Thursday Interdisciplinary Colloquium
Winter 2018-Spring 2018
Thursdays, 16:00-17:30, Webb 103

14.06.18

Patrick Duffley
Laval University
Must/Need, May/Can, and the Scope of Negation:
The Downside of Logical Paraphrases

This paper will argue that the logical paraphrases used to describe the meanings of the modals *must*, *need*, *may*, and can obscure the semantic interaction between these verbs and negation. Unlike modal logic, which has only one possibility and one necessity operator, English has two modals corresponding to the notions of possibility and necessity. The language-specific content of these verbs is argued to explain why they interact differently with negation. For example, since *can* attributes a potentiality to its subject, negation denies that the subject has the potential for realizing some event. This amounts to excluding all possibility of the event. *May* denotes a more tenuous sort of possibility in which the way things are merely allows something as possible. This form of possibility logically entails its own negation, as stating that the state-of-the-world allows rain as a possibility does not logically exclude the possibility that it might not rain. This makes it seem as if negation has no effect on the assertion of *may*. The study presented constitutes an argument against a lexicalization analysis: The modal and the negation each contribute their own meaning to the resultant sense, but according to their conceptual status as inherently irrealis notions.

07.06.18

Tal Linzen
Johns Hopkins University
On the Syntactic Abilities of Recurrent Neural Networks

Recent technological advances have made it possible to train recurrent neural networks (RNNs) on a much larger scale than before. These networks have proved effective in applications such as machine translation and speech recognition. These engineering advances are surprising from a cognitive point of view: RNNs do not have the kind of explicit structural representations that are typically thought to be necessary for syntactic processing. In this talk, I will discuss studies that go beyond standard engineering benchmarks, and examine the syntactic capabilities of contemporary RNNs using established cognitive and linguistic diagnostics. These studies show that RNNs are able to compute agreement relations with considerable success across languages, although their error rate increases in complex sentences. A comparison of the detailed pattern of agreement errors made by RNNs to those made by humans in a behavioral

experiment reveals some similarities (attraction errors, number asymmetry), but also some differences (relative clause modifiers increase the probability of attraction errors in RNNs but decrease it in humans). Overall, RNNs can learn to exhibit sophisticated syntactic behavior despite the lack of an explicit hierarchical bias, but their behavior differs from humans in important ways.

24.05.18

Boaz Ben-David
IDC Herzliya, University of Toronto, and Toronto Rehabilitation Institute
Working Memory, Speech Perception, and Eye-movements:
The Interaction of Working Memory Load, Working Memory Span,
and Noise on Spoken Word Recognition

In daily life, speech perception is usually conducted in noise, while listeners perform additional tasks that tap working memory capacity. However, the role of working memory in speech processing is not clear. In a series of studies, we examined how working memory load, working memory span, and noise, affect spoken word recognition, as the word unfolds in time, using eye-tracking. Listeners heard spoken instructions that related one of four objects depicted on the monitor, while their eye-movements were recorded. Eye-movements captured listeners' ability to differentiate the target noun from its depicted phonological competitor (e.g., CANdy-CANdle). Words were presented either in quiet or on the background of speech spectrum noise, both within- and between-participants. We manipulated working memory load, using a digit pre-load task, where participants had to retain either one (low-load) or four (high-load) spoken digits for the duration of the word recognition trial. Results suggest an interaction of the effects of noise and working memory load. When words are presented in noise, working memory load delayed recognition more than when words were presented in quiet. This delay was mainly found for listeners with lower, yet normal, working memory span. We suggest that working memory and noise tap the same resources in speech perception.

17.05.18

Todd Snider
Cornell University and the Hebrew University
Constraints on Propositional Anaphora

Anaphors are words whose reference is determined on the basis of the interpretation of some other word or phrase (its antecedent). For example, pronouns are anaphors whose antecedents denote individuals, as in (1).

(1) *Nancy has a car.* She *has owned* it *for five years.*

This talk will focus on anaphors which refer to propositions, as in (2).

(2) *Nancy has a car.* She told me that.

In particular, this talk will discuss some of the constraints on propositional anaphora, exploring when propositional anaphora is licit (and when it is not).

The first part of the talk deals with pragmatic discourse-level constraints, in particular at-issueness. There are competing notions of at-issueness, but many are discussed in the literature – explicitly or implicitly – as having consequences for a proposition's availability for anaphora in non-trivial ways (e.g., AnderBois et al. 2013). I argue against this tight linking, and demonstrate that a proposition's at-issue status in a discourse (at least as defined by Simons et al. 2010) is neither necessary nor sufficient to determine its availability for anaphora. Thus, propositional anaphora is not constrained by at-issueness, at least under one prominent definition thereof.

The second part of the talk moves from the discourse to the sentence, to see if there are syntactic constraints on propositional anaphora. In the tradition of Karttunen's (1969) examination of which NPs make an individual available for anaphoric reference, I present (highlights from) a comprehensive examination of which structures make propositions available for anaphora. I present some surprising results which cut across traditional syntactic classifications, including data on small clause and raising/control/ECM verb constructions. These data lead me to propose a new generalization for when propositions are available for anaphoric reference. I then compare the observed behavior of propositional anaphora to that of individual anaphora.

10.05.18

Aynat Rubinstein
The Hebrew University
On Abilities and Priorities: Existential Possessive Modals in Hebrew

This talk explores the semantics of modal existential possessive constructions (comparable to *have to*) in Hebrew. Previous research on modal uses of *yeš* 'be' in Biblical, Rabbinic, and Medieval Hebrew (Ben-Ḥayyim, 1953; Shehadeh, 1991), and my own work on the evolution of the construction during the consolidation of Modern Hebrew around the turn of the 20th century (Rubinstein, 2017) has shown that the classical Hebrew possessive modal construction *yeš* + TO-X + INFINITIVE was not an obligation construction, but rather a construction expressing possibility, primarily ability, with an implication of necessity detected alongside possibility in many cases. In Modern Hebrew, there have been two notable developments: a construction expressing obligation has consolidated in which the dative phrase is ungrammatical (*yeš* (*l-i) *le-hamtin be-savlanut* 'Wait patiently'; cf. Boneh, 2013), while a new goal-oriented meaning has developed in which the dative phrase is obligatory (*yeš l-i laʕasot kvisa* 'I have laundry to do').

The goal of this talk is to investigate these syntactic-semantic developments in theoretical terms. The challenge is threefold: First, to provide a formal semantic analysis of the possibility-cum-necessity modality of *yeš* in classical Hebrew; second, to suggest how the modal *yeš* construction became an impersonal construction expressing obligation in Modern Hebrew; and third, to explain the new goal-oriented meaning of what looks like a true possessive construction. I will develop the hypothesis that formal analyses of *ability modality* hold prospects for explaining the central observations about the historical data and perhaps also the changes undergone in the construction as it entered Modern Hebrew.

03.05.18

Omer Rosenbaum
Tel Aviv University
Strictly Incremental Parsing, Unconscious Deletion, and C-Command

Consider the following sentence from Frazier & Rayner:(1982)
(1) While Mary was mending the clock started to chime.

(1) is an example of sentences that are difficult for the human parser to process. Such sentences, which the parser successfully analyzes only after perceptible breakdown and conscious reanalysis, are called Garden Path sentences, as while processing them, the human parser is led down the garden path.

In this talk, I will use the Garden Path phenomenon in order to investigate the underlying mechanisms of the human parser. I shall attempt to answer the following questions:
(a) Given a locally ambiguous segment (e.g., "While Mary was mending the clock…"), which parse does the parser initially pursue?
(b) What sentences result in a Garden Path effect?
(c) Is the parser head-driven? That is, can the parser attach arguments and adjuncts to the syntactic tree only following the appearance of the relevant head in the input?

Most previous research on this topic has relied on evidence from head-initial languages. I will consider two theories that aim to provide answers for the above questions, those made by Gorrel (1995) and Siloni (2004), and provide counterexamples to each, specifically from head-final languages.

I will then provide my own proposal regarding the mechanisms underlying the working of the human parser, having recourse to strict incrementality, and basic structural relations such as c-command.

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ambiguous sentences. *Cognitive psychology*, 14(2): 178-210.

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26.04.18

Paul Wexler
Tel Aviv University
The New Field of Afro-Eurasian (Silk Road) Linguistics
[The benefits for Yiddish and other old Jewish languages, Hebrew, German, Slavic, Iranian, Turkic, Chinese, Arabic, etc.]

This talk will address eight topics in "Silk Road linguistics":

(i) By "Silk Roads" I understand trade in the 9th-13th centuries between Germany and China, Korea, Japan, Central Asia, Southeast Asia, Andalusia, West Africa, and the Near East; between Central Asia and India; between Iran and East Africa. This trade has led to the rise of sweeping isoglosses linking many Afro-Eurasian languages spoken *en route*.

(ii) New cryptic Jewish languages and a new cryptic Hebrew lexicon of trade were created by peripatetic Jewish merchants around the 9th century in response to the granting of unique trading privileges from the Holy Roman Empire in Western Europe and the Tang dynasty in China in the 9th century. Jews had these rights because they were neutral in the religious disputes affecting Islam. Between 0-1200 A.D., the overwhelming majority of Jews resided in the Iranian empire; they were overwhelmingly the descendants of Iranian converts to Judaism. Today, over 90% of the world's Jews still call themselves "Ashkenazic" or "Sephardic", using an Iranian ethnic and toponymic term, respectively. The term Ashkenazic was originally used by Slavic- and Iranian-speaking Jews and had originally nothing to do with Germany. The Iranians and Jews had a monopoly on the Silk Roads.

(iii) Jewish trade languages founded by the 9th century include Yiddish, Judaized Arabic, Iranian, Berber, Ibero-Romance, and Georgian. They can elucidate many topics in the histories of the non-Jewish contact languages, and Jewish history, and show the need for study within a broad Afro-Eurasian, rather than a narrow monolingual, context. The history of the Old Jewish languages can only be understood fully in the context of the Silk Roads.

(iv) Yiddish, the focus of my research, is a Slavic language, created in the Khazar and Holy Roman empires, which underwent massive Iranianization and modest Turkicization, and even has influences from other Asian and African languages, including Ethiopic, Berber, Mongolian, Chinese, and maybe even Tocharian. Hence, Yiddish is a priceless "litmus test" for

uncovering hidden Iranian, Turkic, and Slavic influences in German, and Iranian and Turkic elements in German, can elucidate the chronology of the Arabicization of Iranian and Turkic languages, can reconstruct the location of Irano- and Turko-Slavic tribal confederations in Europe up to c. 1000 A.D., and can explain how Iranian language, ethnography, religion (including Christianity), and art styles spread to China, Japan, and Europe.

(v) Because Silk Road trade was so lucrative, countless non-Jews sought membership in the Jewish trading guilds. This required "conversion" to Judaism, which also brought freedom from the status of slavery (affecting Slavs and other pagans). Since new converts far outnumbered the Jewish descendants of earlier converts, many pagan customs were introduced into Judaism – most of which had been dropped from Islam and Christianity, e.g., the glass-breaking ceremony at a wedding. Hence, most ritual terms in the old Jewish languages are not genuine Hebraisms (e.g., Iranian *xol-hamo'ed*, *kašer*, *xala*, *bet-hakneset*). Conversion led to the formation of multi-ethnic Jewish communities and a universal religion.

(vi) Since Jewish merchants were always in close contact with co-religionists speaking other, often mutually unintelligible, languages, it was imperative to create a common lexical corpus of Hebraisms and Hebroidisms. All speakers contributed to this cryptic corpus, but Slavic Yiddish speakers predominated. About 50% of Modern Hebrew lexicon consists of neologisms created for "Silk Road Hebrew" users 1000 years ago.

(vii) Old Jewish languages are crucial for elucidating how cryptic trade languages and lexicons are created, since they are the oldest surviving examples. When the Jews lost their paramount role in the Afro-Eurasian trade routes, roughly by the 13th century, they abandoned their cryptic "Hebrew" trade lexicon to their former non-Jewish partners (e.g., Hebrew and Romani > German by the 14th century, and > Afro-Asian trade lexicons in North and West Africa and Western China). While Yiddish is *geographically* a "peripheral" Slavic Silk Road language, it is faithful to the norms of the two "core" language families – Turkic and Iranian.

(viii) Without the Chinese, Iranians, Turks, Slavs, and Arabs, Modern Hebrew, the Jewish tribal confederations and Judaism would not exist today. Arabic flooded Persian and became models for the acquisition and creation of Hebraisms by the Jewish languages; the Chinese, Iranians and the Arabs maintained the Silk Roads which emphasized the role of Iranian Jews who alone spoke Aramaic (and could thus preserve a Hebrew language tradition), and enabled massive conversion to Judaism, which vastly increased the Jewish population.

12.04.18

Elior Elkayam
Tel Aviv University
From Predication to Prediction: Grammaticalization of the Temporal, Aspectual, and Modal Senses of the Hebrew Past Tense Copula

In Modern Hebrew, the *qatal* form of *haya* 'be' functions as a past tense copula to predicate non-verbal predicates (e.g., *hu* **haya** *more* 'He was a teacher'), or as an auxiliary (i.e., the *haya* + participle construction) to convey a range of meanings, all the way from past habits (e.g., *hem hayu garim po* 'They used to live here') to generic or past predictions (e.g., *xaval lo amart li, hayiti mevi'a mašu* 'It's a shame you didn't tell, I would have brought something').

This presentation delineates the grammaticalization of the predicative, aspectual, and modal senses of *haya* all the way from Proto-Semitic to Modern Hebrew. I will show that the '*haya* + participle' construction emerged in Biblical Hebrew as the past imperfective, which in Modern Hebrew was narrowed to the past habitual (Rosén 1977, Doron 2006). I will also claim that the predictive *haya* construction is traceable to the irrealis sense of *haya* in Biblical Hebrew. In Mishnaic Hebrew, the irrealis *haya* was incorporated into a conditional construction which persisted in Modern Hebrew.

Relying on Narrog's (2005) conceptual space of modality, I categorize predictions as tensed, generic, or attitudinal. Based on a corpus analysis of spoken (CoSIH) and written Hebrew (HeTenTen), I will argue that generic predictions are grammaticalized via reanalysis of tensed predictions and that attitudinal predictions share both generic and desiderative senses, placing it in-between volitive and non-volitive modality.

I will show that each grammatical step is characterizable according to formal (Lehmann 1995) as well as functional (Narrog 2005, 2017; Kranich 2015) criteria. I develop this idea further and propose a new model for grammar and grammaticalization, called the Lexicogrammar Spectrum. This model represents forms with a reference to their function, syntax, and embodied representation. Thus, it has two dimensions: the x-axis stands for the lexicogrammar continuum (Halliday & Mathiessen 2004), which I argue is another name for embodied representation (Zwaan 2004). The y-axis stands for variability, which is manifested in (a) syntactic restrictedness (for words or morphemes), (b) constructional variability (Michaelis 2017), and (c) paradigmatic (i.e., oppositional) variability (Lehmann 1995). The advantage of this model is that it visualizes both synchronic and diachronic information, while at the same time providing formal, syntactic, and representational information.

Selected References
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22.03.18

Alexander Grosu and Koji Hoshi
Tel Aviv University and Keio University
***Analyses of Japanese 'Internally-Headed' Relatives,
and the Pitfalls of Homophony***

There are (at least) three types of formal syntactic-semantic approaches to J(apanese) I(nternally) H(eaded) R(elative) C(onstruction)s, represented by [i] Shimoyama (2001) (built on Hoshi 1995), [ii] Landman (2016) (built on Grosu & Landman 2012), and [iii] Erlewine & Gould (2016). *All these view J-IHRCs as* **necessarily definite** *complex DPs*.

IHRCs have the superficial appearance of (1).

(1) [[[complete sentence]-*no*]-Case]

The gist of the three approaches is:
[i] The complex DP contains a CP-internal DP (the 'I(nternal) H(ead)'), which serves as **antecedent** of a CP-external **discourse-type definite anaphor**. *The IH and the anaphor are thematic participants in their clauses*.

[ii] The IH is a **co-argument** of a N(ull) O(perator) attached to the clause immediately containing the IH. The NO undergoes cyclic A-bar movement to the top of the relative, where it gets construed as a lambda operator. The lambda abstract combines with a CP-external null definite determiner, yielding a denotation for the complex DP. *The IH and the complex DP are thematic participants in their clauses*.

[iii] The IH does **not necessarily determine** the denotation of the complex DP, which can also be built on a distinct contextually salient set of entities.

Many of the properties on which [i] and [ii] are built (at least seven of them) have been challenged in earlier literature. All of these challenges were argued in Grosu & Hoshi (2016, 2018) to be traceable to a confusion of IHRCs with one or more of three other constructions that have the superficial appearance of (1), and that can, under certain circumstances, be string-wise homophonous with IHRCs.

In this talk, I will focus on two types of challenge, which deny the following two tenets of [ii]: [A] IHRCs are island-sensitive, and [B] the IH necessarily determines the denotation of the complex DP. I describe in detail the situations in which homophony may seem to justify the denial of [A] and [B], I then refute the challenges to [A]-[B] by relying on carefully constructed unambiguous data, and I finally reach the conclusion that this refutation supports the analysis in [ii] over those in [i] and [iii].

15.03.18

Avital Deutsch
The Hebrew University

The Interrelation between Root and Nominal-Pattern Extraction in the Course of the Morphological Decomposition of Hebrew Words in a Fast Priming Procedure for Sentence Reading

Hebrew words are composed of two non-concatenated morphemes: a consonantal *root* embedded within a *nominal* or a *verbal-pattern* morpho-phonological unit. Research on written-word perception using the masked-priming paradigm has revealed a robust effect of the roots and the verbal-patterns, but not the nominal-patterns, on word recognition. These findings suggest that the Hebrew lexicon is organized and accessed via root units. However, the absence of a nominal-pattern effect creates theoretical difficulties for describing the extraction of the root morphemes. We explored the hypothesis that the potential facilitative effect induced by a shared nominal-pattern was annulled in previous studies by an interference effect induced by the competition between the roots of two words derived from different roots but with the same nominal-pattern. A fast-priming paradigm combined with a letter-delay paradigm was used, where the target words are embedded in sentences in places that are initially occupied by a random letter string. While the eyes move into the target space, the random string is changed into the prime, which consists of the nominal-pattern letters, while the root letters are replaced by dashes. After a brief presentation of the prime, it is replaced by the target. This procedure makes it possible to isolate the initial influence of nominal-patterns on lexical access. The results, based on eye-fixation latency, demonstrated a facilitatory effect induced by nominal-pattern primes over orthographic control primes when presented for 33 ms or 42 ms. However, using this

paradigm for the root letters, i.e., using prime stimuli consisting of only the root letters while the nominal-patterns are replaced by dashes, did not reveal the robust root effect usually observed with the masked priming paradigm. The results are discussed in relation to the effect revealed by the two paradigms and the role of the word-pattern as a mediating unit of morphological decomposition of Hebrew complex words and root extraction.

The lecture will be delivered in Hebrew.

08.03.18

Anna Inbar and Leon Shor
Tel Aviv University
Expression of Negation in Hebrew:
From Grammar to Co-Speech Gestures

The present study will examine negation in spoken Israeli Hebrew as a multimodal phenomenon that is expressed not only in the spoken modality, but also in the gestural one. We will focus on the semantic nature of the gestures associated with negation in Hebrew, and on how these gestures are employed as a component in utterance construction. Since negation is essentially an abstract concept, analyzing its image-like representation in the form of gestures could contribute to a better understanding of negation in general. Furthermore, it will be shown that, exploring the different ways in which these gestures interact with morphosyntactic negators, may lead to a more thorough understanding of the discourse functions of negators in Israeli Hebrew.

Additionally, it was found that the gestural patterns revealed were used to indicate explicit (grammatical) negation as well as implicit (covert) negation. According to Lewandowska-Tomaszczyk (1996), the identity of negation does not depend solely on the overtly expressed negative words, and the negative identity of some linguistic units may be covert. We will show that the negativity of such linguistic units may be uncovered by gestures.

References

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