The semantics of degree verbs and the telicity issue

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outline

❏ **Degree verbs (DVs) as a subclass of "gradual verbs", together with accomplishments (ACCs):**

  - **similarities of DVs and ACCs: scalar semantics**

  - **differences of DVs and ACCs: nature of the affected theme**

  - **"alpha" vs "beta" DVs**

❏ **Conceptual scaffold:**

  - **"event scale" (aspectual interpretation) → degree of realization r**

  - **"extent scale" (theme affectedness) → extent degree δ / differential Δ**

  - **qualifying telicity**

❏ **Our proposal**

  - **the combined contribution of the event and extent scales/degrees**

❏ **Computing telicity...**

  - **... as the defined vs undefined product of two degrees**

terminological matters and previous work

- We address the semantics of a specific set of predicates, often referred to as "degree achievements" Dowty (1979), Alternative denominations are:

    - "gradual completion verbs" Bertinetto & Squartini (1995)

    - "deadjectival verbs" Kearns (2007)

- We prefer to call them **degree verbs** (**DV**s). Possible examples are: *complicate, increase, widen, improve, get older, empty, lengthen, fatten, deepen, clear, lower, heat,* etc.

- Previous work: Vendler 1967; Dowty 1979; Declerck 1979; Dowty 1991; Krifka 1989, 1992; Tenny 1994; Bertinetto and Squartini 1995; Levin and Rappaport Hovav 1995; Jackendoff 1996; Ramchand 1997; Hay 1998; Filip 1999; Hay, Kennedy, and Levin 1999; Kennedy & Levin 2002; Kennedy & McNally 2005; Rothstein 2003; Borer 2005; Kearns 2007, Kennedy & Levin 2008; Piñón 2008; Kennedy 2010; Beavers 2013.

gradual verbs

- In agreement with a recent trend (Kennedy & Levin 2002, among others) we analyze DVs within a larger set of predicates characterized by the presence of an incremental theme (Dowty 1979; Krifka 1989, 1992).

- We refer to this larger set as **gradual verbs**. They include:

i. creation/destruction/affection verbs (*build, eat, paint* …)

ii. directed motion verbs (*run home, creep into* …)

iii. DVs (*complicate, increase, widen, improve* …)

   The predicates in (i) and (ii) are traditionally considered to be accomplishments (**ACC**s), whereas **DV**s receive different Vendlerian interpretations by the different authors.

- All members of the gradual verbs set are based on scalar semantics, expressing the degree of affectedness of the theme.

ACCs vs DVs: semantic evidence

- Despite similarities (i.e. scalar semantics), **ACCs** and **DVs** differ in how the theme is affected:

- **ACCs**:   mereological affectedness of the incremental theme, with subsequent parts progressively affected (possibly until telic culmination), with no necessary object/event homomorphism

  Ex.: *repair the computer*   →   subsequent mutually consistent and goal-directed actions adding to each other alongside the progressive development of the repairing event

- **DVs**:   what is affected is an abstract property of the theme as defined by an appropriate scale (e.g., weight, length, volume, height, speed etc.)

  Ex.: *widen the hole*   →   the abstract property of width is affected, independently of the actual degree reached within this scale

ACCs vs DVs: syntactic evidence

i.   Lack of the resultative construction with DVs:

   (a) *We steamed the clothes <u>dry</u> / <u>clean</u> / <u>stiff</u>*

   (b) * *John dimmed the room <u>dark</u> / cooled the room <u>cold</u>*

ii.   Lack of an intrinsic differential measure with ACCs:

   (a) * *John ate an apple <u>by three mouthful</u>*
         [rather: the apple *decreased* by three m.]

   (b) *The level of the water decreased <u>by one meter</u>*

iii.   Compatibility of DVs with vague comparison adverbs, such as *perceptibly, noticeably*. This underlines the inherently comparative nature of DVs, similar to gradable adjectives:

   (a) *Phil <u>perceptibly/noticeably</u> accelerated his pace (as compared to 5 minutes ago)*

   (b) *Phil is <u>perceptibly/noticeably</u> faster (than he was)*

   (c) *?? Phil <u>perceptibly/noticeably</u> wrote his dissertation*

alpha vs beta DVs

◆ Bertinetto & Squartini (1995) distinguished two major types of DVs: **ALPHA** vs **BETA**, characterized by **absence** vs **presence** of the **extensional telos** (i.e. $\Delta = 1$).

◆ This corresponds to the existence of an **open** vs **closed scale** in Kennedy and co-workers contributions:

(α) *Jim widened the hole* ↛ *Jim completely widened the hole*

(β) *Mary emptied the tank* → *Mary completely emptied the tank*

◆ Both alpha and beta DVs share the existence of a potentially infinite number of differential degrees

(α) *Jim perceptibly/noticeably widened the hole*

(β) *Mary perceptibly/noticeably emptied the tank*

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conceptual scaffold

- To describe the semantic structure of gradual verbs one can exploit the following conceptual scaffold:

event ⟷ **incremental theme**

degree of realization = r **extent degree** = δ
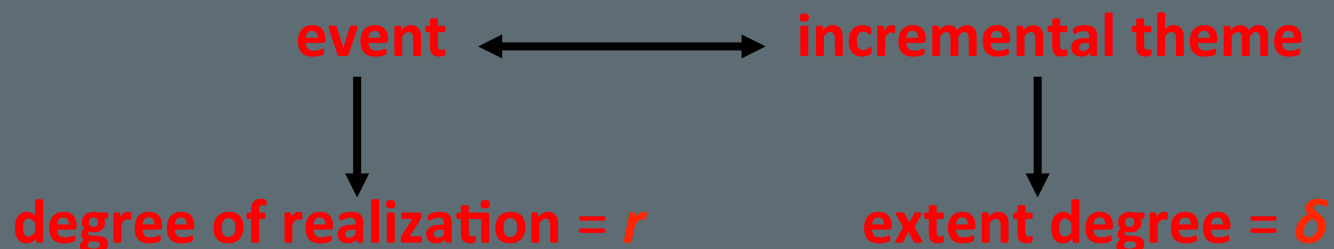
- Both types of degree imply the notion of **scale**:

  - r relates to the **event scale**, concerning <u>aspectual interpretation</u>

  - δ relates to the **extent scale**, concerning the <u>degree of affectedness of the theme/object</u>

- The two types of scales are mutually connected by a possibly (indeed often) indirect <u>homomorphic relation</u>

scalarity

- A scale can be defined (to make a long story short) as an ordered set of points, conventionally ranging from 0 to 1. It is considered closed if includes value 1, open otherwise.

  E.g., the event scale is closed: whenever the aspectual value is **perfective**, the degree of realization r saturates to 1; by contrast, **imperfective** (in the specific sense of progressive) implies an undefined value, hence: $0 < r < 1$.

- As suggested by Kennedy & co-workers, the "extent degree" δ could be intended as directly connected with telicity, defined as quantization along a scale.

  ➢ However, a major purpose of this contribution is to introduce a more refined view of telicity, by combining the contribution of both r and δ.

single vs double scalarity

- Kennedy & al. (1999, 2002, 2005, 2008, 2010) proposed a semantics of gradual verbs based on a single "degree of change" argument: the telic vs atelic reading corresponds to a defined (i.e. saturated) vs undefined (i.e. existentially bounded) value.

- We do buy the important suggestion of (in)definiteness, but we claim that the source of atelicity is two-fold:

  a) imperfective aspect   *(John was writing a paper)*

  b) non-quantized nature of the theme, as due to:

   - mass nouns   *(John drank wine)*

   - indeterminate plurals   *(John wrote letters)*

   - delimited duration   *(John wrote his paper for two hours)*

- The result is apparently the same in both cases (i.e. an undefined degree of change), but the cause is ostensibly different.

qualifying telicity

⇒ We thus propose to consider the combined effect of the **two mentioned scales/degrees**:

- degree of realization *r* (referring to the event scale)

- extent degree *δ* (referring to the extent scale)

⇒ Furthermore, in order to properly qualify the notion of telicity, it is important to dissociate two properties that are often unduly identified:

culmination and **quantization**

dissociating culmination and quantization

- In the following examples, concerning a typical ACC predicate, the adverb *completely* is used as a culmination detector:

  a. *Jim ate an apple completely*

     [perfective; TELIC = culminating, quantized]

  b. *Jim ate half an apple completely*

     [perfective; TELIC = culminating, quantized]

  c. * *Gino ha mangiato la mela per metà completamente*

     * *Jim ate half of the apple completely*

     [perfective; TELIC ? = non-culminating, quantized]

  d. * *Jim ate apples completely*

     [perfective; ATELIC = non-culminating, non-quantized]

  ⇒ Assuming quantization as the essence of telicity:

  an event can be telic, although non-culminating

  (cf. Beavers 2012 for an analogous observation)

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our proposal

⇒ Considering the inherently comparative nature of DVs, we call differential (degree) **Δ** the specific kind of degree on which the DVs' extension scale is based. The differential expresses the change occurred between two successive stages of the event.

- **degree of realization r**
  (event scale)

  = 1   [defined/saturated *(perfective)*]

  0 < r < 1   [undefined *(imperfective)*]

- **extent degree δ (for ACC)**
  or
  differential Δ (for DV)
  (extension scale)

  = 1   [defined/saturated]

  = ιδ or ιΔ   [defined/non-saturated]

  0 < (δ or Δ) < 1   [undefined]

defined vs undefined values: ACCs

a. *Mary ate an apple (in a minute)*

   $r = 1$ | $\delta = 1$ [perfective; culminating, quantized]

b. *Mary ate half an apple (in a minute)*

   $r = 1$ | $\delta = 1$ [perfective; culminating, quantized]

c. *Mary ate half of the apple (in a minute)* [= *mangiò per metà*]

   $r = 1$ | $\delta = 0,5$ [perfective; non-culminating, quantized]

d. *Mary ate apples   /   Mary ate bread*

   $r = 1$ | $0 < \delta < 1$ [perfective; non-culminating, non-quantized]

e. *Mary ate the apple for a minute*

   $r = 1$ | $0 < \delta \leq 1$ [perfective; non-culminating, non-quantized]

f. *Mary was eating the apple*

   $0 < r < 1$ | $0 < \delta < 1$ [imperf.; non-culminating, non-quantized]

defined vs undefined values: beta DVs

a. *Mary emptied the tank in an hour*

    r = 1 | Δ =1 [perfective; culminating, quantized]

b. *Mary emptied the tank by 2 liters (in an hour)*

    r =1 | ιΔ (= 2 lt)   [perfective; non-culminating, quantized]

c. *Mary emptied the tank (*by 2 liters) for 2 hours*

    r = 1 | 0 < Δ < 1   [perfective; non-culminating, non-quantized]

d. *Mary was empting the tank*

    0 < *r* < 1 | 0 < Δ < 1 [imperf.; non-culminating, non-quantized]

defined vs undefined values: alpha DVs

a.   *Mary widened the hole*

   $r = 1$ | ιΔ   [perfective; non-culminating, quantized]

b.   *Mary widened the hole by 10 cm*

   $r = 1$ | ιΔ (= 10 cm) [perfective; non-culminating, quantized]

c.   *Mary widened the hole (* by 10 cm) for an hour*

   $r = 1$ | $0 < Δ < 1$ [perfective; non-culminating, nonquantized]

d.   *Mary was widening the hole (by 10 cm)*

   $0 < r < 1$ | $0 < Δ < 1$ [imperf.; non-culminating, non-quantized]

Compare, by contrast, a beta DV :

a'.   *Mary emptied the tank in an hour*

   $r = 1$ | Δ =1   [perfective; culminating, quantized]

(NB: in the appropriate contexts, alpha DVs may be construed as beta)

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computing telicity: ACCs
[fulfilled perfectivity]

Building on a hint by Piñón, we propose that the event is telic iff the product *d'* of *d* and *n* or Δ yields a defined value

a.   *Mary ate an apple*

($r = 1 \otimes \delta = 1$) = *d'* = 1   [TELIC (culminating, quantized)]

b.   *Mary ate half an apple*

($r = 1 \otimes \delta = 1$) = *d'* = 1   [TELIC (culminating, quantized)]

c.   *Mary ate half of the apple*   [= *mangiò la mela per metà*]

($r = 1 \otimes \delta = 0.5$) = *d'* = 0.5   [TELIC (non-culminating, quantized)]

d.   *Mary ate apples*

($r = 1 \otimes 0 < \delta < 1$) = ($0 < d' < 1$) [ATELIC (non-culmin., non-quant.)]

computing telicity : DVs
[fulfilled perfectivity]

Beta DVs

a. *Mary emptied the tank*
   $(r = 1 \otimes \Delta = 1) = d' = 1$ [TELIC (culminating, quantized)]

b. *Mary emptied the tank by 2 lt*
   $(r = 1 \otimes \iota\Delta\ [= 2\ lt]) = d' = \iota\Delta$ [TELIC (non-culminating, quantized)]

c. *Mary emptied the tank for 2 hours*
   $(r = 1 \otimes 0 < \Delta \leq 1) = (0 < d' \leq 1)$ [ATELIC (non-culminat., non-quant.)]

Alpha DVs

a'. *Mary widened the hole*
   $(r = 1 \otimes \iota\Delta) = d' = \iota\Delta$ [TELIC (non-culminating, quantized)]

b'. *Mary widened the hole by 10 cm*
   $(r = 1 \otimes \iota\Delta = [10\ cm]) = d' = \iota\Delta$ [TELIC (non-culminating, quantized)]

c'. *Mary widened the hole for two hours*
   $(r = 1 \otimes 0 < \Delta < 1) = (0 < d' < 1)$ [ATELIC (non-culminat., non-quant.)]

imperfectively triggered atelicity

a.   *Mary was emptying the tank*

$(0 < r < 1) \otimes (0 < \Delta < 1) = 0 < d' < 1$

b.   *?? Mary was emptying the tank by 2 lt*   [prevision only]

$(0 < r < 1) \otimes (0 < \Delta < (\iota\Delta\ [=2lt])) = 0 < d' < \iota\Delta$

c.   *Mary was widening the hole*

$(0 < r < 1) \otimes (0 < \Delta < 1) = 0 < d' < 1$

d.   *?? Mary was widening the hole by 10 cm*   [prevision only]

$(0 < r < 1) \otimes (0 < \Delta < (\iota\Delta\ [=20cm])) = 0 < d' < \iota\Delta$

conclusion

➢ We defined the semantic properties of DVs, as compared with ACCs within the class of "gradual verbs", pointing out the inherently comparative nature of DVs.

➢ We build our conceptual scaffold by taking into account two scales: the EVENT SCALE and the EXTENT SCALE (respectively associated with the DEGREE OF REALIZATION r and the EXTENT DEGREE δ), showing that they are both needed to properly account for (a)telicity.

➢ Due to the inherently comparative nature of DVs, we called DIFFERENTIAL (DEGREE) Δ the sort of extent degree involved in the DVs' semantics.

→ By combining earlier suggestions, namely:
   - the (un)defined value of the relevant scalar degrees
   - the joined effect of two degrees
   we showed that (a)telicity may be understood as the
   (un)defined product d' of: $r \otimes \delta$ or $r \otimes \Delta$

Thanks for your comments!