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<center>The rise of the *to*-dative in Middle English*</center>

1. The problem

Modern English displays a well known alternation between double object sentences and *to*-datives:

(1) a.   Leila gave Benjamin the book.

   b.   Leila gave the book to Benjamin.

Double object sentences have the order IO-DO, while *to*-datives have the order DO-*to*IO, although the inverted order is possible under certain circumstances, through what is traditionally analyzed as extraposition of the DO:

(2)   Leila gave to Benjamin the book that George recommended.

This sort of extraposition is not available in double objects. While there are other constructions that alternate in some sense with double objects in Modern English (e.g. those marking a benefactive IO with *for*), I will be restricting my attention here to the *to*-dative, by which I mean a construction with a structural direct object and an NP marked by the preposition *to* that is a true indirect object. I thus intend to exclude double complement structures with a PP headed by *to* where the prepositional object is not a dative, but a location or goal, e.g. *Barcelona* in the following sentence:

(3) I sent the books to Barcelona.

Sentences of this type played a crucial role in the creation of the *to*-dative, however, they arguably have a somewhat different structure, and thus must be treated separately.

   While a great deal of work has been done in an attempt to explain this dative alternation in ModE (Oehrle 1976, Barss and Lasnik 1986, Larson 1988, Pesetsky 1995 to name just a few), scant attention has been paid in the generative literature to how it came about. The *to*-dative was not available in Old English,[1] while at the same time, the double object appeared with both object orders. In fact, Koopman (1990) finds that 46% of OE double object constructions with two full NP objects are DO-IO. That is, the two orders are almost equally common, as is also found by van Kemenade (1987) and others. This implies that an important change (or changes) must have occurred in the system during the Middle English period. A new type of dative construction, using the preposition *to* to mark the indirect object,

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was created, in which DO-IO order was clearly preferred. In addition, the old double object came to no longer allow this DO-IO order. It is traditionally assumed that this apparent replacement of one ordering in the double object by the new *to*-dative is due to the fact that the *to*-dative was created to remedy the ambiguities caused by the collapse of case distinctions in early Middle English. The reasoning is that when dative and accusative case could no longer be distinguished overtly, the freedom of object ordering caused ambiguity. Presumably, the use of *to* as a marker of dative case would have had its origin in sentences like (3) above. If the goal were human, rather than inanimate, it is plausible that a reanalysis could have taken place, by which *to* was not a goal marker, but simply a marker of dative case, due to the semantic overlap between animate goals and dative recipients.

These traditional assumptions are most likely correct in their central insights, and I will not challenge them here. However, we would like to have a more explicit account which might enlighten the ongoing debate over how to represent Modern English dative sentences. Specifically, how can we model the Old English constructions in terms of current theories, and what exactly is the formal nature of the changes that occurred? In other words, what relation do the OE constructions bear to the ModE ones?
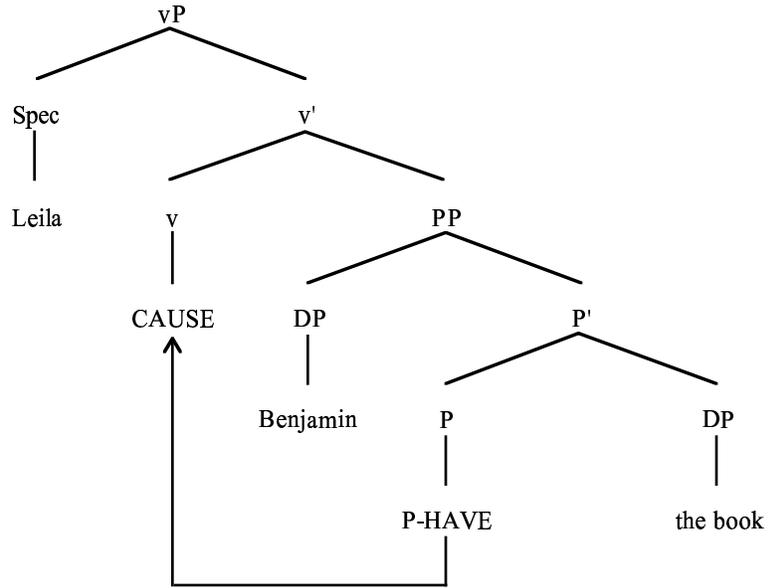
2. A hypothesis

While there are several ways to imagine what may have happened, in this paper I will pursue what seems to be the most simple hypothesis, and see what results it yields. Since in some sense the *to*-dative replaced the old DO-IO double object, I propose that they in fact have the same structure, differing only in the marking on the IO, with *to* replacing case marking when it is lost. That is, I will argue that the *to*-dative is a direct continuation of the old DO-IO order, while the modern double object is, unsurprisingly, the continuation of the old IO-DO order. Harley (1999), adapting the models of Larson 1988 and Pesetsky 1995, proposes structures for modern English that can model this hypothesis:
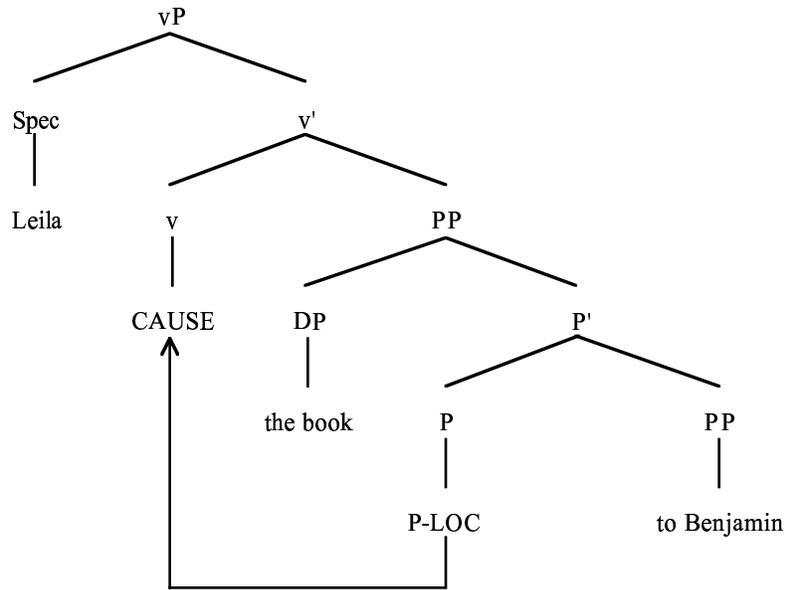
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[1] This is not entirely an uncontroversial statement. See Mitchell (1985) vol. 1 p. 512f. for discussion of some counterexamples. While it seems that precursors of the *to*-dative existed in OE, the truly dative construction did not occur productively until later.

(4) a.

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                        vP
                ┌───────┴───────┐
              Spec              v'
               │        ┌───────┴───────┐
             Leila      v              PP
                        │       ┌───────┴───────┐
                      CAUSE     DP             P'
                        ↑       │        ┌──────┴──────┐
                        │    Benjamin    P            DP
                        │               │             │
                        │            P-HAVE        the book
                        └──────────────┘
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b.

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                        vP
                ┌───────┴───────┐
              Spec              v'
               │        ┌───────┴───────┐
             Leila      v              PP
                        │       ┌───────┴───────┐
                      CAUSE     DP             P'
                        ↑       │        ┌──────┴──────┐
                        │    the book    P            PP
                        │               │             │
                        │            P-LOC        to Benjamin
                        └──────────────┘
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In each structure, an abstract preposition raises to v, where it combines with CAUSE to yield *give*. Crucially, the distinction between the double object in (4a) and the *to*-dative in (4b) lies in the underlying c-command relations (and by extension ordering) of the two objects as subcategorized by these elements P_{HAVE} and P_{LOC}. It does not depend on the overt preposition *to*, which is structurally distinct from P_{LOC}. This means that the type of dative sentence where the DO c-commands the IO need not involve an overt preposition. This allows us to posit that (4b) is the structure that corresponds to both the old DO-IO double object and the later *to*-dative. Double objects with IO-DO at any period would then of course have the structure in (4a).

Analyzing the two varying orders in double object sentences in this way has a precedent in Collins and Thráinsson (1996). The structure they propose for IO-DO double objects in Icelandic is nearly identical to the one above, and they explicitly assume that the DO-IO order corresponds to a prepositional ditransitive with a null preposition, rather than being derived by movement from the other order. Furthermore, they incorporate these structures into a theory of functional projections that allows them to fit in with Minimalist principles of movement and case checking.[2]

3. The study

Thus the hypothesis receives a natural formal interpretation within current syntactic theory, and is testable. The main body of this paper will be devoted to determining whether it is supported by empirical evidence. The ME data for this paper have been drawn from the *Penn-Helsinki Parsed Corpus of Middle English, second edition* (Kroch and Taylor 2000), using the *CorpusSearch* program (Randall 2000). The *PPCME2* is a 1.2 million word corpus, annotated for syntactic structure to allow detailed computerized searches. The texts in the corpus are divided by date into four periods: M1 (1150-1250 CE), M2 (1250-1350), M3 (1350-1420) and M4 (1420-1500). Searches for sentences with *to*-datives had to be constrained so as not to include verbs that occur with PP complements with allative *to* (like *send* and *bring*), since true datives and transitives with PP complements are necessarily parsed identically in the corpus. Thus my data are restricted to clauses with the verbs *give, grant, show, teach* and *tell* (or rather their ME predecessors), which are the five most common double object verbs in the corpus, together making up well over half of all the examples.

In order to test the proposed hypothesis, a series of questions will be addressed in the following sections. In section 4 I will examine the evidence for when and where the *to*-dative first appeared, especially relative to when case marking was lost. According to my hypothesis,

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[2] See Collins and Thráinsson 1996 for extensive discussion of this rather interesting problem.

the two occurrences should be simultaneous. Following this I will begin to discuss the complicated subject of object orders, about which my hypothesis makes very specific predictions. In section 5 I will first discuss the issues of getting at underlying structure from surface orders in ME and then will give an overview of surface orders with two full NP objects. In section 6 I will examine the role that extraposition plays in the surface ordering of objects and show how the consideration of heaviness can reduce uncertainty in the data discussed in section 5. In section 7 I will consider sentences where a full NP precedes a pronoun, and in section 8 I will look at binding data.

4. The appearance of the *to*-dative

The *to*-dative first appears in limited numbers in texts of the M1 period with the five verbs mentioned above. However, relative to the double object, it is quite rare, and several of the texts have no examples of it at all, as can be seen in Table 1. One of these, the *Kentish Homilies* is a short text with only four ditransitive clauses in total, thus the lack of *to*-datives may be a statistical accident. On the other hand, the *Trinity Homilies* has a full 59 double object sentences and no *to*-datives, making it very likely that these were unavailable in the grammar underlying the composition. In all, 7.9% of datives in period M1 are *to*-datives. In texts that actually have one or more *to*-datives, the percentage is 10.8.

Table 1

Construction choice in M1 and Kentish M2

Text	Double Objects	*to*-Datives	% *to*-Datives
Kentish Homilies	4	0	0
Peterborough Chronicle	12	0	0
Ormulum	107	8	7
Vices & Virtues	35	1	2.8
Trinity Homilies	59	0	0
Katherine Group	21	6	22.2
Lambeth Homilies	36	2	5.3
Ancrene Riwle	40	10	20
Total M1	**315**	**27**	**7.9**
Kentish Sermons	10	0	0
Ayenbite of Inwyt	30	16	34.8

This supports the assertion that EME is when the *to*-dative first appeared, since we have here a mixture of some texts lacking it entirely with others that exhibit it to a limited extent. Not surprisingly, this early phase of ME is also when the morphological case system collapsed in most dialects.[3] The prediction that the two should pattern together in the data is in fact borne out and can be observed particularly well in four texts. *The Peterborough Chronicle* and the aforementioned *Trinity Homilies* have no *to*-datives compared to a non-trivial number of double objects.[4] *Vices and Virtues* and the *Lambeth Homilies* have 1 and 2 *to*-datives respectively, again beside large numbers of double object sentences. Not coincidentally, all four of these texts retain some morphological distinction between dative and accusative case. *Peterborough* and *V & V* are specifically discussed by Allen (1995) in this respect. It is important to note that we should expect some variation within a text between case marking and the use of the *to*-dative at this time, since we are dealing with written documents which may preserve literary archaisms alongside innovations. Also, because syntactic change is involved, we should expect some amount of grammar competition (see e.g. Kroch 1999). This will complicate our work at all stages. What we do not expect under the current hypothesis would be one object marked with both *to* and distinctive dative case, and in fact I have found none.[5]

In the period labeled M2 in the Corpus, the *to*-dative has quite suddenly become a fully viable option, indeed it is somewhat more common than the old double object construction. All told, 129 of 247 ditransitive sentences (52.2%) are *to*-datives, but of most interest are the two texts where this percentage is the lowest. They are the *Kentish Sermons*, with 0 *to*-datives beside 10 double objects and the *Ayenbite of Inwyt*, with 16 *to*-datives out of 46 total ditransitives (34.8%). Both of these texts are Kentish, generally regarded as the most conservative dialect of this period. Allen (1995) shows that the *Ayenbite* in particular retains the dative-accusative distinction in pronouns a full century after it has been lost elsewhere. Given this, the fact that the text has any *to*-datives at all is of interest, but their relatively low frequency of occurrence is interpretable.[6] Aside from Kentish, the distinction between dative

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[3] See Allen 1995 for lengthy discussion and analysis of when and how the case distinctions were lost in the various dialects.

[4] It must be stressed again that all of the data presented are restricted to the five most common ditransitive verbs as laid out in section 3 (except for those on double object ordering in section 5, which have been expanded as is explained there). Statements on the occurrence of construction types in certain texts refer only to these verbs.

[5] I exclude here cases where a noun marked by *to* also has an *-e* suffix. Although this ending historically marks the dative, Allen shows that at this late stage, it only appears on prepositional objects, and thus is at most a marker of prepositional case, at least a formulaic archaism.

[6] A possible explanation for these facts is that the native dialect of the author (one Dan Michel) retained the case distinction and did not have the *to*-dative. The surrounding dialects with which he

and accusative had been lost entirely, and the *to*-dative had become a fully viable option. From this point on, no text with more than 5 total dative sentences lacks the *to*-dative entirely. Thus the data surrounding the appearance of the *to*-dative are in agreement with the idea that the loss of case is involved.

5. Object ordering

It is by now well known that surface ordering of elements in Old and Middle English displays a wide range of variation that can only be properly understood after several movement processes have been accounted for (see especially van Kemenade 1987). In order to determine what base orders were available in ME datives, and thus gain insight into the underlying structures, we must eliminate from consideration sentences where one of the objects has moved from its base position. An object appearing before the subject of the sentence is taken to have been fronted via topicalization, thus disregarded. Also, personal pronouns, which were often clitics, cannot be considered in determining base orders except in one special case discussed in section 7. Furthermore, in cases where some form of the verb intervenes between the two objects, we must again assume that movement has occurred, generally scrambling of the first object. Finally, it has been shown by Pintzuk and Kroch (1985) and van Kemenade (1987) that Old and Middle English had a productive process of rightward movement of heavy elements. Determining when this has occurred is not always simple, and will be the subject of the next section.

First, however, we should examine the surface ordering facts presented in Table 2, beginning with those for the sentences without *to* marking. For the consideration of object order in double objects, I expanded my searches to include all verbs in the corpus, since double objects have a unique structure in the annotation used and the numbers here do not need to be compared with those for *to*-datives.[7] Due to the relatively low occurrence of double objects with two full NP objects (approximately 85% of double object sentences have at least one pronoun object), the data set here would be extremely small if we included only the five most common verbs.

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came into contact had, however, already acquired this construction. Thus the text reflects his case system, but also includes examples of the *to*-dative, borrowed perhaps as markers of some literary style, and thus in smaller numbers than we might otherwise expect.

[7] A small number of verbs are, however, excluded, because they have multiple subcategorizations, making it impossible to say which object should be considered the direct and which the indirect. E.g. *binimen* could mean either 'to take something away from someone' or 'to deprive someone of something'.

Table 2

Surface ordering of full NP objects

Text	Double Objects			to-Datives		
	IO-DO	DO-IO	%DO-IO	IO-DO	DO-IO	%DO-IO
Kentish Homilies	4	0	0.0			
Peterborough Chronicle	2	6	75.0			
Ormulum	27	5	15.6	1	3	75.0
Vices & Virtues	11	7	38.9			
Trinity Homilies	22	13	37.1			
Katherine Group	7	2	22.2	1	2	66.7
Lambeth Homilies	12	11	47.8	2	4	66.7
Ancrene Riwle	24	9	27.3	1	0	0.0
Total M1	109	57	34.3	3	7	70
Ayenbite of Inwyt	4	4	50.0	0	2	100
Total M2	18	4	18.2	5	47	90.4
Total M3	85	0	0.0	33	147	81.7
Total M4	60	0	0.0	14	30	68.2

From the beginning, there is a clear preference for the order IO-DO. However, in the early texts of the corpus, there is quite a bit of the inverse order, notably six of eight examples in the *Peterborough Chronicle*. For the M1 period as a whole, 34.3% of double object sentences with two full NP objects and no obvious movement of objects have the order DO-IO (57/166). This is what we expect, given that we know this order was nearly as common as the other in OE. Note that my hypothesis also makes a prediction about which texts should have this order. If it is true that the *to*-dative replaced DO-IO double objects, then this order should be common in texts that lack the *to*-dative and gone in those where the construction is fully established. This prediction seems to be correct. The same four texts that have few or no examples of the *to*-dative are the ones with the highest frequency of DO-IO order without *to*-marking.[8] Furthermore, the *Ayenbite of Inwyt* is the only text in the corpus from the M2

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[8] My hypothesis actually claims that DO-IO without *to*-marking should be impossible as a base order once the *to*- dative appears, while here we are speaking of surface orders. We might expect that DO-IO surface orders without *to* marking arise from extraposition of the IO, but this does not seem to be the case, as I will argue in section 6.

period that has any examples of this order (4/8),[9] as expected if case distinctions have been lost outside of Kentish. Following this, IO-DO is categorical when the IO is not marked by *to*.

The facts for *to*-datives are somewhat more surprising. In period M1, we have only ten examples with two full NP objects and no obvious movement. Of the ten, seven are DO-*to*IO, the unmarked order in ModE. Following this, the numbers are larger, and we have similar findings, with DO-*to*IO preferred but far from categorical. In M2, 90.4% of sentences have the unmarked order (47/52). In M3 it is 81.7% (147/180) and in M4 68.2% (30/44). While the order *to*IO-DO is not ungrammatical in ModE, it is strongly marked, thus it is surprising that we should find 31.8% of sentences with this order as late as the M4 period. An explanation for this will be proposed in the following section.

6. Extraposition

The main question that we must answer when considering movement is whether surface order variation results from base order variation or from movement processes. The hypothesis we are considering here says that there are indeed two base structures, and that in OE and EME these correspond to the two surface orderings of double objects with no prepositional marking. In later ME and ModE, on the other hand, these two structures would be differentiated by the presence of the preposition *to* marking the IO in the structure where the DO c-commands and precedes the IO (4b). Any deviation from this in the surface string would have to result from later movement processes. We have seen in the previous section that both expected surface orders are found in EME, while in later ME, DO-IO without *to*-marking, which should be impossible as a base structure, is not even a possible surface order. However we find surface *to*IO-DO in large numbers. It remains then to be shown empirically that the two surface orders in EME correspond to two base orders, and that surface *to*IO-DO results from movement.

The only movement process that does not leave unambiguous evidence on the surface is what is called rightward extraposition. The most common realization of this type of movement in the relevant stages of English is heavy NP shift, a process found in many of the Germanic dialects by which heavy elements optionally move to the right edge of the clause.[10]

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[9] Cynthia Allen, p.c., has indicated that there is a text from this period, *Robert of Gloucester's Chronicle,* which shows examples of this type, and yet seems to have lost the overt distinction between dative and accusative. She suggests that this could be related to the fact that the text is in verse. The unexpected order could also be explainable as an archaism preserved in the written language, but it is also possible that this structure was legitimately preserved in some dialects after the loss of case marking. This possibility will be addressed below.

[10] How exactly this type of movement is to be analyzed depends of course on one's theoretical leanings regarding rightward movement. While a Kaynean analysis of this type of movement is

In VO clauses it is generally not clear from the surface string whether this has applied or not. However, it can generally be said that the heavier an element is, the more likely it is to extrapose, and a very light element should never extrapose. We can then examine the examples we have for the various object orderings according to the heaviness of their objects and look for patterns. If an order is base generated, we expect the second objects to display the full range of heaviness, including very light examples. If, on the other hand, an order is not base generated, but results only from heavy NP shift, then we expect the second object to be universally heavy. In my study I have used two simple measures of heaviness. Objects can be compared by their length in words and by whether they have an attached subordinate clause.

Looking at *to*-datives, we find a sharp distinction between the two orders. Considering first the matter of attached subordinate clauses, there are 24 direct objects in our ordering data with an attached subordinate clause. 17 of these (70.8%) occur after the indirect object marked with *to*, that is, in the marked position for direct objects. Only seven appear in the normal pre-IO position. Compare this to the fact that, overall, only 19.2% of DOs in *to*-dative constructions occur post IO. Turning to the data for the IOs, 26 of the indirect objects have attached subordinate clauses, of which 19 (73.1%) appear after the DO. Thus it looks like the heaviness of the IO plays a role here too, but this is an illusion. The majority of IOs with a subordinate clause are post DO simply because 80.8% of IOs in general in the *to*-dative are post DO. These data suggest that at least some surface *to*IO-DO ordering is derived from heavy NP shift of the DO, since the heaviness of the DO has a strong effect on its placement, while the weight of the IO according to this measure does not seem to be a factor.

Turning to data from word counts, shown in Table 3, we find further confirmation. If we simply take an average over the weights of the nouns in certain categories, we can quickly get a rough idea of what is happening. The DO in sentences with DO-*to*IO order has an average weight of 1.95 words,[11] while the DO in sentences with *to*IO-DO order is on average 4.45 words, i.e. 2.28 times as heavy. Clearly, the weight of the DO has a definite effect on the ordering. On the other hand, the average IO in DO-*to*IO sentences is 2.58 words, in *to*IO-DO sentences 2.73. That is, they are almost identical, showing that the weight of the IO plays little or no role in the order of the objects. All of this implies that the DO is subject to heavy NP shift, but the IO is not.

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certainly possible, all that is relevant here is whether movement has occurred. Therefore I will continue to use the traditional terminology.

[11] All object word counts above 5 were treated as 6 to keep unusually heavy objects from skewing the averages. The weights for IOs marked by *to* do not count *to* itself, but only the object marked by it.

Table 3

Effects of weight on object orders

	Double Objects		*to*-Datives	
	DO-IO	IO-DO	DO-IO	IO-DO
N	57	109	231	55
avg. DO weight	1.86	3.18	1.95	4.45
avg. IO weight	3.65	2.1	2.58	2.73

Looking at the behavior of light objects, there are only two examples of single word direct objects that appear after the *to*IO, and neither is entirely certain. One occurs in a context where it seems that movement of one of the objects occurs for non-heaviness related reasons.[12] The other is the following sentence from the Katherine Group:

(5)   & ȝeue to ioseph þt wes þe ȝungeste hap i pharaones halle.
       (CMJULIA,119.390)
       '...and you gave to Joseph, who was the youngest, happiness in Pharaoh's hall.'

It looks here like *i pharaones halle* could be attached to *hap*, in which case heavy NP shift would be in order, leaving no *to*IO-DO sentences where the DO is a single word. Consider, on the other hand, that nearly half of the direct objects (112/231) that appear before the *to*IO are single words. Indirect objects again behave quite differently, showing little difference between one position and the other in the frequency of single word examples. 16% of post-DO *to*IOs are single words, while 18.2% are single words in pre-DO position.

All of this supports positing a single base order for *to*-datives. The surface order of two full NP objects in this construction is based on the weight of the direct object. Only a heavy DO can follow the *to*IO, a light one must precede it. This indicates that the DO is always base generated before the *to*IO, but can extrapose over it through heavy NP shift. A closer look at object weights can actually help us explain a fact mentioned above that is somewhat odd under this analysis. It was noted at the end of section 5 that the marked order of *to*-datives actually becomes quite a bit more common over the time covered by the corpus. Under my

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[12] Extraposition of non-heavy objects is possible in certain list contexts in ModE:

(i)   On Christmas day I gave to my little sister a bike, to my older brother a new sweater, to my mom a book and to my dad a shaving kit.

hypothesis, this order results from extraposition of heavy DOs. In fact it turns out that the weight of the average DO in a *to*-dative sentence in the corpus increases significantly over time, from 1.4 words in M1, through 1.83 words in M2 and 2.6 words in M3 to 2.7 words in M4. Since DOs are getting heavier, the proposed analysis actually predicts an increase in the frequency of extraposition, and by extension, *to*IO-DO order.

None of this really comes as a surprise. It is not controversial to say that all *to*-datives are base generated with the DO c-commanding the *to*IO. But the data and argumentation used here can serve as a basis for examining the not-so-obvious claim that the object order variation in OE and EME double objects is not (solely) the result of extraposition, but rather reflects the existence of two base orders. If this portion of my hypothesis is correct, then we expect to find very different heaviness data than were discussed above. Indeed there are some important differences which support my hypothesis, although the data are not entirely conclusive.[13] We see a strong general tendency for the second of the two objects to be heavier, but here the constraint seems to apply equally as well to both objects, rather than just the direct object, as can be seen by the comparison in Table 3. DOs that precede the IO are again very light, on average 1.86 words, while those that follow average 3.18 words. Note that this difference is considerably smaller than that in the *to*-datives (a ratio of final/initial weights of 1.71 versus the 2.28 noted above). IOs that precede the DO average 2.1 words, those that follow 3.65 words (a ratio of 1.72, i.e. essentially identical to that for DOs). Thus, unlike in the *to*-dative, the ordering of the objects is equally sensitive to the heaviness of both. This could suggest that both objects can extrapose, or at least that the possibility of extraposition is dependent on the heaviness of both the NP being shifted and the one being shifted past. Alternatively, this could reflect two base generated orders, where heaviness does not condition rightward NP shift, but rather the choice of base object orders, as in ModE (see Ko 1996). If a DO is heavy, it can shift past the IO in a *to*-dative, but more commonly it will trigger use of the double object construction, where it is generated in final position.

The data on attached subordinate clauses suggest the same thing. Only one of 30 subordinate clauses is attached to the first object. That is, regardless of which object a clause is attached to, it tends to surface at the end. The data from final light objects are, however, not exactly what we would expect. There are 27 such DOs, implying that there must be IO-DO underlying order. However, there is only one example of a single word IO in a DO-IO sentence. This is again not a reliable example, since it appears to have the list context described in note 11, and thus might have resulted from non-heaviness related movement.

This gap is somewhat odd if DO-IO was indeed a base generated order, and will need to be explained, but there are a number of reasons to maintain the current hypothesis in spite of it. To begin with, it is not negative evidence, rather a lack of positive evidence, but positive evidence can be found elsewhere. If we say that DO-IO was not base generated, then we must say that the surface occurrences of it result from extraposition of the IO. But the data on average object weight and attached subordinate clauses, when compared to those from the *to*-datives, where extraposition is clearly at work, make this look very unlikely. Additionally, DO-IO is much more common in those texts that exhibit it (35.1% of double objects) than *to*IO-DO order is in *to*-datives (19.2%).

In fact, it may be that extraposition was never available in the double object construction. It is clearly impossible in ModE and, apparently, in ME after the establishment of the *to*-dative, even though it has always been possible in the *to*-dative construction. One could argue that extraposition in the double object only became impossible when the loss of case marking in EME created ambiguity between the objects. However, in context there can rarely be any ambiguity as to which object is which (e.g. indirect objects tend to be human, while direct objects tend to be inanimate) and in fact in many of the sentences in the corpus from the period when both orders were possible, the case marking is not sufficient to identify which object is which, yet there seems to be no problem with ambiguity, as in example (6):

(6) and ure drihten þe him swo michel luuede ȝaf leue þe deuel to binimende him
    and our lord   who him so much   loved gave leave the devil to take   him
        his oref. (CMTRINIT,167.2272)
        his cattle.
    'And our lord, who loved him so much, gave the devil leave to take his cattle
    from him.' [*him* and *his* refer to Job]

Thus the ban on extraposition in double objects could result from something other than the lack of formal distinction between the two objects, in which case it could have also applied in EME. Then all object order variation at that time would have to result from base order variation.[14]

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[13] Heaviness data for double objects were taken solely from those texts that actually exhibit order variation, i.e. have examples of DO-IO order.

[14] An anonymous reviewer points out that it is strange to claim that extraposition of objects was not available in the double object construction, when it was available in the language generally at the time (although of course this is precisely what we find in Modern English). It would in fact be a very strong claim, for which I do not have strong empirical support. I present it only as an interesting possibility to be considered, because the theory laid out here could account for all of the data without

7. Pronoun orders

As has been noted above, clauses where a pronoun object precedes a full NP object can tell us little about underlying order due to the general cliticization of pronouns. The inverse order, on the other hand, where a full NP precedes a pronoun, is very interesting indeed. We know that pronouns, being extremely light, do not undergo heavy NP shift, rather we expect them to move leftward as verbal clitics. Furthermore, full NPs do not scramble leftward across pronouns, meaning that an NP before a pronoun can only reflect base order.[15] This is precisely the sort of diagnostic we need to strengthen the results of the last section. There are 22 clear examples of this object order in the corpus like the following from *Vices and Virtues*:

(7)   Al swa soðliche swa he hadde are and mildze of ʒeu and ða giue of ðe hali
        all so   truly   as   he had mercy and pity   on you and the gift of the holy
            gaste ʒew sænte wiðuten earninge... (CMVICES1,21.236)
            ghost you sent   without merits...
        'So truly as He had mercy and pity on you, and sent you the gift of the Holy
            Ghost without merits...'

    Precisely how such sentences are to be analyzed is not clear. It must be emphasized that their existence is a bit of a puzzle, given what we know about pronoun ordering in the historical stages of English. There are a number of interesting facts, which will likely play a role in the solution to the puzzle. First, all examples are full NP DO-pronoun IO. Second, there are no examples of this configuration with *to*-datives. Third, all the occurrences I have found are in what, on the surface, appear to be OV clauses. Some of this can, perhaps, be explained away. For example, the lack of such sentences with *to*-datives may result from their restriction to OV clauses, which were themselves disappearing as the *to*-dative became a productive option. Also, the fact that no examples of this type are found where the full NP is the IO and the pronoun is the DO may be merely a statistical accident. It is a pragmatic fact that IOs are much more likely to be pronouns than DOs are (see Snyder 1998). In my searches of the *PPCME2*, for example, I found 1189 sentences with a pronoun IO and a full NP DO, and only 141 sentences with a pronoun DO and a full NP IO. Thus even if a sentence

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extraposition in double objects. It is important to note that this is in no way crucial to my analysis, since base order variation could easily exist alongside extraposition.
        [15] While movement for case checking or something similar may have occurred in such sentences, it would not affect the relative ordering of the objects, since it would presumably apply to both.

with full NP IO and pronoun DO in that order were grammatical, we would expect to find it approximately .12 (=141/1189) times as often as full NP DO-pronoun IO in this corpus. Thus we would predict 2.6 (=.12*22) examples of this type, and the fact that we find none would then not be such a great surprise.

It may be the case that this sentence type was not grammatical, and that the correct analysis of sentences like (7) above will depend on that fact. It does seem likely that the clause final position of the verb in the examples I have found plays an important role. [16] Whatever the correct analysis turns out to be, these sentences most likely reflect the base order of their objects (Ans van Kemenade, Tony Kroch, personal communication). Assuming that our understanding of how pronouns in ME did and did not move is approximately correct, these are unambiguous examples of DO-IO base order in double objects.

8. Binding

Given the well known work by Barss and Lasnik (1986), Larson (1988), and many others, I must consider data from binding. If examples can be found of ditransitives where one object binds into another, we will have strong evidence for a structure where the first object c-commands the second and precedes it in the base order.[17] Of course, there are some complications. The most important weakness of a corpus versus native speaker judgments is the lack of negative evidence, and it so happens that clear instances of binding are relatively uncommon in actual texts. Thus positive binding facts found in the corpus will be very important, but very little can be concluded if binding examples are not found in a given configuration, unless it can be demonstrated that the absence is statistically significant.

Searching the *PPCME2*, I found 10 clear examples of a quantifier in one object binding a possessive pronoun in the following object, e.g.:

(8) a.   ye sal for-giue alle men ðaire trespas for ðe loue o gode. (CMBENRUL,19.639)
          '...you shall forgive all men their sins, for the love of God.'

    b.   Al þus was done, forto teche yche cristen man his byleue. (CMMIRK,51.1450)
          'All this was done to teach each Christian man his belief.'

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[16] An anonymous reviewer has pointed out that this pattern is to be found in Old English as well "as a minority pattern, overwhelmingly in clauses where either the finite or the non-finite verb follows, so in OV structures. Almost all involve dative pronouns, though there are a few accusative pronouns." Thus the lack of this sentence type in the corpus where the pronoun is the DO could really be no more than a statistical accident, but the OV generalization remains.
[17] Koopman 1990 used this method to investigate OE, finding good evidence for IO-DO order, but only one binding example with DO-IO order.

All 10 examples are double objects where the indirect object binds into the direct object. This confirms that IO-DO was a base generated order, but again the lack of examples with the DO binding into the IO does not force us to deny underlying DO-IO. In fact, there is statistical reason to expect that we would not find any examples of binding from the DO into the IO. The type of binding being tested here requires that the object containing the binding quantifier be a possible possessor, since the quantifier will bind a coreferent possessive pronoun. It is a cross-linguistic fact that indirect objects tend to be human, i.e. stereotypical possessors, while direct objects tend to be inanimate, and thus rarely possessors. If only very few direct objects are capable of being possessors, then extremely few will act as binders, since actual binders make up only a fraction of potential binders. This can be formalized as in Table 4. There are 279 examples of IO-DO double objects with human indirect objects.[18] Of these indirect objects, 10 actually bind into the direct object, i.e. 3.58%. In the corpus there are a grand total of 3 human direct objects in DO-IO double object sentences.[19] If the facts from the IO-DO sentences are indicative of how often binding occurs, then we expect 3.58% of these direct objects to be binders, or .11 total examples in the corpus. Even if binding from the direct object into the indirect object is possible in early ME double objects, we predict that the corpus will contain no examples of it. Similar calculations for the *to*-datives predict .29 DO-IO binding examples and 1.83 IO-DO binding examples, again accounting for the fact that we find none.

Table 4

Estimates for binding examples

IO-DO Double objects with human IO:	279
Number of these that bind into DO:	10
Actual binders over total binders:	.0358
DO-IO double objects with human DO:	3
times .0358 (estimated number of actual binders):	.107
DO-IO *to*-datives with human DO:	8
times .0358:	.286
IO-DO *to*-datives with human IO:	51
times .0358:	1.83

9. Formalizing and extending the hypothesis

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[18] In these counts, all NPs that are human-like in their ability to be possessors are counted as human, thus for example, God, the devil and angels are 'human.'

[19] Recall that there are only 57 DO-IO double objects to begin with.

The empirical evidence presented in the preceding sections supports several points of the hypothesis presented at the beginning of this paper. First, the EME double object actually had two different structures corresponding to the two surface orders, one in which the IO c-commanded the DO, and one in which the DO c-commanded the IO. Second, the *to*-dative construction appeared in EME, simultaneous with the loss of dative-accusative case distinctions. Third, this *to*-dative had only one underlying structure, in which the DO c-commanded the IO, with the inverse surface order resulting from extraposition of the DO. Fourth, sentences with a structure where the DO c-commanded the IO and the IO was not marked by *to* disappeared at the same time that the *to*-dative appeared. In this section I will relate all of this by proposing a way to think about the mechanics of the changes that occurred, and specifically the role of case. This theory will lend support to the idea that the *to*-dative is a direct continuation of the lost double object order, and will allow us to explain some additional facts along the way that would otherwise remain puzzling.

As a starting point for this analysis I pose two questions: how do the arguments in ditransitive sentences get case, and why is it that only the IO in *to*-datives requires prepositional marking in ModE? Both questions have essentially the same answer, which is fairly clear if we consider again Harley's model in (4a,b). In both structures, the higher object receives structural case from the immediately dominating causative morpheme. The lower arguments are, however, in a different situation. In the double object structure, the DO is the complement of HAVE. If this abstract morpheme behaves like its overt verbal counterpart, then it assigns structural accusative case to its object. The IO in the *to*-dative, however, is not the complement of a verbal predicate, but of a locative, which arguably assigns an oblique case. This is implicit in Harley's trees, where it can be seen that P_{HAVE} takes a DP complement, while P_{LOC} takes a PP complement. Thus it is clear why only the IO in the *to*-dative needs prepositional marking. About the change then, we can say that ModE obliques must be realized as PPs, while in older stages of the language, they could be realized as DPs with overt oblique case marking.

In fact, we can go one step further if we modify the labeling of Harley's structures slightly. Rather than calling both HAVE and LOC abstract prepositions, I will say explicitly that HAVE is a verbal predicate, and LOC is a non-verbal predicate, perhaps an adjective.[20] HAVE, like *have*, can take a direct object, which it marks with accusative case. LOC, like two place locative adjectives along the lines of *close,* takes a PP complement. In this way we can account for the difference in case marking by referring to the categorial status of the

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[20]If the prepositional status of these predicates should prove to be crucial, then HAVE can be thought of like most English prepositions that take a bare DP complement, while LOC would be

predicates, rather than taking recourse to a semantic or lexical explanation. At this point we can simply say that, in general, predicates like LOC subcategorize for obliques, and these were realized as DPs with overt case in OE and EME, which were replaced by PPs when case marking was lost. In a descriptive sense, this is clearly what happened in the history of English and many other languages.

It might be possible, however, to analyze oblique case marked DPs as PPs where the preposition is realized or marked by the case marking on the DP. .[21] This could be formulable in terms of ideas recently developed by Kayne (1998) concerning the derivation of PPs and Roberts and Roussou (1999) concerning syntactic affixes and the phonological realization of functional material. This would allow us to simply say that predicates like LOC always take PP complements. When case marking was phonologically reduced in EME, movement of the DP to the site where it attached to the affix was lost, and a new, non-affixal preposition was required for the realization of the PP head's functional material in the sense of Roberts and Roussou. PP complement sentences like (3) above would have provided a source for this. When occurring with a human goal, their semantics overlapped extensively with those of true datives. Since they even had the same surface string as a DO-IO ditransitive, the learner was able to posit the structure given in (4b) once P-DP won out over DP-CASE as the normal way to realize "oblique" PPs. Such an extension to my basic analysis must be regarded as highly speculative, but it is suggestive as an account for the changes observed in the history of English.

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something like *next*, which takes a PP complement headed by *to*. All else in the discussion would remain unaffected.

[21] This is hardly a new idea, although it has proved problematic to make it work (see Beard 1995 for one attempt and some references). Thus the suggested analysis of obliques represents little more than speculation on a direction for future research.

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