1025 words (limit of 1,000)

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TRACES

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Traces are a central concept in the theory of syntax and its interfaces with semantics and phonology in GENERATIVE GRAMMAR. The concept goes back to Perlmutter (1972) who used the term *shadow pronoun*. The term *trace* originates with Chomsky (1973). The origin of the term is closely connected to the operation of MOVEMENT. Consider for example, English object questions such as (1). In (1) the object *which woman* is located in the sentence initial position rather than a position following the verb.

(1)   Which woman did John see _?

Early transformational theories analyzed dislocation as literal movement (Chomsky 1955): At an underlying level of structure the word order of the question (1) corresponds to the basic word order of English as in (2a). The obligatory movement transformation *Wh-Fronting* then creates the surface word order in (2b). On such an analysis, the phrase *John see* after wh-fronting has exactly the same structure as the intransitive verb phrase *John sneeze.*

(2)   a.   did John see [which woman]
        b.   [which woman] did John see
        b'.   [which woman]$_i$ did John see t$_i$

        Trace theory, on the other hand, in the influential formulation of Chomsky (1981) assumes that movement creates a structure like (2b') from (2a). In (2b'), the link between the moved phrase and the original position it has moved from is indicated. Specifically, the *Trace* is the material occupying the position originally occupied by the moved phrase.

        One major reason for the change from literal movement to the trace theory is that modern syntactic theories generally assume that syntax and interpretation interact in a

different way than earlier theories: Early work assumed that underlying structures alone (i.e. (2a)) would determine interpretation (cf. GENERATIVE SEMANTICS). But since Jackendoff (1972) and others have argued that dislocation can affect interpretation, interpretation cannot be determined by underlying structures alone. The current consensus in the field is that the interpretation of a sentence is determined by a single level of structure that is called LOGICAL FORM by some theories. Since phrases may be dislocated at logical form, it makes the theory of interpretation simpler if the relationship between dislocated phrases and their original positions is marked.

The form of the marking of this relationship is subject to a lot of debate. One current alternative to (2b') is illustrated in (3). Chomsky (1994), Fox (1999) and Sauerland (2004) argue dislocation should rather be analyzed as copying of the dislocated phrase followed by conversion of the copy left in the original position to a definite description as in (3).

(3)   [Which woman] did John see the woman

Several empirical arguments for traces have been discussed, of which I review two prominent ones in the following. It is important to keep in mind, though, that the justification of a theoretical concept such as *traces* depends on the overall elegance of a theory that assumes the concept compared to one that does not. Hence no single empirical argument on its own provides decisive evidence for or against traces, but entire theories must be compared.

Wanna-contraction (Lakoff 1970) is an empirical phenomenon that can receive a straightforward analysis assuming traces. As the data in (4) illustrate, for many speakers of English *want to* can be contracted to *wanna*, but contraction is blocked when the subject the verb following *to* is dislocated (See Hudson (2006) and references therein.) A trace-based analysis of this phenomenon assumes that the subject trace, which occupies a position between *want* and *to*, blocks contraction in the same way as a non-dislocated subject would.

(4)   a.   Who do you want to/wanna dance with _?
         b.   Who do you want _ to/*wanna dance with Mary?

The phenomenon of *Reconstruction* also lends itself to an elegant analysis in terms of traces (see SYNTAX/SEMANTICS INTERFACE). *Reconstruction* refers to cases where at least parts of the dislocated material seems to be interpreted in the position of a trace. The variable binding data in (5) from (Fox 1999:161) illustrate reconstruction: Only (5b) easily allows an interpretation that concerns every boy and his father. Reconstruction explains this because *his father* can be interpreted in the trace position to the right of *every boy* only in (5b) (cf. BINDING). Other evidence for reconstruction comes from quantifier scope (Fox 1999) and ellipsis interpretation (Sauerland 2004). Reconstruction can be analyzed easily by reference to original position of the dislocated phrase.

(5)   a.   [??]His father wrote to every boy to be a genius.

b. His father seems to every boy _ to be a genius.

Traces also play be big role in PSYCHOLINGUISTICS. Many theories of syntactic processing rely on traces (for example, Gibson 1999). Also PRIMING has been argued to provide evidence for the presence of traces (MacDonald 1989). Furthermore, certain language disorders have been analyzed as relating specifically to traces: specifically, Grodzinsky (2000) for APHASIA and van der Lely and Battell (2003) for SPECIFIC LANGUAGE IMPAIRMENT.

Works Cited and Suggestions for Further Reading

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