

## The rate of phrase structure change in the history of Yiddish

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### ABSTRACT

The position of inflected verbs in early Yiddish varies between second position and positions later in the clause. Standard distributional tests establish that this reflects variation in the underlying position of INFL, and that Yiddish phrase structure changed from INFL-final to INFL-medial. Based on clauses containing the relevant structural diagnostics, we can estimate the rate of this change. We cannot, however, determine the phrase structure of structurally ambiguous clauses (i.e., those superficially consistent with either of the phrase structures) with certainty. Nevertheless, we can use quantitative methods to estimate the likelihood of such clauses being INFL-medial, and we can then use these likelihoods to provide an additional estimate of the rate of the change. Comparing both estimates reveals that they do not differ significantly. The implications of this result are briefly examined in conclusion.

In discussing the time course of linguistic change, Bailey (1973) assumed that linguistic change proceeds along an S-shaped trajectory, and that historically new forms replace old forms at a higher rate in linguistic contexts in which the new form is favored than in those in which it is not. Kroch (1989b:203–206) agreed that the curve describing linguistic change is S-shaped, proposing that linguistic change should be modeled by a specific mathematical function—the logistic. However, drawing on a number of quantitative studies of syntactic change, Kroch rejected Bailey's assumption that new forms replace old ones at different rates, depending on the context in which they occur. Instead, he proposed the Constant Rate Hypothesis, according to which new forms advance at the same rate across linguistic contexts. The present article provides further evidence for the Constant Rate Hypothesis on the basis of a syntactic change that took place in the history of Yiddish and discusses the implications of the Yiddish facts for our understanding of syntactic change.

In the earliest extant Yiddish texts, the position of inflected verbs varies between second position and positions later in the clause.<sup>1</sup> In the modern language, the inflected verb invariably occurs in second position. By apply-

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ing a number of tests concerning the distribution of diagnostic elements of the sort that are standardly used in comparative synchronic syntax (den Besten & Moed-van Walraven, 1986; Emonds, 1976; Holmberg & Platzack, 1988; Travis, 1984; cf. Pollock, 1989), it is possible to establish that the surface word order variation we observe in early Yiddish<sup>2</sup> reflects variation in the underlying position of the syntactic category *INFL* (= inflection)—the landing site of inflected verbs. It can be demonstrated that the phrase structure of Yiddish clauses changed from (essentially) *INFL*-final to categorically *INFL*-medial in the course of a transition period lasting from the 1400s until about 1800 (Santorini, 1989, 1992).<sup>3</sup> On the basis of the clauses that contain the relevant diagnostic criteria, it is further possible to estimate the rate at which the new *INFL*-medial phrase structure replaced the old *INFL*-final phrase structure. But as not every clause meets these criteria, the word order of many clauses—indeed the majority of clauses in the corpus—is consistent with either of the two competing phrase structures. That is, although any particular clause might be a genuine instance of the new *INFL*-medial phrase structure, it might equally well be derived from the old *INFL*-final phrase structure by a number of processes that move constituents rightward across the inflected verb—movement processes that are independently motivated in Yiddish and well-established in West Germanic more generally. However, even though we are not in a position to assign a phrase structure to any particular ambiguous clause with certainty, it is possible to use quantitative methods to estimate the likelihood of the clause's being *INFL*-medial, and these likelihoods can in turn serve as the basis for an additional estimate of the rate at which *INFL*-medial phrase structure replaced *INFL*-final phrase structure.

The remainder of the article is organized as follows. First, I provide sociolinguistic background information concerning the history of Yiddish and its two main dialects—West Yiddish and East Yiddish. Next, I briefly review the evidence—presented in greater detail in Santorini (1989, 1992)—that early Yiddish exhibited *INFL*-medial phrase structure in addition to the *INFL*-final phrase structure which it inherited from German. Then, I distinguish four subcases of the phrase structure change and show that three of these subcases provide strong evidence for the Constant Rate Hypothesis; the fourth subcase poses considerable analytical challenges, and the discussion of it must remain inconclusive for the time being. Finally, I briefly discuss the implications of the results.

#### SOCIOLINGUISTIC BACKGROUND

Yiddish is the language of the *ashkenazim*, the Jews of central and eastern Europe.<sup>4</sup> Genetically, it is descended from medieval German, but Hebrew (the ritual and liturgical language of Judaism) and the Slavic languages have played an important role in its history as well. According to Weinreich (1980), the earliest records of uninterrupted Jewish settlement on German-speaking

territory date back to the ninth century C.E. Except for Regensburg on the upper Danube, these first Jewish communities were located in the lower Rhine and Moselle valleys, and their adoption of German as their vernacular gave rise to the Yiddish language. In the 11th and 12th centuries, Jews began to spread southward and eastward, partly for economic reasons and partly as a result of anti-Semitic edicts passed in connection with the First Crusade (1096). By the middle of the 1200s, Yiddish-speaking communities had been established along the Main, the upper Danube and the upper Rhine, and as far south as northern Italy; these communities had also spread eastward into Slavic territory. Following Weinreich (1980), I refer to the Yiddish-speaking area of central Europe, where the coterritorial language was mostly German, as Ashkenaz I, and to the areas further east that were settled later, where the majority of the coterritorial population spoke some Slavic language, as Ashkenaz II. I refer to the Yiddish spoken in Ashkenaz I and Ashkenaz II as West Yiddish and East Yiddish, respectively.

Until about 1500, the center of gravity of Ashkenazic culture was located in Ashkenaz I, but as Ashkenaz II grew in area and population, so did its cultural influence. After 1500, the leading *yeshivas*, the traditional colleges of rabbinical learning for adolescent boys, increasingly came to be located in eastern Europe. The growing importance of Ashkenaz II also becomes apparent when we consider the history of printed Yiddish literature. The earliest printing centers, which were established in the first half of the 1500s, were in Ashkenaz I: in Venice, Isny (near the lake of Constance), Zurich, and Augsburg (near Munich). In the second half of the century, however, Cracow in southwestern Poland emerged as a significant printing center, where even books by authors from Ashkenaz I were published; in the first half of the 1600s, Cracow was in turn superseded by the even more easterly Lublin. As publishing and printing continued in the west as well, the period from 1500 to the middle of the 1700s was one of equilibrium between Ashkenaz I and Ashkenaz II.

Although the direction of Jewish migration was predominately eastward, Jews moved back and forth between Ashkenaz I and Ashkenaz II quite freely well into the 1600s, and the two parts of the Yiddish-speaking territory continued to form a single cultural community until roughly 1750. After that time, the unity of Ashkenaz I and Ashkenaz II broke up, and their subsequent histories proceeded along separate paths. In western Europe, where Jews had both greater incentives and opportunities than in the east to be in close contact with speakers of German and to become proficient in German themselves, the ascendance of modern secular thought and the developments that culminated in the French Revolution held out the promise of political enfranchisement and social advancement. Among the proponents of secularization in the Jewish community (i.e., the *maskilim*), this opportunity gave rise to an ideology of cultural and linguistic assimilation which had fatal consequences for the existence of West Yiddish, at least as a written language. Not content to reject the use of Yiddish as a vehicle of public discourse, the

*maskilim* attacked the language itself as a corrupt, illegitimate, illogical, reactionary version of German, incapable of expressing the ideals of emancipation and enlightenment. In their view, Yiddish not only symbolized, but was itself in large measure responsible for, a crippling heritage of prejudice, discrimination, segregation, and inequality. The Berlin circle around Moses Mendelssohn, the leading figure of the *haskalah* (the Jewish expression of the Enlightenment), used the pejorative term "jargon" to stigmatize what speakers of West and East Yiddish alike had previously referred to simply as *taytsh*—that is, German. Moses Mendelssohn himself wrote sharply, "This Jargon contributed no little to the immorality of the common Jews" (cited in Weinreich, 1980:321; see also Dinse & Liptzin, 1978:76). The *maskilim* established between Yiddish and German an invidious relationship comparable to the relation between the basilect and the standard language in language contact situations under imperialism. As a result of their vigorous campaign, vernacular Yiddish (and often Hebrew as well) was banished from most domains of language use in Ashkenaz I and was replaced by standard German or at least a highly assimilated form of Yiddish. Although West Yiddish continued to be spoken in traditional rural communities (notably in Alsace-Lorraine) and as a home language in the cities well into the 20th century, West Yiddish literature virtually died out after 1800.

The situation was quite different in the east, mainly because of the much larger percentage of Jews in the cities and towns of eastern Europe. In many places, the great majority of the Jewish population was not in close contact with German speakers and knew no German. In addition to demography, an important factor in the development of Yiddish in Ashkenaz II, which occurred in the second quarter of the 1700s, was the rise of Hasidism—a mystical movement that valued the heartfelt expression of joyful religious sentiment over the traditionally upheld virtues of asceticism and intellectual mastery of the scriptures of Judaism. Hasidism won over the great majority of eastern European Jews, forming an effective bulwark against the influx of secular ideas from the west. Although there were eastern European *maskilim* who knew German, who had studied in Berlin, and who maintained close contacts with the west when they returned home, these intellectuals never made up more than a small elite compared to the entire Yiddish-speaking population. Therefore, the position of Yiddish vis-à-vis German was much stronger in Ashkenaz II than in Ashkenaz I. Though attempts were not lacking to replace Yiddish with German as in the west, many influential eastern European *maskilim* recognized that the demographic and cultural differences between Ashkenaz I and Ashkenaz II called for corresponding strategic differences in the battle of ideologies. Recognizing that the dissemination of progressive ideas could only be successful if carried out in the language of those who were to be its beneficiaries, they defended Yiddish against both German and Hebrew (the language of traditional rabbinical scholarship) and contributed to its prestige and expressive power by using it themselves in their writings. Thus, despite the greater distance in the east between the camps of

tradition and secularism, the legitimacy of Yiddish as an instrument of carrying out the ideological conflict between the two never figured as prominently as it did in the west. In the end, Yiddish in the east emerged not merely unscathed, but even strengthened from the same contest that led to its extinction in the west.

During the period that Ashkenaz I and Ashkenaz II formed a single community (i.e., until the 1700s), the linguistic correlate of their unity was the existence of a supraregional literary standard based on West Yiddish vernacular usage, which Weinreich (1980) referred to as Written Language A. During this period, East Yiddish literary usage conformed closely to that of West Yiddish. Vernacular East Yiddish, on the other hand, struck out along substantially different lines than West Yiddish, largely as a result of language contact with Slavic. The earliest reports of differences between East and West Yiddish date from the beginning of the 1600s, and by the middle of the 1700s, the two dialects had diverged in speech to the point of causing difficulties in mutual comprehension (Weinreich, 1980:284). Eventually—at the end of the 1700s—the growing rift between West and East Yiddish, the shift in the cultural center of gravity from Ashkenaz I to Ashkenaz II, and the virtual demise of West Yiddish as a written language led to the emergence and establishment of a new literary standard based on vernacular East Yiddish—Written Language B (Weinreich, 1980).

For the period for which East Yiddish vernacular texts<sup>5</sup> are available—from the mid-1500s to the late 1600s—they already showed more than three times as much INFL-medial phrase structure as East Yiddish literary texts or West Yiddish texts of the same time period. Specifically, of all the clauses that contain a diagnostic element that allow one to determine with certainty whether their phrase structure is INFL-medial or not, 48% (19/40) are INFL-medial in East Yiddish vernacular texts, as compared to 13% (60/445) in East Yiddish literary texts and West Yiddish texts. Given this striking difference, it would be interesting to trace the categorically INFL-medial character of the modern literary standard back to its vernacular sources and to compare the rates of change from INFL-final to INFL-medial phrase structure in both dialects. Unfortunately, however, vernacular texts are rare, and my corpus does not contain enough East Yiddish vernacular texts to allow such a quantitative comparison. The analysis in this article, therefore, is restricted to the replacement of INFL-final by INFL-medial phrase structure in West Yiddish vernacular texts and literary texts of either dialect.

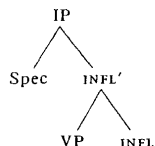
#### PHRASE STRUCTURE VARIATION IN EARLY YIDDISH

##### *Basic assumptions and terminology*

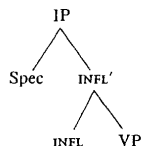
Following Chomsky (1986), I assume that the syntactic head of a clause is the functional category INFL, which can serve as the landing site of the inflected verb and which takes a VP (= verb phrase) complement. INFL can either fol-

low VP (as it does in German and Dutch)<sup>6</sup> or precede it (as in English and the Romance languages). These two phrase structure alternatives—INFL-final and INFL-medial—are illustrated schematically in (1).

(1) a. INFL-final



b. INFL-medial



As noted before, Yiddish phrase structure changed from essentially INFL-final to categorically INFL-medial in the course of a transition period during which INFL-medial phrase structure competed with INFL-final phrase structure and finally replaced it completely in East Yiddish. In this section, I briefly review the distributional evidence for the existence of phrase structure variation in early Yiddish.

I adopt the following terminological conventions. Clauses that must be derived on the basis of the phrase structure in (1a) are "(unambiguously) INFL-final," whereas those that must be derived on the basis of (1b) are "(unambiguously) INFL-medial." Clauses whose word order is consistent with either phrase structure are "(superficially) ambiguous." In statements concerning superficial word order, I use the abbreviation "VF" to refer to the inflected (= finite) verb and "Vf-second" as a convenient cover term for any clause in which the inflected verb appears in second position, regardless of its phrase structure.

#### Evidence for INFL-final phrase structure

Unlike modern Yiddish, but like German throughout its history, early Yiddish exhibited INFL-final phrase structure. In the simplest case, surface word order directly reflects underlying phrase structure: the inflected verb is in absolute clause-final position and more than one constituent precedes the inflected verb, as in the examples in (2).<sup>7,8</sup>

(2) a. *ds zi droyf givarnt vern* (Bovo 39.6, 1507)

that they there-on warned were  
'that they might be warned about it'

b. *ven der vatr nurt doysts leyan kan* (Anshel 11, ca. 1534)

if the father only German read can  
'provided only that the father can read German'

c. *vas er zeyn tag fun zeynm r. gilernt hat*

(Preface to Shir ha-shirim 2, 1579)

what he his day from his rabbi learned has  
'what he learned from his rabbi in his day'

d. *vey! dz als fun daz menshn vegn bishfn vardn iz*

(Lev tov 41, 1620)

because that all from the human behalf created been is  
'because all of that was created on behalf of human beings'

e. *dz der menshi eyn biz vart tsu zeynm mund hroys lazt*

(Lev tov 61, 1620)

that the person a bad word to his mouth out lets  
'that a person lets a bad word escape out of his mouth'

f. *ven du mir meyn kop ab shneydst* (Magen Abraham 2, 1624)

if you me my head off cut

'if you cut my head off'

The inflected verb in INFL-final subordinate clauses can also occur before absolute clause-final (though after second) position—corresponding to the *Späterstellung* of traditional historical grammars of German. Such word orders are the result of various rightward movement processes that are well established in West Germanic, including PP extraposition; heavy NP shift; so-called verb raising (Evers, 1975; Zaenen, 1979), which inverts auxiliaries or modals with the infinitival heads of their VP complements; and verb projection raising (den Besten & Edmondson, 1983; Lötscher, 1978), a variant of verb raising in which an auxiliary or modal inverts with a phrasal projection of its infinitival complement, not just with the infinitive itself. Each of these processes is illustrated in (3).

(3) a. PP extraposition

*dz ikh reyn t<sub>i</sub> verde [<sub>PP</sub> fun der ashin]<sub>i</sub>* (Purim-shpil 1004, 1697)

that I clean become from the ash  
'that I may become clean of the ash'

b. Heavy NP shift

*ven er nit t<sub>i</sub> veys [<sub>NP</sub> eyn guti veyd]<sub>i</sub>* (Sam hayyim 41, 1590)

if he not knows a good pasture  
'if he does not know a good pasture'

c. Verb raising

*dr veyl es gimeynlikh t<sub>i</sub> iz [<sub>v</sub> givardn]<sub>i</sub>* (Anshel 1r, ca. 1534)

because it common is become  
'because it has become common'

d. Verb projection raising

*za ikh den livn t<sub>i</sub> het [<sub>v</sub> vas fun ir shpeyz ginunn]<sub>i</sub>*

(Preface to Shir ha-shirim 2, 1579)

so I the lions had what of their food taken  
'as if I had taken some of the lions' food'

#### Evidence for INFL-medial phrase structure

In addition to unambiguously INFL-final subordinate clauses like those in (2) and (3), early Yiddish also exhibited Vf-second subordinate clauses like (4).

- (4) *dz zi verdn bshirmt fun irh bitrh peyn*  
 (Purim-shpil 876, 1697)  
 that they become protected from their bitter pain  
 'that they might be protected from their bitter pain'

Such clauses might be derived from an *INFL*-final or an *INFL*-medial phrase structure. If they are derived from an *INFL*-final phrase structure, the position of the inflected verb is the result of the rightward movement processes — verb raising and PP extraposition in the case of (4) (cf. 3a, 3c). On the other hand, if they are derived from an *INFL*-medial phrase structure, the inflected verb's position directly reflects the underlying clause-medial position of *INFL*. The two alternative derived structures for (4) are illustrated schematically in (5).<sup>9</sup>

- (5) a. *INFL*-final phrase structure + verb raising + PP extraposition  
*dz zi t<sub>i</sub> t<sub>j</sub> t<sub>k</sub> [<sub>INFL</sub> verdn<sub>k</sub>] [<sub>v</sub> bshirmt]<sub>j</sub> [<sub>PP</sub> fun irh bitrh peyn]<sub>i</sub>*
- b. *INFL*-medial phrase structure  
*dz zi [<sub>INFL</sub> verdn<sub>i</sub>] t<sub>i</sub> bshirmt fun irh bitrh peyn*

Although the majority of *Vf*-second clauses in early Yiddish are structurally ambiguous, some of them can be shown to be unambiguously *INFL*-medial. Travis (1984:114) and den Besten and Moed-van Walraven (1986:116–128) provided convincing evidence for modern Yiddish that the inflected verb moves from its underlying position within the *VP* into a clause-medial *INFL* node, and their arguments carry over to early Yiddish straightforwardly. Moreover, there is evidence that certain apparent instances of verb projection raising in early Yiddish should be analyzed as *INFL*-medial; specifically, a verb projection raising analysis of them is inconsistent with language-internal evidence from early Yiddish as well as with comparative evidence from other varieties of West Germanic.

*Stranded constituents.* Throughout the entire history of Yiddish, particles precede uninflected verbs. This is illustrated for early Yiddish in (6).

- (6) a. *da zi gut ... hat lib ght* (Preface to Shir ha-shirim 5, 1579)  
 since them God has dear had  
 'since God ... loved them'
- b. *biz di nshmh iz im oys gigngin* (Court testimony 189, 1639)  
 until the soul is him out gone  
 'until his soul departed from him'
- c. *ven eynr fun uns tuht irn veyn an rirn* (Purim-shpil 383, 1697)  
 if one of us does their wine on touch  
 'if one of us touches their wine'

(Unstressed) object pronouns, sentence negation, and sentence adverbs behave like particles and also always precede uninflected verbs.<sup>10</sup>

The distribution in early Yiddish of these diagnostic elements with respect to uninflected verbs thus shows that they do not undergo rightward movement.<sup>11</sup> Hence, if they follow an inflected verb in a *Vf*-second clause, we may conclude that their position is the result of the inflected verb having moved leftward from its underlying position immediately following the diagnostic element into a clause-medial *INFL* node. *Vf*-second clauses with stranded diagnostic elements provide evidence that early Yiddish allowed *INFL*-medial phrase structure. Some examples with stranded particles are given in (7).

- (7) a. *dz der mensh git erst oyf in di hikh*  
 (Preface to Shir ha-shirim 6, 1579)  
 that the human goes first up in the height  
 'that people first grow in height'
- b. *ven mn hibt shme isral an* (Ashkenaz un polak 141, ca. 1675)  
 when one lifts Shma Israel on  
 'when one begins to recite Shma Israel [the Jewish creed]'
- c. *di da habin lib iri leybr* (Eflush n.p., 1704)  
 who there have dear their bodies  
 'who love their bodies'

A similar argument can be made on the basis of the distribution of manner adverbs. In unambiguously *INFL*-final clauses, manner adverbs follow the verb they modify, as in (8), in 6 out of 102 potential instances (6%).

- (8) a. *ds mir mit di veybr lebn liplikh un' vaul*  
 (Polak un' ashkenaz 300, ca. 1675)  
 that we with the women live beautifully and well  
 'that we get along with the women beautifully'
- b. *vi zikh eyn bel hbit zal hltin rekh*  
 (Sam hayyim, cited in Assaf [1942:227], 1590)  
 how REFL a head-of-household shall hold correctly  
 'how the head of a household should behave'

Although this rate is high enough to indicate that postposing manner adverbs is marginally possible in early Yiddish, it is still quite low. As a result, if a manner adverb follows an inflected main verb in a *Vf*-second clause, as it does in 29 instances, we may conclude that the adverb's postverbal position reflects leftward movement of the verb into a clause-medial *INFL* node approximately 27 times (29 instances × 94%). On the other hand, if a manner adverb in a *Vf*-second clause follows an uninflected verb, as is the case in 13 out of 55 potential instances (24%), then we may assume that its position is due to base generation of the adverb in postverbal position in approximately 12 instances (13 instances × 94%). In such cases, too, we may conclude that the structure of the entire clause is *INFL*-medial, because head-initial verb phrases are incompatible with *INFL*-final phrase structure (den Besten, 1986:250; Pint-

zuk & Kroch, 1989:119–120).<sup>12</sup> Given the low incidence of adverb postposing, I simply assume for the purposes of the quantitative analysis of the data that all clauses in which a manner adverb follows a main verb are INFL-medial. Assuming that the frequency of adverb postposing is constant over time, this simplification will result in a very slight overestimate of the number of INFL-medial clauses in the data, but will not appreciably distort the estimated rate of change.

*Trapped constituents.* Further evidence that early Yiddish allowed INFL-medial phrase structure comes from subordinate clauses like (9), where sentence negation intervenes between an inflected modal and its infinitival complement.<sup>13</sup>

- (9) a. *ven shun mir kanin nit vern ginezin* (Vilna 218, 1692)  
if even we can not become recovered  
'even if we are not able to recover'
- b. *az unzre kindr zaln nit vern fun unz fryagt*  
(Sarah 85, 1700–1750)  
that our children shall not become from us driven-away  
'that our children shall not be driven away from us'
- c. *dz keynr zul zikh nit dr vegn* (Ellush n.p., 1704)  
that no one shall REFL not dare  
'that no one shall dare'
- d. *az di nshmh zal nit oys gin* (Ellush n.p., 1704)  
that the soul shall not out go  
'that the soul shall not depart'

At first glance, clauses containing trapped negation appear to be ambiguous between INFL-final and INFL-medial phrase structure. Under an INFL-final analysis, negation would follow the inflected verb as a result of the independently motivated process of verb projection raising (cf. 3d), whereas under an INFL-medial analysis, the order of the inflected verb and negation would reflect the underlying position of INFL. The two alternative derivations are illustrated schematically for (9a) in (10).

- (10) a. INFL-final phrase structure + verb projection raising  
*ven shun mir t<sub>i</sub> t<sub>j</sub> [<sub>INFL</sub> kanin<sub>i</sub>] [<sub>VP</sub> nit vern ginezin]*  
b. INFL-medial phrase structure  
*ven shun mir [<sub>INFL</sub> kanin<sub>i</sub>] [<sub>VP</sub> t<sub>i</sub> nit vern ginezin]*

There is evidence, however, that the verb projection raising analysis of such apparently ambiguous clauses should be rejected. It is a striking and well-established fact that, when negation is included in verb projection raising in varieties of West Germanic like Swiss German and West Flemish, the raised projection forms a scope island—that is, negation cannot be interpreted as sentential negation and must take narrow scope with respect to the

modal (Haegeman & Riemsdijk, 1986:442–444; Kroch & Santorini, 1991:272–284). Under the reasonable assumption that early Yiddish does not differ in this respect from the other varieties of West Germanic, the only reading of (9a) which is consistent with the verb projection raising analysis in (10a) would be the one where negation takes narrow scope with respect to the modal: 'even if we are able not to recover.' However, the only reading of (9a) which is consistent with the context in which it occurs is the one where negation takes wide scope with respect to the modal, as indicated in the gloss, and the same is true of the remaining sentences in (9) and those like them in the corpus.<sup>14</sup> From this, I conclude that instances of trapped sentence negation reflect INFL-medial rather than INFL-final phrase structure.<sup>15</sup>

A parallel argument can be made on the basis of subordinate clauses like (11), where an object pronoun intervenes between a modal and its infinitival complement.

- (11) *az ihudim haben mir gizagt* (Court testimony 150, 1625–1640)  
that Jews have me told  
'that people told me'

As in the case of trapped sentence negation, clauses like (11) appear to be ambiguous between an INFL-medial analysis and an INFL-final analysis in which the position of the trapped constituent reflects verb projection raising. However, as pronouns in early Yiddish are never included in instances of verb projection raising that are unambiguously INFL-final,<sup>16</sup> there is no independent motivation for the apparently available verb projection analysis. Again, early Yiddish behaves like other varieties of West Germanic, which generally exclude (unstressed) pronouns from verb projection raising (Kathrin Cooper, Liliane Haegeman, and Manuela Schönenberger, personal communication). Thus, language-internal and comparative evidence converge to indicate that clauses containing trapped negation or trapped pronouns reflect INFL-medial rather than INFL-final phrase structure.

To conclude, there is strong evidence that early Yiddish exhibited INFL-final as well as INFL-medial phrase structure. Specifically, subordinate clauses with more than one constituent preceding the inflected verb provide evidence for INFL-final phrase structure, whereas subordinate clauses with stranded, trapped, or postinfinitival diagnostic elements provide evidence for INFL-medial phrase structure.

#### QUANTITATIVE ANALYSIS

Having established the existence of phrase structure variation in early Yiddish, I turn now to the task of estimating the rates at which the new INFL-medial phrase structure replaced the old INFL-final phrase structure in various subcases of the change; I then compare these rates to one another. As noted earlier, the Constant Rate Hypothesis states that the rate of replacement does

not differ significantly across subcases of a single linguistic change. Assuming that the replacement of one linguistic form by another is modeled by the logistic makes it possible to evaluate this hypothesis in a rigorous way. Specifically, the logistic, whose equation is given in (12), has a mathematically equivalent form – the logit (= logistic transform) function given in (13).

$$p = \frac{e^{k+st}}{1 + e^{k+st}} \quad (12)$$

$$\ln \frac{p}{1-p} = k + st \quad (13)$$

In (13), the variable  $p$  represents the relative frequency of the new form,  $t$  is the time variable, and  $k$  and  $s$  are constants. The constant  $k$  is the value of the function when it intercepts the time axis and represents the frequency of the new form at the inception of the change;  $s$  is the slope of the logit function and represents the rate of replacement. According to the Constant Rate Hypothesis, then, all subcases of the same linguistic change are characterized by the same value for  $s$ .

In this section, I investigate the following four subcases of the change. I first categorize the 1,930 clauses in the corpus according to whether they contain a diagnostic element that could provide evidence for INFL-medial phrase structure and then categorize them further according to whether the main verb is inflected. The resulting four subcorpora thus consist of clauses with the following properties: (1) clauses containing an inflected main verb and a diagnostic element that, if stranded, provides evidence for INFL-medial phrase structure ( $N = 457$ ); (2) clauses containing an auxiliary or modal, an uninflected main verb, and a diagnostic element that, if it is trapped or follows the main verb, provides evidence for INFL-medial phrase structure ( $N = 456$ ); (3) clauses containing an inflected main verb but no diagnostic element ( $N = 427$ ); and (4) clauses containing an auxiliary or modal and an uninflected main verb but no diagnostic ( $N = 590$ ). I refer to these four subcases of the change as the unambiguous simple verb case, the unambiguous complex verb case, the ambiguous simple verb case, and the ambiguous complex verb case, respectively.

#### The unambiguous cases

Estimating the rate of change for the unambiguous simple verb case and the unambiguous complex verb case is straightforward because each instance of these subcases can be identified with certainty as INFL-medial or INFL-final on distributional grounds. For the simple verb case, the relative frequency of INFL-medial phrase structure can be estimated on the basis of the incidence of two minimally distinct clause types: INFL-medial clauses with stranded diag-

nostics, illustrated in (14), and the INFL-final counterparts of such clauses, which contain a nonstranded diagnostic, illustrated in (15).

- (14) INFL-medial (stranded particle)  
*ven mn hibt shme isral an* (Ashkenaz un polak 141, ca. 1675)  
 when one lifts Shma Israel on  
 'when one begins to recite Shma Israel [the Jewish creed]'
- (15) INFL-final (nonstranded particle)  
*ven du mir meyn kop ab shneydst* (Magen Abraham 2, 1624)  
 if you me my head off cut  
 'if you cut my head off'

For the unambiguous complex verb case, the relative frequency of INFL-medial phrase structure can be estimated in an analogous manner on the basis of INFL-medial clauses with trapped or postinfinitival diagnostics and the INFL-final counterparts of such clauses in which the diagnostic is neither trapped nor follows the untensed main verb. These two clause types are illustrated in (16) and (17).

- (16) INFL-medial (trapped pronoun)  
 a. *az ihudim habin mir gizagt* (Court testimony 150, 1625-1640)  
 that Jews have me told  
 'that people told me'  
 INFL-medial (postinfinitival manner adverb)
- b. *als ikh zal nemn deyn nshmh gnts bhend* (Moses 94, ca. 1750)  
 that I shall take your soul very quickly  
 'that I will take your soul very quickly'
- (17) INFL-final (nontrapped pronoun)  
 a. *dz ikh ir zalt eyn brib gebn* (Court testimony 27, ca. 1465)  
 that I her should a letter give  
 'that I should give her a letter'  
 INFL-final (preinfinitival manner adverb)
- b. *ds er in val gikent hat an di varts*  
 (Court testimony 184, 1641-1642)  
 that he him well known has at the wart  
 'that he knew him well by his wart'

Table 1 gives the absolute frequency of INFL-medial and INFL-final clauses and the relative frequency  $p$  of the INFL-medial clauses for the two unambiguous subcases. Figure 1 plots the logistic transforms of the relative frequencies in Table 1 against time. Because the logistic transform for the values 0 and 1 is undefined, Figure 1 reflects no value for the last time period, when the relative frequency of INFL-medial phrase structure has reached 1 because the change has gone to completion. We also have no values for the beginning of the change in the simple verb case and for the very end of the change in the complex verb case; in these cases, I have replaced the relative frequen-

TABLE 1. Rise of INFL-medial phrase structure in unambiguous cases

Time Period	Simple Verb Case			Complex Verb Case		
	INFL-medial	INFL-final	p	INFL-medial	INFL-final	p
1400-1489	0	27	0.00	1	15	0.06
1490-1539	5	37	0.12	2	35	0.05
1540-1589	13	59	0.18	4	51	0.07
1590-1639	5	81	0.06	7	57	0.11
1640-1689	13	33	0.28	18	44	0.29
1690-1739	15	20	0.43	25	28	0.47
1740-1789	1	1	0.50	11	17	0.39
1790-1839	54	3	0.95	79	0	1.00
1840-1950	90	0	1.00	62	0	1.00

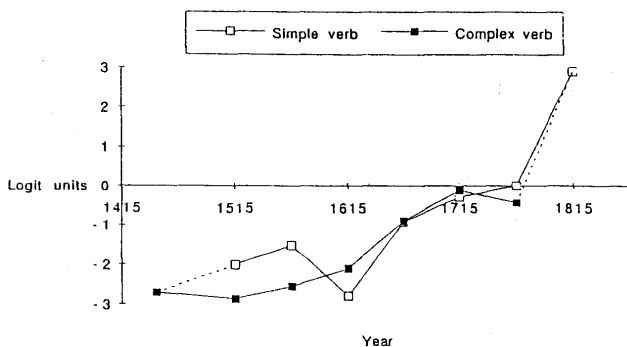


FIGURE 1. Logit of relative frequency of INFL-medial phrase structure: Unambiguous cases.

cies 0 and 1 by the corresponding value from the other subcase, as indicated by the dashed lines. The logit function jumps upward sharply between 1765 and 1815 because the modern literary standard—based on the East Yiddish vernacular in which the change had already gone to completion—replaces the earlier West Yiddish-based literary standard in which the change was less advanced. As the data point for 1815 no longer reflects the same variety of Yiddish as the points up until then, it should not be used to estimate the slope and intercept parameters of the logit function, and I have therefore estimated these parameters in this and all following graphs on the basis of the first seven

TABLE 2. Slope and intercept parameters of logistic regressions in Figure 1

	Slope <sup>a</sup>	Intercept
Simple verb case	1.01	-18.0
Complex verb case	1.19	-20.9

<sup>a</sup>Slope measured in logit units per century.

time periods only. Table 2 gives the slope and intercept parameters for the regression lines characterizing the two unambiguous subcases of the change.

Using a  $\chi^2$  test of significance, the difference between the two slopes is not statistically significant at the 0.05 level ( $\chi^2 = 0.72$ ). Moreover, fixing the slope of the unambiguous complex case to that of the unambiguous simple case yields an estimate of the intercept parameter in the complex case of 18.0, which matches the intercept in the simple case. This means that the phrase structure change is not only progressing at the same rate in both cases, but that neither subcase exhibits a higher incidence of INFL-medial phrase structure than the other. Thus, the results from the unambiguous simple verb case and the unambiguous complex verb case provide unequivocal support for the Constant Rate Hypothesis.

#### The ambiguous simple verb case

Let us now turn to the ambiguous simple verb case, which includes superficially ambiguous clauses with a tensed main verb in second position, but without a diagnostic element, as illustrated in (18), and the INFL-final counterparts of such clauses, illustrated in (19).

- (18) Potentially INFL-medial (no diagnostic)
- daz er hat eyn brudr* (Court testimony 133, ca. 1637)  
that he has a brother  
'that he has a brother'
  - da ihushe kam in arts isral* (Shir ha-shirim 11, 1579)  
when Joshua came into land Israel  
'when Joshua came into the land of Israel'
- (19) INFL-final (no diagnostic)
- da er den mtsri titt* (Megilat Ester 10, 1579)  
when he the Egyptian killed  
'when he killed the Egyptian'
  - vas di mtsraym in heysrn hetin* (Megilat Ester 9, 1579)  
what the Egyptians in houses had  
'what the Egyptians had in their houses'



TABLE 3. Rise of INFL-medial phrase structure in ambiguous simple verb case (uncorrected)

Time Period	Ambiguous	INFL-final	<i>p</i>
1400-1489	3	9	0.25
1490-1539	13	13	0.50
1540-1589	58	39	0.60
1590-1639	41	29	0.59
1640-1689	32	21	0.60
1690-1739	21	11	0.66
1740-1789	5	2	0.71
1790-1839	58	3	0.95
1840-1950	69	0	1.00

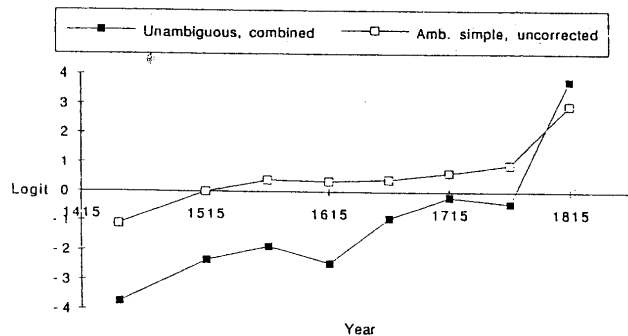


FIGURE 2. Logit of relative frequency of INFL-medial phrase structure: Unambiguous cases combined versus ambiguous simple verb case (uncorrected).

The simplest way of estimating the rise of INFL-medial phrase structure in this subcase is to treat all superficially ambiguous clauses as reflecting INFL-medial phrase structure (as in Santorini, 1989). This yields the figures in Table 3. Plotting the logistic transform of the relative frequencies in Table 3, together with the logistic transform for both unambiguous subcases combined, yields Figure 2. The slope and intercept parameters of the regression lines in Figure 2 are given in Table 4.

Using a  $\chi^2$  test of significance, the probability that the ambiguous simple verb case has the same slope as the combined unambiguous cases is less than 0.001 ( $\chi^2 = 17.14$ ). Moreover, the probability that it has the same slope as

TABLE 4. Slope and intercept parameters of logistic regressions in Figure 2

	Slope <sup>a</sup>	Intercept
Unambiguous cases combined	1.11	-19.5
Ambiguous simple verb case (uncorrected)	0.36	-5.5

<sup>a</sup>Slope measured in logit units per century.

the directly comparable unambiguous simple verb case is also less than 0.001 ( $\chi^2 = 13.04$ ). The discrepancy between the slopes in the unambiguous cases and in the ambiguous simple verb case, therefore, apparently threatens the validity of the Constant Rate Hypothesis.

On reflection, the source of the discrepancy between the two slopes in Figure 2 is the simplifying assumption that ambiguous simple verb clauses are all INFL-medial. In fact, of course, given the availability of the rightward movement processes, only some of these clauses can be assumed to be INFL-medial—the remainder have an INFL-final derivation. As noted, distributional methods on their own do not allow us to determine the phrase structure of any individual ambiguous clause with certainty. However, quantitative considerations make it possible to estimate the relative proportion of INFL-medial and INFL-final phrase structure in the entire pool of ambiguous clauses—or to put it another way, to estimate the likelihood that a particular ambiguous clause is INFL-medial or INFL-final. For expository reasons, I illustrate the considerations involved with simple ambiguous clauses containing a single instance of NP postposing, as in (18a), and the INFL-final counterparts of such clauses—that is, INFL-final clauses with a tensed main verb and without a diagnostic, but with a single nonpostposed NP, as in (19a). Clearly, the method illustrated can be extended to more than one instance of postposing, whether of NPs or PPs, and I have done so to obtain the results reported later. A key assumption I make is that NP postposing occurs at the same rate in ambiguous clauses as in unambiguously INFL-final clauses—an assumption that amounts to the linguistic claim that a speaker's choice of whether to postpose an NP is independent of his or her choice of the phrase structure position of INFL.

We begin by estimating the rate of NP postposing in INFL-final clauses. In order to do so, we must determine the frequency of INFL-final instances of NP postposing on the one hand (*P*) and the frequency of their nonpostposing counterparts on the other (*N*)—that is, the frequency of clauses containing a nonpostposed NP that would remain unambiguously INFL-final even after NP postposing. The relevant word orders are illustrated schematically in (20); *X*, *Y*, *Z*, and *W* stand for arbitrary constituents.

- (20) *INFL*-final instances of NP postposing (*P*)
- a. *X Y Vf NP* *INFL*-final nonpostposing counterparts (*N*)  
*NP X Y Vf*  
*X NP Y Vf*  
*X Y NP Vf*
- b. *X Y Z Vf NP*  
*NP X Y Z Vf*  
*X NP Y Z Vf*  
*X Y NP Z Vf*
- c. *X Y Z W Vf NP*  
*NP X Y Z W Vf*  
*X NP Y Z W Vf*  
*X Y NP Z W Vf*  
*X Y Z NP W Vf*  
*X Y Z W NP Vf*

Given *P* and *N*, the rate of NP postposing in *INFL*-final clauses is defined by the equation in (21).

$$R = \frac{P}{P + N} \quad (21)$$

The assumption that postposing occurs at the same rate in *INFL*-final clauses as in ambiguous clauses now allows us to calculate the expected number of superficially ambiguous instances of NP postposing from two known quantities: the estimated NP postposing rate *R* and the number of *INFL*-final clauses containing a nonpostposed NP that would be ambiguous after NP postposing. The *INFL*-final clauses in question have the word orders illustrated schematically on the right-hand side of (22).

- (22) Expected ambiguous instances of NP postposing (*P*)
- X Vf NP* *INFL*-final nonpostposing counterparts (*N*)  
*NP X Vf*  
*X NP Vf*

The estimated number of superficially ambiguous clauses derived from an *INFL*-final phrase structure by postposing is obtained by solving the equation in (21) for *P*, yielding (23) (note that *P* and *N* now refer to the word order types in 22).

$$P = \frac{R \times N}{1 - R} \quad (23)$$

In order to obtain an estimate of the number of instances of *INFL*-medial and *INFL*-final phrase structure that is corrected for NP postposing, *P* is simply subtracted from the raw number of ambiguous clauses and added to the number of their unambiguously *INFL*-final counterparts.

TABLE 5. *Estimated rates of NP and PP postposing*

Time Period	NP Postposing			PP Postposing		
	Postposed	Nonpostposed	Rate	Postposed	Nonpostposed	Rate
1400-1489	1	12	0.08	9	12	0.43
1490-1539	7	19	0.27	13	16	0.45
1540-1589	7	24	0.23	52	21	0.71
1590-1639	10	40	0.20	39	23	0.63
1640-1689	4	19	0.17	17	30	0.36
1690-1739	1	5	0.17	6	3	0.67
1740-1789	1	2	0.33	8	7	0.53
1790-1839	0	1	0.00	1	1	0.50
1840-1950	0	0	—	0	0	—

TABLE 6. *Rise of INFL-medial phrase structure in ambiguous simple verb case (corrected)*

Time Period	Est. <i>INFL</i> -medial	Est. <i>INFL</i> -final	<i>p</i>
1400-1489	0.5	11.5	0.04
1490-1539	6.8	19.2	0.26
1540-1589	5.9	91.1	0.06
1590-1639	17.0	53.0	0.24
1640-1689	24.7	28.3	0.47
1690-1739	10.0	22.0	0.31
1740-1789	3.6	3.4	0.52
1790-1839	57.0	4.0	0.93
1840-1950	69.0	0.0	1.00

Using this method, we can calculate the expected incidence of *INFL*-final phrase structure among ambiguous simple verb clauses containing one or more NPs or PPs. Table 5 gives the estimated rates of NP and PP postposing,<sup>17</sup> and Table 6 gives the results of correcting the data in Table 3 using these postposing rates.<sup>18</sup> Using the logistic transform of the corrected estimate of the relative frequencies in Table 6, we obtain Figure 3; the slope and intercept parameters of the regression lines in Figure 3 are given in Table 7.

If we constrain the slope to be identical in all three subcases discussed so far—the unambiguous simple verb case, the unambiguous complex verb case, and the ambiguous simple verb case—it is estimated at 1.06 logit units per century. The difference between this constrained common slope and the slopes obtained when they are allowed to vary freely for each of the subcases is not significant at the 0.05 level ( $\chi^2 = 0.59$ ). This is strong evidence in favor of the Constant Rate Hypothesis. In particular, it is stronger than a three-way pairwise comparison of the slopes of the three subcases, as all three

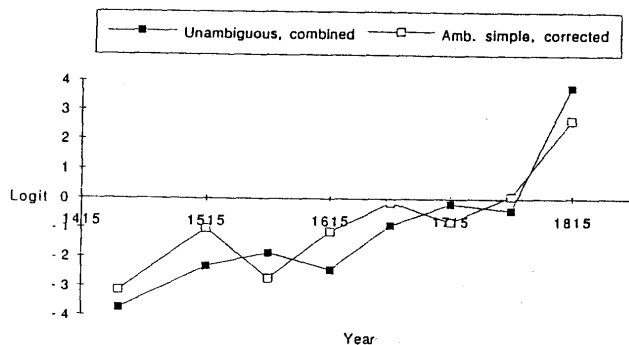


FIGURE 3. Logit of relative frequency of INFL-medial phrase structure: Unambiguous cases/combined versus ambiguous simple verb case (corrected).

TABLE 7. Slope and intercept parameters of logistic regressions in Figure 3

	Slope <sup>a</sup>	Intercept
Unambiguous cases combined	1.11	-19.5
Ambiguous simple verb case (corrected)	0.97	-16.9

<sup>a</sup>Slope measured in logit units per century.

slopes are constrained simultaneously. Furthermore, assuming the common slope, the intercept parameters for the three subcases are essentially identical, as shown in Table 8 – a result comparable to that obtained from comparing the two unambiguous subcases, as demonstrated earlier.

Thus, correcting the raw data for postposing brings the initially apparently refractory ambiguous simple verb case into line with the first two subcases of the phrase structure change. In addition to providing further evidence in favor of the Constant Rate Hypothesis, this result bears out our assumption that the postposing of NPs and PPs does not interact with the choice of phrase structure.

#### The ambiguous complex verb case

The fourth subcase of the phrase structure change to be considered is the ambiguous complex verb case, which includes superficially ambiguous clauses

TABLE 8. Intercepts of logistic regressions in first three subcases<sup>a</sup>

Unambiguous Simple	Unambiguous Complex	Ambiguous Simple
-18.7	-18.8	-18.4

<sup>a</sup>Slope constrained to be common at 1.06.

with a modal or auxiliary and an untensed main verb but without a diagnostic, illustrated in (24), and the INFL-final counterparts of such clauses, illustrated in (25).

- (24) Potentially INFL-medial (no diagnostic)  
*dz zi verdn bshirmt fun irh bitrh peyn*  
 (Purim-shpil 876, 1697)  
 that they become protected from their bitter pain  
 'that they might be protected from their bitter pain'
- (25) INFL-final (no diagnostic)  
*ven der vatr nurt doytz leyen kan* (Anshel 11, ca. 1534)  
 if the father only German read can  
 'provided only that the father can read German'

As we saw before, ambiguous clauses, as in (24), might reflect INFL-medial phrase structure or INFL-final phrase structure together with verb (projection) raising and postposing. We would therefore expect that carrying out corrections for verb (projection) raising (VR/VPR) and postposing along the lines discussed earlier would yield estimates for the rate of change from INFL-final to INFL-medial phrase structure comparable to those obtained for the other three subcases. The relevant verb raising and verb projection raising rates are given in Table 9.<sup>19</sup> But when the corrections on the basis of the postposing rates in Tables 5 and 6 are actually carried out, the estimated number of INFL-final clauses with ambiguous word order in many cases exceeds the number of actually occurring ambiguous clauses, yielding negative estimates for the frequency of INFL-medial clauses. Table 10 gives the raw numbers of ambiguous and INFL-final clauses and the relative frequency of the ambiguous clauses; Table 11 gives the corresponding adjusted numbers.

The striking difference between the beneficial effect of adjusting the raw numbers for postposing in the ambiguous simple verb case and the nonsensical effect of adjusting for postposing *and* verb (projection) raising in the ambiguous complex verb case leads one to suspect that the assumption of independence of grammatical processes underlying the simple postposing case is not satisfied in the verb (projection) case, and that the speaker's choice of whether to carry out verb (projection) raising is not independent of his or her choice of phrase structure. Specifically, what this result suggests is that the phrase structure change that took place in Yiddish involved not simple com-

TABLE 9. *Estimated rates of verb raising and verb projection raising*

Time Period	Verb Raising			Verb Projection Raising		
	Raised	Nonraised	Rate	Raised	Nonraised	Rate
1400-1489	7	7	0.50	1	13	0.07
1490-1539	10	8	0.56	4	14	0.22
1540-1589	3	23	0.12	13	13	0.50
1590-1639	6	19	0.24	11	14	0.44
1640-1689	8	31	0.21	9	30	0.23
1690-1739	0	10	0.00	7	3	0.70
1740-1789	4	2	0.67	1	5	0.17
1790-1839	0	2	0.00	1	1	0.50
1840-1950	0	0	—	0	0	—

TABLE 10. *Ambiguous complex verb case (uncorrected)*

Time Period	Ambiguous	INFL-final	<i>p</i>
1400-1489	5	25	0.17
1490-1539	17	27	0.39
1540-1589	57	37	0.61
1590-1639	48	33	0.59
1640-1689	51	61	0.46
1690-1739	42	11	0.79
1740-1789	22	6	0.79
1790-1839	73	1	0.99
1840-1950	74	0	1.00

petition between INFL-final and INFL-medial phrase structure, but a more complex three-way competition among INFL-medial phrase structure and two word order variants of INFL-final phrase structure: V-Aux sequences on the one hand and the Aux-V sequences produced by verb (projection) raising on the other. It is worth noting that the result reported here concerning the attempt to correct for verb (projection) raising is not unique to early Yiddish, but recurs in Old English (Pintzuk, 1991:294-306). I leave the proper interpretation of this result for future research.

Figure 4 graphs the logistic transform of the relative frequencies in Table 10 versus the combined unambiguous and corrected ambiguous simple cases. The slope and intercept parameters of the logistic regression for the ambiguous complex verb case are 0.72 and -11.38, respectively. The difference between the slope of the ambiguous complex verb case and 1.06, the common slope of the other three subcases combined, is significant at the 0.05 level ( $\chi^2 = 6.32$ )—a further indication that the ambiguous complex case cannot be assimilated to the other three subcases.

TABLE 11. *Ambiguous complex verb case (corrected for VR/VPR and postposing)*

Time Period	Ambiguous	INFL-final	<i>p</i>
1400-1489	31.8	-1.8	-0.06
1490-1539	45.7	-1.7	-0.04
1540-1589	120.7	-26.7	-0.28
1590-1639	85.5	-4.5	-0.06
1640-1689	86.7	25.3	0.23
1690-1739	42.8	10.2	0.19
1740-1789	11.9	16.0	0.57
1790-1839	4.0	70.0	0.95
1840-1950	0.0	74.0	1.00

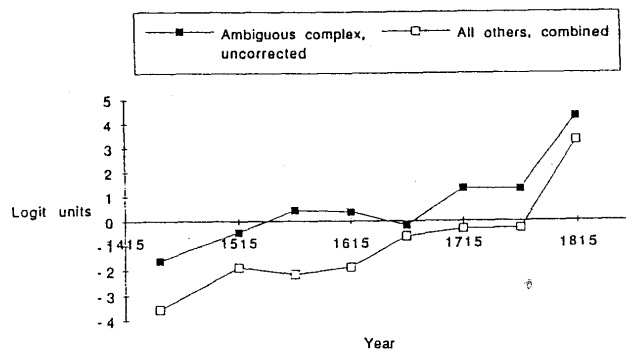


FIGURE 4. Logit of relative frequency of INFL-medial phrase structure: Ambiguous complex verb case (uncorrected) versus all other cases combined.

## CONCLUSION

Most generative discussions assume that syntactic change is the result of a reanalysis of structurally ambiguous clauses at the end of the change (e.g., see Lightfoot, 1991). According to this view, the change from INFL-final to INFL-medial phrase structure in Yiddish progresses as follows. Originally, Yiddish is INFL-final, but allows rightward movement processes such as NP and PP postposing and verb (projection) raising. Suppose now that the frequency of rightward movement increases over time, perhaps for reasons related to ease of processing (see Bach, Brown, & Marslen-Wilson, 1986, for experimen-

tal psycholinguistic evidence that verb raising sequences are easier to process than their nonverb-raising counterparts). As a result, the relative frequency of clauses that are structurally ambiguous between an *INFL*-final and an *INFL*-medial derivation increases. Suppose further that children abduce the minimal number of grammars or grammatical subsystems consistent with the primary data. Then, as long as unambiguously *INFL*-final clauses occur in the primary data with sufficient frequency, children abduce a single *INFL*-final grammar. However, once ambiguous clauses become (nearly) categorical and the frequency of unambiguously *INFL*-final clauses sinks below some critical threshold, children abduce an *INFL*-medial grammar, and the underlying phrase structure of the language changes from *INFL*-final to *INFL*-medial. It is only after this point that unambiguously *INFL*-medial clauses are expected to appear in the historical record.

The Yiddish facts presented in this article contradict the standard view of syntactic change in two important respects. First and foremost, the standard view does not lead us to expect synchronic variation between unambiguously *INFL*-final and *INFL*-medial clauses. Second, the key assumption that rightward movement processes become more frequent in languages undergoing syntactic change from head-final to head-initial phrase structure is not borne out by the data. The frequency of NP and PP postposing and verb (projection) raising in Tables 5 and 9, although highly variable, shows no trend over time (in none of the four cases does the absolute value of the slope of the regression line exceed 0.001). What the Yiddish facts suggest, instead, is that grammatical reanalysis takes place at the beginning of a syntactic change rather than at its end. Perhaps speakers misanalyze a fraction of (superficially ambiguous) *INFL*-final clauses as *INFL*-medial—a linguistic mutation consistent with universal grammar that makes it possible for them to produce structurally unambiguous *INFL*-medial clauses. If ambiguous clauses and their misanalysis are reasonably frequent, then the resulting production of unambiguously *INFL*-medial clauses might in turn occur frequently enough to exceed some critical threshold frequency, and the primary data would as a result come to contain unambiguous evidence for *INFL*-medial as well as *INFL*-final phrase structure. Children exposed to both *INFL*-final and *INFL*-medial clauses will abduce and produce both phrase structures. If *INFL*-medial phrase structure is associated with some advantage to the speaker, be it linguistic or extralinguistic, the frequency of *INFL*-medial clauses will rise, and the change will go to completion along the lines discussed in Kroch (1989a, 1989b:240). Needless to say, the alternative view of syntactic change sketched here leaves many questions still unanswered; in particular, the role of structurally ambiguous clauses merits further study. In conclusion, however, it is worth stressing that the alternative view of syntactic change just presented is no less conceptually simple than the standard view (in both cases, the child applies Occam's razor to the task of language acquisition) and no less consistent with fundamental assumptions of generative syntax. Indeed, the role of universal grammar is arguably enhanced in the alternative view because it is held not only to con-

strain the process of language acquisition properly speaking, but the actualization of syntactic change as well.

## NOTES

1. The analysis in this article is based on a corpus of about 40 Yiddish texts dating from the early 1400s to the mid-1900s. Details concerning the texts in the corpus and the sampling procedure are given in Santorini (1989, 1992).
2. I use the term "early Yiddish" to refer to Yiddish from the time of the earliest texts, which date from the late 1300s until about 1800, and "modern Yiddish" to refer to the language after 1800.
3. Like all Germanic languages other than modern English, Yiddish exhibits the verb-second phenomenon in main clauses throughout its history. The inflected verb is the second constituent regardless of whether the first constituent is the subject, and main clauses with nonsubjects in initial position exhibit obligatory subject-verb inversion. Because the verb-second phenomenon obscures the underlying position of *INFL* in main clauses, the change from *INFL*-final to *INFL*-medial phrase structure in Yiddish can only be investigated by examining subordinate clauses. In the course of the history of Yiddish, the verb-second phenomenon generalized from main clauses to subordinate clauses. In this article, I focus on the phrase structure position of the inflected verb in subordinate clauses, leaving aside the question of whether clause-initial position is restricted to subjects. For further discussion of this important question, see Cardinaletti and Roberts (1991), Diesing (1990), Santorini (1989, 1992), Vikner (1991).
4. The following synopsis of the history of Yiddish is heavily indebted to Weinreich's monumental *History of the Yiddish Language* (1980).
5. By vernacular texts, I mean private correspondence and verbatim transcripts of court testimony. All remaining texts in my corpus I classify as literary.
6. Travis (1984) argued that *INFL* precedes *VP* in German and Zwart (1991) extended Travis's analysis to Dutch, but Schwartz and Vikner (1990) provided convincing evidence against this approach.
7. The first and second numbers following each example indicate the page, verse or line number, and the year of the source of the example, respectively. Where no page number is available, I indicate this by "n.p."; where the exact date of a text is unknown, I give a best estimate or a range of dates.
8. The romanization conventions used are those in Santorini (1989). In contrast to modern Yiddish orthographic practice, vowels are not consistently represented in early Yiddish, and we find unvocalized forms like *dz* alternating with the corresponding vocalized form *daz* even in one and the same text, as in (2d).
9. The headedness of *VP* was variable in early Yiddish; for simplicity, I assume that the verb phrase is head-final in (5a) and head-initial in (5b). I make the further uncontroversial assumption that the verb in *INFL* moves there from an underlying *VP*-internal position.
10. Exceptions to these generalizations are very rare. Particles and *lashn koydesh* elements follow an uninflected verb twice out of 249 potential instances (0.8%), unstressed object pronouns twice out of 398 potential instances (0.5%), sentence negation once out of 158 potential instances (0.6%), and sentence adverbs never out of 98 potential instances. The overall exception rate thus comes to 3 exceptions out of 903 potential instances (0.6%).
11. As expected, the diagnostic elements in question never follow an inflected main verb in *INFL*-final clauses. There are no exceptions to this generalization out of 57 potential instances containing particles, 125 potential instances containing object pronouns, 63 potential instances containing sentence negation, and 43 potential instances containing sentence adverbs.
12. The reason for the incompatibility is not clear, but the cross-linguistic constraint against *V-XP-Vf* sequences is well established.
13. The construction of unaccusative verbs like *recover* with the passive auxiliary in (9a) is presumably due to the contact of Yiddish with Lithuanian, a language that permits passives of unaccusative verbs (Baker, 1988:329). This usage remains characteristic of Yiddish speakers from Lithuania (Ellen Prince, personal communication). Note also that (9c) is an instance of negative concord—that is, the negative element *nit* 'not' does not cancel the negative force of the subject. Negative concord has become obligatory in modern Yiddish.

14. In 1 out of 47 possible cases (2%), an instance of trapped negation is interpreted as having wide scope with respect to the modal. The exceptional token is given in (i).

- (i) *dz mn mikh fr eyn krbn vil nit bgerin* (Vilna 219, 1692)  
that one me for a martyr wants not desire  
'that they will not want me as a martyr'

I take the unexpected availability of the wide scope reading in (i) to be related to the interpretation of the inflected verb *vil* as a temporal auxiliary rather than as a full-fledged modal. In the 30 INFL-final clauses containing negation and a temporal auxiliary, negation is trapped between the auxiliary and its infinitival complement in 4 cases (13%), yet is still interpreted as taking sentential scope. Including negation in a raised verb projection seems to be possible only when the wide scope and narrow scope interpretations of negation are truth-conditionally equivalent, as they are in the case of sentences with a temporal auxiliary, but not in ones with a modal.

15. It is worth noting that trapped sentential adverbs cannot be used as a diagnostic for INFL-medial phrase structure in the same way as trapped sentential negation. In the 49 INFL-final clauses containing a sentential adverb and a nonfinite verb form, the adverb is trapped in 7 cases (14%), yet is still interpreted as taking sentential scope.

16. There is a single exception to the generalization that pronouns in early Yiddish are not included in raised verb projections, out of 221 potential instances (0.5%).

17. The frequency of NP and PP postposing over time is constant in Yiddish. But even if the frequency of postposing were increasing over time, the overall result presented here would be unaffected, because I am correcting the ambiguous data using separate postposing rates for each time period rather than a single average rate.

18. Due to the absence of unambiguous INFL-final clauses in the last time period, the postposing rate is undefined and a corrected estimate of INFL-medial phrase structure cannot be calculated on the basis of the considerations outlined in the text. However, because the absence of unambiguous INFL-final clauses indicates that the phrase structure change has gone to completion in the last time period, I have counted all ambiguous clauses in that time period as reflecting INFL-medial phrase structure.

19. The number of tokens in Table 9 is so small because it reflects only a subset of all verb (projection) raising tokens. Specifically, in order to eliminate the effects of potential interactions between verb (projection) raising and NP and PP postposing, I have calculated the estimated rates of verb raising and verb (projection) raising on the basis of clauses in which the verb sequence is clause-final. The effects of adjusting for verb (projection) raising are not improved by estimating the rate of verb (projection) raising on the basis of larger samples.

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