Situations and Syntactic Structures: Background and Framework

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Layers of Form; Layers of Meaning

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•lexical vs. functional elements (the former ordered below the latter in a functional sequence)

•ROOTs vs. syntactic contexts

•conceptual vs. structural semantics (the former coming from the lexical item/root, the latter coming from the functional elements/syntactic context)

•'universal' cartographic sequences.

What do We Really Mean by Conceptual vs. Structural Semantics?

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(ii) The content of open class items, or ROOTs.

(iii) Unstructured, idiosyncratic or memorized meaning.

The Syn-Sem Question

Is there something qualitatively special or characterizable about the semantic content that is contributed in the lower (inner domains) of linguistic representation?

Why We Need a New Ontology

•Cartography tells us that there are robust crosslinguistic generalizations about the ordering of meaning elements in an extended functional projection (cf Cinque 1999).

•At the bottom of every functional sequence, we find evidence for a kind of substantive, conceptual, rich, yet flexible kind of meaning, as denoted by open class items.

•Evidence for this kind of *layered meaning* are pervasive and exceptionless crosslinguistically, yet they currently look 'accidental', 'templatic' from the point of view of our formal ontologies. (Minimally, there is evidence for a layering along the lines of Hinzen's Interior vs. Edge)

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$\text{Mood}_{speechact} > \text{Mood}_{evid} > \text{Mod}_{epist} > \text{T} > \text{Mod}_{circ} > \text{Asp} > \text{Voice} > \text{Cause} > \text{V}$

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Even those who are uncomfortable with the universalist claims coupled with fine grained 'cartography' , nevertheless subscribe to the $C > T > V$ template of extended verbal projections and language specific rigid ordering.

(see also Ramchand and Svenonius 2014)

Evidence for Event Kinds

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Carlson (1977), Zamparelli (2000), Chierchia (1998), Hinzen(2016)
Parallel to that, we now have strong evidence for an event kind
domain in the lowest part of the verbal functional sequence.
Gehrke (2013), Gehrke (2015) and subsequent work has argued
from the interpretation of adjectival passive participles for the
existence of event kinds (see also Gehrke and McNally 2015)

Who Should Bear the Burden?

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•Syntacticians describe, and then stipulate the labels in their hierarchic structures. Any such generalizations are either primitive or will eventually be explained by their semantics colleagues.
•Formal semantics has not traditionally cared about the evidence for semantic layering that comes from morphosyntax or cartography. Compositional semantics can be made to track the syntax, but does not attempt to explain it.

Interplanetary Travel, or Verbs in Zoggian

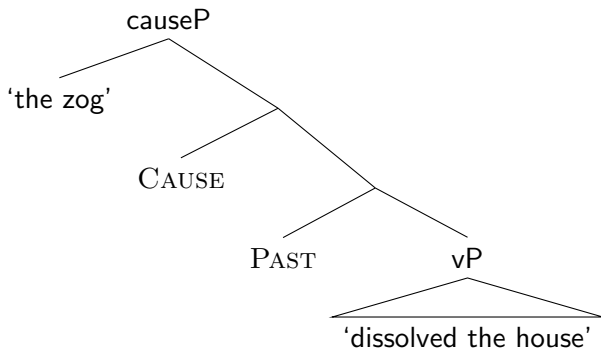Some hypothetical sentences of Zoggian follow in (1).

(1) blixa   fub-ax
     the.house dissolvegreen-PAST
     'The house dissolved into a green slimy puddle.'

(2) blixa   marrg   fub-ax-ilka
     the.house the.zog dissolvegreen-PAST-CAUSE
     The zog dissolved the house into a green slimy puddle.

A Zoggian Tree Structure

The tree structure for the sentence in (2-b) is given below in (3)

(3)

causeP
'the zog'
CAUSE
PAST   vP
'dissolved the house'

Zoggian Compositional Semantics

(4)   (i) $[[\text{ vP }]] = \lambda e[\text{fub}(e) \wedge \text{Undergoer}(e) = \text{'the house'}]$
      (ii) $[[\text{ PAST }]] = \lambda e[\tau(e) <_t \text{ 'now' }]$ (where τ is e's temporal trace function)
      (iii) $[[\text{ CAUSE }]] = \lambda x \lambda e[\text{Causer}(e) = x]$

The vP combines with the PAST morpheme by argument identification to give:
$\lambda e[\text{fub}(e) \wedge \text{Undergoer}(e) = \text{'the house'} \wedge \tau(e) <_t \text{'now'}]$
This then combines with the cause morpheme, again by argument identification to give:
$\lambda x \lambda e[\text{fub}(e) \wedge \text{Undergoer}(e) = \text{'the house'} \wedge \tau(e) <_t \text{'now'} \wedge \text{Causer}(e) = x]$

Robust Crosslinguistic Generalizations concerning Meaning Elements

I take seriously the robust crosslinguistic generalization that tense and aspect inflection when they appear overtly are hierarchically outside of the core verbal description (including the description of cause, process and result in the verb).

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I take seriously the robust crosslinguistic generalization that tense and aspect inflection when they appear overtly are hierarchically outside of the core verbal description (including the description of cause, process and result in the verb). In fact, the orderings are considerably more detailed than that, if we are to believe Cinque (1999) and subsequent work on cartography.

The Semanticists Cannot Save us From Templates

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The Burning Question is: Can we do better than a stipulated template and get closer to an *explanation* for why the meaning orderings show up the way they do?

Kinds vs. Particulars

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The Morphosyntactician
But the functional sequence tells us that there is some notion of kind/property that resides lower down, close to the root and is the basis for the build up of reference to particulars. *In morphosyntax, particulars are built out of essences*.

Empirical Phenomena in the Verbal Domain that require Essential/Non-Instantiation-Related Content

- Adjectival Participial meaning (Gehrke 2013, Gehrke 2015 etc.)
- Causative verbal meanings with defeasible actuality entailments of the caused state. Martin and Schäfer 2014, **?**, Kratzer 2004
- The progressive paradox (Dowty 1979, Landman 1992 etc.)

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apparatus to formally describe these kinds of meanings.
But if modality can be invoked this low down, within root
meanings, and across syntactic categories, then what is the source
for the layering pattern found in the morphosyntax of the verbal
extended projection?

Essences as Basic

Here is Kit Fine, from his 'Necessity and Non-Existence' .

> *"Finally, it will be suggested that the identity of an object— what it is— is not, at bottom, a worldly matter; essence will precede existence in the sense that the identity of an object may be fixed by its unworldly features even before any question of its existence or other worldly features is considered."*

Also event 'properties' as in recent work by McNally and Gehrke (Gehrke and McNally 2015, Gehrke 2015, Grimm and McNally 2015). These authors are very clear that they think of the notion of event essence as *preceding* information about instantiation in the verbal functional sequence.

The Problem with Formalizing Essences Directly

If semantics is to follow morphosyntax in such a way that what is simple and underived in the one system corresponds to what is simple and underived in the other, then *essence* must precede *existence* in the cumulative building up of a natural language proposition.

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In Gehrke and McNally, 'event property' is a primitive which underwrites particulars, but the details of the compositionality are difficult to make precise.

The Internalist vs. Externalist Question

The Externalist:
"There is a crucial 'aboutness' to language, and that if we attempt to ground our theories in internalist notions then we are condemned to theories that make no sense of the intersubjectivity of language and which end up being at best unfalsifiable, and mystical at worst.

The Internalist:
But what about the fact that language is represented in the mind-brain of actual individual speakers? What is it they have memorized? And how is it deployed?

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But what about the fact that language is represented in the mind-brain of actual individual speakers? What is it they have memorized? And how is it deployed?
(News Flash: Formal Semanticists are externalists.)

Chomsky (1995)

But Chomsky is entirely right when he points out that mental phenomena, and the meanings of our natural language symbols, do not seem to be explicable in purely extensional terms, not even with the help of Lewisian possible worlds. Citing Nagel 1993, Chomsky argues that:

> ' It is a hopeless task to "complete the materialist world picture" by translating accounts of "mental phenomena" in terms of a "description that is either explicitly physical or uses only terms that can apply to what is entirely physical" or perhaps give "assertability conditions" on "externally observable grounds". (Nagel 1993. pg.37)
> Chomsky 1995. pg 4 '

Chomsky (1995)

Chomsky advocates a more naturalistic enquiry into the internal products of a natural language system, which will be consistent with the position I will take in what follows.

> " Neurologist Rodolfo Llinás (1987) puts the matter well when describes perception as "a dream modulated by sensory input", the mind being a "computational state of the brain generated by the interaction between the external world and an internal set of reference frames" . But the internal frames that shape the dreams are far more intricate and intriguing than often assumed, even at the level of the lexicon, still more so when we turn to expressions formed by the computational processes."
> Chomsky (1995), pg 23

Background to My Approach

•The verbal extended projection gradually builds up a description
of a situation (the CP).

•Situations are real world particulars that stand in a truth making
relation to this description.

Truth making: "Something on the side of the world— in this case,
a state of affairs— verifies something on the side of language."
(Barwise and Perry 1983, Kratzer 2014, Fine 2013, etc.)

Background to My Approach

According to Fine "Truthmaking is a not a guide to metaphysics."
..."But if our aim is to understand language, then our focus
should be on immediate truth makers, not the ultimate
truthmakers, and the question of *how* they make the statements of
the language true will be of greatest concern."
In fact, I will argue that in language, the verbal extended
projection structures the situational description in a very particular
way, which has implications for the immediate truth makers we
have to assume in natural language and how they function.

Barwise and Perry (1983)

Barwise and Perry (1983) were very clear about the properties of the symbolic primes of a natural language system and what they need to be able to do. Here, the emphasis is on resusability, and user perspective, rather than the more traditional formal semanticist fixation on 'aboutness' and 'intersubjectivity'.

Properties of the Symbolic Primes of an NL System

- Re-usability
- Perspectival relativity
- Ambiguity
- Acquirable on the basis of immediate cognitive/sensory uptake

Quotational Quantificational Semantics (QQS)

Preview:
For human language to get off the ground, we need to have
(i) common possession of symbols that are *abstractions over the different actual situations encountered in the learning phase*, and
(ii) a speaker to deploy those symbols as a means of characterizing new situations in the world as she comes across them.
(iii) The eventuality corresponding to the speech event explicitly represented in the build up of the propositional meaning.
(iii) The 'meanings' of the symbols themselves devoid of temporal or worldly information. They form the hierarchically inner core which are clothed with the contingent information of time, place and world, to link descriptions to actual particulars.

Demonstrations

In terms of implementation, my inspiration has come from the apparently extreme and exotic case of 'ideophones'. Henderson (2015) states that work on the formal semantics of ideophones is scarce because of the 'difficulty in formalizing the distinction between descriptive meaning and depictive meaning, which ideophones seem to traffic in'. In giving his own account, Henderson explores a formal foundation for the notion of *demonstrations* from Davidson (2015) and extends it to account for the ideophonic data. *Intuitively, demonstrations are a special type of communicative event that stand in a similarity relation with the event demonstrated.*

The Metalinguistic Turn

In order to do this we need to add to the usual model, a domain D_μ which is the domain of well-formed linguistic entities of type μ, after Potts (2007). These linguistic objects are triples, consisting of a $<$ `phonological string`, **syntactic features**, $\text{SEMANTICS}>$.

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$[[$ run $]] = <$ run, $<$ **init, proc** $>$, λe[run(e)] $>$

For convenience, we adopt the convention in Henderson (2015) which uses the bottom corner notation to pick out the semantic part of the triple denoted by something of type μ. Thus,

$\llcorner$ run $\lrcorner = \lambda$e[run(e)]

Language Symbols as Objects in the Ontology

(a) Symbols of the language constitute the domain D_μ, which are triples consisting of a $<$ phonological string,**syntactic features**, SEMANTICS$>$

(b) The semantics of a verbal LI are partial descriptions based on sensory and cognitive abstractions over experience.

(c) The syntactic part of the information in a triple that is a member of D_μ, is a subtree of the language. The merge of $u_1 \in D_\mu$ and $u_2 \in D_\mu$, creates a derived element of D_μ, u_3, which has the syntactic representation built by merging the syn-rep of u_1 with the syn-rep of u_2, and a semantics is composed by ordinary argument identification of $\llcorner u_1 \lrcorner$ and $\llcorner u_1 \lrcorner$.

Hendersonian Deployment (The Case of Ideophones)

This is Henderson (2015)'s denotation for the quotation meaning.
TH (d) = u says that the 'theme' of d is the linguistic object u,
and d 'demonstrates' or has certain structural properties in
common with e.

(5)   QUOTE : $\lambda u \lambda d \lambda e[TH_\delta(d) = u \wedge DEMO(d,e)]$

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If this were not so, they would not be reusable in the symbolic system of NL.

This reusable essential symbolic content is the equivalent of Henderson's ideophone. A symbol is a conventionalized ideophone, used to invoke and describe and event.

Deployment, Generalized

Deployment of the Symbolic Content at EvtP

(6)   I. EvtP : $\lambda d \lambda e[\text{UTTERANCE}(d) \wedge \text{TH}_\delta(d)=u \wedge \text{CONVEY}(d,e)]$
Property of of an utterance event d and event e, which has u as its theme, and where d deploys u ($\in D_\mu$) to convey e.
II. In the case of purely conventional (i.e. non-depictive) LIs, uttered with sincerity and without metaphor or hyperbole,
'$\text{TH}_\delta(d)=u \wedge \text{CONVEY}(d,e)$' $\longrightarrow$ '$\llcorner u \lrcorner (e)$'

Using Expressions with Intrinsic Semantic Properties

This is a representational encoding of the intuition that reference involves a speaker and a context in addition to the symbol she is deploying. But it is not just a matter of a speaker X using the symbol Y to refer to the object Z, we need to leave room also for the contextual circumstances and mode of deployment of the symbol in question. Once again Chomsky (1995) puts it well,

> " More generally, person X uses expression E with its intrinsic semantic properties to talk about the world from certain intricate perspectives, focusing attention on specific aspects of its, under circumstances C, with the "locality of content" they induce (in Bilgrami's sense). "
> Chomsky (1995), p. 43

Champollion (2015)

Champollion (2015) proposes is to take verbs themselves to denote sets of sets of events. Essentially, verbs and their projections denote existential quantifiers over events, and the event variable is no longer considered to be bound at the sentence level as in standard accounts. He argues that this is necessary because the event variable always scope underneath other quantificational elements. Here is Champollion's denotation for the verb phrase *see Mary*.

(7)   [[see Mary]] $= \lambda f \exists e[see(e) \wedge f(e) \wedge th(e) = Mary]$

The verb phrase now denotes a property of event properties, a move that is required to allow further properties of the event to be added after existential closure.

Champollion dubs this "quantificational event semantics"

Champollion-style Quotational Semantics

The locus of closure of the event variable converges in my own implementation with the introduction of a variable representing *spatiotemporal/worldly properties* of events. Thus, the AspP built up by the quotational quantificational system, will therefore look as in (8).

(8) $[[\text{ AspP }]] = \lambda f_{<v,<v.t>>} \lambda d \exists e[\text{Utterance}(d) \wedge \llcorner u \lrcorner(e) \wedge f(d)(e)]$

So at the level of AspP we have a property of Relations that link the utterance context d with an existing event that is being demonstrated/described in d. That event has conceptual/perceptual properties as characterized by u . At this point temporal information can be added to the event description that was impossible before.

Why Reify The Speech Event?

Semanticists understand very well the need for incorporating contextual information to build meanings that have actual truth conditions, so from a semantic point of view this is not new. But why put it in the representation in this literal fashion, instead of simply invoking it in the model or in the process of interpretation?

Why Reify The Speech Event?

Semanticists understand very well the need for incorporating contextual information to build meanings that have actual truth conditions, so from a semantic point of view this is not new. But why put it in the representation in this literal fashion, instead of simply invoking it in the model or in the process of interpretation? Why explicitly represent deployment? Isn't it an architectural mistake to treat the 'metalinguistic' reality in this linguistic representational way. Doesn't it lead to all kinds of philosophical horrors and specular infinities?

My Answer

Understanding the Symbolic Primes: We get a better understanding of the representation of lexical items, and systematic polysemies

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Underwriting NL Generalizations: Small steps in the direction of explaining broad level templatic facts/generalizations ($V < T < C$).

Quantificational Quotational Semantics: Three Layers of Meaning

Intuitively, we build up a representation of the proposition in three stages:

(i) The putting together of lexical items which encode certain event properties. This stage needs to be productive and compositional, but with no reference to temporal or world parameters. (The Interior)

(ii) The assertion by the speaker of the existence of an event with those properties. (Deployment)

(iii) Addition of temporal and world properties to the event. (Referential/Instantiational domain)

(iv) Anchoring of the worldly and temporal properties via the Origo (the speaker and her contextual coordinates).

Taking Stock

In this proposal, there is a domain of meaning and meaning composition that is in principle devoid of temporal or worldly information.

I have modelled these meanings as *partial descriptions of particulars*. These meanings compose just like your standard garden variety properties, via simple conjunction, or by function argument composition. Symbolic primitives can also be arguments of functors in this domain, allowing complex properties to be formed *without commitment to referents*.

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It requires symbols themselves to count as a sort of individuals in the 'real' domain.

We also reify the indexical aspect of meaning construction, by explicitly representing the situational variable of the utterance eventuality itself.

So What Really Underwrites the Cartographic Generalizations?

Symbolic self consciousness and the *reusability* of open class items necessary for a generative meaning engine.

This is essentially a 'third factor' design aspect of language which does the work here.

What Lies in the Domain of D_μ Composition?

I argue in some detail in *Situations and Syntactic Structures: Auxiliaries and Ordering in English* (2018) that the progressive in English, adjectival passive participles, dynamic modality, among others are composed at this level.

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These phenomena have all been argued to involve modal notions, but in this system they do not require generalizations over possible worlds. Rather, they are primitive manipulations, involving partial descriptions involved in the creative construction of complex symbols of the language, elements of D_μ.

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(The progressive in English is (i) low in the functional sequence and (ii) acquired first by children (even before the two word stage). If we let the progressive be a modal notion, then we gut the system of any explanation of the cartographic generalization that expresses modal notions high morphologically.)

What Does it Mean for Morphology?

Inflected forms are those that are linked by virtue of the fact that they share the same partial description as their semantic member. *Derivations* contain more than one partial description. They occur when one element of D_μ combines with another to create a complex element of D_μ. This includes compounds, but also derivations like *breakable*, *broken*, and *breaking* which involve relations between properties to create derived properties.

Generative Processes within the First Phase (Denoting in the D_μ (Interior) domain)

Taking examples from the verbal fseq,
breakable can be related to *break* without entailing the existence of any kind of 'breaking' event, and without generalizing over particulars by quantifying over 'possible worlds'.

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broken can describe a state of affairs related to the type of event known as 'breaking', while still allowing for the possibility that a radio can be 'built broken'.

Consequences

•By reifying the symbol and the deployment event, we can allow the symbol to denote partial descriptions of eventive particulars, without commiting ourselves to the existence of those particulars until the event is existentially closed at the vP level.

•This allows a zone of compositional concept building which seems to be required for a wide range of derivational word forms, including compound formation.

•This makes for a sharp divide between the composition that goes on under vP, and that which takes place afterwards: in the lowest zone, we are explicitly manipulating symbols, elements of D_{μ}, and this is followed by 'deployment' .

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•This sharp divide in the artifacts of natural language is consistent with the psycholinguistic and neurological dissociations found in the behaviour of functional vs. lexical items.

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