

ASPECT-BASED THEORY (2):  
**Aspectual universals of temporal anaphora** (Bittner 2006)

1 PROCESSES

• *Quantification versus discourse reference*

- (1) *Event of asking:*  
 When I finished reading the instructions, Jim *asked* me: “What do I do first?”  
 a. ... At that instant the phone rang.  
 b. ... #This process took a long time.
- (2) *Process of asking:*  
 As we worked our way through the instructions, Jim and Tom *asked* me over and over, by turns, with increasing desperation: “What do I do next?”  
 a. ... #At that instant the phone rang.  
 b. ... This process left us all exhausted.

• *Part-whole anaphora with processes*

- (3) *Event/State (atomic episode): #Anaphora to stages*  
 a. John **arrived** last night. At that instant the phone rang. #*First* he rang the doorbell. #*Next* he said: ‘Hello’  
 b. At the end of his life John **had** a beautiful house. #*First* he sat in the living room, admiring every detail. #*Next* he sat in the kitchen.

(4) *Process: ✓ Anaphora to stages*

John <b>built</b> a house last year.	••••	$ee_0$ : John builds house
<i>First</i> ...		$t_0$ : time of $ee_0$ -stage 1
...he hired an architect.	•	$e_1$ : $ee_0$ -stage 1
		$t_1$ : $e_1$ -result time
<i>Next</i> he hired a contractor.	•	$e_2$ : $ee_0$ -stage 2
		$t_2$ : $e_2$ -result time
<i>At the end</i>		$t_3$ : $ee_0$ -end time
...he was very pleased.	—	$s_3$ : John is pleased

• *Universals of temporal anaphora with processes*

**R.** Aspect-based reality presuppositions (v. 2)

From a  $\top w$ -real point-of-view  $\top a$ , the viewer may report:

- a *state*  $s$  as a fact, iff the onset of  $s$  precedes  $\top a$  in  $\top w$
- an *event*  $e$  as a fact, iff  $e$  precedes  $\top a$  in  $\top w$
- a *process*  $ee$  as a fact, iff stage 1 of  $ee$  precedes  $\top a$  in  $\top w$

**L'** Aspect-based location wrt topical instant (v. 2)

In the topical modality,

- a *state* is current at the topical instant
- an *event* has a current result state at the topical instant
- stage 1 of a *process* has a current result state at the topical instant

**L** Aspect-based location wrt topical period (v. 2)

In the topical modality,

- a *state* is current during the topical period
- an *event* occurs within the topical period
- stage 1 of a *process* occurs within the topical period

(5) Reality (**R**) & discourse-initial location (**L'**): *state, event, process*

<i>Ole</i>	{ <i>sinip-pu-q</i> ,	<i>itir-pu-q</i> ,	<i>skakkir-pu-q</i> }
Ole	{be.asleep-IND.IV-3s,	wake.up-IND.IV-3s,	play.chess-IND.IV-3s}
Ole	{is asleep,	has woken up,	is playing chess}.

(6) Discourse-internal location (**L**): *state, event, process*

*Ataata-ga angirlar-m-at*  
 dad-1s.sg come.home-FCT<sub>⊥</sub>-3s<sub>⊥</sub>  
 When my dad came home,

{ <i>sinip-pu-nga</i> ,	<i>itir-pu-nga</i>	<i>skakkir-pu-gut</i> }
{be.asleep-IND.IV-1s,	wake.up-IND.IV-1s,	play.chess-IND.IV-1p}
{I was asleep,	I woke up,	we played chess}

(7) The next day a big mob of kayaks set out to finish off Aataarsuaq's family [i.e. his wife and his son], but a cousin had warned them about this during the night.

<sup>1</sup>*Nukappiara-q suli sinit-tu-q*  
 boy-sg still asleep-ELA<sub>⊥</sub>.IV-3s<sub>⊥</sub>  
 While the boy<sub>⊥</sub> was still asleep,

*qajar-pa-ssu-it nui-a-lir-pu-t.*  
 kayak-group-big-pl appear-together-begin-IND.IV-3p  
 the leaders<sub>⊥</sub> of the kayak mob appeared [on the horizon].

<sup>2</sup>*Arna-a-ta itir-sar-pa-a.*  
 mother-3s<sub>⊥</sub>.sg-ERG wake.up-causal.process-IND.TV-3s.3s  
 The [boy]<sub>⊥</sub>'s mother shook him awake.

[S: 31]

**U** Aspect-based temporal update (v. 2)

If a verb evokes an episode *a* and updates the topic time to <sup>⊥</sup>*t*, then:

- <sup>⊥</sup>*t* is the time of *a*, if *a* is a *state*
- <sup>⊥</sup>*t* is the result time of *a*, if *a* is an *event*
- <sup>⊥</sup>*t* is the result time of stage 1 of *a*, if *a* is a *process*

(8) Temporal update (**U**): *state, event, process*

<i>Ataata</i>	{ <i>sini-mm-at</i>	<i>tikim-m-at</i> ,	<i>aggir-m-at</i> }
dad	{be.asleep-FCT <sub>⊥</sub> -3s <sub>⊥</sub> ,	come-FCT <sub>⊥</sub> -3s <sub>⊥</sub> ,	approach-FCT <sub>⊥</sub> -3s <sub>⊥</sub> }
When dad	{was asleep,	arrived,	was on the way}

*anaana sianir-vig-a-anga.*  
 mum ring-to-IND.TV-3s.1s  
 mum gave me a ring.



- (14) *Habit + kind* (of proposition): ✓ Anaphora to *instances*  
 My father plays chess. The next day he often says: ‘I won’. *The first time* I doubted it.  
 [Bittner *in press*]

- *Universals of temporal anaphora with habits*

**L'** Aspect-based location wrt topical instant

In the topical modality,

- a *state* is current at the topical instant
- an *event* has a current result state at the topical instant
- stage 1 of a *process* has a current result state at the topical instant
- a *habit* is current (but possibly not instantiated) at the topical instant.

- (15) {*Niaqu-nngu-vu-nga*,      *niaqu-nngu-sar-pu-nga*}  
 {head-ache-IND.IV-1s      head-ache-habit-IND.IV-1s}  
 {I have a head ache,      I have head aches.}
- (16) *Ataata-ga* {*skakkir-pu-q*,      *skakkir-tar-pu-q*}  
 dad-1s.sg {play.chess-IND.IV-3s,      play.chess-habit-IND.IV-3s}  
 My dad {is playing chess,      plays chess}.

**L** Aspect-based location wrt topical period

In the topical modality,

- a *state* is current during the topical period
- an *event* occurs within the topical period
- stage 1 of a *process* occurs within the topical period
- a *habit* is current (but possibly not instantiated) during the topical period.

- (17) <sup>1</sup>As soon as his new son was born, the father took him out and ran off with him down to the shore. <sup>2</sup>There he dipped his head in a puddle for a long time.  
<sup>3</sup>*Taava tuavi=innaq illu-min-nut majuup-pa-a.*  
 then hurry=V home-3p.sg-DAT carry.up-IND.TV-3s.3s  
 Then he carried him [back] up home, hurrying all the way.  
<sup>4</sup>*Taama-iliur-tuar-pa-a.*  
 thus-do-regularly.do-IND.TV-3s.3s  
 He did that to him on a regular basis.  
<sup>5</sup>Every morning when he woke up, while his son was still asleep,  
 he took him out, always down to the shore. [S: 27–28]

**L''** Aspect-based location wrt topical kind of time

Let *h* be a habit located at a topical kind of time  $\top k^x$ . Then in each  $\top k^x$ -world at each  $\top k^x$ -time, there is an *h*-episode:

- located according to **L**, if  $\top k^x$ -times are (discourse) periods
- located according to **L'**, if  $\top k^x$ -times are (discourse) instants

**U** Aspect-based temporal update

If a verb evokes  $a$  and updates the topic time to  ${}^T t$  or  ${}^T k^x$ , then:

- ${}^T t$  is the time of  $a$  in the topical modality, if  $a$  is a *state*
- ${}^T t$  is the result time of  $a$  in the topical modality, if  $a$  is an *event*
- ${}^T t$  is the result time of stage 1 of  $a$  in the topical modality, if  $a$  is a *process*
- ${}^T k^x$  is the kind of time such that, in each  $a$ -world,
  - a. sends each  $a$ -state to its time, if  $a$  is a *habitual state*
  - b. sends each  $a$ -event to its result time, if  $a$  is a *habitual event*
  - c. sends stage 1 of each  $a$ -process to its result time, if  $a$  is a *habitual process*

(18) Update by habitual {state, event, process}; location of habitual event  
*Ataata* {*naparsima-gaang-at*, *tikik-kaang-at*, *aggir-aang-at*}  
 dad {be.ill-HAB<sub>⊥</sub>-3s<sub>⊥</sub>, arrive-HAB<sub>⊥</sub>-3s<sub>⊥</sub>, approach-HAB<sub>⊥</sub>-3s<sub>⊥</sub>}  
 When dad {is ill, comes (home), is on the way}

*anaana-ma sianirvigi-sar-pa-anga.*  
 mum-1s.sg.ERG ring.to-habit-IND.TV-3s.1s  
 mum gives me a ring.

(19) Update by habitual {state, event, process}; location of habitual state  
*Ataata* {*naparsima-gaang-at*, *tikik-kaang-at*, *aggir-aang-at*}  
 dad {be.ill-HAB<sub>⊥</sub>-3s<sub>⊥</sub>, arrive-HAB<sub>⊥</sub>-3s<sub>⊥</sub>, approach-HAB<sub>⊥</sub>-3s<sub>⊥</sub>}  
 When dad {is ill, comes (home), is on the way}

*anaana nikallu-nga-sar-pu-q.*  
 mum get.depressed-state-habit-IND.TV-3s  
 mum is depressed.

**R.** Aspect-based reality presuppositions

From a  ${}^T w$ -real (episodic) point-of-view  ${}^T a$ , the viewer may report:

- a *state*  $s$  as a fact iff the beginning (onset) of  $s$  precedes  ${}^T a$  in  ${}^T w$
- an *event*  $e$  as a fact iff  $e$  precedes  ${}^T a$  in  ${}^T w$
- a *process*  $ee$  as a fact iff the beginning (stage 1) of  $ee$  precedes  ${}^T a$  in  ${}^T w$
- a *habit*  $h$  as a fact iff the beginning (episode 1) of  $h$  precedes  ${}^T a$  in  ${}^T w$

(20) [Susan has visited me in N.Y. once, we had fun & I hope she'll come again.]  
*Suusat New Yorki-mut tikik-kaang-at nuannisaar-tar-pu-gut.*  
 Susan New York-DAT come-HAB<sub>⊥</sub>-3s<sub>⊥</sub> have.fun-habit-IND.IV-1p  
 When Susan comes to New York, we have fun.

(21) Pelletier & Asher 1997  
 a. Kim handles the mail from Mars.  
 b. Members of this club support each other in emergencies.

**D. Aspect-based temporal defaults**

Given a  $\top w$ -real point-of-view  $\top a$ , the default topic time is:

- the instant of  $\top a$ -onset in  $\top w$ , if  $\top a$  is a *state*
- the instant of  $\top a$  in  $\top w$ , if  $\top a$  is an *event*
- the kind of time instantiated in  $\top w$ , at each stage  $e$  of  $\top a$ , by the  $\top w$ -instant of  $e$ , if  $\top a$  is a *process*
- the kind of time instantiated, in any  $\top a$ -world  $w$ , by the  $w$ -instants of  $\{\top a\text{-state.onsets}, \top a\text{-events}, \top a\text{-process.stages}\}$ , if  $\top a$  is a *habitual*  $\{state, event, process\}$

- (22) When he finishes reading instructions, Jim *is* usually *confused*: “What do I do first?”
- (23) When I finish reading instructions, Jim usually *asks* me: “What do I do first?”
- (24) When we worked our way through instructions, Jim and Tom usually *asked* me, by turns, with fading hope: “What do I do next?”

APPENDIX: OVERVIEW OF ASPECT-BASED UNIVERSALS

**D** (temporal defaults)

*reality*  $\top w_i$

—	$\top s_0$
	$\top \vartheta_{wi} \text{BEG}_{wi} s$
•	$\top e_0$
	$\top \vartheta_{wi} e_0$
••	$\top ee_0$
	$\top \{\vartheta_{wi} e: e \in ee_0\}$
...— —...	$\text{Ran } \top h^\sigma w_i$
...   ...	$\top \{\vartheta_{wi} \text{BEG}_{wi} s: s \in \text{Ran } \top h^\sigma w_i\}$
...• •...	$\text{Ran } \top h^\varepsilon w_i$
...   ...	$\top \{\vartheta_{wi} e: e \in \text{Ran } \top h^\varepsilon w_i\}$
...•• ••...	$\text{Ran } \top h^{\varepsilon\varepsilon} w_i$
...   ...	$\top \{\vartheta_{wi} {}^1ee: ee \in \text{Ran } \top h^{\varepsilon\varepsilon} w_i\}$

**R** (reality)

$\top w_i$ :

•	$\top e_0$ ( <i>perspective pt.</i> )
•	$\text{BEG}_{wi} s$ ( <i>s-onset</i> )
•	$e$
•	${}^1ee$ ( <i>ee-stage 1</i> )
—	${}^1h^\sigma w_i$ ( <i><math>h^\sigma</math>-episode 1</i> )
•	${}^1h^\varepsilon w_i$ ( <i><math>h^\varepsilon</math>-episode 1</i> )
••	${}^1h^{\varepsilon\varepsilon} w_i$ ( <i><math>h^{\varepsilon\varepsilon}</math>-episode 1</i> )

**L'** (loc wrt  $\top$  instant)

$w_i$ : |  $\top t$  (event-time)

—	$s$
—	$\text{RES}_{wi} e$
—	$\text{RES}_{wi} {}^1ee$
...— —...	$\text{Ran } h^\sigma w_i$
...• •...	$\text{Ran } h^\varepsilon w_i$
...•• ••...	$\text{Ran } h^{\varepsilon\varepsilon} w_i$

**L** (loc wrt  $\top$  period)

||  $\top t$  (state-time)

—	$s$
•	$e$
•	${}^1ee$
...— —...	$\text{Ran } h^\sigma w_i$
...• •...	$\text{Ran } h^\varepsilon w_i$
...•• ••...	$\text{Ran } h^{\varepsilon\varepsilon} w_i$

**L''** (loc wrt  $\top$  kind.of.time)

...|| ||...  $\text{Ran } \top k^\varepsilon w_i$

...— —...	$\text{Ran } h^\sigma w_i$
...• •...	$\text{Ran } h^\varepsilon w_i$
...•• ••...	$\text{Ran } h^{\varepsilon\varepsilon} w_i$

**U** (temporal update)

•	$e$
	$\top \vartheta_{wi} \text{RES}_{wi} e$
—	$s$
	$\top \vartheta_{wi} s$
•••	$ee$
	$\vartheta_{wi} \text{RES}_{wi} {}^1ee$
...— —...	$\text{Ran } h^\sigma w_i$
...     ...	$\top \{\vartheta_{wi} s: s \in \text{Ran } h^\sigma w_i\}$
...• •...	$\text{Ran } h^\varepsilon w_i$
...      ...	$\top \{\vartheta_{wi} \text{RES}_{wi} e: e \in \text{Ran } h^\varepsilon w_i\}$
...•• ••...	$\text{Ran } h^{\varepsilon\varepsilon} w_i$
...     ...	$\top \{\vartheta_{wi} \text{RES}_{wi} {}^1ee: ee \in \text{Ran } h^{\varepsilon\varepsilon} w_i\}$