A Learners' Perspective on the Rise of the English Dative Alternation

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Summary The Modern English dative alternation is the result of a millennium of development. The current system of 'double object' (*Alice gave Bob the book*) and 'to-dative' (*Alice gave the book to Bob*) constructions contrasts with the Old English symmetric double object (IO-DO or DO-IO). We propose a model derived from child language acquisition of successive reinterpretations and generalizations through which the modern dative alternation took form. Middle English corpora provide evidence of a period where the to-dative had wider use than today. The rule generalization processes explains not only the rise of the to-dative in Middle English but also the retreat to its modern distribution.

The most likely candidate for the origin of the to-dative is what we refer to here as ambiguous *directional-to* (dir-to) constructions. These are PP complements headed by 'to' whose indirect objects are ambiguously recipients or goals (Levinson *PWPL* 2005, Hallman *LI* 2015). Additional ambiguity came from 'to' with abstract caused motion (e.g., with 'say') in Old English (YCOE), something common cross-linguistically. A similar leap to the to-dative was made in the history of North Germanic and Romance.

(1) Alice sent a book to the Civic Center. / Alice threw a book to Bob.   AMBIGUOUS

(2) Bob sent a book to 8610 Main St. / Bob threw a book to the tree.   NOT AMBIGUOUS

(3) *. . .and hu miht þu **secgan to** ðinum breðer þus:*   (coaelhom,+AHom$_1$4:146.2080)

In acquiring the dative alternation, children need to determine which verbs are licit in which constructions in their native language. It has been shown that children are sensitive to broad and narrow-range semantic classes when learning the alternation (Gropen et al. *Language* 1989, Hovav & Levin *Journal of Linguistics* 1998, etc.). Rather than observing how each individual verb participates in the alternation, they generalize constructions to entire classes. If they hear enough (above some threshold) verbs from a class in to-dative constructions, then they extend the to-dative to the other members of the class. One formulation of this threshold, the Sufficiency Principle (SP) has been successfully applied to many problems in language acquisition including dative alternation learning among Modern English speakers (Yang 2016).

If a child has heard N members of a semantic class and has heard M of those with the to-dative, and M is great enough such that $N - M$ is less than $N/\ln N$, then the child has sufficient evidence to extend the to-dative to all members of the class. We use the verbs attested in the PPCME2 corpus to approximate learner input in the Middle English period. As with any historical work that relies on attested language, we must use text corpora to approximate language in use. PPCME2 retains broad distributional similarities with child direct speech despite its different genre. For example, the most frequent relevant verbs in the corpus, *give*, *say*, *show*, etc., are among the most frequent in child directed corpora such as CHILDES as well. Additionally, we adopt Levin (1993)'s semantic classification. Levin's classification is widely used in studies of language acquisition and is similar to other classifications (e.g., Gropen, Pinker et al. *Language* 1989, Levin 2008).

PPCME2 contains 75 dative verbs of which 36 have the potential for dir-to. Applying the SP, there are enough dir-to verbs to generalize the to-dative to 9/18 classes in one generation. For example, the PUTTING IN A SPECIFIED DIRECTION class contains seven members (*fasten, teiten, join, lift, reren, raise,* and *hewen*, $N = 7$), four of which can support dir-to ($M = 4$). The SP calculates a threshold of 3.60. Since $N - M = 3 < 3.60$, it predicts that children could generalize to all members of that class. The next generations, hearing dir-to *and* to-datives from these classes

have sufficient evidence to extend the to-dative to *all* verbs with broadly defined recipients. Note that this makes the prediction that the to-dative should be attested even where it is prohibited in Modern English. This bears out in the Middle English corpus with *save* and *forgive* for example.

(4) *He **saued to** hym þe helpe of hys chosen and hys holi pouste.*   (CMEARLPS,119.5212)

(5) *and pyteuously **forgyve** offences and dettes **to** theym...*   (CMINNOCE,8.117)

In Modern English, the to-dative is no longer widely accepted with verbs like *ask*, *save*, *judge*, or *forgive*, so it is not sufficient for a model to only explain the rise of to-datives in Middle English. It should also capture their partial retreat into the modern period. We extend the same acquisition analysis into Early Modern English with the PPCEME corpus to demonstrate how changes to the lexicon could tilt the balance against the to-dative. PPCEME contains 118 dative verb lemmas of which 57 also occur in the Middle English PPCME2, and 44 dir-to lemmas, of which 27 occur in PPCME2. To determine how children may have reacted to the changing lexicon, we recalculate thresholds in this updated lexicon according to the SP. We conservatively assume that all dir-to verbs and all verbs attested in PPCME2 already support the to-dative. Under the updated lexicon, the to-dative generalizes to the new lemmas in every class except for those which do not allow the to-dative in Modern English. This is not surprising. Since these classes (BILL, APPOINT-type, etc.) have no dir-to verbs among their members, the status of the to-dative among them is at the mercy of the rest of verbal lexicon. Any slight changes to the system, such as the introduction of new vocabulary in Early Modern English, had the power to upset that balance.

Our proposal makes different predictions from Lightfoot (1999) and those based on Longobardi (1995) which argue that the to-dative entered the grammar to replace DO-IO as a result of morphological leveling. Broadly under these approaches, the loss of a distinct dative case entailed a change in abstract Case features which forced the insertion of 'to.' Evidence from North Germanic comports with our approach but represents a failure of entailment accounts. Faroese and those dialects of Norwegian which maintain some morphological DAT-ACC distinction have a to-dative and prohibit most DO-IO despite overt case marking (Åfarli & Fjøsne *Studia Lingusitica* 2012). Conversely, languages without ambiguous dir-to verbs should not have to-datives. We are investigating evidence from Nepali which suggests this correlation (Acharya 1991 and elicitations). Additionally, since our account depends on the specifics of a given lexicon, it predicts that languages should differ slightly in exactly which classes allow the to-dative. This bears out in Norwegian which, for example, permits the to-dative with POSESSION class (e.g., *save*) (Barðdal et al. *Linguistics* 2011) unlike English.

This account of the development of the English to-dative neatly applies models of language acquisition to a historical problem. The same generalization process and SP threshold which make accurate predictions about how children learn the modern system also explain how the system arose in the first place. Our model has further implications for the loss of DO-IO in two-derivation accounts of the dative alternation (cf McFadden 2002 following Pesetsky 1995, etc.). Under these accounts, only DO-IO with full NP DO and pronominal IO are unambiguously the result of their own structure rather than scrambling of IO-DO. As double objects competed with the rising to-dative, unambiguous DO-IO became so uncommon (about 9% of recipient constructions in PPCME2 m1 down to a single instance in m3) that they may not have been heard at all by most learners. With no evidence to postulate a unique construction for DO-IO, children could only entertain a grammar where language-wide scrambling processes created that surface order from IO-DO. When scrambling decreased towards Modern English, it took DO-IO with it.