

FORCE DYNAMICS AND THE PROGRESSIVE

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OVERVIEW

- ❖ The puzzle of stative progressives
- ❖ Dowty's (1979) proposal
- ❖ Kearns's (1991) proposal
- ❖ Smith's (1991) proposal
- ❖ A crosslinguistic perspective
- ❖ The case for Force Dynamics (FD)
- ❖ Dynamicity and the semantics of the progressive
- ❖ A residual problem
- ❖ Conclusions

I. THE PUZZLE OF STATIVE PROGRESSIVES

- Vendler's (1957) "time schemata of verbs" deconstructed (cf. Mourelatos 1981; Smith 1991: 30; Van Valin & LaPolla 1997: 91-102)

	dynamic	telic	instantaneous
states	-	-	-
activities	+	-	-
accomplishments	+	+	-
achievements	+	+	+

Table 1. A decomposition of Vendler's aspectual classes

- incompatibility with the progressive is a diagnostic of states – Vendler 1957; Dowty 1979: 55

(1) incompatibility of statives with the progressive (simple-tense examples from the www)

- a. IBM **knows**/***is knowing** the meaning of "Partner"
- b. The boat **is** (***being**) **on the river**
- c. NASA **has**/***is having** a plan for asteroid deflection
- d. Mauritania **desires**/***is desiring** to work with Ethiopia

- some state descriptions have polysemous activity senses which license the progressive

(2) stative progressive with coerced activity senses: examples from Comrie 1976: 36-37

- a. Fred **is being silly**
- b. He **is suffering** from influenza
- c. I've only had six whiskies and already **I'm seeing** pink elephants

- (3) stative progressive with coerced activity senses: examples from Kearns 1991: 147
- I'm loathing*** this book
 - Sally said she **was adoring** the new apartment
 - Are you really enjoying** that pie?

- (4) stative progressive with coerced activity senses: examples from Smith 1991: 174
- John **was** really **liking** the play
 - That cake **is looking done**
 - Amy **is resembling** her great-uncle today

- these expressions are in fact dynamic when combining with the progressive – witness their non-habitual interpretations with aspectual verbs

- (5) stative progressives with coerced activity senses are compatible with *stop* under non-habitual interpretations
- Suddenly, Fred **stopped being silly**
 - He finally **stopped suffering** from influenza when the drug took effect
 - I **stopped seeing** pink elephants when Sally poured a glass of ice water down my neck
 - I **stopped loathing** this book somewhere in the middle of the third chapter
 - Sally said she **stopped adoring** the new apartment when she found out that her neighbor kept pet tarantulas
 - You **stopped enjoying** that pie the moment I told you about the ingredients
 - John **stopped liking** the play when he realized it was about him
 - That cake **stopped looking done** when I took off my sun glasses
 - Amy **stopped resembling** her great-uncle when she unexpectedly said something smart

- in contrast, true statives are compatible with aspectual verbs only under habitual/generic interpretations

- (6) state descriptions are incompatible with *stop* except under habitual/generic interpretations
- IBM **no longer knows** the meaning of "Partner"
 - a'. ?IBM has **stopped knowing** the meaning of "Partner"
 - a". 59 years ago Americans **stopped knowing** how much they earned (www)
 - The boat **is no longer on the river**
 - b'. ?The boat **stopped being on the river**
 - b". The boats **stopped being on the river** in the late 70's when the wier was opened up to try to get rid of the weed that was choking the river.
 - NASA **no longer has a plan** for asteroid deflection
 - c'. ?NASA has **stopped having a plan** for asteroid deflection
 - c". Simultaneously, the "Get Mail" button **stopped having any effect** (www)
 - Mauritania **no longer desires** to work with Ethiopia
 - d'. ?Mauriania **has stopped desiring** to work with Ethiopia
 - d". ...he was more content with what he owned and **stopped desiring** things he couldn't afford (www)

- however, there is another class of stative progressives, which do *not* combine

with aspectual verbs under non-habitual/generic interpretations

- (7) stative progressives which do not combine with aspectual verbs under non-habitual interpretations - www
- a. *I **was standing** in line at the library*
 - a'. *I **stopped standing** in line (habitual reference only)*
 - b. *I **was sitting** at a bar in the St Louis airport*
 - b'. *I **stopped sitting** at the bar (habitual reference only)*
 - c. *One day a fisherman **was lying** on a beautiful beach*
 - c'. *The fisherman **stopped lying** on the beach (habitual reference only)*
 - d. *He **was hanging** head down in a tree*
 - d'. *He **stopped hanging** head down in a tree (habitual reference only)*
 - f. *Someone or something **was restraining** my legs*
 - f'. *It **stopped restraining** my legs (habitual reference only)*
 - h. *She **was holding** a sign with her name written on it*
 - h'. *She **stopped holding** the sign (habitual reference only)*

- (8) stative progressives which do not combine with aspectual verbs at all - www
- a. *The forklift **was supporting** the top I-beam of Frame 2*
 - a'. *?The forklift **stopped supporting** the top I-beam*
 - b. *The box **was containing** his necessary documents*
 - b'. *?The box **stopped containing** his documents*

- unlike statives with coerced activity senses, the verbs/VPs in (7)-(8) are truly stative
- we argue that what licenses the progressive in these expressions is not a lexical-aspectual property, but a **Force-Dynamic** (FD) meaning component in the sense of Talmy 1988
- henceforth, we refer to stative progressives with FD semantics as **FD progressives**
- before laying out our analysis, we review alternative proposals by Dowty 1979, Kearns 1991, and Smith 1991

II. DOWTY'S (1979) PROPOSAL

- Dowty (1979: 173-180) argues that there is a correlation between FD progressives and mobility of the theme/figure

"...the progressive is acceptable with these verbs just to the degree that the subject denotes a movable object, or to be more exact, an object that has recently moved, might be expected to move in the near future, or might possibly have moved in a slightly different situation."
(Dowty 1979: 175)

- (9) FD progressives and mobility (Dowty 1979: 175)
- a. *?Two trees **were standing** in the field*
 - b. *After the forest fire, only two trees **were still standing***

- on this account, stationary themes/figures become acceptable with FD

progressives if it is the observer who moves

(10) FD progressives and observer motion (Dowty 1979: 175)

*When you enter the park through the gate there **will be** a statue **standing** to your right, and a small pond **will be lying** directly in front of you*

- Dowty's proposal: Carlson's (1977) stage-level predicates fall into two subclasses – *momentary stage predicates*, which include locatives and possessives, and *interval statives*, which include FD progressives
- interval statives, like dynamic predicates on Taylor's (1977) account, can only be true of extended intervals and require progressives for evaluation with respect to instants

"Consider again the information that can be gleaned from a single frame of a motion picture film. A frame showing a book on the surface of a table does not really tell us whether the book is remaining stationary on that table or is sliding across the table ... But if my intuitions serve me correctly, I cannot truthfully say *The book is lying (sitting, etc.) on this table* at any time at all as long as the book is in motion. If this distinction is a real one ... then the truth conditions for these verbs do require that the object of which they are predicated remain stationary in over-all position for more than one moment, hence they could plausibly be supposed to be true only at intervals, not moments." (Dowty 1979: 176-177)

- but as Kearns (1991: 116-122) points out, Dowty's extension of Taylor's analysis to state descriptions mixes truth conditions with evidential considerations

"Consider the following cases:

- A. A ball is sitting motionless on a tabletop, and I make a short motion picture of the scene.
- B. A ball rolls across a table top, and I make a motion picture of the event.

Taking any single frame out of film A, I cannot tell whether it is a shot of a moving ball or a stationary ball; nevertheless the fact of the matter is that it is a shot of a stationary ball. Similarly, no single frame of film B allows me to judge whether it is a shot of a stationary ball or a moving ball, but the fact is that it is a shot of a moving ball." (Kearns 1991: 120)

- contrary to Dowty's assumptions, state predicates, including FD statives, appear to have the *subinterval property*

(11) FD statives and the subinterval property

- a. *I stood in line at the library from 8:50 to 9:25*
 \therefore *I stood in line at the library* is true for any subinterval of [8:50,9:25]
- b. *I sat at a bar in the St Louis airport from 8:50 to 9:25*
 \therefore *I sat at a bar in the St Louis airport* is true for any subinterval of [8:50,9:25]
- c. *He hung head down in a tree from 8:50 to 9:25*
 \therefore *He hung head down in a tree* is true for any subinterval of [8:50,9:25]

III. KEARNS' (1991) PROPOSAL

- Kearns (1991: 111-169) proposes that the progressive with stage-level predicates implicates that the state applies only temporarily

(12) FD progressives and the implicature of temporariness (Kearns 1991: 123)

- The statue of Tom Paine **stands/?is standing** at the corner of Kirkland and College*
- New Orleans **lies/*is lying** at the mouth of the Mississippi River*
- The socks **?lie/are lying** under the bed*
- We **live/are living** in London*

- as Kearns acknowledges, one major problem for her proposal is that it incorrectly predicts that locatives and possessives should take the progressive as well

(13) incompatibility of locatives and possessives with the progressive (simple-tense examples from the www)

- The boat **is (*being)** on the river*
- NASA **has/*is having** a plan for asteroid deflection*

- preference for the progressive to express imperfective reference indeed correlates with temporariness/mobility

(14) mobility and preference for the progressive under imperfective aspect

- When last I saw it, the book **was lying/?lay** on Floyd's desk*
- When the phone rang, Sally **was sitting/?sat** at her desk*
- When I was talking to Harriett, her bike **was leaning/?leaned** against a tree*
- When Harry lived in this house, a chestnut tree **was standing/ stood** in the back yard*
- When the World Fare opened in 1926, a statue of Grant **was standing/ stood** in front of town hall*
- When Jill moved to Princeton, a stately mansion **?was standing/ stood** on the hill behind her house*
- When last I checked, New Orleans **?was lying/?lay** at the mouth of the Mississippi River*

- with individual-level uses such (14g), not only the use of the progressive, but imperfective reference itself becomes problematic

- we submit that stage-level applications of FD statives to immobile objects (14d-f)

may be metaphorical and resist the progressive the way Fictive Motion metaphors do (cf. Talmy 1996; Dowty 1979: 175)

(15) Fictive Motion metaphors and the progressive

- a. *The river **flows**/**?is flowing** through the center of town* (Dowty 1979: 175)
- b. *The highway **runs**/**?is running** past the farm* (Dowty 1979: 175)
- c. *The fence **descends** from the plateau to the valley* (Talmy 2000: 138)
- c'. *?The fence **was descending** from the plateau to the valley*
- d. *The field **spreads out** in all directions from the granary* (Talmy 2000: 138)
- d'. *?The field **was spreading out** in all directions from the granary*

IV. SMITH'S (1991) PROPOSAL

- Smith (1991: 173-175) suggests that FD progressives mark a special "resultative imperfective" viewpoint

"English has a resultative imperfective viewpoint which appears with verb constellations of position and location. Sentences with this viewpoint have the same form as progressives... In these sentences the viewpoint focuses an interval that follows a change of state into the position... Given the possibility of an internal or external focus, one can construct sentences that are ambiguous, allowing both the dynamic event and static resultative readings. [16] illustrates:

(16) John was sitting in the chair

On the Accomplishment reading, the sentence presents John in the process of assuming a seated position; on the Stative reading he is already seated. The two readings are due to the fact that imperfective viewpoints may focus on internal or resultant intervals." (Smith 1991: 173-174)

- this analysis accounts for the uses of the progressive with Levin's (1993) **assume-position verbs**
- but it fails to explain why other stative **verbs of spatial configuration** and FD statives without state change senses accept the progressive

(17) "verbs of spatial configuration" (Levin 1993: 255); subset with "assume-position" senses in bold (Levin 1993: 262)

*balance, **bend**, **bow**, **crouch**, dangle, **flop**, fly, **hang**, hover, jut, **kneel**, **lean**, **lie**, loll, loom, lounge, nestle, open, **perch**, **plop**, project, protrude, recline, rest, **rise**, roost, sag, **sit**, slope, **slouch**, **slump**, **sprawl**, **squat**, **stand**, **stoop**, **straddle**, swing, tilt, tower*

(18) progressives with stative verbs of spatial configuration that lack assume-position senses (www)

- a. *The lift kept going, and soon Anthony **was dangling** almost 30 feet above the ground*
 a'. ?*Anthony **stopped dangling** almost 30 feet above the ground*
 b. *Something shiny **was jutting** out of the hollow*
 b'. ?*The shiny object **stopped jutting** out of the hollow*
 c. *One of the deuterium miners had walked over, and **was looming** over Nick's table*
 c'. ?*The deuterium miner **stopped looming** over Nick's table*
 d. *The beam **was resting** on concrete pillars at both ends*
 d'. ?*The beam **stopped resting** on concrete pillars*

(19) progressives of other stative FD predicates

- a. *The forklift **was supporting** the top I-beam of Frame 2*
 a'. ?*The forklift **stopped supporting** the top I-beam of Frame 2*
 b. *Someone or something **was restraining** my legs*
 b'. ?*It **stopped restraining** my legs*
 c. *The box **was containing** his necessary documents*
 c'. ?*The box **stopped containing** his necessary documents*
 d. *She **was holding** a sign with her name written on it*
 d'. ?*She **stopped holding** a sign with her name written on it*

V. A CROSSLINGUISTIC PERSPECTIVE

- another problem for Dowty's and Kearns's (but not necessarily for Smith's) analyses: they incorrectly predict that progressives should universally combine with FD statives
- the weakly grammaticalized German *am*-+-infinitive progressive construction is strictly incompatible with FD statives

(20) FD statives and the German progressive

- a. *Ich **stand** in einer Schlange in der Bibliothek*
 I stood(PRT) in a queue in the library
 'I was standing (lit. stood) in line at the library'
- a'. **Ich **war** in einer Schlange in der Bibliothek **am Stehen***
 I was(PRT) in a queue in the library at the standing
 'I was standing in line at the library'
- b. *Ich **saß** in einer Bar im Flughafen von St Louis*
 I sat(PRT) in a bar in the airport of St Louis
 'I was sitting (lit. sat) at a bar in the St Louis airport'
- b'. **Ich **war** in einer Bar im Flughafen von St Louis **am Sitzen***
 I was(PRT) in a bar in the airport of St Louis at the sitting
 'I was sitting at a bar in the St Louis airport'

c. *Der Gabelstapler **stützte** den Stahlträger*

the forklift	supported(PRT)	the beam	
'The forklift was supporting (lit. supported) the beam'			
c'. *Der Gabelstapler	war	den Stahlträger	am Stützen
the forklift	was(PRT)	the beam	at the supporting
'The forklift was supporting the beam'			
d. Irgendetwas	hielt	meine Beine	zurück
something	held(PRT)	my legs	back
'Something was restraining (lit. restrained) my legs'			
d. *Irgendetwas	war	meine Beine	am Zurück-halten
something	was(PRT)	my legs	at the back-holding
'Something was restraining my legs' ¹			

- in Spanish, *sentar(se)* 'sit', *parar(se)* 'stand', *acostar(se)* 'lie', and *recostar(se)* 'lie/lean' require the resultative construction (*estar* plus participle) for reference to static body positions/spatial configurations
- the progressive (*estar* plus gerund) does not have this interpretation

(21) <u>Spanish assume-position verbs and the progressive (non-progressive examples www)</u>			
a. Un hombre	estaba	sentado	a la puerta de su casa
a man	was(IMPF)	seated(PTC)	at the door of his house
'A man was sitting (lit. seated) at the door of his house'			
a'. Un hombre	(?/se)	estaba	sentando a la puerta de su casa
a man	REFL	was(IMPF)	sitting(GER) at the door of his house
'A man was sitting down at the door of his house' (no stative interpretation)			
b. El caballo blanco del Obispo	estaba	parado	junto a él
the white horse of the Bishop	was(IMPF)	stood(PTC)	together to him
'The Bishop's white horse was standing (lit. stood) next to him'			
b'. El caballo blanco del Obispo	(?/se)	estaba	parando
the white horse of the Bishop	REFL	was(IMPF)	standing(GER)
'The Bishop's white horse was stopping/standing up' (no stative interpretation)			
c. Yo	estaba	acostado	viendo televisión
I	was(IMPF)	laid(PTC)	watching(GER) television
'I was lying (lit. 'laid') watching TV'			
c'. Yo	(?/me)	estaba	acostando viendo televisión
I	REFL	was(IMPF)	lying(GER) watching(GER) television
'I was lying down watching TV' (no stative interpretation)			

- other verbs with FD semantics do admit the progressive with stative

¹ Note, however, that the *am*-+infinitive construction is restricted to intransitive verbs in most dialects anyway.

interpretations, but still prefer the resultative construction in this function

(22) *colgar* 'hang' and the progressive²

- a. *La manzana **está colgando** del tronco*
 the apple is(PRS) hanging(GER) from the trunk
 'The apple is hanging from the branch'
- a'. ?*La manzana **dejó de colgar** del tronco*
 the apple left(PRT) of hang(INF) from the trunk
 'The apple stopped hanging from the branch' (hard to interpret)
- b. *La manzana **está colgada** del tronco*
 the apple is(PRS) hung(PTC) from the trunk
 'The apple is hanging (lit. hung) from the branch' (preferred over a)

(23) *apoyar* 'support' and the progressive

- a. ?*El tronco **está apoyando** en la canasta*
 the trunk is(PRS) supporting(GER) on the basket
 'The stick is leaning (lit. supporting) on the basket'
- b. **La canasta **está apoyando** el tronco*
 the basket is(PRS) supporting(GER) the trunk
 'The basket is supporting the stick'
- c. *El tronco **está apoyado** en la canasta*
 the trunk is(PRS) supported(PTC) on the basket
 'The stick is leaning (lit. supported) on the basket'

VI. THE CASE FOR FORCE DYNAMICS

- we argue that FD progressives are licensed by a sensitivity of the English progressive to FD meaning components in the lexical semantics of the verb
- consider Levin's (1993: 137-138) "verbs of exerting force": dynamic when combined with appropriate Path phrases; (potentially) stative otherwise (e.g., in conative construction)

(24) Levin's (1993: 137-137) verbs of exerting force: compatible with both motion and stasis

- a. *Floyd/the wind **was pushing** the cart into the driveway*
 a'. *Floyd/the wind **was pushing (at)** the cart, but it didn't move*
 b. *The tug boat/the current **was pulling** the tanker into the harbor*
 b'. *The tug boat/the current **was pulling (at)** the tanker, but it didn't move*
 c. *The weight **was pressing** the gravel bed down*
 c'. *The weight **was pressing** the gravel bed against the rock*

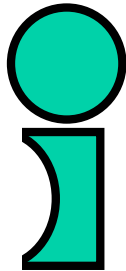
- as the examples show, applicability of the progressive with FD verbs is independent of animacy and volitionality
- Talmy (1988; 2000: ch.7) has proposed that FD semantics can be modeled as

² The (unstarred) examples in 22-23 were kindly provided to us by Valeria Belloro. They stem from a corpus of descriptions of picture stimuli collected in the context of a crosslinguistic project on the lexicalization of (dis)positional concepts. We take this opportunity to gratefully acknowledge Belloro's help with the entire subsection on Spanish.

interactions between two entities: an **agonist** with some inherent tendency towards motion (or some other activity) or rest and an **antagonist** supporting or opposing that tendency

Force entities

Agonist (AGO)



Antagonist (ANT)



Intrinsic force tendencies

toward action



toward rest



Resultant of the force interaction

action



rest



Balance of strength

stronger entity

+

weaker entity

-

Figure 1 Building blocks of FD semantics (after Talmy 2000: 414)

- for example, the FD interaction in (24a') might be modeled as in Figure 2

Floyd/the wind was pushing at the cart, but it didn't move

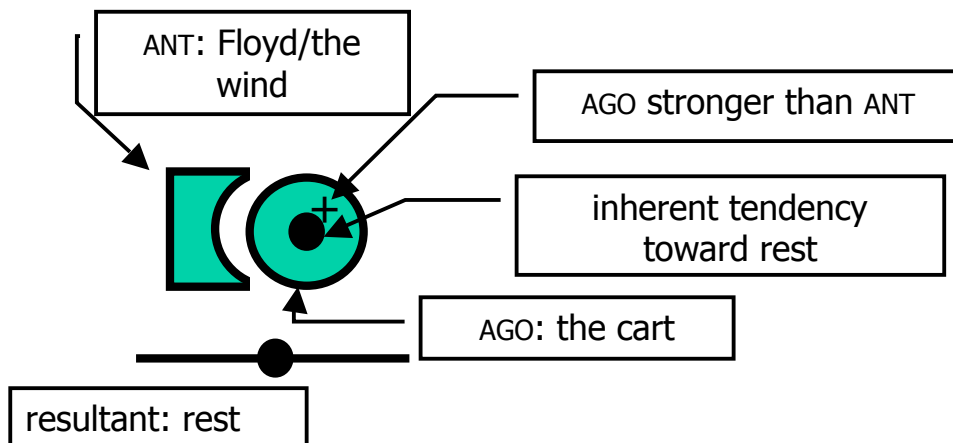


Figure 2 A representation of the FD interaction in (24a') in Talmy's framework

- we assume that with FD verbs of spatial configuration, such as *sit*, *stand*, *lie*, *hang*, and *lean*, the agonist is the figure/theme and the antagonist some entity that neutralizes the pull of gravity by providing support/suspension

- this entity is not linked to an argument of the verb, although it may (but need not) be expressed as a locative ground in a Path phrase (cf. Figure 3)

I was sitting at a bar in the St Louis airport

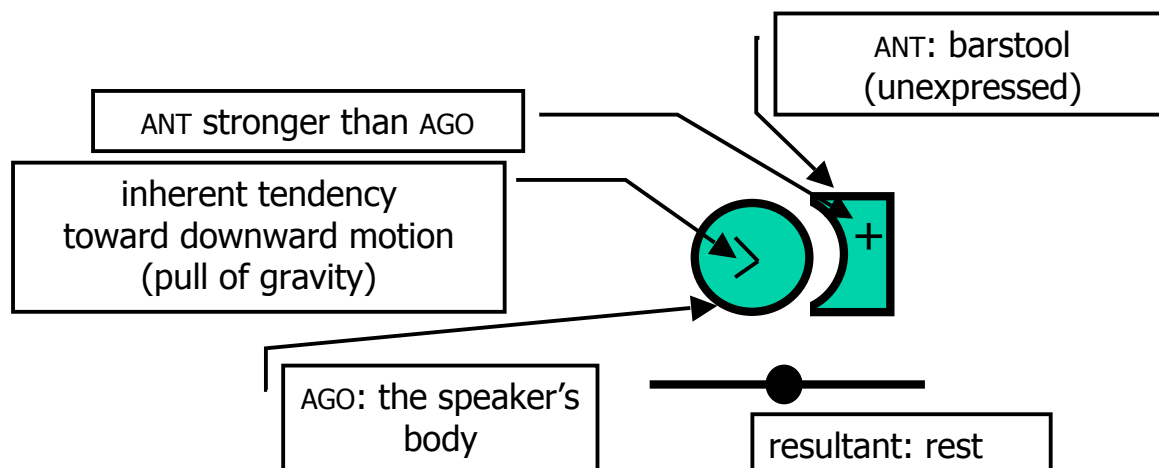


Figure 3 A representation of the FD interaction in (7b) in Talmy's framework

- Jackendoff (1990: 125-151) suggests that FD interactions may be encoded on the "action tier" of Conceptual Structure in terms of the conceptual functions AFF and REACT
- AFF takes ANT as its first and AGO as its second argument; REACT is the converse
- we propose that the semantics of verbs of spatial configuration with FD components (cf. Figure 3) may be modeled in this framework as in (25):

(25) generic formula for the Lexical Conceptual Structure of verbs of spatial configuration with FD semantics in the framework of Jackendoff (1990)

$$\left(\begin{array}{l} \text{CONF} \left(\left[\text{Thing } X \right]_{-A} \right) \\ \text{State REACT}^- \left(\left[\text{Thing } _ \right]_A, \left[\text{Thing } Y \right] \right) \end{array} \right)$$

- the "thematic tier" of such verbs encodes some spatial configuration (CONF; Jackendoff 1990: 91) of the figure/theme X
- on the action tier, X is coindexed with the first argument of REACT, which maps it into the antagonist Y
- the negative coefficient of REACT indicates that AGO's inherent tendency towards motion is successfully blocked by ANT
- only X , the figure/theme = AGO, is "A-marked" for linking in syntax
- our hypothesis: all English verbs that specify an FD interaction on the action tier permit or require the progressive for imperfective reference
- non-coerced stative progressives without FD semantics in a literal sense (e.g., *be sleeping/wearing a sweater*) may be analyzable as metaphorical extensions

VII. DYNAMICITY AND THE SEMANTICS OF THE PROGRESSIVE

- progressives encode imperfective viewpoints

(26) semantics of imperfective aspectual reference – let

P be an event predicate

t_{TOP} range over possible 'topic times' in the sense of Klein 1994 (roughly, the time for which the truth of proposition is evaluated)

e range over events

$\tau(e)$ denote the 'run time' of event e

\subset_T be the partial order relation of proper inclusion among time intervals

$$\boxed{\text{IMPF}(P, e, t_{TOP})} = 1 \leftrightarrow \boxed{e.P(e) \wedge t_{TOP} \subset_T \tau(e)}^3$$

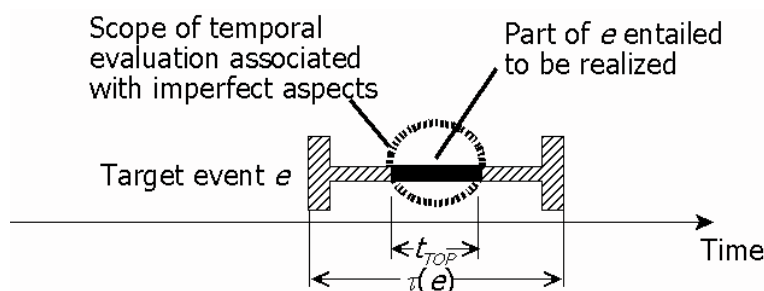


Figure 4 A Kleinian semantics for imperfective viewpoints aspects

- imperfective aspects such as the Russian imperfective or the Spanish *imperfecto* differ from progressives in that they generalize the imperfective viewpoint function to states and to habitual reference

(27) The Spanish *imperfecto* with dynamic-imperfective (a), habitual (b), and stative-imperfective (c) reference (www)

a. Hoy mientras **trabajaba** en mi puesto de trabajo

today while I was working(IMPF) at my place of work

me ha venido a la mente una fecha...

to me has(PRS) come(PTC) to the mind a date

'Today, as I was working at my workplace, a date came to my mind...'

b. En esta época era tejedora y **trabajaba** en mi casa

in this time I was(IMPF) weaver and I worked(IMPF) in my house

'In those days I was a weaver and worked at home'

c. Al arribar al puerto **estaba enfermo**

at the arrival at the port he was(IMPF) sick

'When he arrived at the harbor, he was sick'

- progressive aspects differ from imperfectives in that they require the "root VP" to

³ This ignores the modal aspects of the imperfective. On the modal semantics proposed by Portner 1998 (cf. also Dowty 1979 and Landman 1992), for $\text{IMPF}(P, e, t_{TOP})$ to be true, $\boxed{e.P(e) \wedge t_{TOP} \subset_T \tau(e)}$ is merely required to hold in *inertia worlds*, i.e., worlds which are optimal wrt. a modal base and ordering source in the sense of Kratzer 1977, the former capturing the "set of circumstances relevant to whether e is completed", the latter comprising the "set of propositions which assert that e does not get interrupted" (Portner 1998: 774).

be *dynamic*

- we propose that the “basic” meaning of dynamicity is **change**, which can be modeled as in (28) (cf. Bohnemeyer 2005, based on Kennedy & Levin 2001)

(28) the semantics of change – let

Q be a property predicate

x range over individuals

e range over events

$d \in [0, 1]$ ranges over real numbers that describe the degree to which property Q applies to individual x at a given point in time (the degree of change DoC)

t_{INI} , t_{FIN} denote the lower and upper bound, respectively, of the run time interval $_ (e)$

$$\boxed{\text{CHANGE}(Q, x, e, d) = 1 \leftrightarrow \exists e \exists x. \text{THEME}(e, x) \wedge \text{CHANGE}(Q, x, d)^{t_{INI}} = 0 \wedge \text{CHANGE}(Q, x, d)^{t_{FIN}} = 1}$$

1

- an event e can be characterized as involving change of THEME x in property Q by degree d iff Q applies to x to degree d at the end point t_{FIN} of the event, but not at the beginning t_{INI}
- on our account, all dynamic event descriptions entail a CHANGE in *some* property
- if the theme to which this property applies is expressed, the event description is a state change description (29a); otherwise, it is a process description (29b)

(29) paint with expressed (a) and unexpressed (b) theme

a. Sue **paint_{ed} a picture** (in an hour)

b. Sue **paint_{ed}** (for an hour)

- in some cases, an argument is re-categorized as a THEME by the introduction of a reference point that permits evaluation of the CHANGE – e.g., a “ground” phrase

(30) walk as an activity verb and in change-of-location descriptions

a. Sally **walk_{ed}** on Elmwood Ave (for an hour)

b. Sally **walk_{ed to the Albright Knox Gallery}** (in an hour)

- combining (26) and (28), the semantics of the progressive can be modeled as in (31):⁴

(31) semantics of the progressive

$$\boxed{\text{PROG}(P, e, t_{TOP}) = 1 \leftrightarrow \exists e \exists x. P(e) \wedge t_{TOP} \subset_T \tau(e) \wedge \text{CHANGE}(Q, x, e, d) = 1^5}$$

⁴ Rothstein 2004 proposes an attractive alternative account according to which dynamic event descriptions entail the existence of proper “stages” (Landman 1992, based on Carlson 1977), rather than merely parts, of an eventuality that instantiates the description. However, so far, the notion of “event stages” has resisted proper formalization.

⁵ On a modal account, $P(e)$, $t_{TOP} \subset_T \tau(e)$, and $\text{CHANGE}(Q, x, e, d) = 1$ are only required to hold in inertia worlds. – Formula (31) does not adequately capture the fact that the progressive requires the CHANGE predicate to be encoded by the “root VP”. Furthermore, future research will have to determine how the relation between the event predicate P and the state predicate Q is constrained.

- we propose that CHANGE in (31) may have been metonymically extended to the FD functions AFF and REACT in the English progressive, based on folk physics conceptualizations of the relation between forces and the changes they effect

(32) metonymic extension from CHANGE to FD semantics

CHANGE -> AFF/REACT

- this semantic extension may be interpreted to the effect that the conceptualization of dynamicity itself is broadened from change to force
- we do not at present know when this semantic shift took place⁶
- our hypothesis is that the semantic extension from change to force is particular to the English progressive
- a comparable shift has not happened at all in German, and only to a much lesser extent in Spanish

VIII. A RESIDUAL PROBLEM

- a few stative verbs license the progressive without either coerced activity interpretations or Force Dynamic meaning components in a literal sense

(33) non-FD stative progressives (www)

- a. *I **was sleeping** on the couch and woke to hear a small... explosion*
- a'. *I **stopped sleeping** on the couch* (habitual reference only)
- b. *Like others, the Vice President **was wearing** a hat*
- b'. *The Vice President **stopped wearing** a/the hat* (habitual reference only)
- c. *In 1860, Benino Beltrán **was living** in Tuolumne county*
- c'. *In 1861, Benino Beltrán **stopped living** in Tuolumne county* (habitual only)

- future research will have to show whether these are amenable to analysis as metaphoric extensions of the FD progressive, involving domain mappings from the physical sphere to the biological/social sphere

XI. CONCLUSIONS

- ❖ stative progressives can be classified into at least two subtypes: progressives of statives with coerced activity senses and Force Dynamic (FD) progressives
- ❖ incompatibility with aspectual verbs under non-habitual/non-iterative interpretations suggests that the root VPs in FD progressives are truly stative
- ❖ FD progressives are characterized by the encoding of FD interactions on the action tier of the verb root
- ❖ the "normal" dynamicity requirement of the progressive can be characterized in terms of an entailment of Change
- ❖ the root VP encodes a state change description in case the theme entailed to

⁶ Examples of the FD progressive can be found in Early Modern English, e.g., in Shakespeare and Samuel Pepys' Diary; but they are quite rare, and the particular verbs are more frequently found in simple-tense forms under imperfective reference. However, given the particularities of the genres, it is difficult to generalize on the basis of this evidence.

undergo change is overtly expressed; otherwise the root VP encodes a process description

- ❖ FD progressives metonymically extend the interpretation of dynamicity from Change to Force Dynamics
- ❖ this semantic transfer is language-specific – it has occurred in the English progressive, but is not found in the German progressive and only to a minor extent in the Spanish progressive

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