

The similarities and differences between participles and main clauses

Same interpretation:

- Joseph turned around. He shot Mike.
- Turning around, Joseph shot Mike.

but more deterministic: fewer discourse relations

- Having had a great evening yesterday, Max had a great meal.
- #Having a great evening yesterday, Max had a great meal.

and no skipping

- Max bought a new bike. He had seen it in the newspaper. He paid 300 euros for it.
- # Max bought a new bike. Having seen it in the newspaper, he paid 300 euros for it.

How to deal with this at the level of syntax, semantics and discourse?

Combine:

- **Lexical Function Grammar** (Kaplan & Bresnan 1982) to deal with the free word order in Ancient Greek
- **Compositional Discourse Representation Theory** (Muskens 1996) to deal with the intersentential bindings of participles
- **Segmented Discourse Representation Theory** (Asher & Lascarides 2003) (loosely, we only model the temporal dimension of discourse relations)
- **Glue Semantics** (Dalrymple 1999) for the syntax-semantics interface, using **constructional meanings** (Asudeh, Dalrymple & Toivonen 2008)

Ancient Greek

Three functions of participles:

Independent rhemes: discourse coordination

dramôn de tis kai gemisas spoggon oxous peritheis kalamôï epotizen auton
'Someone **ran** and **filled** a sponge with sour wine, **put** it on a reed, and gave him a drink'

Frames: temporal anchoring

Teleutêsantos de Aluatteô exedexato tèn basilêiên Kroisos
'After Alyattes **died** Croesus received the reign'

Elaborations: expanded event descriptions

grammata graphousi Hellênes men apo tôn aristerôn epi ta dexia pherontes tèn kheira
'The Greeks write letters **by moving** the hand from left to right'

We model:

- the temporal anchoring of events inside and across sentences, both what anchors they can relate to and with what temporal relations;
- the obligatory narrative progression with independent rhemes and frames;
- the obligatory intersentential bindings of all participles except the leftmost one in a serial construction;
- the effects of participles on the further narration and the extent to which they provide anchors for it.

Analysis

Independent rhemes

- are adjoined to I'
- push the reference time when perfective
- provide the reference time for the next verb
- only the left-most participle interacts with the context: **finite** requires that its reference time be anaphorically bound.

Frames

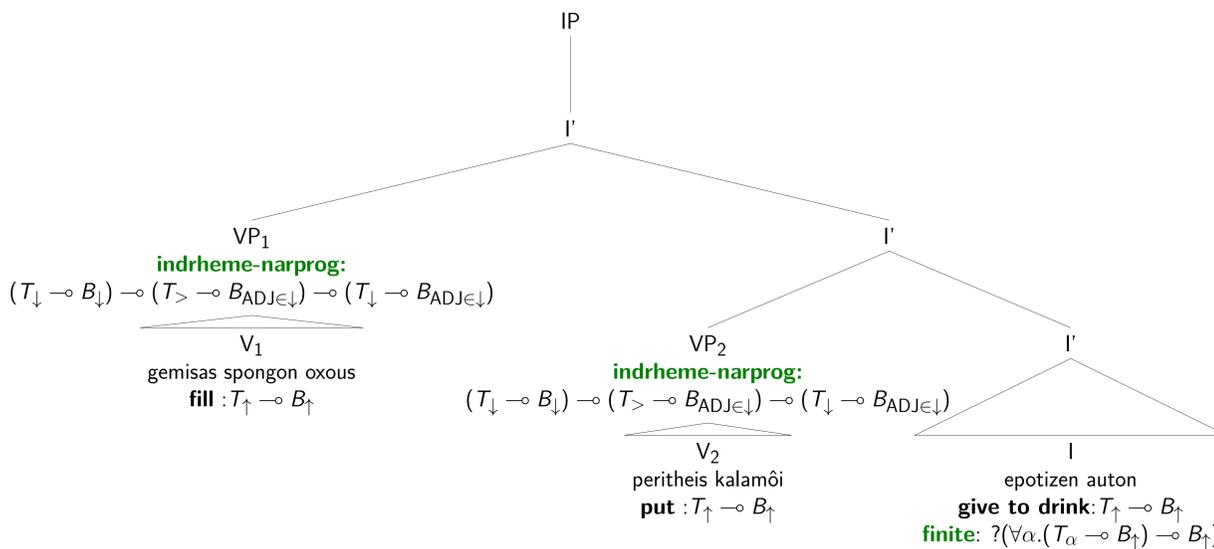
- are in spec, IP

- **narframe**: $\lambda P \lambda Q [\partial [\frac{t_{1p}}{t_{1p}} \oplus P(t_{1p})] \oplus Q(t_{1q})]$
- bind to a time and event of the kind described by P
- **narframe** anchors the matrix event in time, not **finite**

Elaborations

- are inside I'
- **elab**: $\lambda P \lambda Q \lambda e [P(\tau(e)) \oplus Q(e)]$
- pick up the run time of their matrix event (before aspect) instead of a time from context
- do not provide a time referent which can be picked up in later discourse

Worked-out example: independent rhemes



- The arrows in the tree are meta-variables over f-structures (not shown)
- They are instantiated to the labels *f*, *p*, *d* (for 'fill', 'put' and 'drink')
- B_f is a boolean and T_f a time associated with *f*
- Such linear logic propositions act as types driving the composition
- Linear modus ponens corresponds to functional application

$$\frac{P : A \multimap B \quad x : A}{P(x) : B}$$

node	constructor	lambda term	
V_1, V_2	$T_f \multimap B_f, T_p \multimap B_p$	$\lambda t_{fill} \begin{bmatrix} e \\ fill(e) \\ e \subset t_{fill} \end{bmatrix}, \lambda t_{put} \begin{bmatrix} e \\ put(e) \\ e \subset t_{put} \end{bmatrix}$	fill/put + perfective aspect
VP_1	$(T_f \multimap B_f) \multimap (T_p \multimap B_d) \multimap (T_f \multimap B_d)$	$\lambda P \lambda Q \lambda t [P(t) \oplus \frac{t'}{t \succ t'} \oplus Q(t')]$	indrheme-narprog
VP_2	$(T_p \multimap B_p) \multimap (T_d \multimap B_d) \multimap (T_p \multimap B_d)$		
I	$T_d \multimap B_d$	$\lambda t_{drink} \begin{bmatrix} e \\ make\ drink(e) \\ e \supseteq t_{drink} \\ t_{drink} < n \end{bmatrix}$	give to drink + imperfective aspect + tense
I	$?(\forall \alpha. (T_\alpha \multimap B_d) \multimap B_d)$	$\lambda P [\frac{t}{\partial} \frac{t_r}{\rho(t, t_r)} \oplus P(t)]$	finite



$B_d :$

$$\begin{array}{l} t_{put} \succ t_{drink} \\ put(e_{put}) \\ e_{put} \subset t_{put} \\ make\ drink(e_{drink}) \\ e_{drink} \supseteq t_{drink} \\ t_{drink} < n \\ t_{fill} \succ t_{put} \\ e_{fill} \subset t_{fill} \\ \partial \begin{bmatrix} t_r \\ \rho(t_{fill}, t_r) \end{bmatrix} \end{array}$$

Conclusions

- Combining LFG and CDRT using Glue semantics enables an analysis of these phenomena all the way from syntax to discourse incorporating both intersentential and intrasentential binding.
- Explicit meaning constructors capture intrasentential binding
- Only when intrasentential binding fails will finiteness do its work and provide for intersentential binding, exploiting the underlying dynamic semantics.
- The constructional meanings in the intrasentential semantics are grammaticalized versions of intersentential discourse relations