

A Learners' Perspective on the History of the English Dative Constructions

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**Nov. 9, 2018
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The Dative Constructions in Modern English

- **Ditransitives with recipient/goal indirect objects**

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 Dative Constructions in Modern English

- Ditransitives with recipient/goal indirect objects

Double Object

- Alice gave Bob the book
- Alice told Bob a story

But...

- *Alice donated Bob the book
- Alice promised Bob a job

to-Dative

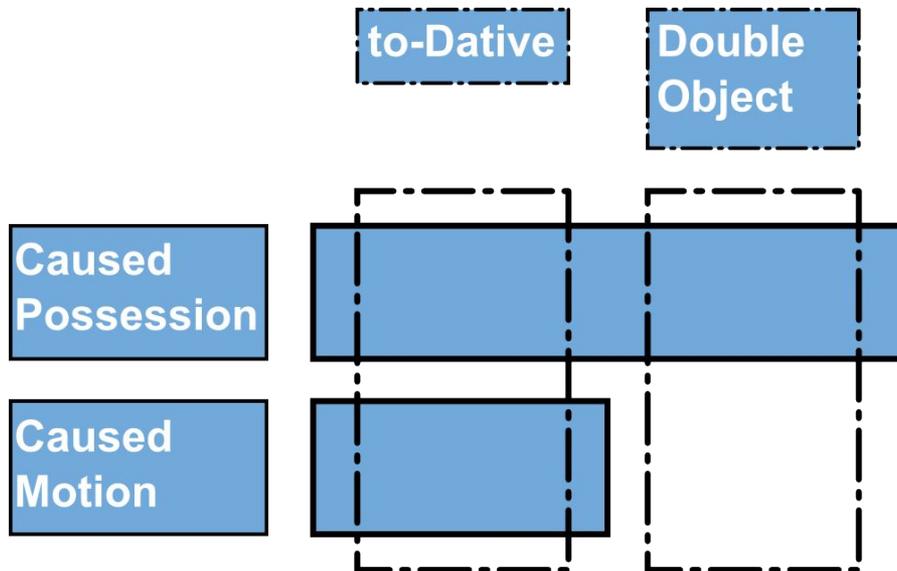
- Alice gave the book to Bob
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Broad-Range Semantic Classes

Necessary Condition

Verbs require **caused possession** or **caused motion** meanings

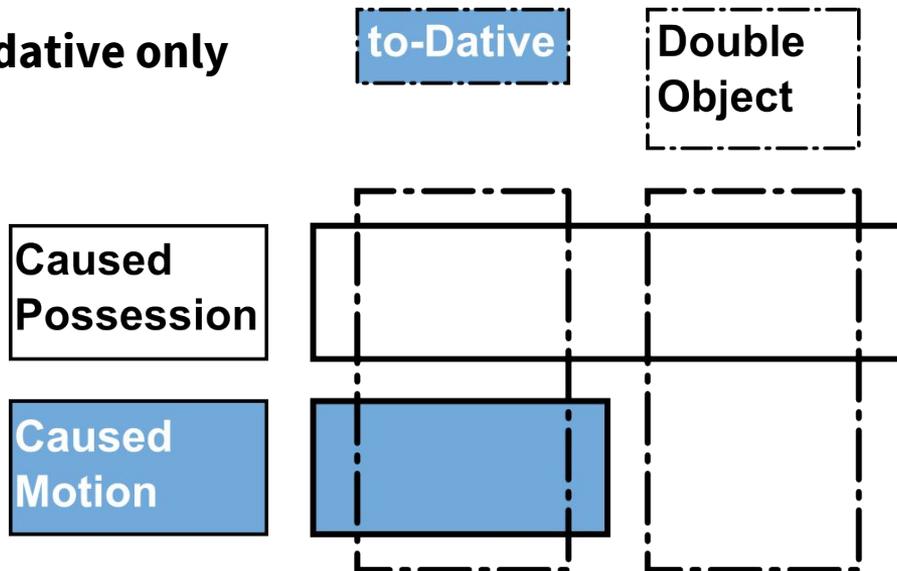


Broad-Range Semantic Classes

Necessary Condition

Verbs require **caused possession** or **caused motion** meanings

eg *say* is caused motion-only so it is to-dative only



Broad-Range Semantic Classes

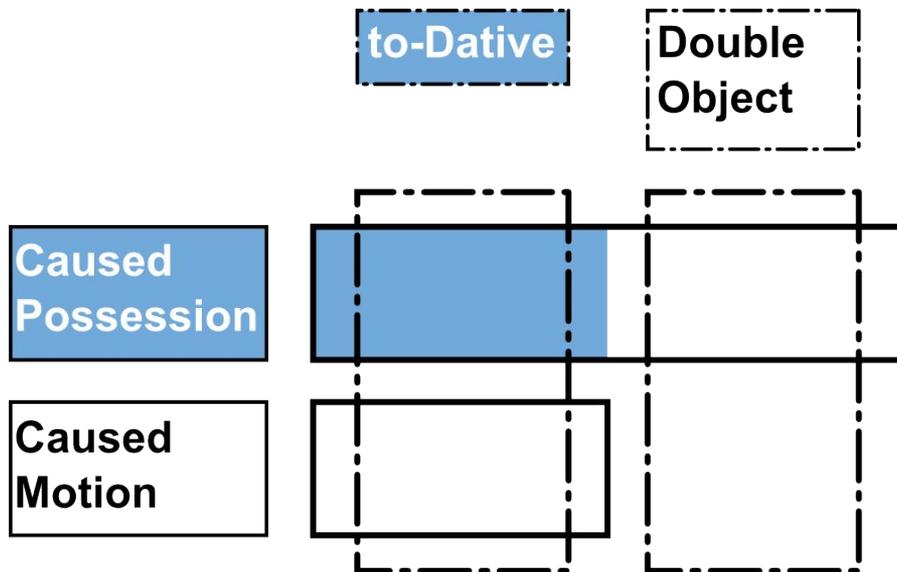
Necessary Condition

Verbs require **caused possession** or **caused motion** meanings

But not a Sufficient Condition

A given verb need not participate in all possible constructions

eg *donate* cannot take the double object even though it is a caused possession verb



Broad-Range Semantic Classes

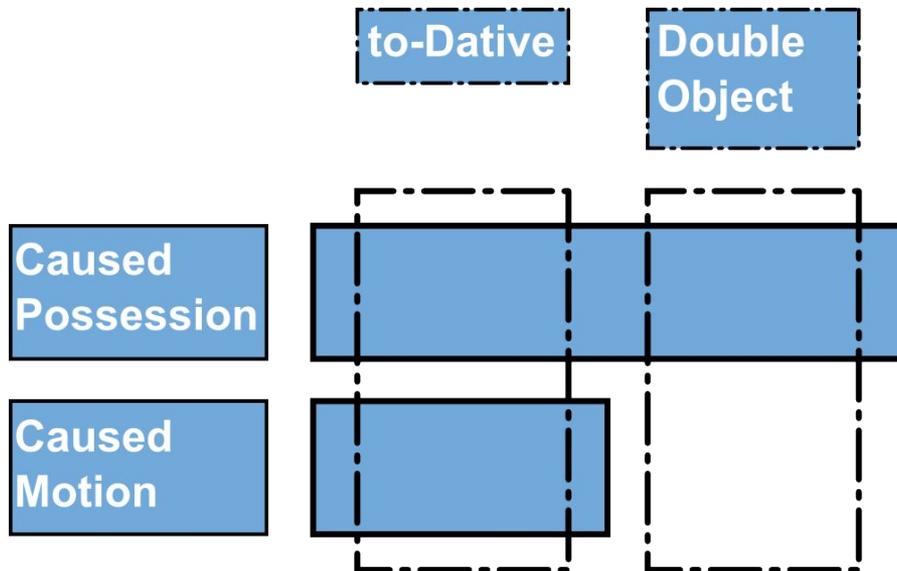
Necessary Condition

Verbs require **caused possession** or **caused motion** meanings

“**Latinate verbs are to-dative-only**”

But this does not account for *promise*

All such generalizations have exceptions



How did it get this way?

There are three factors at play

- **The grammar behind the constructions**
- **How they are acquired**
- **The history of the language**

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- **How they are acquired**
- **The history of the language**

A diachronic account for the dative constructions is an excellent case study for investigating the interplay between the three. Focusing on acquisition:

- **Grounds the historical account**
- **Clarifies what must be explained in representation - yields a simpler grammar**

Outline

- **The dative constructions over time**
- **How children learn the constructions**
- **Initial Innovation of the to-dative**
- **The lexical advance and retreat of the to-dative**

The Constructions over Time

Old English

- **The double object was symmetric (IO-DO and DO-IO both licit)**
- **There was (probably) no to-dative**
- **There was an overt dative-accusative (DAT-ACC) distinction**

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DO-IO (* in Modern English)

... *þæt he forgeafe godne willan þam seocan hæðenan*

... *that he would grant good will.ACC the sick heathen.DAT*

IO-DO (ok in Modern English)

... *gif þu geoffrast Gode ænige lac æt his weofode.*

... *if you offer God.DAT any sacrifice.ACC at his altar*

Old English

- Similar pattern to Old Norse
- *to* could be used to indicate goals (Mitchell 1985): *bringan*, *niman* ‘take,’ *lætan* ‘permit,’ *sendan*...
- Including abstract goals: *secgan* ‘say, speak,’ *cweþan* ‘speak, name, declare,’ *sprecan* ‘speak,’ *cleopian* ‘cry, call’...

Old English

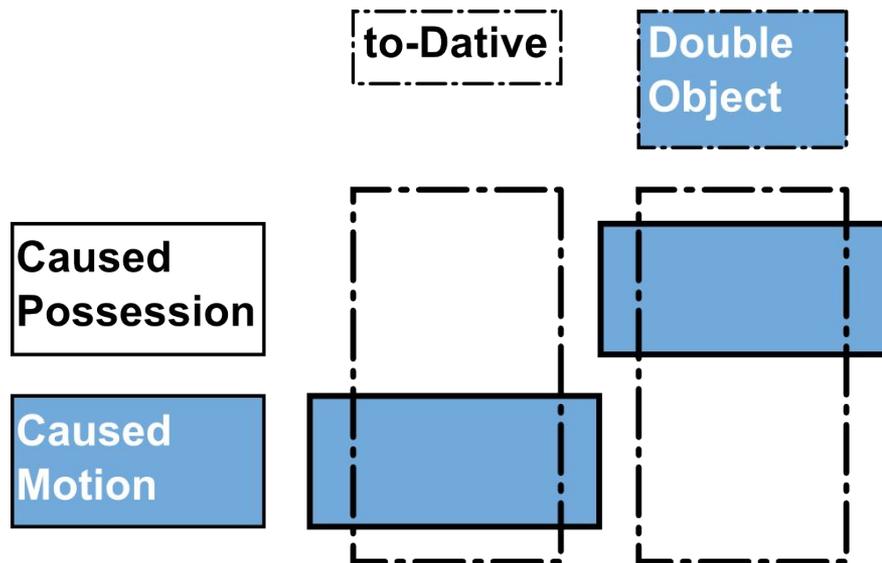
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- And dubiously a couple examples with human goal-like recipients

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eg ‘*agifan to a monastery*,’ ‘*(ge)sellan to a church*’
- And dubiously a couple examples with human goal-like recipients
- Are these really to-datives? Visser 1963 says yes, Mitchell 1985 says no

Old English

- **Caused possession did not allow for the prepositional construction**
- **ie, no to-dative**



Middle English

- **DO-IO double objects fell out of use**
- **The to-dative came into being**
- **Overt accusative-dative case marking was lost**

Are these changes related? Did the to-dative replace DO-IO as a functional response to the loss of case marking?

Middle English

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Are these changes related? Did the to-dative replace DO-IO as a functional response to the loss of case marking? **I don't think so...** Also,

- The to-dative was more broadly applicable in ME than in ModE (Visser 1963)
- *Commaunde to the peuple, saued to hym, acsy to his uader, forbed...to Roboam...*

This requires an explanation too

Against Morphology-Driven Accounts

Strong Morphological Erosion

The general idea: When overt case marking is lost, DO-IO becomes ineffable or otherwise problematic because of ambiguity. Overtly marking the goal/recipient with *to* fixes this.

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- Not dependent on a specific theory of Case
- Allen 1995 presents the fullest argument
- See also McFadden 2002 for a competing grammars account
- Essentially **functional** in nature

Predictions

If morphological erosion were the primary driver of this change,

1. **The to-dative should replace DO-IO around the time that overt DAT-ACC is lost**
2. **The DO-IO double object should be rare when DAT-ACC is lost**
3. **The to-dative should be rare where overt DAT-ACC is maintained**

Prediction #1

The to-dative should replace DO-IO around the time that overt DAT-ACC is lost

- The overt DAT-ACC was lost on nouns well before DO-IO was in the SE Midlands
- The temporal correlation between the loss of DAT-ACC on pronouns and DO-IO is closer, so Polo 2002 argues that the pronouns provided sufficient evidence to learn DO-IO

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- **The temporal correlation between the loss of DAT-ACC on pronouns and DO-IO is closer, so Polo 2002 argues that the pronouns provided sufficient evidence to learn DO-IO**
- **If the to-dative existed in late OE, then it arose before overt DAT-ACC was lost**

There are mismatches in at least one direction, maybe both

Prediction #2

The DO-IO double object should be rare when DAT-ACC is lost

- Swedish retains it lexically with a few particle verbs (Lundquist 2014)

DO-IO

Stevie Wonder tillägnade **konsernten** **sin** hustru

Stevie Wonder dedicated **consert.DEF** **his** wife

IO-DO

Stevie Wonder tillägnade **sin** hustru **konsernten**

Stevie Wonder dedicated **his** wife **consert.DEF**

‘Stevie Wonder dedicated the concert to his wife.’

Prediction #2

The DO-IO double object should be rare when DAT-ACC is lost

- Swedish retains it lexically with a few particle verbs (Lundquist 2014)
- Modern Liverpool and Manchester Englishes have DO-IO (Biggs 2015)

DO-IO

Mary gave **the book** **the teacher**

Mary sent **the package** **her nan's**

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- Swedish retains it lexically with a few particle verbs (Lundquist 2014)
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DO-IO is learnable with three different structures in three languages without overt case marking.

Prediction #3

The to-dative should be rare where overt DAT-ACC is maintained

- Faroese: overt DAT-ACC distinction, to-dative, but no DO-IO (Lundquist 2014)

DO-IO

* Hon gaf troyggiuna Mariu
She gave sweater.DEF.ACC Maria.DAT

to-Dative

Hon gaf troyggiuna till Mariu
She gave sweater.DEF.ACC to Maria.DAT

‘She gave Maria the sweater / the sweater to Maria.’

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- Some Norwegian: overt DAT-ACC on pronouns + def nouns, to-dative, DO-IO pronouns only (Åfarli & Fjøsne 2012)

DO-IO

Ho ga det 'nå
She gave it him.DAT

IO-DO

Ho ga 'nå det
She gave him it
'She gave him it'

to-Dative

Ho ga det åt 'nå
She gave it to him.DAT
'She gave it to him'

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DO-IO

* Ho ga mat kattáinn
She gave food cat.DEF.DAT

IO-DO

Ho ga kattáinn mat
She gave cat.DEF.DAT food
'She gave the cat food'

Prediction #3

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- **Some Norwegian: overt DAT-ACC on pronouns + def nouns, to-dative, DO-IO pronouns only (Åfarli & Fjøsne 2012)**

The to-dative arises even when there is no pressure from morphological ambiguity.

The Norwegian examples show that case marking on pronouns (and def nouns) does not maintain DO-IO on nouns, so the English temporal gap remains unaccounted for

Weak Morphological Erosion

The general idea: Exceptions are okay because there is a tendency against ambiguity, not a hard and fast rule

- Allen 2006, De Cuypere 2015

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- How to prove causation?
- Can study this by running regressions on corpus usage frequencies
- Changes in token frequencies are language change but not the relevant kind

Weak Morphological Erosion

The general idea: Exceptions are okay because there is a tendency against ambiguity, not a hard and fast rule

- How to prove causation?
- Can study this by running regressions on corpus usage frequencies
- Changes in token frequencies are language change but not the relevant kind
- **It doesn't actually answer the relevant questions**
 - How did categorical changes to the grammar occur?
 - Why did *to* become a recipient marker?
 - How did the *to*-dative achieve its modern lexical distribution?

Borrowing

The general idea: the to-dative is a borrowing from French. Hinted at in Visser 1963, more fully explicated by Trips & Stein

- I don't have a problem with it *per se*
- But it also can't be the full story
- I'll come back to this later...

And those “Overextensions”

None of these accounts explain why constructions like *Commaunde to the people*, *saued to hym*, *acsy to his uader*, or *forbed...to Roboam* were lost

We would still need a second mechanism to account for this even if morphological erosion bore out.

Learning the Constructions

Child Language Acquisition

Primarily focused on how children learn the arbitrary lexical mappings between verbs and the double object and to-dative

- **Broad-range classes are a good start, but they are insufficient (cf *donate*)**
- **Lexical conservatism is unfeasible (input data is too sparse)**

Need enough innate knowledge to make it learnable but enough inductive learning to explain inter-personal and cross-lingual variation

Narrow-Range Classes

Finer-grained classifications can be designed to describe grammaticality better than broad-range classes (eg Gropen et al 1989, Levin 1993)

Double Obj & to-Dative:

**GIVE, TRANSFER OF MESSAGE,
FUTURE HAVING, CARRY,
BRING/TAKE, THROWING,
SEND, DRIVE**

to-Dative Only:

**SAY, MANNER OF SPEAKING,
FULFILLING, PUTTING IN SPEC.
DIRECTION, LATINATE**

Double Object Only:

**DO ONLY, DUB, APPOINT,
BILL, DECLARE**

Narrow-Range Classes

Finer-grained classifications can be designed to describe grammaticality better than broad-range classes (eg Gropen et al 1989, Levin 1993)

Cannot be totally innate. May be learned (in part) distributionally (Pinker):

- There is cross-linguistic variation: Norwegian **THROWING** is to-dative-only (Barðdal et al. 2011)

- There is diachronic variation in English

- The classes are violable:

eg Latinate to-dative & double object verbs: *advance*, *refund*, *allocate*, *allot*, *concede*, *extend*, *guarantee*, *offer*, *promise*, *render*...

Latinate double object-only verbs: *imagine*, *nominate*, *presume*, *profess*, *refuse*, *suppose*

Narrow-Range Classes

Finer-grained classifications can be designed to describe grammaticality better than broad-range classes (eg Gropen et al 1989, Levin 1993)

These are a useful descriptive tool, but how to children leverage them to learn the dative constructions?

The Sufficiency Principle

The **Sufficiency Principle** (Yang 2016) provides a mechanism.

- A corollary to the Tolerance Principle
- An **evaluation metric**: does a child find enough positive evidence in favor of a generalization?

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- A corollary to the Tolerance Principle
- An **evaluation metric**: does a child find enough positive evidence in favor of a generalization?
- Children seek smaller generalizations before larger ones
- **Children should generalize once they have received enough evidence to do so**
- **Without enough evidence, essentially fall back on lexical conservatism**

The Sufficiency Principle

The **Sufficiency Principle** (Yang 2016) provides a mechanism.

- N number of items to which the generalization should apply
- M number of items to which the child has observed the generalization to apply
- θ_N threshold for generalization

Generalize if: $N - M \leq \theta_N$

where $\theta_N := \frac{N}{\ln(N)}$

The Sufficiency Principle

- **Based on a notion of processing efficiency: If $N-M < \theta$, it is more efficient to represent a generalization than to learn a pattern lexically**
- **Threshold is calculated assuming frequency-rank lexical access, an elsewhere condition, a Zipfian lexical distribution (Yang 2016)**

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- **This is something children do.**
- **3yos know roughly a thousand words at most (Hart & Risley 1995, 2003)**
- **So a few hundred verbs at best**

Acquiring the Modern Dative Alternation

Consider narrow generalizations: **one for each narrow-range class**

- Each class has its own N , M , θ according to that child's experience



- These numbers are estimated from text corpora for a “typical” child
- A frequency cutoff (often 1/million Nagy & Anderson 1984) gives a child-like lexicon size and composition

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Example: How this Accounts for Latinate Verbs

Most Latinate verbs are to-dative-only (eg *donate*), but some are both (eg *advance*), and some are double object-only (eg *nominate*)

- Neither construction is productive: for mature (large N) speakers, $N-M$ exceeds the sufficiency threshold for both
- So everything is a lexical exception.

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- Neither construction is productive: for mature (large N) speakers, $N-M$ exceeds the sufficiency threshold for both
- So everything is a lexical exception.
- **But not always.** For some young learners (small N), the double object may have been temporarily productive. Explains why *donate* double objects, etc are okay for some speakers.

Overgeneralization Errors

- A construction is temporarily generalized if $N-M$ falls below the sufficiency threshold but later rises above it
- Children may produce overgeneralization errors when this happens

Overgeneralized to-dative

'I asked this to you'

Overgeneralized double object

'Jay said me no'

'Mattia demonstrated me that yesterday'

An Avenue for Actuation

Innovating the to-Dative by Chance

- **We need to account for to-dative-like constructions in Middle English (possibly Old English), Faroese, Continental North Germanic, and elsewhere**
- **Cannot rely on borrowing alone: How much NGermanic-French contact?**
- **Cannot rely on DAT-ACC ambiguity at all: why to? Why OE, Faroese, etc?**

What we have to work with

Old/Early Middle English (and Old Norse)

- **Double objects**
- ***to* introducing concrete and abstract goals**
- ***to* introducing recipient-like goals**

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What if recipient-like and abstract goals were reanalyzed as goal-like and abstract recipients?

Ambiguous Directional-*to*

Alice threw the ball to Bob

recipient-like goal or **goal-like recipient?**

Alice said something to Bob

abstract goal or **abstract recipient?**

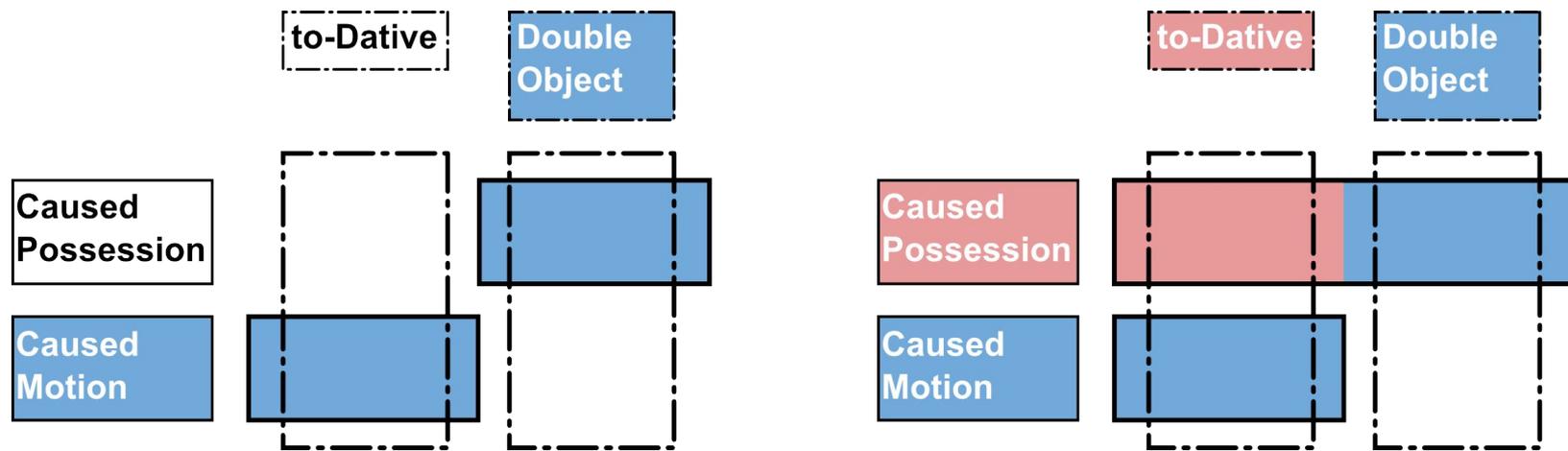
Ambiguous Directional-*to*

Alice threw the ball to Bob **recipient-like goal** or **goal-like recipient?**

Alice said something to Bob **abstract goal** or **abstract recipient?**

- **The semantics of these interpretations are formally distinct, but they are practically the same in use.**
- **Language-specific broad-range class to construction mapping must be learned**
- **Assuming the red interpretations is tantamount to realigning the mapping**

An Asymptomatic Realignment

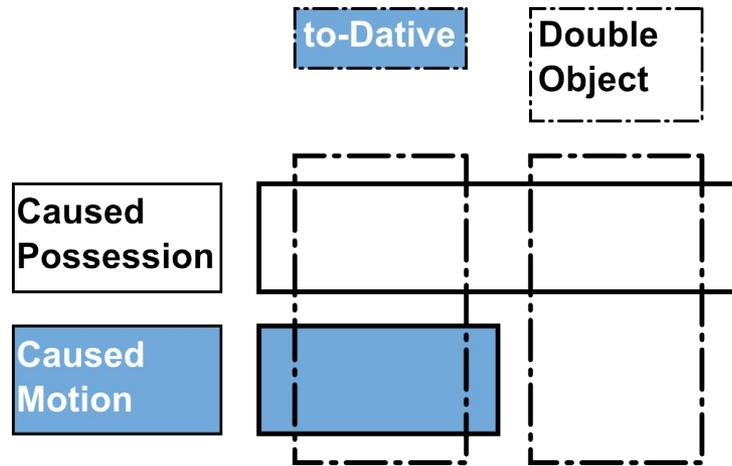


Old English *throw*

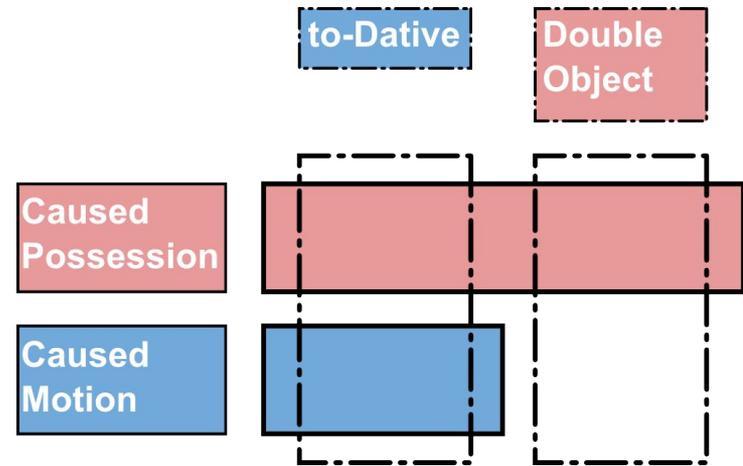
Realigned *throw*

A Modern Symptomatic Realignment

Consider the modern child utterance '*Jay said me no*'



Modern adult say



Modern child error say

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- We cannot know exactly what happened (the **Actuation Problem** WLH 1968)
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- Under this account, it could have happened many times
- **It did across languages with goal-introducing prepositions**

North Germanic *til/till*

Hon **gaf** troyggiuna **till** **Mariu**. ‘*She gave the sweater to Maria*’ (Faroese, L 2004)

West Germanic *aan/oan*

Ik **joech** in plant **oan** **Beppe**. ‘*I gave a plant to Grandmother*’ (Frisian, Tiersma 1985)

Romance *a/à*

Juan (le) **dio** el libro **a** **Maria**. ‘*Juan gave the book to Maria*’ (Spanish, D 1995)

The Moment of Innovation

- We cannot know exactly what happened (the **Actuation Problem** WLH 1968)
- Under this account, it could have happened many times
- It did across languages with goal-introducing prepositions
- Most actuations are asymptomatic or later corrected

Actuation is not the limiting factor here, it is the construction's ability to spread

Interim Summary

- **Linguistic input supports an alternative analysis where some intended goals with *to* are actually recipients**
- **This is tantamount to hypothesizing a to-dative**
- **It is not reliant on morphological erosion or borrowing**
- **It may have happened many times**

Advance and Retreat

Contingency on the Lexicon

- **The composition of the lexicon determines a construction's ability to generalize through it**
- **We need to estimate a lexicon**
- **Then we can model it with the Sufficiency Principle**

The generalization, “overgeneralization,” and retreat of the to-dative can all be modeled in exactly the same way

How to think about the problem

Think like a language acquisition researcher

- **We want to model how ME learners behaved given what we know about modern ones**
- **Need to reason from the perspective of a typical Middle English learner**

How to think about the problem

Think like a language acquisition researcher

- We want to model how ME learners behaved given what we know about modern ones
- Need to reason from the perspective of a typical Middle English learner

Fundamentally different from the traditional approach

- We are not interested in the grammar of any individual at any specific time
- Deeply analyzing a specific text will not give us a good estimate

Modeling Modern Learners

- **Modern learner knowledge is approximated from corpora of modern speech**
- **Especially of child-directed speech (CDS)**
- **These corpora are not that big. CHILDES English CDS has ~5 million tokens.**
- **The goal is to model a “typical” child, not a specific one**
- **Pooling sources and applying a frequency cutoff gets at that “typicality”**
- **Child lexicons are not large at the relevant time. ~1000 words at 3yo.**
- **Yang 2016 extracts ~100 lemmas for his synchronic dative constr. study**

Modeling Middle English Learners

- **ME learner knowledge is approximated from corpora of ME text**
- **Religious and legalistic documents**
- **These corpora are not that big. PPCME2 has 1.2 million tokens.**
- **The goal is to model a “typical” child, not a specific one**
- **Pooling sources and applying a frequency cutoff removes elevated vocabulary**
- **Child lexicons are not large at the relevant time. ~1000 words at 3yo.**
- **I extract 75 lemmas for this diachronic study**

When this approach works

- **All the Sufficiency Principle needs is a count of lemmas**
- **That count should be child-sized and contain typical child vocabulary**
- **The PPCME2 is large enough and the frequency cutoff works well enough**

For the purposes of estimating a child lexicon, pooled historical corpora work about as well and for the same reason as modern general corpora

- **This approach is complementary to traditional corpus token analysis**
- **It can address problems not well addressable previously**
- **But it is not workable for others**

Modeling the Initial State

- **After actuation, only ambiguous directional-*to* verbs supported the to-dative**
- **We need to estimate how many of these there were in Middle English:**

Method

1. **Extracted all verbs occurring in double object constructions or with a to-PP in the PPCME2**
2. **Sorted by lemma, then into narrow-range classes**
3. **Labeled verbs with possible ambig-*to* meanings**

75 verbs were extracted, 39 of which are plausibly ambig. directional-*to*

Ambiguous Directional-to by Class

Doub Obj + to-Dat	<i>N</i>	<i>M</i>
TRANS. MESSAGE	10	2
GIVE	5	4
FUTURE HAVING	14	10
CARRY	0	-
BRING/TAKE	4	4
THROWING	1	1
SEND	1	1

to-Dative Only	<i>N</i>	<i>M</i>
DRIVE	1	1
SAY	2	2
MANN. OF SPEAK	2	0
FULFILLING	3	2
PUT SPEC. DIR.	7	4
LATINATE	9	5

Doub Object Only	<i>N</i>	<i>M</i>
DO ONLY	6	0
DUB	4	0
APPOINT	3	0
BILL	0	-
DECLARE	3	0

Initial Expansion

- Applying the Sufficiency Principle to every class tells us for which classes the new to-dative was initially productive
- Learners who actuated it may have produced it **symptomatically** in these classes: **with ambig-to and non-ambig-to verbs**
- And other learners would hear these instances

Sufficiency Result by Class

Doub Obj + to-Dat	Generalize
TRANS. MESSAGE	no
GIVE	yes
FUTURE HAVING	yes
CARRY	-
BRING/TAKE	yes
THROWING	yes
SEND	yes

to-Dative Only	Generalize
DRIVE	yes
SAY	yes
MANN. OF SPEAK	no
FULFILLING	yes
PUT SPEC. DIR.	yes
LATINATE	yes

Doub Object Only	Generalize
DO ONLY	no
DUB	no
APPOINT	no
BILL	-
DECLARE	no

Already almost the modern distribution

Initial Expansion

- **Most narrow-range classes could support a productive to-dative**
- **French calques would provide additional evidence for this process**
- **The numbers calculated here are robust: other labelings produce the same result**

Further Expansion

- **ME learners who heard the new unambiguous to-datives from older peers had a broader basis for generalization**
- **The Sufficiency Principle works up to broader generalizations**

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An example broader classification:

1. **TRANSFER OF MESSAGE, GIVE
FUTURE HAVING**
2. **CARRY, BRING/TAKE, THROWING
SEND**
3. **DRIVE, SAY, MANNER OF SPEAKING,
FULFILLING, PUT SPEC DIR**
4. **LATINATE**
5. **DO ONLY, DUB, APPOINT, BILL,
DECLARE**

Sufficiency Result by Broader Class Class

Doub Obj + to-Dat	Generalize
CLASS 1	yes
CLASS 2	yes

to-Dative Only	Generalize
CLASS 3	yes
CLASS 4	yes

Doub Object Only	Generalize
CLASS 5	no

- **This is the modern distribution**
- **Now, what does the Sufficiency Principle predict ME learners hearing this might do?**

Sufficiency Result by Broader Class Class

Doub Obj + to-Dat	Generalize
CLASS 1	yes
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to-Dative Only	Generalize
CLASS 3	yes
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Doub Object Only	Generalize
CLASS 5	no

- This is the modern distribution
- Now, what does the Sufficiency Principle predict ME learners hearing this might do?

Classes 1-4 provide enough evidence to extend the to-dative to all caused possession/motion verbs **despite Class 5**. The attested “overgeneralization”

Temporal and Geographic Extent

- This **recursive application** of the Sufficiency Principle models a single speech community over a short (years, decades) period of time
- Once present, the to-dative would have also spread to other communities by typical sociolinguistic means.
- So we would expect a typical S-curve expansion on a national level

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- Actuation account is similar to De Cuypere 2015's usage based one
- While DC 2015 predicts a gradual expansion into subtle semantic classes, **Elter 2018 finds otherwise**
- This actuation + TP account predicts already wide semantic use by the time the to-dative is well attested, **consistent with Elter 2018**

Interim Summary

- **We can estimate child lexicons from historical corpora**
- **Applying a modern formula for child generalization to these lexicons predicts a rapid generalization**
- **Including the attested “overgeneralization”**

Modeling Retreat

- **The presence of the to-dative in Class 5 is predicated on the composition of the Middle English lexicon**
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More Latin borrowings in the 16th Century than French in the previous centuries combined. Was this enough?

Modeling Retreat

- I consider lexical change in English by counting lemmas in the Penn Parsed Corpus of Early Modern English
- Same methodology as before
- Lemmas carried over from ME are assumed to support the to-dative

118 lemmas (57 carried over), 44 ambig-to lemmas (27 carried over)

29 Latinate verbs compared to 9 previously. Many are attested in modern CDS:
administer, convey, mention, return, submit...

EME Broader Classes

Doub Obj + to-Dat	<i>N</i>	<i>M</i>
CLASS 1	27	27
CLASS 2	8	8

to-Dative Only	<i>N</i>	<i>M</i>
CLASS 3	29	21
CLASS 4	29	14

Doub Object Only	<i>N</i>	<i>M</i>
CLASS 5	25	9

- **Middle English holdovers + ambig-to verbs present substantial opportunities for to-datives**

EME Broader Classes

Doub Obj + to-Dat	Generalize
CLASS 1	yes
CLASS 2	yes

to-Dative Only	Generalize
CLASS 3	yes
CLASS 4	no

Doub Object Only	Generalize
CLASS 5	no

- The broadest generalization no longer works
- Neither does generalization in Classes 4 and 5

This brings Class 5 into line with modern grammar but incorrectly predicts that Latinate Class 4 should be double object only

Summary

A realignment account for actuation and Sufficiency Principle for generalization applied to Middle and Early Modern English account for:

- **The disconnect between morphological erosion and the dative constructions**
- **The rise of the to-dative**
- **Its “overgeneralization”**
- **Its retreat**
- **Latinate verbs pose a problem** - Would borrowed *to*-datives help here?

Discussion

Implications

For historical syntax,

- **Externally motivated processes of language acquisition provides a concrete mechanism for language change**
- **We can look at historical data like child data for certain problems**
- **This is a complementary alternative to tracking corpus token frequencies**

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- **A division of labor is required here**
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On the interplay between history, acquisition, and grammar,

- **A division of labor is required here**
- **Allows for a simpler grammar and more general learning algorithm**

For functional historical accounts,

- **Functional pressures may be irrelevant for changes like this “a-functional”**

Ongoing and Future Work

Language Change Driven by Acquisition

- The Z-model of language change
- Focus on categorical changes to the grammar

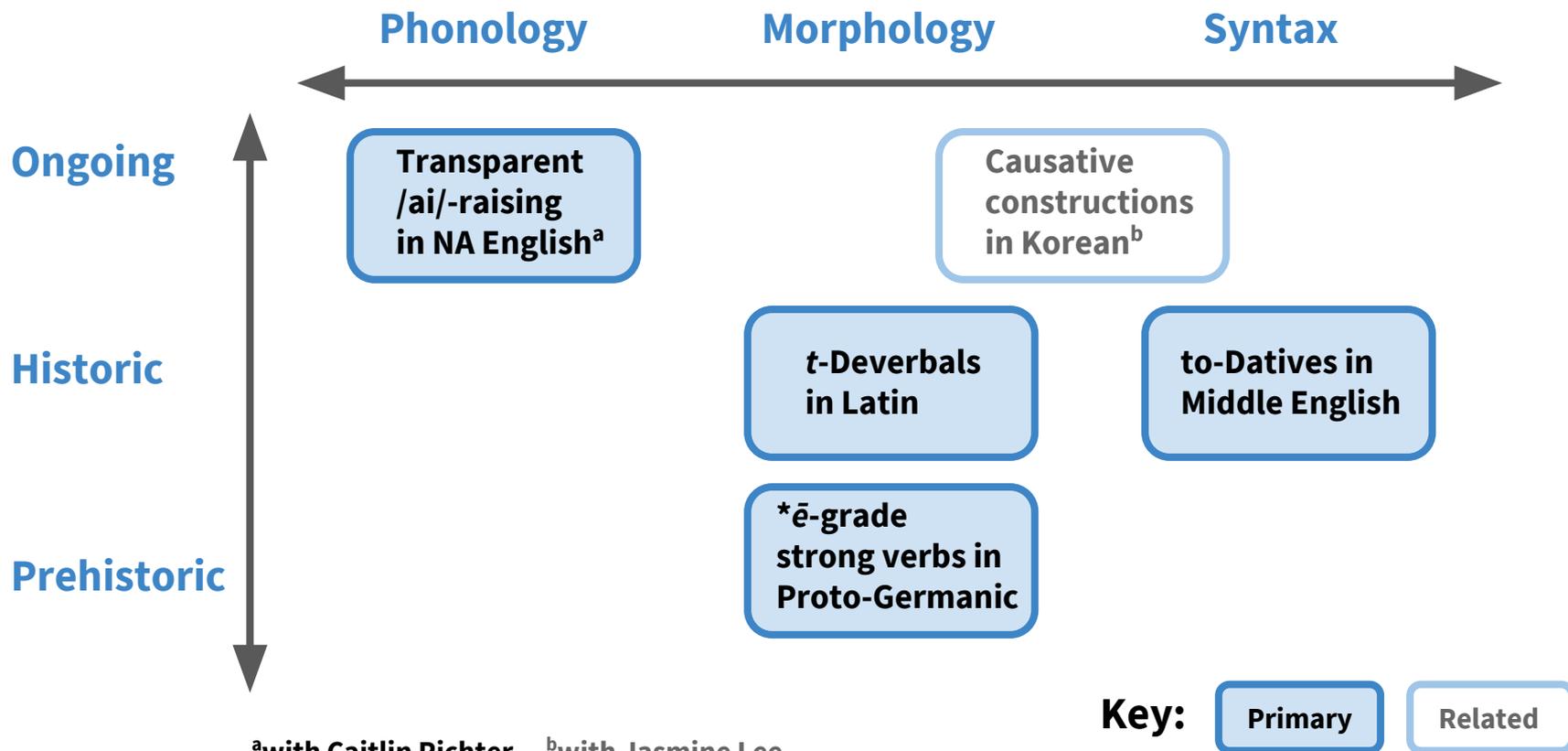
Acquisition in Variable Environments

- The interplay of acquisition and variation
- Learning categorical variables

Interplay of Diachrony, Acquisition, and Representation

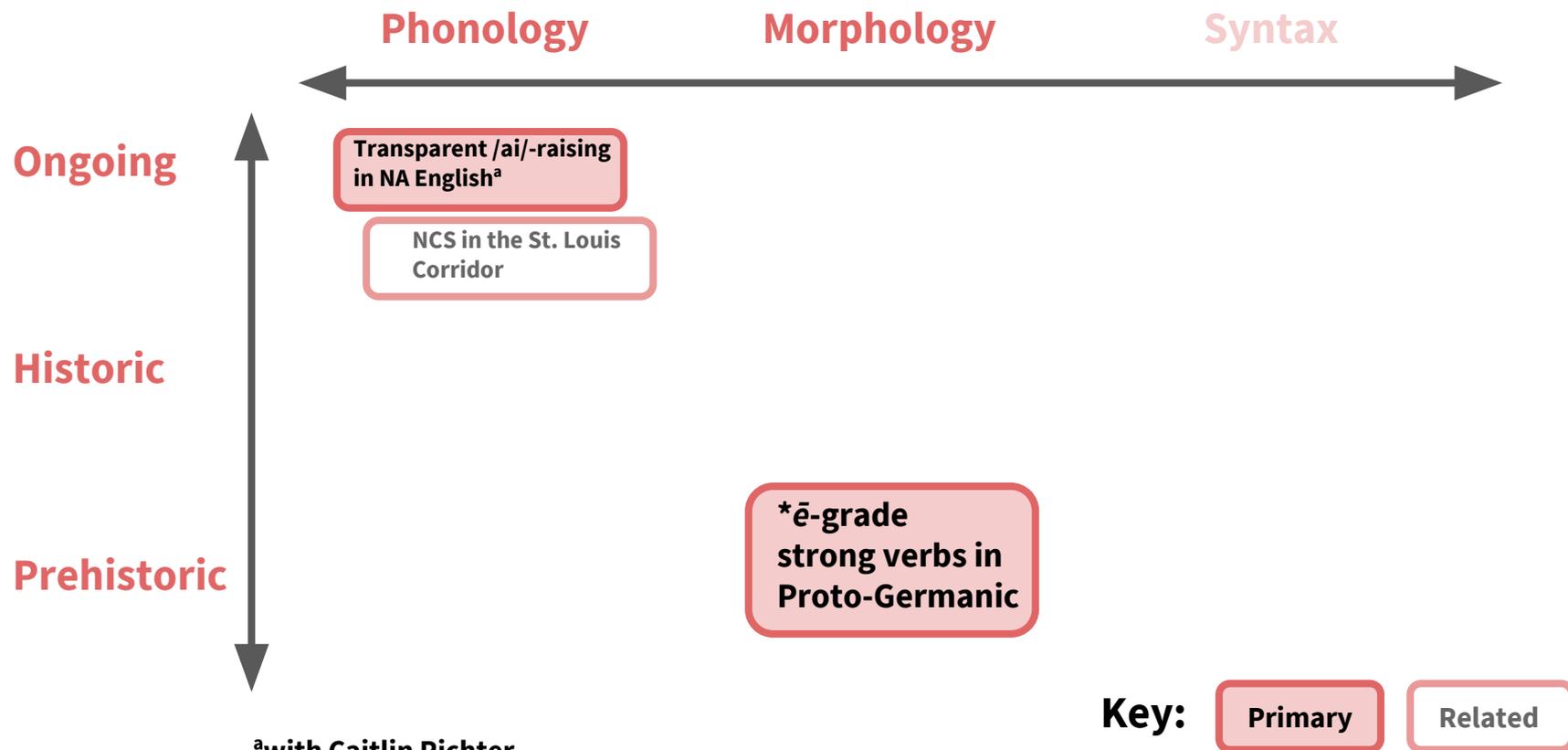
- Balancing the explanatory power of the three
- How this can result in simpler theories

Acquisition Case Studies



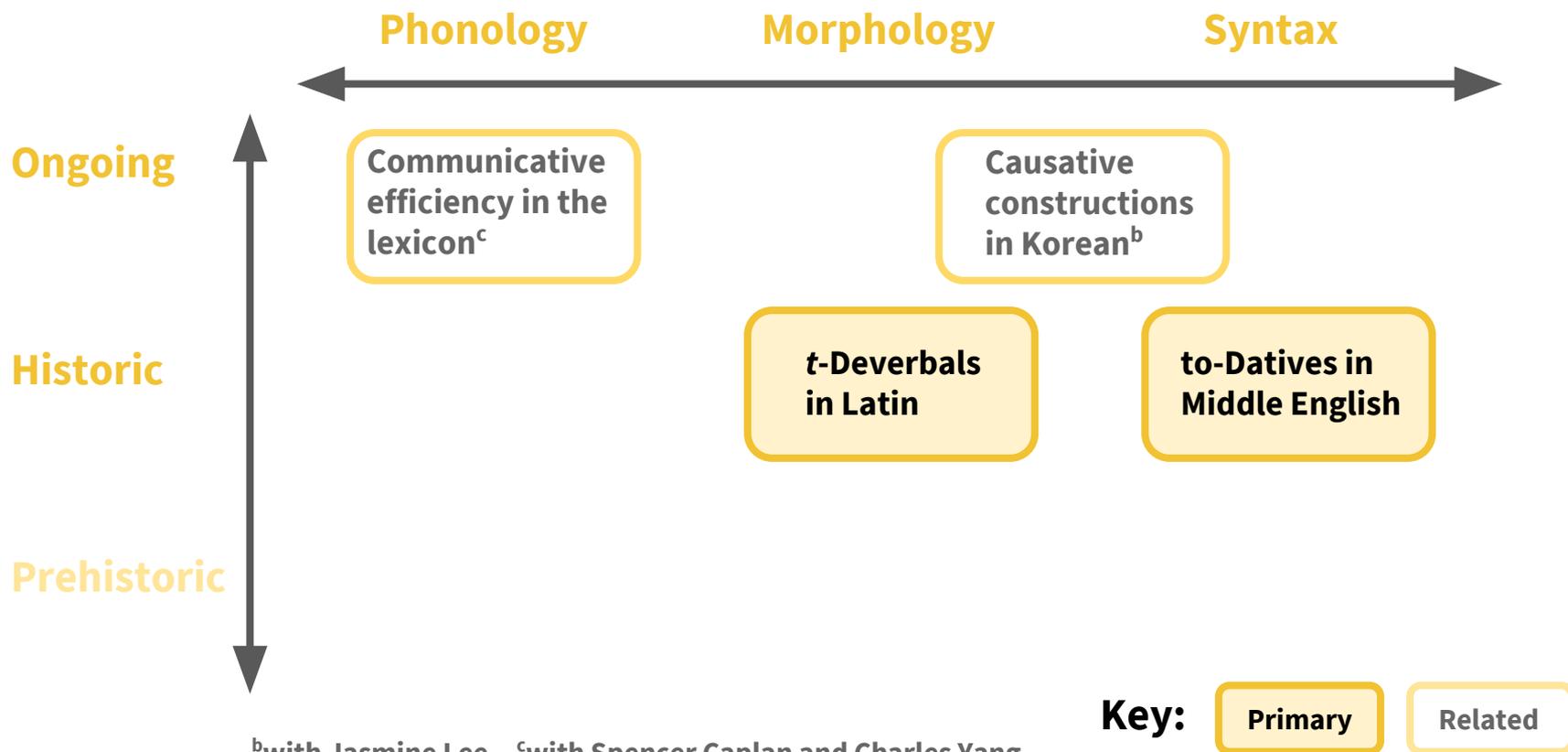
^awith Caitlin Richter ^bwith Jasmine Lee

Mixed Input Case Studies



^awith Caitlin Richter

Synchronic vs Other Factors Case Studies



^bwith Jasmine Lee ^cwith Spencer Caplan and Charles Yang

End

Acknowledgements:

- **Charles Yang**
- **Julie Anne Legate**
- **Carola Trips**
- **George Walkden**

**Supported by:
NDSEG Fellowship (US ARO)**