Linguistics 661, Issues in Semantics
Alexander Williams, 3 May 2007
Telicity and incremental themes

1 Krifka 1989/1992

1.1 Overview

• Krifka’s three main claims:

1. The distinction between telic and atelic event-descriptions is (quite nearly) the same thing as the distinction between **cumulative** and **quantized** predicates.

   (1) **Cumulativity (informal)**
   \( P \) is cumulative iff, whenever \( x \) and \( y \) both have \( P \), then so does the collection of \( x \) and \( y \).

   (2) **Quantization (informal)**
   \( P \) is quantized iff, whenever \( x \) has \( P \), it has no proper parts that also have \( P \).

2. For some verbs, whether the predicate they head is telic or atelic depends on the referential properties of a certain argument noun phrase, \( \alpha \).

   (3) a. John drank (a glass of) wine (in) for 10 minutes.
   b. John saw (five) zebras (*in) for an hour.

According to Krifka, the referential properties of the \( \alpha \) argument which determine telicity for such predicates are, again, **cumulativity** and **quantization**.

3. What distinguishes the predicates where telicity depends on the referential properties of the argument, concludes Krifka, is the **thematic relation** they involve.

   Specifically, these predicates go with a thematic relation that is **homomorphic** with respect to certain mereological properties, namely cumulativity and quantization.

So in sum: given a thematic relation that is Cum/Qua-homomorphic, the event-description will be cumulative—hence atelic—when \( \alpha \) is cumulative, and will be quantized—hence telic—when \( \alpha \) is quantized.
A classic (re)statement of the basic idea from Dowty 1991 (567):

The proposal is that the familiar way in which the aspect of telic predicates (or accomplishments and achievements) depends on their NP arguments . . . can be captured formally by the principle that the meaning of a telic predicate is a homomorphism from its (structured) Theme argument denotations into a (structured) domain of events. . . . [A] homomorphism is a function, from its domain to its range, which preserves some structural relation defined on its domain in a similar relation defined on the range. . . . In the case of telic predicates, this relation which is preserved is the ‘part-of’ relation: If $x$ is part of $y$, then if a telic predicate maps $y$ (as Theme) onto event $e$, it must map $x$ onto an event $e'$ onto an event $e'$ which is part of $e$.

Dowty introduces the term “incremental theme” for arguments whose part-whole structure is related homomorphically to the part-whole structure of the event.

1.2 The theory in more detail

1.2.1 The structure of the domain

- Ontology: Objects $\mathcal{O}$, Events $\mathcal{E}$, and Times $\mathcal{T}$.

- Structure: All are structured as a complete join semi-lattice without a bottom element.

(4) a. Only like things can be joined.
$$\forall x \forall y \forall z [(x \sqcup y = z) \rightarrow [\mathcal{O}(x) \land \mathcal{O}(x) \land \mathcal{O}(x)] \lor [\mathcal{E}(x) \land \mathcal{E}(x) \land \mathcal{E}(x)] \lor [\mathcal{T}(x) \land \mathcal{T}(x) \land \mathcal{T}(x)]]$$

b. For any two things, there is a join of them.
$$\forall x \forall y \exists z [(x \sqcup y) = z]$$

c. A thing joined with itself is itself.
$$\forall x [x \sqcup x = x]$$

d. One thing is a part of another, just if their join is equal to the latter.
$$\forall x \forall y [x \subseteq y \iff x \sqcup y = y]$$

e. One thing is a proper part of another, just if their join is equal to the latter, and they are not identical.
$$\forall x \forall y [x \subseteq y \iff x \sqcup y = y \land x \neq y]$$

f. Two things overlap just if there is something that is a part of both.
$$\forall x \forall y [x \circ y \iff \exists z [z \subseteq x \land z \subseteq y]]$$
1.2.2 Properties of predicates

(5) Singular reference (SING):
$P$ is singular iff exactly one thing is $P$
\[\forall P [\text{SING}(P) \iff \exists x [P(x) \land \forall y [P(y) \rightarrow x = y]]]\]

(6) a. Cumulative reference (CUM):
$P$ is cumulative iff, when $x$ and $y$ are both $P$, then so is their join
\[\forall P [\text{CUM}(P) \iff \forall x \forall y [P(x) \land P(y) \rightarrow P(x \sqcup y)]]\]
b. Strictly cumulative reference (SCUM):
$P$ is strictly cumulative iff it is cumulative and not singular.
\[\forall P [\text{SCUM}(P) \iff \text{CUM}(P) \land \neg \text{SING}(P)]\]

(7) a. Quantized (QUA):
$P$ is quantized iff the $P$ things are never proper parts of each other.
\[\forall P [\text{QUA}(P) \iff \forall x \forall y [P(x) \land P(y) \rightarrow y \not\sqsubseteq x]]\]
b. Strictly quantized (SQUA):
$P$ is strictly quantized iff $P$ is quantized, and every $P$ thing has a proper part.
\[\forall P [\text{SQUA}(P) \iff \text{QUA}(P) \land \forall x [P(x) \rightarrow \exists y [y \sqsubseteq x]]]\]

(8) a. Atom (ATOM):
x is an atom in $P$ iff it has no parts that are also in $P$.
\[\forall x \forall P [\text{ATOM}(x, P) \iff P(x) \land \neg \exists y [y \sqsubseteq x \land P(y)]]\]
b. Atomic reference (ATM):
If $P$ has atomic reference, then everything in $P$ has a part that’s atomic.
\[\forall P [\text{ATM}(P) \rightarrow \forall x [P(x) \rightarrow \exists y [y \sqsubseteq x \land \text{ATOM}(y, P)]]]\]

1.2.3 Terminal points

- The temporal trace function:

(9) Temporal trace:
The temporal trace function maps an event to its run time; and it is a homomorphism with respect to the join operation:
\[\forall e \forall e' [\tau(e) \sqcup \tau(e') = \tau(e \sqcup e')]\]

- “The notion of a ‘set terminal point’ cannot be defined for bare events or ‘event tokens,’ but only for events with respect to a certain description, event predicates, or ‘event types.’” [35]
Terminal point:
Time \( t \) is the terminal point of \( e \) just iff it is the latest time in the run-time \( e \).

\[ \forall e \forall t [\text{TP}(e) = t \iff T_a(t) \land (t \subseteq \tau(e)) \land \forall t'[t' \subseteq \tau(e) \rightarrow t' \leq t]] \]

Set terminal point:
\( P \) describes events with a **set terminal point** iff, whenever a \( P \) event has a \( P \) part, the two events end at the same time.

\[ \text{STP}(P) \iff \forall e [P(e) \rightarrow \forall e'[P(e') \land e' \subseteq e \rightarrow \text{TP}(e) = \text{TP}(e')]] \]

- Cumulative predicates (at least those that include events with different terminal points) cannot have set terminal points:

  “Assume an event predicate with \( \text{CUM}(P) \) and [it applies two at least two different events that end at different times]. Then there are two events with different times. Assume one ends before the other. Because \( P \) is cumulative, it follows that \( P \) holds of their join. The terminal point of the join-event is not the same as the terminal points of the component events. And so \( \neg \text{STP}(P) \).”

- Quantized predicates are trivially STP, because they never have parts that fall under the same predicate.

- However, there will be things with STP that are not quantized: if you walk to the station, there are many subparts that are also walkings to the station.\(^1\)

- In any case, Krifka proceeds under the convenient pretense that the quantized/cumulative distinction is an adequate reconstruction of the set/unset terminal point distinction.

### 1.2.4 Krifka’s compositional semantics

- Krifka assumes, rather oddly, that determiners denote thematic relations, different ones in different positions. He does this in order to avoid have structural meaning.

\[(12) \quad \text{a. For subjects of certain verbs:} \]

\[ [\text{a(n)}] = \lambda Q \lambda P \exists x [P(e) \land \text{Agent}(e) = x \land Q(e)] \]

\(^1\)Question: Is it just a fact that a walk to the station *is* the sum of all its component walks to the station? Somehow this strikes me as odd.
b. For objects of certain verbs:
\[
\lambda Q \lambda P \exists x [P(e) \land \text{Patient}(e) = x \land Q(e)]
\]
c. For objects of certain prepositions:
\[
\lambda Q \lambda R \lambda P \exists x [P(e) \land R(e) = x \land Q(e)]
\]
d. Etc.

- In the end you get a predicate of events that is existentially closed, by default.

### 1.3 Homomorphic thematic relations

- Suppose you drink wine. Then for each part of the wine, there is a part of the wine-drinking event that is itself a wine-drinking event.

- In contrast, if you drink a glass of wine, the glass of wine has no glass-of-wine parts; and hence the drinking event cannot have parts corresponding to them.

- For certain thematic relations—mainly the **gradual** ones—a quantized nominal predicate leads to a quantized VP meaning, and a cumulative nominal predicate leads to a cumulative VP meaning.

A **gradual** thematic relation is one that has three properties: uniqueness of objects, mapping to objects, and mapping to events.

(13) Summativity:
A 2-place relation \( R \) is **summative** iff, when it holds for \((a, c)\) and \((b, d)\), it also holds for \((a \sqcup b, c \sqcup d)\).

\[
\forall R[\text{SUM}(R) \iff \forall e \forall e' \forall x \forall x' [R(e, x) \land R(e', x') \implies R(e \sqcup e', x \sqcup x')]]
\]

(14) Uniqueness of objects:
A function from events to objects.

\[
\forall R[\text{UNIO}(R) \iff \forall e \forall x \forall x' [R(e, x) \land R(e, x') \implies x = x']]
\]

(15) Uniqueness of events:
A function from objects to events.

\[
\forall R[\text{UNIE}(R) \iff \forall e \forall e' \forall x [R(e, x) \land R(e', x) \implies e = e']]
\]

(16) Mapping to objects:
If \( R(e, x) \), then for any part of \( e, e' \), there is a part of \( x, x' \), such that \( R(e', x') \).

\[
\forall R[\text{MAPO}(R) \iff \forall e \forall e' \forall x [R(e, x) \land e' \sqsubseteq e \implies \exists x' [x' \sqsubseteq x \land R(e, x')]]]
\]
(17) Mapping to events:
If $R(e, x)$, then for any part of $x$, $x'$, there is a part of $e$, $e'$, such that $R(e', x')$.

$$\forall R[\text{MAPE}(R) \iff \forall e \forall x \forall x'[R(e, x) \land x' \sqsubseteq x \rightarrow \exists e'[e' \sqsubseteq e \land R(e', x')]]]$$

(18) Graduality:
$R$ has **graduality** iff it shows uniqueness of objects, mapping to objects, and mapping to events.

$$\forall P[\text{GRAD}(P) \iff \text{UNIO}(P) \land \text{MAPO}(P) \land \text{MAPE}(P)]$$

<table>
<thead>
<tr>
<th>Summativity</th>
<th>Graduality</th>
<th>Uniquess of events</th>
<th>Role label</th>
</tr>
</thead>
<tbody>
<tr>
<td>write a letter</td>
<td>x</td>
<td>x</td>
<td>×</td>
</tr>
<tr>
<td>eat an apple</td>
<td>x</td>
<td>x</td>
<td>×</td>
</tr>
<tr>
<td>read a letter</td>
<td>x</td>
<td>x</td>
<td>–</td>
</tr>
<tr>
<td>touch a cat</td>
<td>x</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>see a horse</td>
<td>x</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

1.4 Some problems for Krifka

1.4.1 Cumulativity and event plurality

• In defining cumulativity, Krifka is careful to distinguish singular from plural predicates in the nominal domain:

(19) a. i. $\llbracket \text{an apple} \rrbracket (a)$
    ii. $\llbracket \text{an apple} \rrbracket (b)$
    b. $\nRightarrow \llbracket \text{an apple} \rrbracket (a \sqcup b)$

He is less careful in the verbal domain, and the oversights are important.

• Krifka says that two runnings sum to make a running:

(20) a. i. $\llbracket \text{ran} \rrbracket (e_1)$
    ii. $\llbracket \text{ran} \rrbracket (e_2)$
    b. $\nRightarrow \llbracket \text{ran} \rrbracket (e_1 \sqcup e_2)$

And he says that two runnings of a mile do not:
(21) a. i. \([\text{ran a mile}] (e_1)\)
    ii. \([\text{ran a mile}] (e_2)\)
    b. \(\not\Rightarrow [\text{ran a mile}] (e_1 \sqcup e_2)\)

But for this to make sense, several more things need to be said.

- Suppose that \([\text{ran}] (e_1)\) and \([\text{ran}] (e_2)\), but the runner is Al in \(e_1\), and Bob in \(e_2\). Is it true that \([\text{ran}] (e_1 \sqcup e_2)\)?

Not if verbs are like nouns in having a singular/plural distinction. Then we need to distinguish singular \text{ran} from plural \text{ran}.

(22) a. i. Al ran\(_{sg}\).
    ii. Bob ran\(_{sg}\).
    b. \(\Rightarrow\) Al and Bob ran\(_{pl}\)
    c. \(\not\Rightarrow\) Al and Bob ran\(_{sg}\).

But in that case, singular \text{ran} would not be cumulative simpliciter, contra Krifka.

- Suppose Al ran a mile, and Bill ran a mile. Then can we say that Al and Bill ran a mile? – Of course we can.

Suppose Al ran a mile twice. Then can we say, of his two runnings together, that he ran a mile? – Well, if he ran two miles, then he ran one mile.

So why isn’t “\text{ran a mile}” cumulative, contra Krifka?

If we make a singular/plural distinction, and further interpret “\text{ran a mile}” as ‘ran exactly one mile,’ then we can say that singular “\text{ran a mile}” is not cumulative.

But even then, we still have not distinguished “\text{ran}” from “\text{ran a mile}” in terms of cumulativity, since we just observed that the sum of two singular runnings may not itself be a singular running.

- To distinguish “\text{ran}” from “\text{ran a mile},” we may need to say something like this:

  – Sometimes two singular runnings can sum to become a single running.

  – Two singular runnings of a mile cannot sum to become a single running of mile; they will always sum to be a plural running a mile.
But can any two runnings sum to a single running?

- If the two runnings have the same runner, and are temporally contiguous, we do not hesitate to think of their collection as a single running.
- But otherwise, we might hesitate.

• So in conclusion, to maintain Krifka’s analysis, it may be necessary to do two things:

1. Distinguish between predicates that apply to singular individuals and predicates that apply to plural individuals.

2. Place substantive conditions on when two instances of an event-type can be combined to form a distinct singular instance of that type.

1.4.2 Quantization and minimal events

• Suppose that Al has OCD, and he crosses Main Street by crossing it 5 times. Then his crossing of Main Street has several parts that are also crossings of Main Street.

But “cross Main Street” is telic:

(23) Today Al crossed Main Street in 45 seconds.

• Notice, this problem cannot be solved by saying that an event can be described by a quantized predicate \( P \) only if it has no \( P \)-parts that end before its terminal point.

• We might deny that Al’s 45 second street-crossing is a single event of Main St.-crossing, or that it is not a minimal event of Main St.-crossing.

But even if we do that, the (plural) predicate “cross Main Street” would still be non-quantized, since it can apply equally to an event and to its parts.

• So how should the definitions be changed?
1.4.3 Is Cum/Qua the right distinction among NPs?

• Is it empirically correct that the relevant contrast in noun phrase meanings is between cumulative and quantized reference? Perhaps not:

1. Nonbare plural indefinites, like “at least n Ns,” are in general cumulative.

(24)  
   a. i. These$_x$ are at least two apples.
   ii. These$_y$ are at least two apples.
   b. ⇒ These$_{x\sqcup y}$ are at least two apples.

But such noun phrases, when identifying the theme of an accomplishment predicate, lead to a telic predicate:

(25)   Al ate at least two apples in one minute.

2. There are many singular indefinites that are not quantized.

(26) In all of the following cases, anything that can be described by the NP may (or must) itself have one or more parts that can described the same way.

   a. a quantity of N
   b. a sequence of N
   c. a line

And yet such noun phrases, when identifying the theme of an accomplishment predicate, may nevertheless lead to a telic predicate:

(27)  
   a. Al drank a quantity of beer in 5 seconds.
   b. Al enumerated a sequence of numerals in 30 seconds.
   c. Al drew a line in less than a second.

1.4.4 Telicity is not just about parts

• Telicity is not always about an incremental correspondence between parts of the theme and parts of the event.

1. For example, each part of a house-building is not necessarily reflected by a particular part of the house (Krifka 1992:45).

---

2See Rothstein 2004, Structuring events.
3See for example Zucchi and White 2001, Linguistics and Philosophy.
(28) Al built the house.

Maybe it’s true that everything you do when building a house leads to the house becoming a little more ‘built.’ But the units of ‘buitedness’ are not necessarily individual parts of the house itself.

2. Or, even more obviously, each part of a shoe-blackening is not necessarily in correspondence with a part of the shoe.

(29) Al blackened his shoe.

3. So cases of incremental correspondence between telic events and their themes need to be described in more general terms:4
   - Parts of the event relate to the development of some property of the theme.

   (30) a. Al blackened his shoe.
       (How black the shoe is.)
   b. Al pushed the perambulator across the park.
       (How far across the park the perambulator is.)
   c. Al drank five liters of beer.
       (How much beer has gone down the hatch.)

Only in some special cases is the relevant property the (dis)appearance of a part of the theme.

1.4.5 Why have thematic relations do the work?

   • For Krifka, the difference in telicity between activity and accomplishment verbs is that the latter select CumQua-homomorphic thematic relations, while the former don’t.

   • But why should this be? What is the relation between the “temporal constitution” of an event-description and the selection of a type of thematic relation? It can hardly be accidental!

   • Once we make clear that some event-predicates describe events of change (e.g. blacken, eat) and some don’t (e.g. see), for example, will it be necessary to make a further distinction in what sorts of thematic relations they occur with? Won’t it be enough to say that, while both blacken and see occur with a theme relation, blackenings involve a change in their theme, but seeings do not.

---

4Compare Krifka’s comments on peel an apple, 1992:45
• Responding to apparently telic sentences like “John saw three gazelles in 5 minutes,” Krifka says:

‘The fact that the object roles of verbs like see sometimes have the same mapping properties as the object roles of verbs like eat indicates that the properties we have discussed so far are not ‘hard-wired’ in the thematic relations, but follow from other knowledge sources. Consequently, we should assume that even the object role of verbs like eat does not exhibit graduality as some grammatical feature, but simply because the normal way of eating enforces the graduality properties.”

So then—to repeat—why bother distinguishing between homomorphic and nonhomomorphic thematic relations?

• Besides its conceptual attractiveness, this change would of course also simplify the grammar, eliminating the mechanisms needed to select special thematic relations.

2 Hay, Kennedy, Levin

2.1 The variable telicity of degree achievements

• Degree achievements:
  
  lengthen, straighten, cool, dry, . . .

• Telicity tests show both a telic and an atelic interpretation:

\begin{align*}
\text{(31)} & \quad \text{a. i. It cooled for hours.} \\
& \qquad \text{ii. It cooled in five minutes.} \\
& \text{b. i. It is cooling.} \\
& \qquad \text{ii. } \Rightarrow \text{It has cooled.} \\
& \text{c. It almost cooled.} \\
& \quad \text{HKL: ambiguous (?)}
\end{align*}

\begin{align*}
\text{(32)} & \quad \text{a. i. It lengthened for hours.} \\
& \qquad \text{ii. It lengthened in five minutes.} \\
& \text{b. i. It is lengthening.} \\
& \qquad \text{ii. } \Rightarrow \text{It has lengthened.} \\
& \text{c. It almost lengthened.} \\
& \quad \text{HKL: ambiguous (?)}
\end{align*}
• For some DAs, there is a preference for telic interpretations only.

(33)  
  a.  
    i.  ? It straightened for hours.
    ii. It straightened in five minutes.
  b.  
    i.  It is straightening.
    ii. \( \not\Rightarrow \) It has straightened.
  c.  It almost straightened.
HKL: Ambiguous

But HKL insist (later in the article, though not at the outset) that both interpretations are possible here too. There is just a strong preference for the telic interpretation, in *null contexts*.

• So we have two questions:
  1. What accounts for the variable telicity?
  2. What explains the contrast between (e.g.) *lengthen* and *straighten*?

• HKL frame their discussion with an analogy to the case where telicity depends on whether the

Similar to: accomplishments with a mass/indefinite plural objects.

(34)  
  a.  
    i.  Al built houses for years.
    ii. Al built a house in one month.
  b.  
    i.  Al is building houses.\(^{5}\)
    ii. \( \not\Rightarrow \) Al has built houses.
  c.  Al almost built houses.
    ?? Ambiguous

\(^{5}\)Waaait a second. If this were *just* an activity, this implication should go through. But does it? I don’t think so, not if you keep the object fixed. *Maybe* you get a suggestion of having built at least one house. But...
2.2 The ultimate basis of the contrast between *lengthen* and *straighten*

- HKL observe that the difference between *lengthen* and *straighten* correlates with the understood nature of the property associated with the underlying adjectives, *long* and *straight*.

1. Open-range adjectives: Those whose property is understood to have no maximal degree.

   (35)  
   a. Considered true:
   Something that is long could always be longer.
   b. * It is completely straight.

   (36)  
   a. Considered true:
   Something that is cool could always be cooler.
   b. * It is completely straight.

2. Closed-range adjectives: Those whose property is understood to have no maximal degree.

   (37)  
   a. Considered false:
   Something that is straight could always be straighter.
   b. It is completely straight.

2.3 The semantics for DAs

- HKL suggest that a DA based on the degree adjective ADJ means ‘to increase in the ADJ property by degree $d$.’

   (38)  
   a. $\phi$-en $\mapsto$ INCREASE($\phi'$)
   b. $\llbracket$INCREASE($\phi$($x$($d$($e$)))$]$ = 1 \iff \phi(x)(\text{starttime}(e))+d = \phi(x)(\text{endtime})(e)$

To put it somewhat more naturally: ‘to become ADJ-er by $x$ amount.’

   (39)  
   a. *lengthen*: ‘to become longer by $x$ amount’
   b. *straighten*: ‘to become straighter by $x$ amount’
   c. *cool*: ‘to become cooler by $x$ amount’

HKL refer to the ‘amount of change’ as the *difference value*.

- The difference value may be explicitly identified. In that case, the predicate is invariably understood as telic.
a. It lengthened 5 mm in 20 seconds.
b. It straightened to a certain degree in 20 seconds.

- If the difference value is not identified, it is (so far as I can tell from this article) interpreted as existentially bound.

a. i. It lengthened.
   ii. ‘There is an amount by which it lengthened.’
b. i. It straightened.
   ii. ‘There is an amount by which it straightened.’

They give this logical form for “Kim lengthened the rope”:

\[
\exists e \exists d [\text{INCREASE(}\text{long(rope))}(d)(e)]
\]

‘There is an event \( e \) and a degree \( d \), such that \( e \) is an event of the length of the rope increasing by degree \( d \).’

### 2.4 Understanding the DA as telic

- This is what HKL say about how sentences involving existential quantification over the difference value are interpreted:

  “[W]hen the degree to which this property changes can be interpreted as bounded, a telic interpretation of the predicate arises, and when the degree of change must be considered nonbounded, an atelic interpretation results.”

- They then discuss how—as a result of **context-dependent, pragmatic** mechanisms—the difference value may come to be “interpreted as bounded.”

1. A certain “bounded degree” of increase may be salient in the context:

   a. Context:
      Everybody understands that the cable needs to reach the amplifier; and to reach the amplifier, it needs to be lengthened from 6ft to 9ft.
   b. They lengthened the cable.
   c. Natural understanding in this context:
      ‘They lengthened the cable by three feet.’
(44) a. Context:
   Everybody understands that the cable need to be completely straight in
   order to function.
   b. They straightened the cable.
   c. Natural understanding in this context:
      ‘They straightened the cable completely.’

2. Or, in some cases, the difference value is interpreted as the maximum difference value possible. That is, the increase is to the maximal degree of the associated property.

(45) a. It straightened.
   b. Can be understood as: ‘It got completely straight.’

• Concerning the ‘maximal degree interpretation’:

1. It is of course available only to closed-range DAs, since only these have a maximal degree.

2. It is, say HKL, an implicature: “The effect of the implicature is to impose a completely-like interpretation on the predication.”

They suggest that the implicature derives from an interest in giving the sentence the “most informative” interpretation possible.

It is entirely unclear, however, how or why such an implicature should be calculated.

(a) Certainly not via the assumption (based on the maxim of Quantity) that the speaker has said as much as he believes. Compare:

(46) a. Some popes were male.
   b. Quantity-based (scalar) implicature: Not all popes were male.

(b) Maybe it’s more like the following sort of implicature:

(47) a. I had a tooth removed.
   b. Implicature: I had one of my own teeth removed.

But then it’s not clear what motivates it. Maybe (47b) is motivated by the assumption that the alternative interpretation is so shocking that, if it were intended, the speaker would have made it clear. But this is not so in the case of straighten.

• In sum: both telic interpretations are derived pragmatically.

This suggests that the semantics proper delivers only an atelic interpretation. But HKL do not say this explicitly.
2.5 Interpreting DAs as atelic: What is a nonbounded degree?

- “[W]hen the degree of change must be considered nonbounded, an atelic interpretation results.”

- Questions:

  1. Why would it ever be necessary to consider the degree of change nonbounded?

  2. What is a “nonbounded degree of change?”

I don’t see answers to either question in this article. Nor can I think of clear answers myself.

- HKL presume that all properties can be measured in degrees.

  I presume that any change in a property must therefore be change of a certain degree. I don’t know what a change of ‘nonbounded degree’ is.

  I also presume the domain of degrees presumably contains only ‘specific’ degrees, i.e. numbers. I don’t know what an ‘unbounded number’ is.

  So what could it possibly mean to say:

  \[ \exists e \exists d [ \text{INCREASE}(\text{long}(\text{rope}))(d)(e)] \]

  except that ‘there is an event of the rope getting longer by a particular degree’?

  And consequently, how could a predicate with this meaning not be telic?

- Notice, there is an important difference between (a) indefinite reference to a specific quantity, and (b) the putative notion of reference to a ‘nonbounded’ quantity.

  - (a) is easy to understand:

    (48)  a. I ate some apples.

    b. A cop showed up.

    And indefinite reference to a specific quantity does not produce atelic meanings:

    (49)  a. I ate some apples in 30 seconds / ??for 30 seconds.
b. I pushed the perambulator to a certain location in 5 minutes / ??for 5 minutes.

– (b) is not an easy notion to understand. But the HKL account of DAs depends on it.

• In contrast, I do know what an unbounded number of changes of a certain degree is:

‘There were some events of the cable lengthening by a some degree.’
That is: ‘There were indefinitely many events of the cable getting longer by a ‘bounded’ degree.’

Moreover, I know that the number of possible lengthenings is infinite, while the number of possible straightenings is finite.

But this is not how HKL describe the facts.

2.6 The contrast between *lengthen* and *straighten*

• For HKL, the telic interpretations of both *lengthen* and *straighten* are derived pragmatically.

• So then what accounts for the judgment, given at the start of the paper, that “straighten” is preferentially understood as telic?

• They don’t exactly say—not in terms germane to their actual theory, which describes the telic interpretations as pragmatically derived.

But I guess they have to say there is a preference to deploy the ‘maximal degree’ interpretation—i.e. the ‘maximal degree’ implicature—when this is available.

2.7 The psychological status of difference values

• According to HKL, when one interprets “straighten” as ‘get completely straight,’ one is understanding the *difference value* as equal to the difference between the degrees of straightness at the starting point and ending points of the event.

(50) Cable’s degree of straightness at the outset:
    3 out of a possible 10.
a. The cable straightened.  
b. ‘The cable increased in straightness by degree 7.’

(51) Cable’s degree of straightness at the outset:  
8 out of a possible 10.  
a. The cable straightened.  
b. ‘The cable increased in straightness by degree 2.’

• This seems a startling claim about how we actually understand “straighten (completely).” Allegedly, we both:
  1. Calculate a degree of straightness at the outset, and  
  2. Calculate the difference between that degree and the maximum.

• I would have thought that “straighten (completely)” just means ‘to become completely straight.’

• Consider an alternative.
  – “The cable straightened” means ‘there were some events of the cable getting straighter.’  
  – There is of course a limit on how many such events there could be.  
  – To interpret the sentence as meaning ‘the cable got completely straight’ is to assume that there were as many straightening events as possible.

2.8 Difference values and themes

• Krifka (among others) understands ‘incremental themes’ as objects whose parts corresponded incrementally to the parts of the event.

• With DAs, the parts of the object that changes are irrelevant. What changes is the ‘degree’ to which it has a certain property.

• The difference value, on the other hand, does itself reduce in increments that correspond to the parts of the event.
So given Krifka’s basically mereological notion of ‘incremental theme,’ you might think of the difference value as the incremental theme.

This idea is pursued in HKL.

Dowty 1991 and Jackendoff 1996 pursued the same idea with respect to path adjuncts. They suggested that the path is the ‘true’ incremental theme in, e.g., “Al pushed the perambulator to the other side of the park.”

It’s not clear to me, however, what this perspective would gain.

1. For any DA, there is still a distinguished argument whose condition determines the terminal point of the event:

   (52) a. The workers straightened the cable.
   b. Event is complete when the rope is straight. The condition of the workers is irrelevant.

2. The referential properties of the ‘changing’ argument still influence the telicity of the predicate.

   (53) a. They straightened the cable in 5 minutes.
   b. They straightened cables for 5 hours.

Why not simply say that the ‘incremental theme’ is the thing that changes, and hence the thing whose condition determines the completion of the event?

You could say that the difference value (or path) and the ‘traditional’ theme argument are both incremental themes. – But only if you assume they are incremental themes of different events. (Discuss.)