Language Acquisition in German and Phrase Structure Change in Yiddish

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The Big Questions

- **The Biggest Question**: Is it possible to predict the direction of syntactic change based on the input to the learner?

- **Next Biggest Question**: what does data from the acquisition of modern, living languages tell us about language change in the far past?
  - “Using the present to explain the past” (Labov 1977, and p.c.)

- **Narrower Question at Hand**: In particular, was the change in the position of Tense in Yiddish a necessary development?
  - Under what assumptions about phrase structure and acquisition?
Introduction

Outline

1. Introduce the Yiddish case-study, and a very simple learning algorithm (Yang 2000) to test against it

2. A Hypothetical Early Yiddish Learner: input from 2 Yiddish Grammars
   - Estimated using data (subordinate clauses) from the Penn Yiddish Corpus (Santorini 1997/2008)
   - A serious puzzle emerges.

3. Why is German Acquisition in the title of this talk?
   - It gives a clue to where the solution to the puzzle lies.

4. A Kaynian Solution to the Puzzle

5. Directions for Further Research and Conclusions
Section 1

A mixture of inputs

- Santorini (1989, 1992, 1993a) shows, Yiddish changed gradually from Tense-final to Tense-medial during the years (roughly) ~1400-1800

- During the change, there was a mixture of both phrase structures in the speech community (“grammar competition” in the sense of Kroch 1989 and much subsequent work)

- Under a classical X-bar phrase structure, this means something like...
Section 1

A mixture of inputs
A learning model


Given a mixture of 2 grammars in the input, $G_1$ and $G_2$, a child is expected to learn both, assign some probability (weight) to each, and then update these weights throughout the learning process.

- If an ambiguous input is encountered, i.e. either $G_1$ or $G_2$ can analyze it, then the child will reward whichever grammar he/she happened to be using at the time.
- If an unambiguous input in encountered, e.g. only $G_1$ could have produced the sentence, then either $G_1$ will be rewarded, or $G_2$ will be punished. Either way, $G_1$ ends up with an augmented weight.
A learning model

Therefore, the outcome of the competition depends on unambiguous inputs to the learner.

As the weights are updated over and over again in this way, with the learner using $G_1$ and $G_2$ alternately to analyze the outputs of $G_1$ and $G_2$ in the ambient linguistic environment, the grammar which produces more unambiguous sentences of its own type will have its weight augmented more often.

And, of course, over generations as well.

Yang shows mathematically that this is true even independently of the initial weights of $G_1$ and $G_2$.

i.e. independently of the frequencies of the two grammars in the population.
Section 1

A learning/change model

- In other words, (in selectional, evolutionary terms,)

- \( \text{Fitness}(G) = \) proportion of unambiguously “G” clauses it produces out of all the clauses it produces.

- \( \text{Advantage}(G_1 \text{ over } G_2) = \text{Fitness}(G_1) - \text{Fitness}(G_2) \)

- Yang argues that if \( \text{Fitness}(G_1) > \text{Fitness}(G_2) \), then \( G_1 \) must win in the long run (and vice-versa).
  - The outcome of the change is entirely fixed, once it begins.
2. A Hypothetical Early Yiddish Learner

- Estimate what collection of ambiguous and unambiguous inputs the learner would have seen at the beginning of the change, just after the Tense-medial grammar was introduced.
  - Using the Penn Yiddish Corpus (Santorini 1997/2008)

- **Corpus for the Tense-final grammar**: a sample of texts from pre-1507 Western Yiddish which contain nearly no Tense-medial clauses (no clearly Tense-medial clauses)
  - Especially Elia Levita’s Bovo Bukh, published 1507

- **Corpus for the Tense-medial grammar**: texts from 1848-1947 Eastern Yiddish which contain nearly no Tense-final clauses
Background: diagnostics


- Pre-Tense objects diagnose Tense-final order in (at least) Yiddish (Wallenberg 2008)
  
  \[(\text{Subj} > \text{particle/negation/object}) > \text{finite-verb} \quad \text{vs.} \quad \text{finite-verb} > \text{particle/negation/pronoun-object}\]
Section 2

Unambiguous Subordinate Clauses

- **Tense-final:**
  - **Particle, Object**
    - (1) ...das ikh **im ab zag**
      - *that I him off spoke*
      - “that I refused him”
      - *(G”otz fun Fiderholtz’s Complaint, date: 1518)*

- **Negation**
  - (2) **vau keyn fleysh nakh keyn blut nit iz**
    - *What no flesh nor no blood not is*
    - “What neither flesh nor blood is…”
    - *(Preface to Lev Tov, date: 1620)*
Section 2

Unambiguous Subordinate Clauses

- **Tense-final, continued:**

- **V > Aux (, and Object)**

  (3) \( \ldots \text{d[a]z mir yusf di h' zhubim nit gebn vil} \)
  
  that me **Joseph the five guilders not give wants**
  
  “that Joseph doesn’t want to give me the five guilders”
  
  (court testimony from Rubashov 1929: 158, date: 1465;
  also cited in Santorini 1992)

(4) **Vi mir das kinigreykh fun hkb"h un zeyn yokh oyf uns antpfngn habn**

  how we **the kingdom of God and his yoke on us accepted have**
  
  “…how we accepted upon ourselves the yoke of the kingdom of heaven”
  
  *(Preface to Sefer Shir ha-shirim, date: 1579)*
Section 2

Unambiguous Subordinate Clauses

- **Tense-medial:**
  - **Particle**

  (5) un dernokh hot zi im gefregt, tsi er hot lib tsimes
  
  *and afterwards has she him asked Q he has love tsimes.*

  “Afterwards, she asked him if he likes tsimes.”
  
  (Olsvanger 1947, *Royte Pomerantsen*, date: 1947)

(6) ... vi me ruft oyf dem rov tsu der toyre

*how one calls up the rabbi to the Torah*

(Olsvanger 1947, *Royte Pomerantsen*, date: 1947)
Section 2

Unambiguous Subordinate Clauses

- **Tense-medial, continued:**
  - **Negation (, and pronoun object)**
    
    (7) az men hot **ihm** friher keyn mahl **nist** dem emes gzagt
    
    *that one has him earlier no time not the truth said*
    
    “that hadn’t earlier been told the truth even one time”
    
    *(Vos iz dos azuns geshehn in Vien un in Lemberg?, revolutionary proclamation by Judah ben Abraham, date: 1848)*

- **Pronominal Object**

  (8) der tate hot **im** gefregt, vi azoy men ruft **im**
  
  *The father has him asked how one calls him*
  
  “The father asked him what his name was.”
  
  *(Grine Felder, date: 1910)*
The input becomes more complicated...

- **PP Extraposition**
  (9) d[a]z ikh reyn verde fun der ashin

  *that I clean become from the ashes*

  “that I become clean from the ashes”

  (Santorini 1992: 607; example from Johann Jakob Christian’s *Eyn sheyn purim shpil*, 1004, date: 1697)

- **DP Extraposition**
  (10) ven er nit veys eyn guti veyd

  *if he not knows a good pasture*

  “if he doesn’t know a good pasture”

  (Santorini 1992: 607; example from Abraham Apotheke Ashkenazi’s *Sam hayyim*, 41, date: 1590)
Section 2

The input becomes more complicated...

- **West Germanic Verb (Projection) Raising**

  (11) dr veyl es gimeyniklikh iz giv[o]rdn

  \textit{because it common is become}

  “because it has become common”

  (Santorini 1992: 607; example from Anshel ben Joseph’s Preface to \textit{Merkevet ha-mishneh}, 1r, date: 1534)

  (12) …dz es di mtsreym nit zaltn zehn

  \textit{that it the Egyptians not should see.}

  “That the Egyptians shouldn’t see it.”

  (Leib bar Moses Melir’s \textit{Book of Esther}, date: 1589)
Ambiguous Subordinate Clauses

- **One tensed lexical verb (“Simplex”)**
  - **Early Yiddish**
    
    (13) vas zi bigert  
    *what she desires*  
    “that I refused him”  
    *(Bovo Bukh, date: 1507)*
  
  - **Modern Yiddish**
    
    (14) ikh vil zi nemen vi zi shteyt un geyt  
    *I will her take how she stands and walks*  
    “I’ll take her however she is.”  
    *(Grine Felder, date: 1910)*
Section 2

Ambiguous Subordinate Clauses

- One tensed lexical verb ("Simplex")
  - Early Yiddish
    (15) vu er vust di altn hern
    *how he knew the old lords/knights*
    
    (16) biz mir kumn tsum nestn purtn
    *until we come to-the next section*
    (Elia Levita’s *Bovo Bukh*, *date*: 1507)

- Modern Yiddish
  (17) az der rov hot a toes
  *that the rabbi has a mistake*
  “that the rabbi made a mistake” (Royte Pomerantsen, *date*: 1947)
Ambiguous Subordinate Clauses

- **Finite auxiliary, nonfinite lexical verb ("Complex")**
  - **Early Yiddish**
    
    (18) vs  
    
    er  
    
    valt  
    
    hbn  
    
    *what he wanted have*  
    
    “what he wanted to have”  
    
    *(Bovo Bukh, date: 1507)*
  
  - **Modern Yiddish**
    
    (19) vos  
    
    er  
    
    hot  
    
    gehat  
    
    *what he has had*  
    
    “what he had”  
    
    *(Royte Pomerantsen, date: 1947)*
Ambiguous Subordinate Clauses

- Finite auxiliary, nonfinite lexical verb ("Complex")
  - Early Yiddish
    (20) ds ikh zul vur mikh merkn
    *that I should for myself take note*
    “that I should take notice for myself”
    *(Bovo Bukh, date: 1507)*
  - Modern Yiddish
    (21) mit vemen ikh bin in teater gegangen
    *with who-DAT I am in theater gone*
    “with whom I went to the theater”
    *(Nokhem Shtif’s The Slavicization of Yiddish, date: 1932)*
Ambiguous Subordinate Clauses

- **Finite auxiliary, nonfinite lexical verb ("Complex")**
  - **Early Yiddish**
    
    (20) ds ikh zul vur mikh merkn
    
    that I should for myself take note
    “that I should take notice for myself”
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  - **Modern Yiddish**
    
    (21) mit vemen ikh bin in teater gegangen
    
    with who-DAT I am in theater gone
    “with whom I went to the theater”
    *(Nokhem Shtif’s The Slavicization of Yiddish, date: 1932)*

- **These are all string-wise identical.**
Tense-final Grammar

Simplex: 41.4% Unambig., 58.6% Ambig.
Complex: 0.0 Unambig., 1.0 Ambig.
All: 41.4% Unambig., 58.6% Ambig. (n = 215)
Tense-medial Grammar

Simplex

Complex

All

(\(n = 2500\))

66.3% Ambig.

33.7% Unambig.
Side-by-Side

Predicted Advantage of Final over Medial = .077

All Tense-Final
(n = 215)

All Tense-Medial
(n = 2500)
Yang’s (2000) model, straightforwardly applied to the Yiddish data, straightforwardly interpreted, makes exactly the wrong prediction:

- Fitness(TenseFinal) = .414
- Fitness(TenseMedial) = .337
- Advantage(TenseFinal over TenseMedial) = .414 - .337 = .077

Therefore, Tense-Final can never lose to Tense-Medial, and in fact, if Tense-medial is introduced into the speech community (e.g. by contact with Slavic), it should actually lose to Tense-Final over time.
Section 2

Summary: The Puzzle

- So now there are 3 possibilities:
  1. Yang’s model is wrong.
  2. There is some inherent (UG or processing) bias in favor of Tense-Medial (or left-headedness generally), which causes learners to reward that grammar more when it analyzes a sentence.
  3. I have not grouped the data in a way that represents what the actual competition was like for the learner.

- #1 would be very unfortunate, #2 is similarly a last resort, so maybe #3.
3. Child German and Adult Yiddish

- German child with Swabian mother, “Benny”, and Tense-medial

  **Negation diagnostic**
  
  (22) …dass du hast **net** die meerjungfrau
  
  *that you have **not** the mermaid*
  
  “that you don’t have the mermaid”
  
  (Benny, 3 years 1 month old; Fritzenschaft et al 1990: 76)

  **Modern Yiddish**
  
  (23) …az men hot **nisht** keyn koyekh
  
  *that one has **not** no strength*
  
  “that people don’t have any strength”
  
  *(Grine Felder, date: 1910)*
Section 3

Child German and Adult Yiddish

- German child with Swabian mother, “Benny”, and Tense-medial

- Pronoun Object

  (24) …wenn des dreht sich was tut ’s dann?

  if it turns REFL what does it then

  “if it turns, then what does it do?”

  (Benny, 3 years 2 months 26 days; Gawlitzek-Maiwald 1997: 137)

- Modern Yiddish

  (24) di lange sforim, vos me shoklt zikh iber zey

  the long books, what one sways REFL over them

  “the long books that people sway over”

  (Grine Felder, date: 1910)
Section 3

Child German and Adult Yiddish

- Bernese Swiss learners, and likely Tense-medial

- **Negation**
  
  (25) nei eine, wo tuet nid hokche
  
  no someone who does not sit
  
  (S., 3 years; Penner 1990: 178)

- **Pronoun Object**
  
  (26) we me tuet’s lige-la
  
  when one does-**it** lie-let
  
  “when one lets it lie”
  
  (M., 3 years; Penner 1990: 178)
Section 3

Child German and Adult Yiddish

- And in addition, these Bernese Swiss learners produce adult-like verb-projection-raising examples at the same age.

(27) (wie)-n-i de Schnabu cha o kaputt mache

how I the beak can also broken make

“how I can also break the beak”

(S., 3 years; Penner 1990: 178)

- Penner (1990) suggests that the acquisition of VPR complicates learning the target adult Tense-final grammar.
4. A Kaynian Solution?

- “Tense-final” orders are derived from head-initial structures, following (ultimately) Kayne (1994), but especially Biberauer (2003) and Biberauer & Roberts (2005)
  - A whole vP is pied-piped with the subject to Spec(TP), leaving the finite verb in final position.

(28) ... d[a]z \[v_{p} \text{mir yusf di h'} zhubim nit gebn] \text{vil } t_{vP} \\
that me Joseph the five guilders not give \text{wants} \\
“that Joseph doesn’t want to give me the five guilders” \\
(court testimony from Rubashov 1929: 158, date: 1465)

- While Verb Projection Raising involved some pied-piping under this view, it does not require the maximum amount of pied-piping.

- VPR suggests less-than-maximal pied-piping to the learner, and so may not be evidence for the “Tense-final” system, even if it isn’t fully “Tense-medial”.

Side-by-Side

Predicted Advantage of Final over Medial = .077

All Tense-Final (n = 215)

All Tense-Medial (n = 2500)
Side-by-Side

Predicted Advantage of Final over Medial = .077

All Tense-Final (n = 215)

All Tense-Medial (n = 2500)
Side-by-Side

Predicted Advantage of Medial over Final = .100

All Tense-Final
(n = 165)

All Tense-Medial
(n = 2500)
Section 5

5. Questions for Further Research

- Is the change to Tense-medial necessarily preceded by an increase in verb-(projection)-raising?
  - Old English (Pintzuk & Haeberi 2006)
  - Possibly with the addition of some Tense-medial (no-pied-piping) examples in the input, due to contact?
  - Slavic → Yiddish, Celtic and/or Scandinavian → English?

- The acquisition examples were isolated; are more quantitative studies possible?
  - ...to catch what may be a very small period of time between the acquisition of clause subordination and adult Tense-final syntax
Conclusions

- A simple acquisition model makes strong predictions about language change; this is a good thing!

- The change in the position of Tense in Yiddish cannot be understood in terms of the simple acquisition model and a classical view of “headedness” in phrase structure.

- A Kaynian phrase structure for Tense-final languages has been proposed on independent grounds, and leads to the correct prediction without any ad hoc complication of the acquisition model.
Thank You!

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