Change of State Verbs and Scalar Underspecification

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Recently, the role of scalarity has attracted increasing attention in analyses of verb related phenomena such as aspectuality, resultative constructions and argument realization (e.g. Wechsler 2005, Caudal & Nicolas 2005, Beavers 2008, Rappaport Hovav 2008). In this regard a question of central importance is which types of verbs express scalar changes and which do not. There is some agreement that incremental theme verbs do not come with a scale but instead depend on an incremental theme argument which introduces the scale (e.g. Kennedy 2012, Pinon 2008). By contrast, change of state verbs lexicalize a scale as part of their meaning and may therefore be called *scalar verbs* (e.g. Rappaport Hovav 2008).

Rappaport Hovav (2008) formulates two constraints based on scalarity: First, scalar verbs are restricted with respect to secondary resultative predicates, which have to be compatible with the verb's scale (1a). Verbs which do not lexicalize a scale are less restricted (1b).

(1) a. *The prisoners froze to death/*sick/*fat/*tall.*
b. *Peter ate himself to death/sick/fat/*tall.*

Second, object deletion is only possible if the object is not measured by a scale (2a), whereas an argument which is measured by a scale has to be realized overtly (2b).

(2) a. *Peter ate (the pizza).*
b. *The earthquake widened *(the crack).*

Another criterion is based on adverbs that directly operate on a scale such as *gradually* (cf. Piñon 2000). (3a) shows that change of state verbs allow for modification by *gradually* whereas non-scalar verbs do not (3b).

(3) a. *The sky gradually darkened.*
b. *#Mary bought the house gradually in the street.* (Pinon 2000:450f)

In the talk, we tackle the question whether all change of state verbs are scalar in the sense that they fully lexicalize a scale. Kennedy & McNally (2005) define a scale as a triple <**S**, **R**, δ> with **S** being a set of degrees, **R** an ordering on **S**, and δ a dimension. Given this tripartite scale definition, a strict hypothesis may be that all three parameters must be specified in the lexical meaning of the verb if the verb lexicalizes a scale. We will present evidence against this hypothesis and argue for a weaker version. Our argumentation is based on the fact that the scalarity tests identify some change of state verbs as scalar although these verbs do not lexicalize all three scale parameters. As illustrated by the examples in (4), there are change of state verbs such as *form (into)* and *dye*, which denote a change of the referent of the object argument. However, these verbs do not lexicalize a complete scale since the dimensions of form and color do not impose an inherent order on their values. Therefore **R**, the ordering of the values, remains unspecified in the verb. Note that both verbs behave like scalar change of state verbs with respect to resultative formation and object deletion.

(4) a. *The workers formed *(the pipe) into an 'S'.*
b. *He dyed *(his hair) black.*

Another type of scalar underspecification is illustrated in (5), in which the verb *raise* denotes a scalar change but is underspecified with respect to the dimension and the value range of the scale. Both scale parameters are introduced by the object argument (*price* and *wages*).

(5) a. *The company has raised *(the price of gas).*
b. *The company has raised *(the wages of the senior employees).*

The examples in (6) show that the change of state verbs introduced above can be modified by *gradually* and thus are scalar:

(6) a. *The workers gradually formed the pipe into an 'S'.*
b. *The company has gradually raised the price of gas.*

Finally, the verb *change* in (7) is completely underspecified with respect to scalarity. As shown by the contrast between (7a) and (b), scalarity only results if *change* is combined with a scale denoting noun like *temperature* whereas the combination with a non-scalar noun like *mayor* does not yield scalarity.

(7) a. *The temperature has changed.*
a.' *The temperature has gradually changed.*
b. *The mayor has changed.*
b.' **The mayor has gradually changed.*
(intended meaning: the old mayor has been replaced by a new one)

In the talk, we will argue that a verb can be lexically scalar, even if not all of the scale parameters are lexically specified. As indicated by the examples, there exist different types of scalar underspecification, for which we will provide a typology. We will show that at least two types of strategies are applied for the resolution of scalar underspecification: one is the introduction of a missing parameter by the context and the other one is the composition with a scale denoting noun like *temperature*. We will focus on the compositional aspects of scale structure and illustrate the interaction between verbs and arguments in building scalar changes.

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