A typology of modal, aspectual operators

Modality as a window to cognition
ICL 19, Geneva
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Progressive interpretation with the suffix -yva

(1) О, будьте уверены, что Колумб был счастлив не тогда, когда он открывал Америку, а когда он открывал её.

‘Oh, rest assured that Columbus was happy not when he discovered America, but while he was discovering it’ (Dostoevskij, *Idiot*; quoted by Vinogradov 1972 and cited in Rassudova 1984, 15).
**Russian suffix -yva**

**Completive interpretation with -yva**

(2)  *Da, ja otrkr-yva-l okno.*

Yes I **open-yva-PST** window

‘Yes, I (have) opened the window.’
Hindi suffix -yaa

Complevtive interpretation with –yaa
  ◦ Singh 1991, 1998; Arunachalam & Kothari 2010

(3) `maayaa-ne biskuT-ko khaa-yaa`  
  Maya-ERG cookie-ACC eat-yaa
  ‘Maya ate the cookie (in its entirety)’
Hindi suffix -yaa

Completeive and non-completeive interpretation with –yaa

- Singh 1991, 1998; Arunachalam & Kothari 2010

(3) *maayaa-ne biskuT-ko khaa-yaa*
Maya-ERG cookie-ACC eat-yaa
‘Maya ate the cookie (in its entirety)’

(4) *maayaa-ne biskuT-ko khaa-yaa*
Maya-ERG cookie-ACC eat-yaa
par use puuraa nahiin khaa-yaa
but it-ACC finish not eat-yaa
‘Maya was eating the cookie but not completely.’
Achievements

Compleitive inference is an entailment with achievements.

(5) *mere pitaajii hamaare ghar aa-ye*
    my father our house come-ye
    ‘My father came to our house.

#lekin hamaaraa ghar nabiiN DhoonD sake
    but our house not find could
    but was unable to find our house’ (Rajesh Bhatt, p.c.)

- Many other examples of achievements in Singh 1998
- e.g. *res jiitii* (‘win the race’); *pyaalaa toR* (‘break a cup’)

The puzzle

- Compleitive/non-compleitive readings
- Sensitive to achievement/non-achievement distinction

- yva (Russian): ‘imperfective’ according to all grammarians
- yaa (Hindi): ‘perfective’ according to all grammarians

“...there is no such thing as the meaning of the [Russian] imperfective; this ‘aspect’ is really a non-aspect” (Paslawska & von Stechow 2003: 336).
Hypothesis: In addition to the traditional distinction between the perfective and the imperfective—there is an aspectual class called neutral aspect.

Neutral aspect has a meaning that generalizes across (at least) the perfective and the imperfective and for whatever reason is sensitive to the achievement/non-achievement distinction.

Some version of this idea has played a vital role in many analyses:

Perfective aspect

(16a) Yesterday afternoon, John built a tree house in my backyard.

The perfective aspect portrays a situation: “from [the] outside” (Comrie 1976, 4).

PERFECTIVE: $\lambda P \lambda t \exists e[\tau(e) \subseteq t \land P(e)]$

Imperfective aspect

(16b) Yesterday afternoon, John was building a tree house in my backyard.

The imperfective aspect portrays a situation: “from [the] inside” (Comrie 1976, 4).

IMPERFECTIVE: \( \lambda P \lambda t \exists e [t \subseteq \tau(e) \land P(e)]\)

**Neutral Aspect**

**Hypothesis**
The neutral aspect is neutral with respect to whether a situation is presented from the inside or outside

**NEUTRAL:** $\lambda P \lambda t \exists e[t \bigcirc \tau(e) \land P(e)]$

(e.g. Smith 1994, Klein 1995, Grønn 2003)
Quantification over Events

- IMPERFECTIVE: $\lambda P \lambda t \exists e[t \subseteq \tau(e) \land P(e)]$
- NEUTRAL: $\lambda P \lambda t \exists e[\tau(e) \circlearrowleft t \land P(e)]$
Quantification over Events

- IMPERFECTIVE: $\lambda P \lambda t \exists e[t \subseteq \tau(e) \land P(e)]$
- NEUTRAL: $\lambda P \lambda t \exists e[\tau(e) \bigcirc t \land P(e)]$

“To implement this modal element, one could replace the imperfective condition $e \bigcirc t$ with a disjunction $t \subseteq e \lor e \subseteq t$. The modality could then be smuggled into the first disjunct’ (Grønn 2003, 58).”
Research Program

- Get the modality right: what does it mean to be an event-part?
  - Distinguish two ways that an event terminates relative to a particular description (cf. Krifka 1989):
    1. An event that culminated
    2. An event that ceased to develop further

- Get the discourse properties right: how is the described event-part related to the reference time.
  - Cf. Altshuler 2012, forthcoming
Claims of the talk

- There are perfective and imperfective forms that describe an event’s culmination; this depends on whether they require proper event stages in the extension of the VP that they combine with.

- Telicity is independent of (im)perfectivity

- The possibility of a form being telic has consequences for available coercion strategies with a particular aspectual form.
Hypothesis about (im)perfectivity

- A form is *perfective* if it requires a *maximal stage* of an event in the extension of the VP that it combines with.
- A form is *imperfective* if it requires a *stage* of an event in the extension of the VP that it combines with, but this stage need NOT be maximal.

Events can be ordered by a ‘part-of’ relation and a ‘stage-of’ relation.

To be a stage $s$ of an event $e$, $s$ has to be big enough part of $e$ and share enough with $e$ so that we can call $s$ a less developed version of $e$ (Landman 1992: 23; see also Landman 2007).

PROG is a function from a set of events $E$ to a set of stages of events in $E$.

A progressive sentence is true if a stage of an event in $E$ develops into an event in $E$ according to a particular recipe.
Explaining culmination entailment in Russian and Hindi

(a) Achievement VPs denote a set of events with no proper parts; non-achievement VPs denote a set of events with proper parts.

(b) Russian and Hindi have operators, IPF_{RUSS} and PFV_{HINDI} which combine with VP meanings and return a set of VP-event stages
   • Cf. Singh 1998 for Hindi PFV

(c) When combining with achievement VP, IPF_{RUSS} and PFV_{HINDI} lead to a culmination entailment because the only event-stage that could satisfy its truth-conditions is the VP-event.
A Landman-Type-Analysis

\[(7) \quad \text{IPF}_{\text{RUSS/PVF}} \overset{\sim}{\Rightarrow} \lambda P \lambda e' \exists e \exists w \left[ \text{STAGE}^*(e', e, w^*, w, P) \right] \]

\[
\left[ \left[ \text{STAGE}^*(e', e, w^*, w, P) \right] \right]^{\mathcal{M}} \cdot g = 1 \iff \text{(i)-(iv) holds:} \\
\text{(i) the history of } g(w) \text{ is the same as the history of } g(w^*) \text{ up to and including } \tau(g(e')) \\
\text{(ii) } g(w) \text{ is a reasonable option for } g(e') \text{ in } g(w^*) \\
\text{(iii) } \left[ [P] \right]^{\mathcal{M}} \cdot g(e, w) = 1 \\
\text{(iv) } g(e') \sqsubseteq g(e) \]
PROG does not give rise to the culmination entailment with achievement VPs; PROG of an achievement VP leads to coercion (Moens & Steedman 1988; de Swart 1998; 2000, Rothstein 2004).

- *John was arriving*, does not entail that John arrived

How do we account for the difference between $\text{IPF}_{\text{RUSS}}$ and $\text{PFV}_{\text{SV}}$ on the one hand, and PROG on the other?
Coercion with PROG

(a) Achievement VPs denote a set of events with no proper parts; Non-achievement VPs denote a set of events with proper parts.

(b) English has an operator, PROG, which combines with VP meanings and returns a set of VP-event stages.

(c) When PROG combines with an achievement VP, there is coercion because the truth-conditions of PROG require proper VP-event-stages.
   - e.g. insertion of a coercion operator in the sense of de Swart 1998; 2000
   - or a type shifting rule viz. Rothstein 2004
A Landman-Type-Analysis

(8) \[ \text{PROG} \mapsto \lambda P \lambda e' \exists e \exists w \ [\text{STAGE}(e', e, w^*, w, P)] \]

\[ [[\text{STAGE}(e', e, w^*, w, P)]]^M, g = 1 \text{ iff (i)-(iv) holds:} \]

(i) the history of \( g(w) \) is the same as the history of \( g(w^*) \) up to and including \( \tau(g(e')) \)

(ii) \( g(w) \) is a reasonable option for \( g(e') \) in \( g(w^*) \)

(iii) \[ [[P]]^M, g(e, w) = 1 \]

(iv) \( g(e') \sqsubseteq g(e) \)
Questions

Question 1: What the difference between $\text{IPF}_{\text{RUSS}}$ and $\text{PFV}_{\text{SV}}$?

Question 2: How do we account for the cancelable culmination inference often associated with $\text{IPF}_{\text{RUSS}}$ and $\text{PFV}_{\text{SV}}$?

Question 3: How does the described event relate to the time provided by the tense?
A TELLING CONTRAST

(9)  
Ja e-l  tort
I eat.IPF-PST.1S cake
no  ego ne  s’e-l
but it  not PFV-eat-PST.1S
‘I ate cake, but did not finish it.’

(10)  
Ja e-l  tort
I eat.IPF-PST.1S cake
i  sejčas prodolžaju ego est’.
and now  continue  it  eat.INF
‘I was eating the cake and I am currently still eating it.’
A TELLING CONTRAST

(11) *maayaa-ne biskuT-ko khaa-yaa*
Maya-ERG cookie-ACC eat-PFV
par use puuraa nahiin khaa-yaa
but it-ACC finish not eat-PFV
‘Maya ate the cookie, but did not finish it’ (Arunachalam & Kothari 2010: 1).

(12) *#maayaa-ne biskuT-ko khaa-yaa*
Maya-ERG cookie-ACC eat-PFV
aur use ab-tak khaa rahii hai
and it still eat PROG be.PRS
Intended: ‘Maya was eating the cookie, and is still eating it’
Perfectivity as requiring a maximal event stage

Hypothesis

Perf ective operators require maximal events stages

- Cf. Koenig & Muansuwan’s (2000) analysis of Thai perfective
Maximal Stage Requirement

Given an event $f$ that was instantiated in the world of evaluation $w$ and which warrants the assertion by a perfective sentence $S$, there is no event in $w$ that is a more developed version of $f$ that fits the description provided by $S$

If $g$ or $h$ were instantiated in $w$, then $S$ would be false because $g$ and $h$ are more developed than $f$

This means that $S$ is true if either $f$ culminated or ceased to develop in $w$
**EXTENDING THE ANALYSIS**

(13) \( PFV_{HINDI} \leadsto \lambda P \lambda e' \exists e \exists w \, [\text{MAXSTAGE}(e', e, w^*, w, P)] \)

\([\text{MAXSTAGE}(e', e, w^*, w, P)]^M, g = 1 \) iff (i)-(v) holds:

(i) the history of \( g(w) \) is the same as the history of \( g(w^*) \) up to and including \( \tau(g(e')) \)

(ii) \( g(w) \) is a reasonable option for \( g(e') \) in \( g(w^*) \)

(iii) \( [[P]]^M, g(e, w) = 1 \)

(iv) \( g(e') \sqsubseteq g(e) \)

(v) \( \forall e''[(g(e') \sqsubseteq e'' \land e'' \sqsubseteq g(e)) \rightarrow [[P]]^M, g(e'', w^*) = 0] \) (Maximal Stage Requirement)
Perfectivity

A form is *perfective* if it satisfies the Maximal Stage requirement
PFV in Russian

(14) Maja погуляла в парке десять минут.
Maya PFV.walked in park ten minutes
‘Maya walked in the park for ten minutes.’

(15) Maja села торт (#no не до конца).
Maya PFV.ate cake but not until end
‘Maya ate up the cake (#but not completely).’

- Both (14) and (15) satisfy the Maximal Stage requirement because they deny any further development relative to an event description.

- VP in (17) is cumulative; (18) entails an event’s culmination
Hypothesis about (im)perfectivity

- A form is *perfective* if it requires a *maximal stage* of an event in the extension of the VP that it combines with.
- A form is *imperfective* if it requires a *stage* of an event in the extension of the VP that it combines with, but this stage need NOT be maximal.

- No need for neutral aspect
**Summary**

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<tr>
<th>Partitive OP</th>
<th>Proper stage?</th>
<th>Maximal stage?</th>
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<tbody>
<tr>
<td>PFV\textsubscript{HINDI}</td>
<td>NO</td>
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<tr>
<td>IPF\textsubscript{RUSS}</td>
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<td>NO</td>
</tr>
<tr>
<td>PROG</td>
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<td>NO</td>
</tr>
<tr>
<td>???</td>
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- cf. ‘to stop arriving’
# Adding Habituality

<table>
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<th>Partitive OP</th>
<th>Proper stage?</th>
<th>Singular events?</th>
<th>Maximal stage?</th>
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<td>SVPFV</td>
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Ongoing research

- Cross linguistic work on the semantics of the perfective and imperfective
- Extending the analysis to incorporate discourse semantics (“relating an event stage to a topical time”)
- Capturing temporal implicatures generated by the Russian imperfective and partitive perfective operators.