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

Jordan Kodner
University of Pennsylvania

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Stellenbosch University
Acquisition-Driven Change

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- Including among historical syntacticians
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- Including among historical syntacticians
- But work takes a grammar analysis first, diachrony second approach
- Fine when the primary goal is to enrich theoretical syntax
- But not when the goal is to understand why change happens
Acquisition-Driven Change

- Studies on the cause of language change should focus on the driver of change
- So acquisition should be a research focus, not an afterthought
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- An inversion of the traditional order: Explanatory power leans more towards change and less towards representation
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- Also, theoretically useful in situations where the grammar alone cannot account for judgments
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- Has the power to differentiate between models of change
- An inversion of the traditional order: Explanatory power leans more towards change and less towards representation
- Also, theoretically useful in situations where the grammar alone cannot account for judgments
- E.g., the dative alternation
The English Dative Alternation

- Broad traditional name for a pair of surface constructions

Double Object: Alice gave Bob the book  Alice told Bob a story

to-Dative: Alice gave the book to Bob  Alice told a story to Bob
The English Dative Alternation

- Broad traditional name for a pair of surface constructions

  **Double Object:** Alice gave Bob the book   Alice told Bob a story

  **to-Dative:** Alice gave the book to Bob   Alice told a story to Bob

- Not always the case that both constructions are grammatical

  ok   Alice asked Bob a question

  *   Alice asked a question to Bob

  *   Alice said Bob something

  ok   Alice said something to Bob
The English Dative Alternation

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  - Two-derivation accounts (Pesetsky 1995, Bruening 2012, etc.)
  
  Structures may be parallel but are independent
The English Dative Alternation

- Typically connected with **recipient** and **goal** thematic roles
- Formalized in the grammar (**cannot be the whole story; more on that later**)
- Two families of theoretical analyses:
  - **Two-derivation accounts** (Pesetsky 1995, Bruening 2012, etc.)
    - Structures may be parallel but are independent
  - **Single-derivation accounts** (Larson 1989, etc.)
    - One structure is derived from the other via movement
Where the Dative Alternation Came From

Background

● Brief overview of the dative alternation’s history
● Excursion on the acquisition of the modern alternation
Where the Dative Alternation Came From

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An Account

1. Actuation of the to-dative  What triggered it?
Where the Dative Alternation Came From

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An Account

1. Actuation of the to-dative
2. Expansion of the to-dative Why did it spread through the lexicon?
Where the Dative Alternation Came From

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An Account

1. Actuation of the to-dative
2. Expansion of the to-dative
3. Retreat of the to-dative

How did it reach its modern distribution?
Where the Dative Alternation Came From

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An Account

1. Actuation of the to-dative
2. Expansion of the to-dative
3. Retreat of the to-dative
4. The loss of symmetric double objects Why did they disappear?
History of the English Dative Alternation
Old English

- No true to-dative
Old English

- No true to-dative

Sometimes used *to* to introduce abstract goals

...and *hu miht ðus secgan to ðinum breðer ðus*:

“...And he might *say to his brother*...”  (coaelhom,+AHom_14:146.2080)
Old English

- No true to-dative
- Symmetric double object (DO-IO or IO-DO)
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- Symmetric double object (DO-IO or IO-DO)

...þæt he forgæafe godne willan þam seocan hæðenan
“...that he would grant the sick heathen good will” (ÆCHom ii.2.12.28)

...gif þu geoffrast Gode ænige lac æt his weofode.
“...if you offer God any sacrifice at his altar.” (ÆCHom 16.19)
Old English

- No true to-dative
- Symmetric double object (DO-IO or IO-DO)
- Morphological dative-accusative distinction
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- No true to-dative
- Symmetric double object (DO-IO or IO-DO)
- Morphological dative-accusative distinction
- More similar to Icelandic than to Modern English
Middle English

- to-Dative rose dramatically in frequency
- DO-IO double object fell out of use
- Morphological dative-accusative distinction was lost
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PPCME2 Counts for *Give, Grant, Show, Teach, Tell*

<table>
<thead>
<tr>
<th>Era</th>
<th># DO-IO</th>
<th># Db Obj</th>
<th>% DO-IO</th>
<th># to-Dat</th>
<th>% to-Dat</th>
</tr>
</thead>
<tbody>
<tr>
<td>m1 (1150-1250)</td>
<td>23</td>
<td>63</td>
<td>36.51</td>
<td>11</td>
<td>14.87</td>
</tr>
<tr>
<td>m2 (1250-1350)</td>
<td>1</td>
<td>10</td>
<td>10.00</td>
<td>62</td>
<td>86.11</td>
</tr>
<tr>
<td>m3 (1350-1420)</td>
<td>0</td>
<td>53</td>
<td>0</td>
<td>183</td>
<td>77.54</td>
</tr>
<tr>
<td>m4 (1420-1500)</td>
<td>0</td>
<td>31</td>
<td>0</td>
<td>48</td>
<td>60.76</td>
</tr>
</tbody>
</table>
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- Many have proposed that the to-dative replaced DO-IO
- Perhaps triggered by morphological leveling
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- Perhaps triggered by morphological leveling
- An entailment: Leveling $\iff$ to-dative instead of DO-IO
- Does not stand up to evidence
Middle English

- to-Dative attested across more types than in Modern English
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He *saued to hym* *be helpe of hys chosen and hys holi pouste.*
“He saved him the help of his chosen and his holy power” (CMEARLPS,119.5212)

...God *forbed this werre* *to Roboam and al his peple*
“...God forbade Rehoboam and all his people from this battle” (CMPURVEY,I,13.510)

...and *pyteuously forgyve offences and dettes to theym*
“...and pietously forgive them their offenses and debts” (CMINNOCE,8.117)
Middle English

- to-Dative attested across more types than in Modern English

  Huet may þe zone betere acsy to his uader...?
  “What may the son better ask his father...?” (CMAKENBI,110.2131)

  ...and he wold aske mercy wyth a meke hert to God
  “...and he would ask for mercy with a meek heart” (CMMIRK,91.2446)
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Acquisition of the Dative Alternation
Why Learning is Necessary

Arbitrariness

Why does *give* support the double object while *donate* does not?
Why does *throw* support the double object in English but not Norwegian?

Inter-speaker variation

Why do many, but not all, speakers reject the double object with *donate*?

Burden on UG

Verbs need to be pre-defined to overcome arbitrariness
Change is impossible
Why Innateness is Necessary

Interactions

E.g., with A’-raising, idioms

Underspecification

Verbs are not be attested with all possible constructions in learner input

Innovation

Mimicking cannot produce new uses
Change becomes impossible
Semantic Classification

- Children group verbs by their semantics
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- If “enough” members of a semantic class are attested with a construction, it is extended to all members
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- Proposed classification schemes are descriptive
- But they share common features
Semantic Classification

- Children group verbs by their semantics
- If “enough” members of a semantic class are attested with a construction, it is extended to all members
- Proposed classification schemes are descriptive
- But they share common features
- **Classification alone does not solve the problem**
- A suitable learning algorithm is required as well
Broad vs. Narrow-Range Classes

Broad-Range

- Caused Possession vs. Caused Motion
- Correspond to Recipient and Goal thematic roles
- Insufficient to explain fine details (e.g., *give* vs. *donate*)
- Innate?
Broad vs. Narrow-Range Classes

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Narrow-Range

- E.g., GIVE-type, THROW-type, CARRY-type, LATINATE-type, etc.
- Similar but not identical across languages
- Learned distributionally from input?
Levin (1993) Narrow-Range Classes

Double Object & to-Dative:
- GIVE - feed, give, lend, etc.
- TRANSFER OF MESSAGE - teach, show, etc.
- FUTURE HAVING - grant, promise, etc.
- CARRY - carry, pull, etc.
- BRING/TAKE - bring, take.
- THROWING - cast, hit, throw, etc.
- SEND - send, ship, etc.
- DRIVE - chase, drive, steer, etc.

An effective approximation. Similar to other descriptions (e.g., Gropen 1989).

Psycholinguistic evidence that children use similar classes cross-linguistically

to-Dative Only:
- SAY - say, speak, etc.
- MANNER OF SPEAKING - call, cry, sing, etc.
- FULFILLING - entrust, pledge, etc.
- PUTTING IN SPECIFIED DIR - lift, raise, etc.
- LATINATE - distribute, explain, donate, etc.

Double Object Only:
- DO ONLY - ask, beget, wish, etc.
- DUB - anoint, dub, etc.
- APPOINT - allow, appoint, ordain, etc.
- BILL - bill, charge, tender, etc.
- DECLARE - declare, judge, etc.
Quantifying “Enough”

- An learning algorithm exploiting semantic classes needs to be mathematically explicit
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- Related to the Tolerance Principle
Quantifying “Enough”

- An learning algorithm exploiting semantic classes needs to be mathematically explicit
- Yang (2016)’s Sufficiency Principle fits the bill
- Related to the Tolerance Principle
- Successfully applied to synchronic acquisition of the double object
The Sufficiency Principle

- A construction is productive for some class if a sufficient number of members are attested with the construction.
The Sufficiency Principle

- A construction is productive for some class if a sufficient number of members are attested with the construction
- Otherwise, the construction is memorized word-by-word in that class
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- Otherwise, the construction is memorized word-by-word in that class.
- Work up from small classes to large classes until the test fails.

**Sufficiency Principle**

\( N \): # of attested members

\( M \): # of members attested with construction

Construction is productive if:

\[ N - M < \frac{N}{\ln N} \]
Predictions

- The threshold for sufficiency shifts as children learn more verbs, so classes may go in and out of productivity
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- Inter-speaker variation as a function of when vocabulary is learned (donate)
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- The threshold for sufficiency shifts as children learn more verbs, so classes may go in and out of productivity
- Inter-speaker variation as a function of when vocabulary is learned (donate)
- Over-production when constructions are temporarily productive
- Children can backtrack

**CHILDES over-productions**

- **to-Dative**: “I asked this to you.”
- **Double Obj**: “Jay said me no.”
The Rise of the to-Dative
Actuation

- Misinterpretation of *to + animate goal construction* as *to + recipient*

  - Alice sent the book to Bob                      AMBIGUOUS
  - Alice sent the book to the White House          AMBIGUOUS (metonymy)
  - Alice kicked the book to Bob                     AMBIGUOUS
  - Alice kicked the book to the tree               UNAMBIGUOUS
Actuation

- Misinterpretation of *to + animate goal* construction as *to + recipient*
  
  Alice sent the book to Bob  \text{ AMBIGUOUS }
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  Alice kicked the book to Bob  \text{ AMBIGUOUS }
  Alice kicked the book to the tree  \text{ UNAMBIGUOUS }

- Learners who make this mistake have no way to be corrected
- \textbf{Formally}, the intended (goal) and misunderstood (recipient) meanings differ
- \textbf{Practically}, the intended and misunderstood meanings are identical
Ambiguous Goals in Middle English

Concrete Goals

...tyll þay brought to him þat þroðer þat was at home
“...till they brought to him that brother that was at home” (CMMIRK,99.2671)

Asa sente mychil gold and syluer to the king of Syrie
“Asa sent much gold and silver to the king of Syria” (CMPURVEY,I.22.1050)
Ambiguous Goals in Middle English

Abstract Goals

...and blesse hym that seith to thee harm.
“...and bless him that says to you harm.” (CMCTMEL.I,226.C2.371)

...so þat þu mowe seye to þy singuler loue,...
“...so that you may say to him your singular love,...” (CMAEL.R3,60.1041)
Cross-Linguistic Evidence

- If actuation was this easy, it may have happened multiple times
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- Cannot test historical actuation directly
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<thead>
<tr>
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<th>Faroese</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DoubO</strong></td>
<td><strong>Hon gaf Mariu troyggiuna</strong></td>
</tr>
<tr>
<td>Jag har gett mannen boken</td>
<td>“She gave Maria the.sweater”</td>
</tr>
<tr>
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<td>“She gave Maria the.sweater”</td>
</tr>
<tr>
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<td><strong>Hon gaf troyggiuna till Mariu</strong></td>
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- But we can see parallels in other languages

**Spanish**

to-Dat  Juan (le) *dio* el libro a Maria

“Juan gave the book to Maria”

**French**

Je (lui) *donne* le livre à Marie

“I gave the book to Marie”
Cross-Linguistic Evidence

- More ambiguous constructions make the to-dative more likely
- Languages without ambiguous to constructions should lack a to-dative
Cross-Linguistic Evidence

- More ambiguous constructions make the to-dative more likely
- Languages without ambiguous to constructions should lack a to-dative
- **Nepali** obligatorily follows recipients with *lai* and goals with *tira/Ø*
- There is no relevant ambiguity... and no to-dative
Cross-Linguistic Evidence

- More ambiguous constructions make the to-dative more likely
- Languages without ambiguous to constructions should lack a to-dative
- Nepali obligatorily follows recipients with *lai* and goals with *tira/Ø*

Alice le Bob *lai/*tira chitti pathai
Alice INS Bob DAT letter sent
“Alice sent Bob the letter/letter to Bob”

Alice le Bob *lai/*tira chitti pathai
Alice INS Bob TO letter sent
“Alice threw Bob the book/book to Bob”
Cross-Linguistic Evidence

- More ambiguous constructions make the to-dative more likely
- Languages without ambiguous to constructions should lack a to-dative
- Nepali obligatorily follows recipients with *lai* and goals with *tira*/*Ø*

Alice le chitti Kathmandu ma kasailai pathai
Alice INS letter Kathmandu at someone.DAT sent
“Alice sent the letter to (someone in) Kathmandu”

Alice le chitti Kathmandu ko kasai thau (ma)/(tira) pathai
Alice INS letter Kathmandu GEN somewhere at/TO sent
“Alice sent the letter to (somewhere in) Kathmandu”
Expansion of the to-Dative

- Misinterpreted ambiguous to constructions serve as evidence to children
- With enough evidence, the new to-dative could spread to additional verbs
- Without enough evidence, it cannot spread past the ambiguous to cases
Expansion of the to-Dative

- Testable for historical English!
Expansion of the to-Dative

- **Testable for historical English!**
- **Extracted 75 verbs with recipient semantics from PPCME2**
- **36 support the ambiguous construction**
Expansion of the to-Dative

- Testable for historical English!
- Extracted 75 verbs with recipient semantics from PPCME2
- 36 support the ambiguous construction
- Approximates positive examples in child language input
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- Testable for historical English!
- Extracted 75 verbs with recipient semantics from PPCME2
- 36 support the ambiguous construction
- Approximates positive examples in child language input

Could children extend the to-dative to 75 verbs with evidence from 36 verbs?
Using the Sufficiency Principle

$N$ (Number of lemmas): 75
Using the Sufficiency Principle

\(N\) (Number of lemmas): 75

\(M\) (Number of “to-dative”): 36
Using the Sufficiency Principle

\[ N \text{ (Number of lemmas):} \quad 75 \]

\[ M \text{ (Number of “to-dative”):} \quad 36 \]

\[ N-M \text{ (Number of lemmas not with to-dative in input):} \quad 39 \]
Using the Sufficiency Principle

\[ N \text{ (Number of lemmas):} \quad 75 \]

\[ M \text{ (Number of “to-dative”):} \quad 36 \]

\[ N-M \text{ (Number of lemmas not with to-dative in input):} \quad 39 \]

\[ \frac{N}{\ln N} \text{ (productivity threshold):} \quad 17.37 \]
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\(M\) provides sufficient evidence for productivity only if \(N - M < \text{threshold}\).
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N-M (Number of lemmas not with to-dative in input): 39

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M provides sufficient evidence for productivity only if N - M < threshold.

But 39 >> 17.37.
Using the Sufficiency Principle

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But what about semantic classes?
The Sufficiency Principle and Narrow Classes

Perform the calculation for each class

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<th>$N$</th>
<th>$M$</th>
<th>$N / \ln N$</th>
<th>$N - M$</th>
<th>Gen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>T. MESSAGE</td>
<td>10</td>
<td>2</td>
<td>4.34</td>
<td>8</td>
<td>NO</td>
</tr>
<tr>
<td>GIVE</td>
<td>5</td>
<td>4</td>
<td>3.11</td>
<td>1</td>
<td>YES</td>
</tr>
<tr>
<td>FUT. HAV.</td>
<td>14</td>
<td>10</td>
<td>5.30</td>
<td>4</td>
<td>YES</td>
</tr>
<tr>
<td>CARRY</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BRING/TAKE</td>
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<td>4</td>
<td>2.89</td>
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<tr>
<td>THROW</td>
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<td>1</td>
<td>(1)</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>SEND</td>
<td>1</td>
<td>1</td>
<td>(1)</td>
<td>0</td>
<td>YES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class</th>
<th>$N$</th>
<th>$M$</th>
<th>$N / \ln N$</th>
<th>$N - M$</th>
<th>Gen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRIVE</td>
<td>1</td>
<td>1</td>
<td>(1)</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>SAY</td>
<td>2</td>
<td>2</td>
<td>(2)</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>MANNER S.</td>
<td>2</td>
<td>0</td>
<td>(2)</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>FULFILLING</td>
<td>3</td>
<td>2</td>
<td>2.73</td>
<td>1</td>
<td>YES</td>
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<tr>
<td>PUT S. DIR</td>
<td>7</td>
<td>4</td>
<td>3.60</td>
<td>3</td>
<td>YES</td>
</tr>
<tr>
<td>LATINATE</td>
<td>9</td>
<td>5</td>
<td>4.10</td>
<td>4</td>
<td>YES</td>
</tr>
<tr>
<td>DO ONLY</td>
<td>6</td>
<td>0</td>
<td>3.35</td>
<td>6</td>
<td>NO</td>
</tr>
<tr>
<td>DUB</td>
<td>4</td>
<td>0</td>
<td>2.89</td>
<td>4</td>
<td>NO</td>
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<tr>
<td>APPOINT</td>
<td>3</td>
<td>0</td>
<td>2.73</td>
<td>3</td>
<td>NO</td>
</tr>
<tr>
<td>BILL</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>DECLARE</td>
<td>3</td>
<td>0</td>
<td>2.73</td>
<td>3</td>
<td>NO</td>
</tr>
</tbody>
</table>
Extension to Broad Classes

- One age cohort could generalize the to-dative to most narrow range classes
- A next cohort received both ambiguous to and the new to-datives as evidence
Extension to Broad Classes

- One age cohort could generalize the to-dative to most narrow range classes
- A next cohort received both ambiguous to and the new to-datives as evidence

Broad Classes

Class 1 (caused possession, some motion)  T. MESSAGE, GIVE, FUTURE HAVING
Class 2 (caused motion and possession)   CARRY, BRING/TAKE, THROW, SEND
Class 3 (caused motion)                  DRIVE, SAY, M. SPEAK, FULFILL, PUT
Class 4 (morphophonological)             LATINATE
Class 5 (no caused motion)               DO ONLY, DUB, APPOINT, BILL, DECL.
Extension to Broad Classes

- One age cohort could generalize the to-dative to most narrow range classes
- A next cohort received both ambiguous to and the new to-datives as evidence

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>M</th>
<th>N / ln N</th>
<th>N - M</th>
<th>Gen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>29</td>
<td>21</td>
<td>8.61</td>
<td>8</td>
<td>YES</td>
</tr>
<tr>
<td>Class 2</td>
<td>6</td>
<td>6</td>
<td>3.35</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>Class 3</td>
<td>15</td>
<td>13</td>
<td>5.54</td>
<td>2</td>
<td>YES</td>
</tr>
<tr>
<td>Class 4</td>
<td>9</td>
<td>9</td>
<td>4.10</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>Class 5</td>
<td>16</td>
<td>0</td>
<td>5.77</td>
<td>16</td>
<td>NO</td>
</tr>
</tbody>
</table>
Extension to “All”

- A second cohort could extend the to-dative to Classes 1-4, but not 5
- This is identical to the modern distribution
Extension to “All”

- A second cohort could extend the to-dative to Classes 1-4, but not 5
- This is identical to the modern distribution
- With this additional evidence, the next cohort extends it to all recipient verbs
- Matches Middle English corpus data (e.g., ask to, forbid to, etc.)
- $M = 59$ (all of Classes 1-4)

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>M</th>
<th>N / ln N</th>
<th>N - M</th>
<th>Gen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Recip</td>
<td>59</td>
<td>76</td>
<td>17.37</td>
<td>17</td>
<td>YES!</td>
</tr>
</tbody>
</table>
Interim Summary

- The to-dative is the result of misinterpreting ambiguous to-goal constructions.
- The to-dative tends to arise in languages with enough of such constructions.
Interim Summary

- The to-dative is the result of misinterpreting ambiguous to-goal constructions
- The to-dative tends to arise in languages with enough of such constructions
- Applying the Sufficiency Principle as the learning algorithm, the rapid spread of the to-dative is accounted for
- As well as the tenuous “overgeneralization” of the to-dative
The (Partial) Decline of the to-Dative
The Goal

- The to-dative had a wider distribution in Middle English than Modern English
- A full account of the to-dative must explain its retreat as well as its rise
The Goal

- The to-dative had a wider distribution in Middle English than Modern English
- A full account of the to-dative must explain its retreat as well as its rise
- The Sufficiency Principle applied to changing vocabulary solves it
Changing Inputs

- Early Modern English saw an influx of new vocabulary
Changing Inputs

- Early Modern English saw an influx of new vocabulary
- The Sufficiency Principle is predicated on the lexicon, so changing vocabulary has the power to alter productivity thresholds
Changing Inputs

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- Use the PPCEME corpus to approximate change
Changing Inputs

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PPCEME

- 118 lemmas (59 overlap with PPCME2)
- 44 ambiguous to lemmas (26 overlap)
Changing Inputs

- Early Modern English saw an influx of new vocabulary
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- Use the PPCEME corpus to approximate change

PPCEME

- 118 lemmas (59 overlap with PPCME2)
- 44 ambiguous to lemmas (26 overlap)
- Conservatively assume all overlap all and ambiguous to lemmas support to-dative
Learning the Early Modern English to-Dative

- We perform the same process of narrow to broad generalization as before
- This is a learning algorithm, so children of all eras must perform these steps
Learning the Early Modern English to-Dative

- We perform the same process of narrow to broad generalization as before
- This is a learning algorithm, so children of all eras must perform these steps
- Given the new vocabulary, extension to Classes 4 and 5 fails

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<th>Gen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>27</td>
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<td>8.19</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>Class 2</td>
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<td>8</td>
<td>3.85</td>
<td>0</td>
<td>YES</td>
</tr>
<tr>
<td>Class 3</td>
<td>29</td>
<td>21</td>
<td>8.61</td>
<td>8</td>
<td>YES</td>
</tr>
<tr>
<td>Class 4</td>
<td>29</td>
<td>14</td>
<td>8.61</td>
<td>15</td>
<td>NO</td>
</tr>
<tr>
<td>Class 5</td>
<td>25</td>
<td>9</td>
<td>7.77</td>
<td>14</td>
<td>NO</td>
</tr>
</tbody>
</table>
Learning the Early Modern English to-Dative

- We perform the same process of narrow to broad generalization as before
- This is a learning algorithm, so children of all eras must perform these steps
- Given the new vocabulary, extension to Classes 4 and 5 fails
- And extension to all recipient verbs fails

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<th>N - M</th>
<th>Gen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Recip</td>
<td>118</td>
<td>87</td>
<td>24.73</td>
<td>31</td>
<td>NO</td>
</tr>
</tbody>
</table>
Classes 4 and 5

- Successfully removes the to-dative from Class 5 (as in Modern English)
- But removes it from Class 4 (Latinate) as well
Classes 4 and 5

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Latinate Verbs

- The only class defined morphophonologically (no monosyllables, etc.)
- Should they be treated with the other classes at all?
Classes 4 and 5

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- But removes it from Class 4 (Latinate) as well

Latinate Verbs

- The only class defined morphophonologically (no monosyllables, etc.)
- Should they be treated with the other classes at all?

Possible Solution

- Latinate verbs were sometimes borrowed with Romance syntax (cf Ayenbite)
- Recent work by Engemann & Trips
- This would boost their $M$ value and render to to-dative productive
Interim Summary

- The same learning process that explains the rise of the to-dative explains its partial retreat
Interim Summary

- The same learning process that explains the rise of the to-dative explains its partial retreat
- It is unclear what to do with Latinate verbs
DO-IO Double Objects
The to-Dative vs. DO-IO Double Objects

• Have not addressed it yet because we propose no direct relationship between the to-dative and DO-IO double objects
The to-Dative vs. DO-IO Double Objects

- Have not addressed it yet because we propose no direct relationship between the to-dative and DO-IO double objects
- Contrasts with previous accounts arguing that the to-Dative replaced DO-IO
- An “accidental” ambiguity account for the loss of DO-IO better explains cross-linguistic data on the phenomenon
Surface Ambiguity

- Corpus research on DO-IO is frustrated by surface ambiguity
- How to distinguish “genuine”/base generated DO-IO from scrambled IO-DO?
Surface Ambiguity

- Corpus research on DO-IO is frustrated by surface ambiguity
- How to distinguish “genuine”/base generated DO-IO from scrambled IO-DO?

Potentially Scrambled IO-DO

- Heavy NP shift moves IO rightward over DO
- Pronoun cliticization moves DO leftward over IO
Surface Ambiguity

- Corpus research on DO-IO is frustrated by surface ambiguity
- How to distinguish “genuine”/base generated DO-IO from scrambled IO-DO?

Potentially Scrambled IO-DO

- Heavy NP shift moves IO rightward over DO
- Pronoun cliticization moves DO leftward over IO

Unambiguous DO-IO (McFadden 2002, Polo 2002)

- Full NP DO and Pronoun IO
- Cannot be the result of either movement
Surface Ambiguity

- Corpus research on DO-IO is frustrated by surface ambiguity
- How to distinguish “genuine”/base generated DO-IO from scrambled IO-DO?
- Surface ambiguity is hard on researchers. Is it hard on children too?
Surface Ambiguity

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- How to distinguish “genuine”/base generated DO-IO from scrambled IO-DO?
- Surface ambiguity is hard on researchers. Is it hard on children too?

Proposal

As unambiguous DO-IO became rarer, children had no need to posit a unique structure. All remaining DO-IO were interpreted as scrambling.
Surface Ambiguity

- Corpus research on DO-IO is frustrated by surface ambiguity
- How to distinguish “genuine”/base generated DO-IO from scrambled IO-DO?
- Surface ambiguity is hard on researchers. *Is it hard on children too?*

**Proposal**

As unambiguous DO-IO became rarer, children had no need to posit a unique structure. All remaining DO-IO were interpreted as scrambling.

- Lends itself to a competing grammars account
- Base generated DO-IO is at a disadvantage due to ambiguity
## Corpus Evidence

- PPCME2 and PPCEME token frequencies

<table>
<thead>
<tr>
<th>Era</th>
<th>V-NP-pro / % Total</th>
<th>Total DO-IO / % Total</th>
<th>Total Double Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>m1 (1150-1250)</td>
<td>31 4.40</td>
<td>339 48.15</td>
<td>704</td>
</tr>
<tr>
<td>m2 (1250-1350)</td>
<td>5 1.75</td>
<td>97 33.92</td>
<td>286</td>
</tr>
<tr>
<td>m3 (1350-1420)</td>
<td>1 0.13</td>
<td>211 27.58</td>
<td>765</td>
</tr>
<tr>
<td>m4 (1420-1500)</td>
<td>1 0.15</td>
<td>99 15.23</td>
<td>650</td>
</tr>
<tr>
<td>e1 (1500-1569)</td>
<td>1 0.10</td>
<td>244 23.33</td>
<td>1046</td>
</tr>
<tr>
<td>e2 (1570-1639)</td>
<td>1 0.07</td>
<td>265 19.77</td>
<td>1412</td>
</tr>
<tr>
<td>e3 (1640-1720)</td>
<td>0 0.00</td>
<td>185 15.58</td>
<td>1155</td>
</tr>
</tbody>
</table>
Corpus Evidence

- Unambiguous V-NP-pro DO-IO dropped off almost completely

<table>
<thead>
<tr>
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</tr>
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Corpus Evidence

- Ambiguous DO-IO dropped off then levelled off

<table>
<thead>
<tr>
<th>Era</th>
<th>V-NP-pro / % Total</th>
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Corpus Evidence

- Remaining rate represents background scrambling rate for double objects

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<td>0   0.00</td>
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<td>1155</td>
</tr>
</tbody>
</table>
Learnability

- Even by m1, there is insufficient evidence to postulate a unique DO-IO
- The declining rate then is due to lexical erosion
Learnability

- The Sufficiency Principle will not predict productivity
- DO-IO type frequencies

<table>
<thead>
<tr>
<th>Era</th>
<th>V-NP-pro (M)</th>
<th>Total DO-IO</th>
<th>Total Double Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>m1 (1150-1250)</td>
<td>13</td>
<td>90</td>
<td>155</td>
</tr>
<tr>
<td>m2 (1250-1350)</td>
<td>5</td>
<td>26</td>
<td>75</td>
</tr>
<tr>
<td>m3 (1350-1420)</td>
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Morphological Erosion Hypotheses

If the to-dative replaced DO-IO (via morphological erosion),
Morphological Erosion Hypotheses

If the to-dative replaced DO-IO (via morphological erosion),

● Languages with a dative-accusative distinction should not have a to-dative
● Languages without a dative-accusative distinction should not have a DO-IO
● Languages with a to-Dative should not have DO-IO *

* modulo competing grammars
Morphological Erosion Hypotheses

If the to-dative replaced DO-IO (via morphological erosion),

- Languages with a dative-accusative distinction should not have a to-dative
- Languages without a dative-accusative distinction should not have a DO-IO
- Languages with a to-Dative should not have DO-IO *

* modulo competing grammars

Under our model, there is no expected correlation

At best, more prepositions  →  more opportunity for actuation
More to-datives  →  less unambiguous DO-IO
Failures of Entailment

Faroese

- Old Norse was like Old English: symmetric double obj, no to-dative, DAT-ACC
- Has DAT-ACC distinction, a to-dative, and no DO-IO double object
Failures of Entailment

Faroese

- Old Norse was like Old English: symmetric double obj, no to-dative, DAT-ACC
- Has DAT-ACC distinction, a to-dative, and no DO-IO double object

Nepali

- Has DAT-ACC ambiguity (lai sometimes marks ACC as well as DAT)
- But has no to-dative
Failures of Entailment

Norwegian Dialects

- Some have a DAT-ACC distinction on pronouns and definite nouns
- Yet have a to-dative, no DO-IO for full NP, have DO-IO for pronouns
Failures of Entailment

Norwegian Dialects

- Some have a DAT-ACC distinction on pronouns and definite nouns
- Yet have a to-dative, no DO-IO for full NP, have DO-IO for pronouns

ok \textit{ho ga kattåinn mat}

* \textit{ho ga mat kattåinn}

“She gave \textit{the.cat.DAT food}”
Failures of Entailment

Norwegian Dialects

- Some have a DAT-ACC distinction on pronouns and definite nouns
- Yet have a to-dative, no DO-IO for full NP, have DO-IO for pronouns

\[
\begin{align*}
\text{ok} & \quad \text{ho ga } \text{kattåinn mat} & \quad \text{ok} & \quad \text{ho ga } \text{‘nå det} & \quad (\text{IO-DO}) \\
* \quad \text{ho ga } \text{mat kattåinn} & \quad \text{ok} & \quad \text{ho ga } \text{det } \text{‘nå} & \quad (\text{DO-IO}) \\
\text{ok} & \quad \text{ho ga } \text{det åt } \text{‘nå} & \quad (\text{to-dative})
\end{align*}
\]

“She gave the.cat.DAT food” \quad “She gave it to him.DAT”
Conclusions

- The cause of change should be taken seriously
- As a primary research goal
- As a secondary research goal
Conclusions

- The cause of change should be taken seriously
- As a primary research goal
- As a secondary research goal

- Acquisition-driven change directly accounts for the English to-dative
- What other problems can it solve?
Questions?

Slides available: ling.upenn.edu/~jkodner