0. Central claims

- The cognitive representation of events encodes inherent contingent relations
  - These include subparts of the event, associated events, associated states
- Temporal expressions make reference to relations between events
- The interaction of aspectual and temporal modifiers with event predicates is determined/constrained by:
  - the type of argument required by the modifier
  - the contingent dependencies inherent in the predicate
  - manipulation of the predicate structure by the modifier: coercion

1. Introduction

1. When they built the 59th St. bridge,
   a) .....a local architect drew up the plans
   b) .....they used the best materials
   c) .....they solved most of their traffic problems

- The when clause appears to be ambiguous, potentially referring to several different temporal intervals
- When is not ambiguous
  - When does not identify a temporal interval, rather, a temporal referent in the form of an event
- The three events expressed in the matrix clauses are among the contingent events contained within the structure of the temporal referent

2. Events

- An event, in contrast to a state, has defined beginning and end points
- Event types can be categorized according to their values along two parameters
  - An event is either punctual or extended in time: + atomic or + extended
  - An event either does or does not produce a salient consequent state: +/- conseq

2.1 Four Event Types

1. Culmination: + atomic/+conseq
   2. Harry reached the top
The culmination is instantaneous
   - The culmination introduces a transition from one state to another

2. Point expression: \(+\text{atomic}/-\text{conseq}\)

   3. John hiccupped
      - The event is an ‘indivisible whole’
      - There is (typically) no transition to a salient state

3. Process: \(+\text{extended}/-\text{conseq}\)

   4. Harry climbed
      - The event includes no culmination

4. Culminated process: \(+\text{extended}/+\text{conseq}\)

   5. Mouska climbed to the top

2.2 Event Structure and Coercion

- Progressive aspect requires a process as its argument
   6. Mouska was running

- Perfect aspect requires a consequent state as its argument
   7. Mouska has reached the top

- The predicate hiccup is a point expression
  - Hiccup can be coerced into an argument for the progressive…
     8. Mouska was hiccupping
  - …but not into an argument for perfect
     9. ??Mouska has hiccupped

- Coercion of a predicate into the required argument type is constrained by its contingent relations
- Coercion is the manipulation of a tripartite contingency-based event structure or nucleus
- A nucleus consists of a preparatory process, a culmination, and a consequent state

   - Nucleus structure of climb to the top

\[
\begin{align*}
\text{reach the top} & \\
\text{culmination} & \quad | \\
\text{preparatory process} & \quad | \quad \text{consequent state} \\
\text{climb} & \quad | \quad \text{be at the top}
\end{align*}
\]
3. Aspect

3.1 Progressive

• Progressive aspect
  - takes a process as argument
  - outputs a process ongoing at reference time

3.1.1 Coercion into a process event

• Point expressions are coerced into processes via iteration
  - hiccup...hiccup...hiccup

• Culminated processes may be coerced in two ways
  1. The culmination and consequent state are lopped off and the remaining part of the nucleus, the *preparatory process*, is input to the progressive

  10. *Mouska was running a mile*
ii. The entire nucleus is treated as a point and iterated

11. *Mouska was running a mile last week. Now he’s up to three.*

- A culmination is coerced via addition of a preparatory process, and removal of the culmination

12. *Harry was reaching the top*

- This proposal addresses the *imperfective paradox*
  - Because the culmination is not included in the construction, the assertion concerns only the preparatory process
  - There is no assertion that the culmination occurred

13. *Harry was reaching the top when he slipped and fell to the bottom*

3.2 Perfective

- Perfective aspect
  - takes a culmination as argument
  - indicates that a relevant consequent state holds

14. *John has broken the chair (so don’t sit in it)*

3.2.1 Coercion into a culmination event

- A culminated process is coerced by treating the entire nucleus as a culmination
  - The culmination inherent in the event cannot serve as the relevant culmination
  - The question *Have you climbed Mount Everest yet?* is not appropriate when addressed to one who is in the immediate consequent state of climbing Mount Everest, i.e. standing on the summit

- Creation of a new nucleus

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+++                ++++++++  ++++++++  ++++
Preparatory process reaching the summit Consequent state
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- A process is likewise treated as the culmination of a new nucleus
  - a process can only be coerced if a relevant consequent state results

15. ?*John has worked in the garden*

  - This is acceptable only if an event is contingent on John’s having worked in the garden
Some process predicates cannot be associated with a consequent state; these cannot be coerced into arguments for perfective aspect

16. *A star has twinkled

Constraints on consequent states

Moens and Steedman argue that the ban on temporal adverbials with the perfect is due to the inconsequentiality of time of culmination: i.e. only the fact of the consequent state matters:

17. #They have married yesterday

M&S claim that the use of a temporal adverbial is acceptable when the time specification is relevant

18. They have married on Friday the 13\(^{\text{th}}\)

The relevant consequent state must hold at reference time

19. I have spilled my coffee

use of the perfect is not felicitous once the resultant mess has been cleaned up

This accounts for the distinction in acceptability between (20) and (21)

20. #Einstein has visited Princeton
21. Princeton has been visited by Einstein

there can be no consequent state for (20) as Einstein is no more, however:

the ‘corporate consciousness’ of Princeton lives on; the consequent state holds in (21)

4. Adverbials

4.1 For-adverbials

For–adverbials

take a process argument and

produce a culminated process

22. #John has worked in the gardens
23. John has worked in the garden for 5 hours

The process work in the garden is degraded as input to the perfect in (22)

The for-adverbial outputs a culminated process, creating an appropriate argument for the perfect in (23)
4.1.1 Coercion into a process event

• There are two ways to coerce an event into a process:
  ✷ The event is treated as a point and iterated:
    24. John played the sonata for 5 hours
        process → point → iteration
    25. John arrived late at work for several days
        culmination → point → iteration
  ✷ The event is transformed into an ongoing process
    ✷ Unlike coercion into an iterated point event, which requires no special
        morphology, creation of an ongoing process can only be accomplished by use of
        progressive morphology
    26. Red Rum won the race for five years in a row
    27. *Red Rum won the race for the first five minutes
    28. Red Rum was winning the race for the first five minutes

4.2 In-Adverbials

• In –adverbials
  ✷ require a culminated process as input
  ✷ indicate the duration of the preparatory process

4.2.1 Coercion into a culminated process

• Application of an in-adverbial to a culmination event adds a preparatory process
  29. Laura reached the top in 2 hours
  ✷ for those culminations which cannot incorporate a preparatory process, use of an
     in –adverbial is ill-formed (i.e. without additional context)
  30. #John spilled his coffee in 15 minutes

• A process can be coerced only if a culmination is available
  31. #John ran in a few minutes
  ✷ Alternatively, the event as a whole is treated as a culmination; and the adverbial adds a
     preparatory stage
    ✷ John ran in a few minutes is interpretable as John having run after a few minutes
       had elapsed
5. Multiple Transitions

- The structure of the transition network permits an event to be coerced through more than one transition by the application of additional modifiers

32. *It took me two days to learn the play the Minute Waltz in 60 seconds for more than an hour*

i. A culminated process is input to an *in*-adverbial specifying process duration
   - *play the Minute Waltz in 60 seconds*

ii. The output of (i) is treated as an atomic event and iterated to create input to *for*-adverbial, creating a culminated process
   - *play the Minute Waltz in 60 seconds for over an hour*

iii. *Learn to play the Minute Waltz in 60 seconds for over an hour* is a culminated process.

iv. This is input to *it took me two days*, functioning as an *in*-adverbial

6. Tense

- Tense is not an anaphor dependent on a previously introduced temporal referent
- Tense has the properties of a definite DP, rather than an anaphor
  - The referent of a pronoun is fixed
    - *Harry came in. He sat down and took off his boots, then he stood up again…*

  - The referent of tense may change
    - *Harry came in, sat down, and took off his boots*
      - Each instantiation of past tense refers to a different temporal referent
    
  - The forward-shift of the temporal referent is determined by the nucleus of each event
    - The culmination of *came in* must be reached before *sat down* can occur
      (and so on)

  - Tense therefore makes reference to times which have not been explicitly introduced, but which are implied by the structure of the events
    - In this behavior, tense is similar to a definite NP:
    
35. *I went to a party last night. The music was wonderful*
6.1 When Clauses

- *When* clauses do not require/do not make reference to an established temporal interval
- *When* clauses establish a ‘temporal referent’: an event
- This event forms the basis for a nucleus
  - The event in the matrix clause must be interpretable as a contingent relation located in this nucleus

6.1.1 Establishing a contingency relationship

- When confronted by a *when*-clause, the hearer must construct a nucleus in one of two ways:
  1. Decompose the event indicated in the *when* clause into a nucleus
  2. Treat the entire event as a culmination and embed it in a full nucleus
- The decomposition option is used in parsing example (1b)

  1b) *When they built the 59th St. bridge, they used the best materials*
  - The matrix clause event refers to the preparatory process of the nucleus

    Culmination
    
    *they complete the bridge*
    
    |  
    
    Preparatory process  consequent state
    
    *they build*  
    *they have completed the bridge*

- The event-as-culmination option is used in parsing (1a) and (1c)

  1a. *When they built the 59th Street bridge, a local architect drew up the plans*
  - The matrix clause of (1a) is located within the preparatory process of the new nucleus

  1b. *When they built the 59th Street bridge, they solved most of their traffic problems*
  - The matrix clause of (1c) is located within the consequent state of the new nucleus

    Culmination
    
    *they build the bridge*
    
    |  
    
    Preparatory process  consequent state
    
    *they prepare to build*  
    *they have built the bridge*
• Requirements on event dependencies
  ‣ The hearer must be able to construct a nucleus for the introduced event
  ‣ The hearer must be able to identify the contingent relation between the event in the main clause and the event in the *when* clause
    ‣ The matrix event must be locatable at a relevant point within the nucleus
    ‣ Inability to place the matrix event within the nucleus leads to ill-formedness
      36. *When my car broke down, the sun set*
      ‣ There is no section of the nucleus (‘my car broke down’) within which *sun setting* can be located as contingently related

• *When*-clauses with stative consequents
  ‣ The state specified in the main clause held when culmination of when-clause event occurred:
    37. *When they built that bridge, I was still a young lad*

6.2 Futurates
• There are two futurate forms: simple (non-modal) and progressive

• Simple futurates parallel the simple past
  ‣ The event time (E) and the reference time (R) coincide
    38. *John leaves tomorrow* - R and E in the future
    39. *John left* - R and E in the past

• Progressive futurates parallel the perfect:
  ‣ R and E do not coincide
    40. *John is leaving (tomorrow)* - R is the present; E is in the future
    41. *John has left* - R is the present; E is in the past

• Simple futurates can be used with perfect aspect (kinda), in keeping with their simple-past-like properties
  42. *Once the Mets play the Fish on Sunday, they have finished for the season*