec 20} \\ \text{place} = & \text{batumi} \end{array} \right]$ | (2b) $\left[\begin{array}{ll} \text{runner} & : \text{Ind} \\ \text{time} & : \text{Time} \\ \text{place} & : \text{Loc} \end{array} \right]$ |
| (2c) $\left[\begin{array}{l} \text{sit} = u \\ \text{sit-type} = T_u \end{array} \right]$ | (2d) $\text{LocProp} = \left[\begin{array}{l} \text{sit} : \text{Rec} \\ \text{sit-type} : \text{GrammType} \end{array} \right]$ |
| (2e) A: Did Bo leave? B: Bo? | (‘Who are you referring to as ‘Bo’?’) |

The account we develop unifies the treatment of cases such as (1a-c), (2e), and quotative verbs such as ‘ask’, ‘say’, and ‘go’. The first class makes reference to (different dimensions of) the utterance type, the second to the utterance event, whereas we argue that the most parsimonious analysis of e.g. ‘ask’

is one that unifies direct and indirect quotation, so that (3a) and (3b) both involve a relation between an agent and a question (qua abstract semantic entity, cf. e.g. Ginzburg & Sag, 2000). In other words, such verbs compose with the *content* of the utterance token. Note though that a single predication can address both type and token aspects, as in (3c,d):

- (3a) Bill asked ‘Was I snoring’ → Bill asked a question, a question about himself.
 (3b) Bill asked whether he was snoring → Bill asked a question, a question about himself.
 (3c) ‘Was I snoring’ was asked by Bill and is a frequently used interrogative clause.
 (3d) ‘Am I snoring?’ asked Bill, a sentence frequently uttered by men who don’t think they snore. It is usually answered by ‘You were before you woke up.’

All this points to analyzing quotative phrases analogously to co-predication cases (Pustejovsky, 1995; Cooper, 2012). We associate a denotation of quotative phrases as *locutionary propositions*. We exemplify our account here with a rule for directly quoted phrases and a lexical entry for a quotation embedding verb ‘ask’. A direct quotation denotes a locutionary proposition individuated by an utterance event and the type the grammar associates with the quoted material (type *T* in (4a)). The phonology and syntactic category of this phrase is identical to the quoted material. On the other hand, the contextual parameters of the original have been projected away, but include now the utterance event (this gets absorbed in pure quotation cases.). In (4b) ‘ask’ selects for a quotation phrase as its complement daughter, a phrase that can be specified as an interrogative clause—its content is a question and its category is verbal. Crucially, this lexical entry for ‘ask’ has the same content as the lexical entry ‘ask’ has as the content of *indirect* quotation, viz. a relation between an agent and a question; the sole difference is in the specification of the complement.

$$\begin{array}{ll}
 (4a) \text{ } \textit{quot-ph} = & \left[\begin{array}{l} \text{phon} = T.\text{phon} : \text{phoncat} \\ \text{syn} = T.\text{syn} : \text{syncat} \\ \text{ctxt-params} : [u : \text{Rec}] \\ \text{cont} = \left[\begin{array}{l} \text{sit} = u \\ \text{sit-type} = T \end{array} \right] : \text{LocProp} \end{array} \right] & (4b) \left[\begin{array}{l} \text{phon} : \textit{ask} \\ \text{syn} : V[+\text{fin}] \\ \text{spr-dtr} = [\text{content} = x : \text{Ind}] : \textit{np} \\ \text{comp-dtr} = \\ \left[\begin{array}{l} \text{cont} = p : \text{LocProp} \\ p.\text{sit-type}.\text{syn}.\text{head} = v[+\text{fin}] : \text{PoS} \\ p.\text{sit-type}.\text{ctxt-params}.\text{spkr} = x : \text{IND} \\ q = p.\text{sit}.\text{cont} : \text{Question} \\ \text{content} = \text{Ask}(x,q) : \text{Prop} \end{array} \right] : \textit{quot-ph} \end{array} \right] \\
 & \left| \right. \\
 & \left[\begin{array}{l} T = \left[\begin{array}{l} \text{phon} : \text{phoncat} \\ \text{syn} : \text{syncat} \\ \text{ctxt-params} : \text{Rectype} \\ \text{cont} : \text{Semobj} \end{array} \right] : \text{GrammType} \\ \text{head-dtr} : T \end{array} \right]
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