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Reconstructing constructional semantics

The dative subject construction in Old Norse-Icelandic, Latin, Ancient Greek, Old Russian and Old Lithuanian*

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As the historical linguistic community is well aware, reconstructing semantics is a notoriously difficult undertaking. Such reconstruction has so far mostly been carried out on lexical items, like words and morphemes, and has not been conducted for larger and more complex linguistic units, which intuitively seems to be a more intricate task, especially given the lack of methodological criteria and guidelines within the field. This follows directly from the fact that most current theoretical frameworks are not construction-based, that is, they do not assume that constructions are form-meaning correspondences. In order to meet this challenge, we present an attempt at reconstructing constructional semantics, and more precisely the semantics of the Dative Subject Construction for an earlier stage of Indo-European. For this purpose we employ lexical semantic verb classes in combination with the semantic map model (Barðdal 2007, Barðdal, Kristoffersen & Sveen 2011), showing how incredibly stable semantic fields may remain across long time spans, and how reconstructing such semantic fields may be accomplished.

Keywords: Semantic reconstruction, constructional semantics, lexical semantic verb classes, Dative Subject Construction, Indo-European

1. Introduction

Constructional meaning is considerably more abstract than lexical meaning, and hence more difficult to study. Using introspection to study constructional meaning may be an adequate procedure within synchronic linguistics, where the aim is

to study one's own variety of language. However, introspection is not a useful analytical tool when studying abstract constructional meaning in dead languages or earlier language stages. In the present article we lay out how constructional meaning may be studied historically, within the framework of Cognitive Construction Grammar, based on the lexical semantics of the predicates instantiating an argument structure construction, in combination with the Semantic Map Model (Croft 2001, Haspelmath 2003, Cysouw, Haspelmath & Malchukov 2010).

Traditionally the meaning of case markers has been studied irrespective of the constructions they instantiate, and an abstract meaning has been posited for a given case, for instance the dative case, on the basis of its occurrence in a variety of different constructions (cf. Hjelmslev 1935, Jakobson 1936). This view of case is not only common for traditional grammar but it is also the prevalent view within Cognitive Grammar (Dąbrowska 1997, Janda 1993). On a constructional approach, however, where constructions, i.e. form-meaning pairings, are taken to be the basic units of language, case markers constitute a part of the form side of a construction (cf. Barðdal 2001a: 33–39, 2009, Fried 2005), and should not be studied outside of their respective constructions. Instead, they are viewed as an integrative part of the form side and should be studied as a part of that whole. On a constructional account, therefore, the view that a form may have an all-embracing meaning, generalizing over all its instances, appears to be detached from linguistic reality and the psychological reality of the speaker.

Since the assumption that constructions are form–meaning pairings is specific to the constructional framework, and not shared by other current linguistic frameworks, this also explains why no attempts to reconstruct the meaning of abstract constructions are found in the literature. The present article, therefore, is an attempt to outline a methodology on how to reconstruct the semantics of such abstract constructions, illustrating how the framework of Cognitive Construction Grammar is needed to carry out this enterprise. Hence, we will compare the semantic fields occupied by dative-subject predicates in Old Norse-Icelandic, Ancient Greek, Latin, Old Russian, and Old Lithuanian. Systematic investigation of the semantic scope of the Dative Subject Construction in each of these Indo-European languages will be carried out as a part of a larger Indo-European comparison, with the aim of casting light on the relation between verbal semantics and non-canonical case marking. A secondary goal is to study the development of the Dative Subject Construction in Indo-European and whether the construction may be reconstructed for an earlier proto-stage. We will concentrate here on the semantics of the construction irrespective of the different forms found for different subconstructions of the Dative Subject Construction in the Indo-European languages under investigation (see Section 2).

It is the general view in the literature on non-canonical subjects in the Indo-European languages (Zaenen, Maling & Þráinsson 1985, Sigurðsson 1989, Falk 1997, Haspelmath 2001, inter alia) that such non-canonical subject marking is associated with EXPERIENCER and BENEFACTIVE predicates.[1] As shown by Barðdal (2004) in her comparative study of Modern Icelandic, Modern Faroese, and Modern High German, this is an oversimplification, and several dative-subject predicates in Modern Icelandic are neither experiencer nor benefactive predicates, but denote some sort of non-volitional, often accidental, events, referred to here as HAPPENSTANCE events. The same is true for Modern Faroese and Modern German, although there are fewer happenstance predicates in those languages than in Modern Icelandic. It remains to be documented whether the situation is similar in, for instance, Old Norse-Icelandic, the predecessor of Modern Icelandic, and in the other ancient and archaic Indo-European languages, although a preliminary comparison between Old Norse-Icelandic and Modern Icelandic reveals that the frequency of happenstance predicates in the Dative Subject Construction has gone down drastically in comparable texts (Barðdal 2011).

It has often been assumed that while the Dative Subject Construction is robust in Modern Icelandic, the same is not true for the older stages of Germanic or the Indo-European languages. Hock (1990) documents only a few potential predicates for Sanskrit, as does Luraghi (2010) for Hittite. However, our results reveal a large number of common sememes across the Indo-European language branches investigated here, as well as a major overlap in the semantic fields occupied by the construction across Germanic, Italic, Greek, Slavic, and Baltic, which may suggest an Indo-European inheritance. For this purpose, we will develop a method to reconstruct a common semantic space, on the basis of existing lexical semantic verb classes across related languages, a method which can generally be used to reconstruct constructional semantics for earlier language stages and dead languages.

In Section 2 we give a definition of our notion of the DATIVE SUBJECT CONSTRUCTION, illustrated with examples of the various subconstructions of the construction. In Section 3 we review and discuss some of the problems with reconstructing semantics, and suggest a method for reconstructing constructional semantics on the basis of narrowly-defined lexical semantic verb classes and the Semantic Map Model. In Section 4 we compare the predicates instantiating the Dative Subject Construction in all five Indo-European language branches under investigation and suggest a classification of the relevant predicates into narrowly-circumscribed semantic classes. We also discuss the different kinds of semantic overlaps expected, depending on whether a category is inherited or not, whether the inheritance is early or recent, and whether the construction has been productive or not in the history of these languages. We then, in Section 5, attempt a comparison of the semantic space of the Dative Subject Construction across the five

Indo-European branches under investigation, and on the basis of that put forward a reconstruction of the semantics of the Dative Subject Construction for an earlier Indo-European proto-stage. In Section 6 we discuss how the Dative Subject Construction in the Indo-European languages under discussion has its own specific Indo-European characteristics, which makes it different from an alleged universal "dative experiencer" construction, again corroborating our claim that the Dative Subject Construction in the Indo-European daughters is inherited from an earlier proto-stage. In Section 7 we summarize the content and conclusions of this article.

2.   The Dative Subject Construction

With the term Dative Subject Construction, we refer to argument structure constructions instantiated by predicates where the first argument is in the dative case and not in the canonical nominative case (cf. Eythórsson & Barðdal 2005, Barðdal & Eythórsson 2012a). Examples are given in (1a–e) below:

(1)   a.   ***honum*** *er   nauðsyn*   Old Norse-Icelandic
           him.DAT is.3SG need
           'he has a need'

      b.   ***mihi***   *necesse   est*   Latin
           me.DAT necessary is.3SG
           'I have a need'

      c.   ***emoi***   *dei*   Ancient Greek
           me.DAT needs.3SG
           'I need'

      d.   *noužda by   **jemou***   Old Russian
           need   be.3SG.SUBJ him.DAT
           'he would have a need'

      e.   ***iiémus***   *naudinga búwo*   Old Lithuanian
           them.DAT necessary was.3SG
           'they had a need'

As argued by Eythórsson & Barðdal (2005: 827–832) and Barðdal & Eythórsson (2012a) who discuss several subject properties in the Germanic languages, the common denominator of the arguments which pass the subject tests in these languages is that they are the first or leftmost argument of their verbs' argument structure. They follow Croft (1998) in assuming that the internal order of the arguments is determined by the causal conceptual structure of each predicate and the force-dynamic relations holding between the participants of the event denoted by the predicate (cf. Croft 1998, Barðdal 2001b–c). Clearly, for one-place predicates, the only argument of such an argument structure will automatically be its first argument.

As the syntactic subject properties of the ancient and archaic Indo-European languages have only been investigated to a limited degree (Hock 1990 on Sanskrit, Eythórsson & Barðdal 2005, 2012a on Early Germanic, Fedriani 2009 on Latin, Grillborzer 2010 on Old Russian), it is impossible at this stage to make substantiated claims to a non-controversial subject status of these dative subject-like arguments across the early Indo-European languages, based on their syntactic behavior relative to any subject tests. For some of these languages, however, a subject analysis is more compatible with the data than an object analysis is. Fedriani (2009) argues for a subject analysis for Latin, as does Grillborzer (2010) for Old Russian. For Old Germanic, moreover, several instances of control constructions have been documented, as in Old Norse-Icelandic, Old Swedish, Early Middle English, and Gothic, in addition to other ordinary subject behaviors, which in turn rules out object analysis for that language branch. Hock argues for a subject analysis for the subject-like dative of the possessive construction, for instance, but not for the subject-like dative of the experiencer construction in Sanskrit.

For the remaining early Indo-European languages, there is no doubt, however, that these subject-like datives are the first or leftmost arguments of their verbs' argument structure constructions, and as such one may regard them as the S argument of intransitives, in Dixon's (1994) alignment typology, where A is the subject of a transitive predicate, O its object, and S the subject of an intransitive predicate. Hence, our notion of subject in this work refers to the status of subject-like datives as being the S argument of intransitive predicates. We also include in our definition and our discussion the subject-like dative of so-called TRANSIMPERSONAL predicates, in the sense of Donohue (2008), although we prefer to use the label OBLIQUE TRANSITIVES.[2] These are predicates which are formally two-place predicates but where the subject-like argument is not in the nominative case, and the second object-like argument may be a nominative (2a), a genitive (2b), a prepositional object (2c) or simply a subordinate clause (2d), as is shown below with one example from four of the five Indo-European language branches under investigation:

(2) a. *omnibus amicis   meis   **idem**   **unum**   convenit* (Dat-Nom)
         all.DAT friends.DAT my.DAT the-same.NOM one.NOM agreed.3SG   Latin
         'All my friends agreed on the one same thing' (Pl.*Poen*.1340)

     b. a *molodomu **esti**   **dobytъ***   (Dat-Gen) Old Russian
         but young.DAT honor.GEN creates.3SG
         'but the young receive honor' (Sl. O Zadon)

     c. *honum líkaði   **til Sighvats**   vel*   (Dat-PP) Old Norse-Icelandic
         him.DAT liked.3SG to Sighvatur.GEN well
         'he liked Sighvatur well' (Fm. IV, 89[10])

    d.   *Ar   nedera   man   **ką**   **noriu darit**   *(Dat-S) Old Lithuanian
          does not.suit.3SG me.DAT what want do.INF
          'Is it not appropriate for me what I want to do?' (DP 93 13)

There is thus no doubt that a wide array of Oblique Subject Constructions are found across several of the ancient and archaic Indo-European languages. Since we will be showing later in this article that argument structure constructions with a dative subject pivot are not confined to experiencer and benefactive predicates, we do not regard these as having the status of E (for Experiencer), as is done in Nichols (2008), but believe that the notion of S is more accurate, following Andrews (2001) and Onishi (2001). However, we will neither refer to these as S nor E here, but continue to refer to these as DATIVE SUBJECTS in the remainder of this article.

    Observe also that the predicate in (2a) selects for the Dat-Nom case frame, and we believe that several, if not all, such predicates could alternate between two argument structure constructions, Dat-Nom and Nom-Dat. In other words, we believe that the two word orders do not represent a basic word order and a topicalization of the basic word order, but rather two different basic word orders. The evidence for this is comparative, as such alternating predicates exist in Modern Icelandic (Bernódusson 1982, Jónsson 1997–98, Barðdal 2001b) and Modern Faroese (Barnes 1986), and have been argued to exist in the history of English (Allen 1995), Icelandic (Barðdal 2001b), German (Eythórsson & Barðdal 2005), and Mainland Scandinavian (Barðdal 1998). The hypothesis that both word orders are basic is also confirmed by the fact that, in Modern Lithuanian, both arguments show some subject properties (Holvoet 2009), and in the old languages, the Dat-Nom word order does not seem to be motivated by any specific information-structural properties (cf. Allen for Old English), although this clearly needs further investigation. Therefore, at this point in our research, we take both word orders to be basic, which means that we include in our investigation predicates which are traditionally listed as Nom-Dat predicates in dictionaries and traditional reference grammars, provided of course that they show properties of basic word order variation. The same is true for Acc-Nom and Gen-Nom predicates, although they fall out of the scope at the present investigation.

    Before we commence with the comparison of the semantics of dative-subject predicates across the earliest layers of Germanic, Italic, Greek, Slavic, and Baltic, a few words on the problems associated with reconstructing semantics are in place.

3.   Reconstructing semantics

More or less all semantic reconstruction within historical linguistics is focused on reconstructing the semantic content of lexical items or morphemes (cf. Dyen & Aberle 1974, Blust 1987, Fox 1995, Fortson 2003, Zorc 2004, Urban 2011). Within grammaticalization studies the focus has mostly been placed on internal semantic reconstruction (cf. Traugott 1986, Smith 2007, inter alia). In contrast, little or no effort has been put into the historical-comparative reconstruction of the semantics of larger and more complex constructions such as abstract argument structure constructions. The reason is presumably that, while scholars do not agree on how to reconstruct semantic content and are still working on uncovering the mechanisms and directionality of semantic change, one will of course not embark on the even more complicated undertaking of reconstructing the semantics of units larger than words. Another reason is, of course, the fact that most current linguistic frameworks do not assume that constructions are form–meaning correspondences, let alone that abstract syntactic constructions have a meaning of their own. This, however, is unproblematic on a cognitive construction grammar approach where the semantics of argument structure constructions is regarded as being derived from the semantics of the predicates instantiating it.

In this article, therefore, we attempt to approach the problem of reconstructing the semantics of larger units than words, in this case argument structure constructions, with the aid of Cognitive Construction Grammar and the Semantic Map Model (Croft 2001, Haspelmath 2003, Cysouw, Haspelmath & Malchukov 2010). On a constructional approach, all linguistic units from the level of morphemes are regarded as form-function correspondences, and this includes larger and more complex units such as argument structure constructions. Like all other constructions, argument structure constructions can be divided into two semantic types, i.e. SEMANTICALLY SPECIFIC and SEMANTICALLY GENERAL constructions (Tomasello 1998, Croft & Cruse 2004: 253–254, Barðdal 2001b, 2004, 2007, 2008, Barðdal, Kristoffersen & Sveen 2011, Barðdal & Eythórsson 2012b), also sometimes referred to in the literature as SEMANTICALLY NON-COMPOSITIONAL and SEMANTICALLY COMPOSITIONAL (cf. Goldberg 1995: 13–16, Croft 2001: 180–184, Wulff 2008). The difference between the two is that the semantics of the first type is not a function of the semantics of the parts, while the semantics of the latter one is. Or, in other words, the first type is semantically irregular, where the meaning part has to be idiosyncratically attributed to the form part on a construction-specific basis, while the second is semantically regular with the meaning of the whole being derivable from the meaning of the parts.

It is the second type of construction that we will be dealing with here, where the semantics is taken to be derived from the lexical verbs instantiating a

construction (Goldberg 1995, Barðdal 2008, 2011). In this respect, the notion of verb classes becomes important, as different subclasses of verbs instantiating an argument structure construction may be regarded as representing different sub-constructions of a construction (Croft 2003, Barðdal 2004, 2006, 2007, 2008, 2011, Barðdal, Kristoffersen & Sveen 2011). This is why a comparison of the lexical semantic verb classes which instantiate an argument structure construction across related languages is useful for semantic reconstruction. The lexical semantic verb classes function as the unit of COMPARANDA, and on the basis of presence or absence of such verb classes, mapped onto semantic space, a reconstruction can be carried out. It is thus semantic fields, mapped across different regions in semantic space, that are reconstructed for earlier proto-stages. This is how Cognitive Construction Grammar, in combination with the Semantic Map Model, aids in the reconstruction of larger, more complex, and abstract units like argument structure constructions for proto-stages, more specifically in the reconstruction of their semantics. Such a reconstruction has already been successfully carried out for the Ditransitive Construction in Germanic (Barðdal 2007).

We now proceed to a comparison of the lexical semantic verb classes which instantiate the Dative Subject Construction in the five Indo-European language branches under investigation.

4. Comparison of the semantics of the Dative Subject Construction in Old Norse-Icelandic, Archaic/Classical Latin, Ancient Greek, Old Russian, and Old Lithuanian

Our database with dative-subject predicates has yielded 232 different sememes across Old Norse-Icelandic, Early and Classical Latin, Ancient Greek, Old Russian and Old Lithuanian, which we list in the Appendix together with one predicate from each of the languages where a verb with that meaning is attested. The term *sememe* refers to a unit of meaning, in our case the meaning of individual predicates. Several of the verbs are synonymous or near-synonymous, in which case we list only one predicate as an example of that sememe. This means that the Appendix does not list all the predicates in our database, but only one lexical instantiation of each sememe in the languages where it is attested.

Table 1 gives the type frequency of the dative-subject predicates found in each of the five Indo-European language branches. The predicates have been extracted through searches in dictionaries and reference grammars for each language, both electronically and manually. Some text-specific searches have also been made. The data from Latin were partially extracted from a computational lexicon contain-

ing morphological and syntactic information about arguments of latin predicates occurring in two syntactically annotated corpora of Latin (see McGillivray 2010)

These predicates are well known from the philological and school grammar traditions as having an oblique argument which is not regarded as being the grammatical subject but the "logical" or the "psychological" subject. The argument structure and the meaning of the predicate together have been used to distinguish these predicates from other predicates where the oblique argument is syntactically an object. We are currently preparing an electronic version of our database (available at www.uib.no/noncancase) which includes the full context, as well as glosses and translations of all our examples.

Table 1. Type frequency of dative-subject predicates

	Type Frequency
Old Norse-Icelandic	380
Archaic/Classical Latin	166
Ancient Greek	135
Old Russian	103
Old Lithuanian	51

The distribution of predicates across the five Indo-European languages is quite uneven, with Old Norse-Icelandic texts being extremely high in type frequency, and Old Lithuanian predicates being rather low in type frequency. Old Lithuanian texts go back to the 16th century, but they are only available to a limited extent in an electronic format. The Old Lithuanian part of the database is therefore quite small, substantially smaller than a corresponding database for Modern Lithuanian. We believe that there are more data to harvest not only from Old Lithuanian texts, but also from the other languages, although such data harvesting has not been possible at present. Our figures in Table 1 are therefore not to be regarded as exhaustive (although we treat them as such for the purpose of this methodological exercise).

Let us now consider the most common sememes, i.e. those that are found across three or more branches. These are listed below, first the ones documented in all five branches, then the ones found in four branches, and finally the ones found in three branches. The sememes found in two languages are too numerous to be listed.

Sememes found in five branches (ten types):

– **like**: falla (í geð) (ON-I), placere (Lat), areskein (Gr), patikti (OLith), ougažati (OR)
– **be pleased**: finnast (ON-I), libere (Lat), arestōs einai (Gr), liūba būti (OLith), vъsladěti (OR)

- **be proper for sby**: sama (ON-I), decori esse (Lat), dikaion einai (Gr), tikti (OLith), godě byti (OR)
- **be sufficient/suffice**: duga (ON-I), satis esse (Lat), exarkein (Gr), kakti (OLith), dovъlati (OR)
- **be of shame**: elenchos einai (Gr), vera skömm að (ON-I), gėda būti (OLith), ljutě (OR), pudor esse (Lat)
- **suit, become**: sama (ON-I), commodus esse (Lat), prepein (Gr), derėti (OLith), prijętьnъ byti (OR)
- **succeed**: takast (ON-I), succedere (Lat), sumbainein (Gr), sektis (OLith), ougoditisę (OR)
- **lack**: bila (ON-I), deesse (Lat), elleipein (Gr), stokoti (OLith), lixъ byti (OR)
- **need**: vera þörf á (ON-I), oportere (Lat), dein (Gr), reikėti (OLith), nadobě byti (OR)
- **seem**: virðast (ON-I), videri (Lat), dokein (Gr), regėtis (OLith), javitisę (OR)

Sememes found in four branches (15 types):

- **enjoy**: philos einai (Gr), contingere (Lat), smagu būti (Lith), radostьnъ (OR)
- **find easy**: facilis esse (Lat), oudobъ byti (OR), anesis einai (Gr), lengva būti (OLith)
- **be difficult**: acerbus esse (Lat), argaleon einai (Gr), sunku būti (OLith), vъstoužiti (OR)
- **be in sorrow**: oiktos empiptein (Gr), gailti (OLith), pečalь byti (OR), dolori esse (Lat)
- **be in pain**: algeinōs einai (Gr), skaudėti (OLith), zъlo byti (OR), dolor esse (Lat)
- **be dear**: carus esse (Lat), miela būti (OLith), čьstьnъ byti (OR), entimos einai (Gr)
- **find (un)important for sby**: skipta máli (ON-I), levis esse (Lat), luein (Gr), reikalinga būti (OLith)
- **be of smb's business/concern**: res esse (Lat), meteinai (Gr), rūpėti (OLith), nadobьnyi byti (OR)
- **benefit**: aflast (ON-I), prodesse (Lat), kerdiōn einai (Gr), polьza byti (OR)
- **have use of sth**: verða gagn að (ON-I), lusitelein (Gr), naudinga būti (OLith), usus esse (Lat)
- **occur to one's mind**: hugsast (ON-I), succurrere (Lat), eperchesthai (Gr), priiti vъ oumъ (OR)
- **know**: vera (ó)kunnleiki á (ON-I), (ig)notus esse (Lat), vedomo byti (OR), gnōstos einai (Gr)
- **happen**: accedere (Lat), apobainein (Gr), atsitikti (OLith), loučitisja (OR)
- **appear**: birtast (ON-I), apparere (Lat), phainesthai (Gr), dozьrěti (OR)
- **have, possess**: einai (Gr), būti (OLith), esse (Lat), byti (OR)

Sememes found in three branches (14 types):

- **dislike**: leiðast (ON-I), displicere (Lat), nepatikti (OLith)
- **have fear/agony**: ofbjóða (ON-I), timori esse (Lat), baisėtis (OLith)
- **be in danger**: standa mein að (ON-I), molestus esse (Lat), kindunos einai (Gr)
- **be of good**: bene esse (Lat), lusitelein (Gr), blago byti (OR)
- **have problems with sth**: vandræðast (ON-I), laboriosus esse (Lat), metežьno (OR)
- **find (im)possible**: hlýðast (ON-I), adunatein (Gr), močьno byti (OR)
- **find strength in sth**: vera styrkur að (ON-I), firmus esse (Lat), pora byti (OR)
- **have a wish**: optatus esse (Lat), poluarētos einai (Gr), xotětisę (OR)
- **get, receive**: áskotnast (ON-I), tekti (OLith), imati (OR)
- **be allowed**: licere (Lat), exeinai (Gr), lьzě byti (OR)
- **feel warm**: hitna (ON-I), teplo byti (OR), thermē einai (Gr)
- **expect**: vera von (ON-I), expectatio esse (Lat), epanamenein (Gr)
- **be surprised**: thauma einai (Gr), dyvėti (OLith), divъnyi (OR)
- **agree**: lynda (ON-I), keisthai (Gr), constare (Lat)

The 232 sememes may be divided into the following 49 narrowly-defined lexical semantic verb classes (see Appendix), some of which can be subsumed under wider semantic category labels, given in boldface below:

Verbs denoting Emotions:
1. Verbs of liking/being pleased
2. Verbs of dislike
3. Verbs of longing
4. Verbs of enjoyment/happiness
5. Verbs of feeling/experiencing
6. Verbs expressing fear/danger
7. Verbs denoting suffering/distress
8. Verbs expressing anger/irritation
9. Verbs of boredom/tiredness
10. Verbs expressing relieve/ease
11. Verbs expressing burden/load
12. Verbs of sorrow/sadness
13. Verbs of pain
14. Verbs of bitterness/hate
15. Verbs of shame
16. Verbs of care
17. Verbs expressing hope/wish

Verbs of Possession:
29. Verbs denoting possession

Verbs of Bodily States:
30. Verbs expressing bodily temperature
31. Verbs of getting better/worse (of illness)
32. Verbs of getting younger/older
33. Verbs of sleeping/being unconscious
34. Verbs of swallowing/choking
35. Verbs of symptoms of diseases
36. Verbs of hunger/thirst

Verbs of Cognition
37. Verbs of thinking/beginning to think
38. Verbs of (in)determinacy
39. Verbs of surprise/confusion
40. Verbs of knowing/change in knowledge
41. Verbs of agreeing/disagreeing

Verbs of Gain:
- 18.   Verbs of benefit
- 19.   Verbs of permission
- 20   Verbs of growing

Verbs of Hindrance:
- 21.   Verbs of hindrance
- 22.   Verbs of failing
- 23.   Verbs of slipping/losing

Verbs of Ontological States:
- 24.   Verbs of (dis)similarity
- 25.   Verbs expressing superiority
- 26.   Verbs of properties/abilities
- 27.   Verbs of other ontological states

Verbs of Evidentiality:
- 28.   Verbs of seeming/appearing

Verbs denoting Attitudes:
- 42.   Verbs expressing sufficiency/usefulness
- 43.   Verbs expressing appropriateness/ suitability

Verbs of Perception:
- 44.   Verbs of perception

Verbs of Speaking:
- 45.   Verbs of speaking

Verbs of Success:
- 46.   Verbs of success:

Verbs of Happening:
- 47.   Verbs of happening

Verbs of Modality:
- 48.   Verbs of obligation
- 49.   Verbs of lacking

Due to space limitations, we will not justify the classification given above, but refer the reader to Barðdal (2004) for details. There is no doubt, however, that a different type of classification may be applied to the material, equally successfully or unsuccessfully; at present we will let it suffice to say that for the purposes of comparison and reconstruction, the only thing of importance is that the same classification be applied consistently to all the languages being compared.

Before presenting an overview of how the various lexical semantic verb classes divide across the five early and archaic Indo-European language branches, let us first consider some different scenarios and what kinds of conclusions can be drawn from different types of semantic overlap.

Consider first Figures 1 and 2. If the Dative Subject Construction is not inherited, but an independent development in the various branches of Indo-European, then one would not necessarily expect any semantic overlap, as is shown in Figure 1. Or, one would at least not expect more overlap than by pure chance, as is shown in Figure 2, where there is some overlap, although it is not systematic. Overlap by pure chance should be characterized by lack of systematicity.

Consider now Figures 3 and 4. If the Dative Subject Construction is a relatively recent common development, for instance from late Proto-Indo-European and relatively soon before the dispersal of the daughter languages, one might expect nearly a 100% overlap in semantic fields, as the vocabulary will not have had much time to develop. This scenario is found in Figure 3. However, on this scenario, one would also expect a high number of cognates across the branches, which is not the
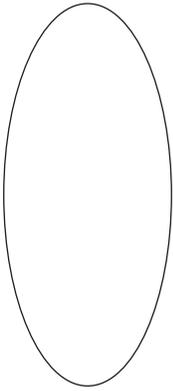
Figure 1. Independent development: **No overlap**
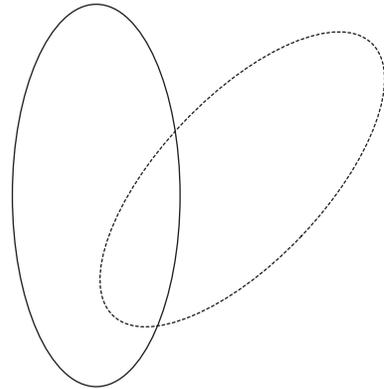
Figure 2. Independent development: Overlap by chance: Lack of systematicity

case here (cf. Bauer 2000, Lühr 2011), again speaking against this scenario as being likely for the development of the Dative Subject Construction in Indo-European.[3]

Alternatively, if the Dative Subject Construction is an early inheritance, say from Early Proto-Indo-European, and not a recent development, one would expect a common semantic core, but with some branch-specific developments. This scenario, shown in Figure 4, presupposes that the Dative Subject Construction has been productive in the individual branches.

Moreover, if the Dative Subject Construction is an early inheritance from a common proto-stage, and has not been productive, there are two possible scenarios; first, one might expect either more or less the same semantic fields across
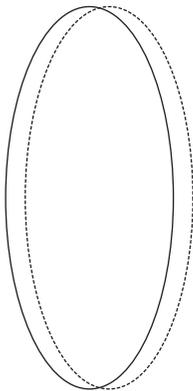
Figure 3. Recent common development
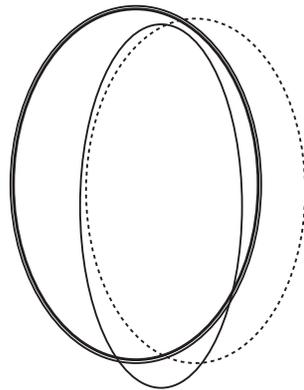
Figure 4. Early inheritance: Productivity

Figure 5. Early Inheritance: **Non-Productivity**

Figure 6. Early Inheritance: **Non-Productivity**

the branches, provided that the relevant vocabulary has not fallen into disuse. This scenario is shown in Figure 5. Or, alternatively, if the vocabulary has fallen into disuse, one might expect the semantic space to have shrunk in some of the branches. This last scenario might look like the one presented in Figure 6.

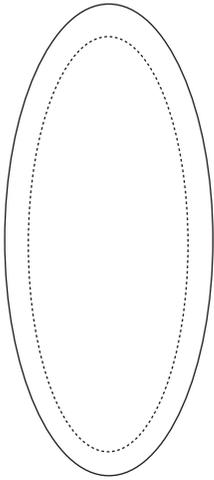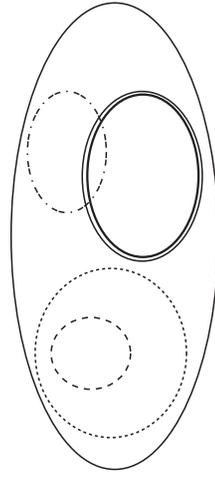Finally, the last scenario to be discussed here involves contact and mutual borrowing. We do of course know that there has been contact among the different Indo-European languages, as between Ancient Greek and Latin, on the one hand, and Germanic, Baltic, and Slavic, on the other. However, a contact situation that entails mutual borrowing should result in a number of cognates across the languages in contact, and their form should be easily recognizable as borrowed. The same is true for areal contact; it should also result in identifiable cognates across languages geographically adjacent to each other. Such a situation is not at hand here. If anything, the lack of cognates across the early Indo-European languages has been the subject of some discussion in the literature (cf. Bauer 2000, Lühr 2011), although a few cognates are now in the process of being documented. These cognates are not borrowed but show clear signs of rule-based language-dependent phonological developments (Barðdal & Smitherman 2013) and must therefore be regarded as being old in these languages.

So what kind of semantic overlap is found when we compare the lexical semantic verb classes found with the Dative Subject Construction across the five Indo-European branches under investigation here? What does the picture revealed by our five branches look like? This is the topic of the next section.

5. A reconstruction of the semantics of the Dative Subject Construction in Indo-European

The predicates instantiating the Dative-Subject Construction in the Indo-European languages comprise two main semantic categories, EXPERIENCE-BASED predicates and HAPPENSTANCE predicates (Barðdal 2004, 2008, 2011). The experience-based predicates are verbs of emotion, bodily states, cognition, attitudes, and perception. The happenstance predicates are verbs of gain, success, happening, hindrance, ontological states, speaking, and possession. In addition, verbs of modality and evidentiality, as well as possessives, are also found occurring in the Dative Subject Construction, and these are not readily classified as either experience or happenstance.

The predicates can also be divided into event type categories in that some are stative and others are eventive. However, matters are not so simple that the experience-based predicates are stative and the happenstance predicates are eventive, as verbs of emotion are very often stative but there are also some inchoative predicates among them. For instance, 'occur to one's mind' would be inchoative and not stative. The same is true for happenstance predicates: some of them are eventive like 'happen', 'lead to death', while others are stative. The semantic class of Verbs of Ontological States is one such class where the predicates are stative. The predicate 'be similar to', from Verbs of (Dis)Similarity, would be a case in point.

We will now present three different semantic maps of the lexical semantic classes instantiating the Dative Subject Construction, one, manually drawn, based on the 14 higher-level semantic categories, and two others, computationally drawn, based on the narrowly-circumscribed semantic verb classes given in the Appendix. We start with the manually-drawn map, shown in Figure 7. Here one can see that the Dative Subject Construction has the widest semantic scope in Ancient Greek, where all the categories are represented. Old Norse-Icelandic has all the subconstructions, except for Possession, Latin has all but Verbs of Speaking, Old Russian has all but Verbs of Speaking and Verbs of Perception, while Old Lithuanian is missing Verbs of Speaking. The graphics in Figure 7 are therefore most reminiscent of the graphics in Figure 6, which we claimed above in Section 3 might be typical for a scenario where the construction is an early inheritance but has not been productive since the languages split. It is of course entirely possible that the lack of sememe attestation in specific language branches is due to accidental gaps in the data. Only further research will reveal if that is the case. In the meantime, let us continue with our methodological exercise.

Notice, moreover, that the semantic map in Figure 7 is based on the 14 higher-level semantic categories presented in Section 4, and that such a semantic map abstracts away from the lower-level predicate-specific classes given in the Appendix.

The distribution of languages across the lower-level classes will be addressed below, through a Principal Component Analysis and the semantic map derived from that method.

Except for Verbs of Speaking in Old Norse-Icelandic, all other semantic categories in Figure 7 are always found in at least four of five branches. Therefore, the semantic map in Figure 7 suggests an amazing stability within the semantic field of the Dative Subject Construction in the history of Indo-European.

The Semantic Map Model is frequently used in typological and cross-linguistic comparisons and its adequacy lies in its ability to model implicational hierarchies and diachronic predictions, as well as its ability to capture the relatedness of grammatical categories and their structure through adjacent regions in conceptual space. The last property is often referred to as the Semantic Map Connectivity Hypothesis (Croft 2001: 96). However, most semantic maps are intended to capture grammatical categories and not lexical categories (with the notable exceptions of Barðdal 2007, François 2008, Majid, Boster & Bowerman 2008, and Barðdal, Kristoffersen & Sveen 2011). We believe that the semantic maps of lexical verb classes should be regarded as discrete networks rather than continuous categories, and the details of such networks are hard to represent given 232 sememes. We therefore present our lexical categories as continuous spaces on the semantic map in Figure 7, while in reality this is more of a discrete network than a set of continuous categories. The discrete nature of lexical categories is better captured by maps as in Figures 8–9, although semantic maps as in Figure 7 are good for illustrative purposes, showing very clearly where some of the similarities and differences between languages lie (cf. Janda 2009). Therefore, at the present stage, we do not
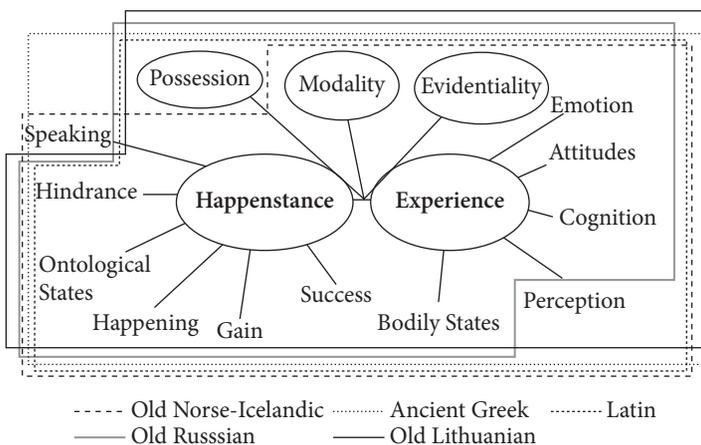
Figure 7. A comparison of the higher-level semantic categories across Old Norse-Icelandic, Ancient Greek, Latin, Old Russian, and Old Lithuanian.

intend the semantic map in Figure 7 to have diachronic or typological validity, as only through a careful examination of a set of (unrelated) languages is it possible to order the categories on the map in such a way that they represent an implicational hierarchy or diachronic predictions.

Let us now consider the computationally generated semantic map in Figures 8–9, based on the 49 narrowly-circumscribed semantic verb classes. The map was created using PRINCIPAL COMPONENT ANALYSIS (PCA), an unsupervised clustering method closely related to techniques such as MULTIDIMENSIONAL SCALING (MDS) and CORRESPONDENCE ANALYSIS (CA). All three techniques are used to tease out the most important patterns in a multidimensional dataset (i.e. one with several row- and column-variables) so that it can be plotted in a two-dimensional graph. For a more thorough technical description of the methods and how they can be applied in linguistic research, see e.g. Jenset & McGillivray (2012).

Table 2. A portion of the by-language-and-class centroids that were used to cluster the branches based on their attestations, as expressed by the centroid, for specific classes. The full data has a total of 49 rows, each corresponding to a narrowly-circumscribed verb class.

	Greek	Latin	OLith	ON-I	OR
ANGER/IRRITATION	0.00	0.75	0.00	0.50	0.00
BE ALLOWED	0.33	0.67	0.00	0.33	0.33
BE SURPRISED/CONFUSED	0.33	0.00	0.17	0.67	0.17
BE IN/DETERMINED	0.29	0.71	0.00	0.29	0.00
BENEFIT	0.33	0.44	0.11	0.67	0.33
BITTERNESS/HATE	0.75	0.50	0.00	0.00	0.25

In our case, the choice of method was motivated by the data at hand, which consists of binary (0 and 1) indications of whether a narrowly-circumscribed verb class is attested in our five Indo-European language branches or not. For each language branch we calculated the centroid of the verb class, essentially the mean (see e.g. Everitt & Hothorn 2006). To take the LIKE/PLEASE class as an example, we find that there are eight sememes included in the class in the dataset. Ancient Greek, with three attested sememes in the class, hence gets a centroid of 3/8 = 0.375 as the best approximation of the lexical attestation of that specific class in that branch. The process was carried out for all classes and all branches, and the resulting data were used for the Principal Component Analysis. Table 2 shows a portion of the data as an illustration.

PCA clusters the data based on importance, or strength of contribution, to dimensions or PRINCIPAL COMPONENTS (PCs). These can be compared to the degree of association between categories in the data and ordered so that the most important relationships are expressed in PC 1 (as a percentage), the second most

important in PC 2, and so on, until all variation is accounted for. Figure 8 shows the first two, i.e. the most important dimensions. In this case, the first two dimensions account for a total of 67% of the total variation in the data (PC1 + PC2), a result which we consider more than acceptable, even if there is clearly more variation than what the map shows.

The most striking feature of Figure 8 is the position of Old Norse-Icelandic as being distinct from the other branches, shown in PC 1. If we next turn to PC 2, we find that this dimension is distinguished by the difference between Old Russian and the other branches. Since Figure 8 only accounts for 67% of the variation, we have also included a plot of PC 3, shown in Figure 9.

Including a third dimension brings the cumulative explained variation up to 82%, which must be considered a good result. In Figure 9 we recognize PC 2 from Figure 8 (now represented as the horizontal axis) and PC 3 on the vertical axis. The interpretation of PC 2 is the same as in Figure 8: Old Russian stands out from the rest. Turning to PC 3, we find that Greek and Latin *together* stand out from the other branches, indicating a close relationship in terms of verb class attestations. Since the dimensions in the PCA solution are ordered, we can draw the following conclusions about the patterning in the verb-class data. First and most importantly, we see that Old Norse-Icelandic is clearly distinct from all the other languages. Secondarily, we note that Old Russian shows signs of important differences from
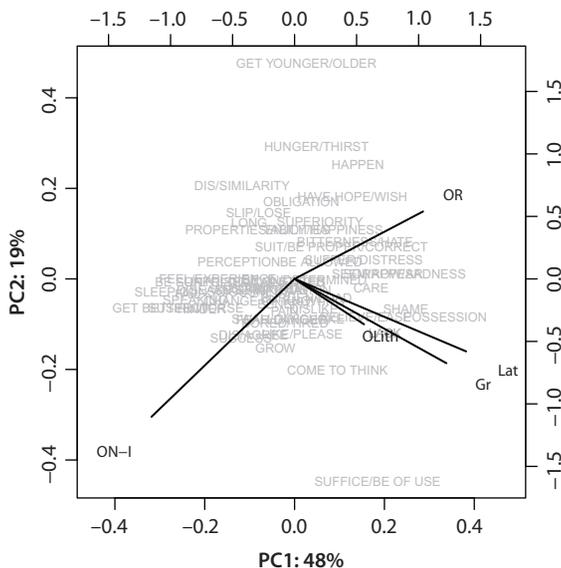
Figure 8. PCA map of the verb class data exemplified in Table 2, showing the first and the second dimension with a cumulative explained variation of 67%. Note in particular the opposition between Old Norse-Icelandic and Old Russian.

Figure 9. PCA map of dimensions 2 and 3 in the PCA solution shown in Figure 8, bringing the cumulative explained variation to 82%. Note the opposition between Ancient Greek/Latin and Old Russian.

the other languages and Old Norse-Icelandic in particular. Finally, we see that Ancient Greek and Latin together form a third dimension where they stand out from the others. It is also evident from Figures 8–9 that Old Lithuanian contributes little in terms of explained variation, suggesting that it shares several features with all the other branches.

The verb classes themselves are harder to interpret, since there is obviously much overlap, as seen in the two plots. However, this is hardly surprising, both due to linguistic realities and the nature of the data. It would be surprising to find clear, unique, and unambiguous clouds of verb classes clustered with specific languages, given that the languages at hand are genetically related. Secondly, and perhaps more importantly, the underlying binary nature of the data makes a faithful representation more difficult. In this perspective, it should be noted that the 82% of the variation captured in the maps, the *x* and *y* axes combined, is probably a very good result, indicating that there are real differences among the languages. This picture is therefore highly compatible with a scenario of early common development where the languages have had time to develop in different directions.

To follow up on the PCA results, we have also carried out a Multinomial Logistic Regression analysis on the data. Multinomial Logistic Regression is used to predict the probability of an outcome with more than two values (in our case, the 49 verb classes), which is estimated as a weighted average of the input data (in our

Table 3. Summary of the multinominal logistic analysis of the similarities and differences between Old Norse-Icelandic, Ancient Greek, Latin, Old Russian, and Old Lithuanian with respect to the narrowly-circumscribed semantic verb classes

	Chisq	*Df*	*P-value*	*Sig-level*
Ancient Greek	62.65	49	0.0911	n.s
Latin	74.92	49	0.0100	0.05
Old Lithuanian	56.63	49	0.2118	n.s
Old Norse-Icelandic	75.47	49	0.0089	0.01
Old Russian	74.36	49	0.0112	0.05

case the binary, language-specific attestations of the sememes). For our purposes, the method is used to further help us distinguish among the language branches. The summary of the analysis shown in Table 3 corroborates the PCA results. Only Old Norse-Icelandic, Old Russian, and Latin are statistically significantly different from the overall average, supporting the view presented above that these are the branches with the strongest attestations of sememes with respect to verb classes.

Figure 9 also shows that the earliest attested languages, Latin and Ancient Greek, cluster together, while the three more recently documented languages, Old Norse-Icelandic, Old Lithuanian, and Old Russian, deviate from these, and from each other. This is in fact highly compatible with the scenario presented in Figure 4 above, of early inheritance and productivity, suggesting that the construction is inherited but that it has become productive in the history of Germanic, Baltic, and Slavic, albeit in different ways. This is exactly what one would expect from an ancient inherited category, namely that it has developed and not remained static; moreover, if the developments are independent of each other, they are expected to go in different directions.
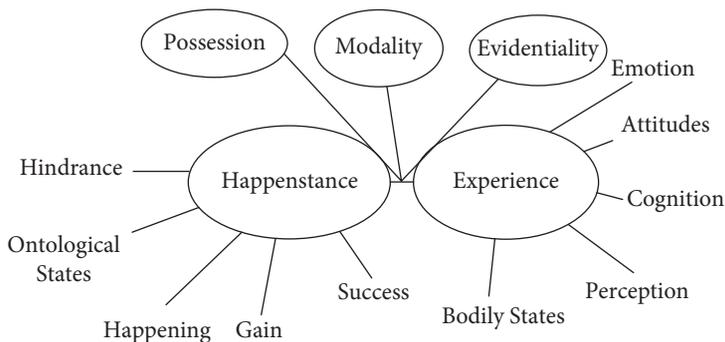
Figure 10. Reconstruction of the semantics of the Dative Subject Construction for a common proto-stage

On the basis of all this, we would like to suggest a reconstruction of the semantics of the Dative Subject Construction, for a common Indo-European proto-stage, as shown in Figure 10. We have excluded here Verbs of Speaking, which are only documented in two language branches, Old Norse-Icelandic and Ancient Greek, but we have included all the other high-level semantic classes, as all of these are found in at least four language branches.

We would like to emphasize, however, that we are not making claims about the structure of the semantic space of the Dative Subject Construction for Proto-Indo-European, as our investigation is only based on five Indo-European subbranches. In order to make such claims, more Indo-European language branches must be investigated. One could claim, however, that our reconstruction may be valid for a common West-Indo-European stage, given that such a stage existed (cf. Kulikov 2009). What we have shown, however, is how a semantic reconstruction of constructional semantics may be accomplished within historical-comparative linguistics, irrespective of whether one can reconstruct any specific lexical predicates or not for the relevant proto-stage (for a reconstruction of a specific cognate set for the Dative Subject Construction in Proto-Indo-European, see Barðdal & Smitherman 2013).

To conclude, the present comparison of sememes found with the Dative Subject Construction across five different Indo-European language branches does not suggest an independent development but either a recent common development or an early inheritance. However, the fact that there are not very many cognate predicates found across these branches, instantiating the Dative Subject Construction, suggests an early inheritance rather than a recent common development. Furthermore, a Principal Component Analysis shows that Latin and Ancient Greek, the oldest attested branches in our database, are most similar to each other, while the later attested branches, Germanic, Slavic, and Baltic, all show signs of independent developments. In other words, our preliminary results, based on five branches of Indo-European, certainly suggest that the Dative Subject Construction is inherited in these branches, as opposed to being borrowed or having arisen independently in the different daughters (cf. Barðdal & Eythórsson 2009, 2012b, Barðdal 2013, Barðdal & Smitherman 2013). This inherited Dative Subject Construction has certain semantic properties, which are in principle reconstructable as a semantic space, meaning that even though we are not reconstructing any individual verbs and their lexical semantic meaning, it is still possible to reconstruct the meaning of more abstract argument structure constructions for earlier language stages and dead languages, given the tools of Cognitive Construction Grammar in combination with the Semantic Map Model. Finally, Principal Component Analysis and related techniques may be used to detect more fine-grained differences between the language branches; in this case it

has shown that the later-documented languages have partly developed in different directions, while at the same time maintaining a common semantic core.

6.   Special characteristics of the Indo-European Dative Subject Construction in the typological landscape

A final issue that we would like to discuss is the cross-linguistic fact that if a language has non-canonically case-marked subjects, these tend to be in the dative case expressing the experiencer. Therefore, one may argue, the facts discussed here do not necessarily show that the Dative Subject Construction is inherited in the Indo-European daughter languages under discussion, as these facts might as well be explained by reference to a typological universal or a near-universal defined by a conceptual constraint that experiencer subjects be in the dative case. Given the high number of languages with dative experiencers in the world, such a conceptual constraint might seem motivated.

We have several objections to this. First of all, the "typological dative", i.e. the dative found cross-linguistically, is not *cognate* to the Indo-European dative, so it does not necessarily represent the same functional category or categories. Second, the question arises regarding what is meant by "dative" here, as what is referred to as "dative" in the world's languages is often a third case, i.e. neither a nominative/subject case, nor an accusative/object case, but a third morphological marker. In other words, there is no uniform category of "typological dative", but rather a category of a third case. Let us now consider Tables 4–8 for Icelandic, Ancient Greek, Early/Classical Latin, Russian, and Lithuanian, which give the case patterns/valency patterns found in these languages. Patterns that are crossed out exist in some of the branches, but are not found in that specific language branch. Bracketed patterns are patterns that we have not been able to document but may still exist. Notice that non-canonical subject marking is found for accusative, dative, and genitive, in all five language branches, even though we are only dealing with the Dative Subject Construction in this article. This stands in a stark contrast with, for instance, Japanese, shown in Table 9, where the case labeled "dative" is much more of a third case than in Indo-European, as accusative and genitive cannot be used as non-canonical subject markers in Japanese.

Table 4. Case and argument structure constructions in Germanic

Nom	Acc	Dat	Gen
Nom	Acc	Dat	Gen
Nom-Acc	Acc-Nom	Dat-Nom	Gen-Nom
Nom-Dat	Acc-Acc	Dat-Gen	Gen-PP
Nom-Gen	Acc-Gen	Dat-PP	Gen-S
Nom-PP	Acc-PP	Dat-S	
Nom-S	Acc-S		

Table 5. Case and argument structure constructions in Latin (preliminary)

Nom	Acc	Dat	Gen
Nom	Acc	Dat	Gen
Nom-Acc	Acc-Nom	Dat-Nom	Gen-Nom
Nom-Dat	~~Acc-Acc~~	Dat-Gen	Gen-PP
Nom-Gen	Acc-Gen	Dat-PP	Gen-S
Nom-PP	Acc-PP	Dat-S	
Nom-S	Acc-S		

Table 6. Case and argument structure constructions in Ancient Greek (preliminary)

Nom	Acc	Dat	Gen
Nom	Acc	Dat	Gen
Nom-Acc	Acc-Nom	Dat-Nom	(Gen-Nom)
Nom-Dat	~~Acc-Acc~~	Dat-Gen	(Gen-PP)
Nom-Gen	~~Acc-Gen~~	Dat-PP	(Gen-S)
Nom-PP	(Acc-PP)	Dat-S	
Nom-S	Acc-S		

Table 7. Case and argument structure constructions in Lithuanian (preliminary)

Nom	Acc	Dat	Gen
Nom	Acc	Dat	Gen
Nom-Acc	Acc-Nom	Dat-Nom	(Gen-Nom)
Nom-Dat	Acc-Acc	Dat-Acc	Gen-PP
Nom-Gen	Acc-Gen	Dat-Gen	(Gen-S)
Nom-PP	Acc-PP	Dat-PP	
Nom-S	(Acc-S)	Dat-S	

Table 8. Case and argument structure constructions in Russian (preliminary)

Nom	Acc	Dat	Gen
Nom	Acc	Dat	Gen
Nom-Acc	Acc-Nom	Dat-Nom	(Gen-Nom)
Nom-Dat	Acc-Acc	Dat-Acc	(Gen-PP)
Nom-Gen	Acc-Gen	Dat-Gen	(Gen-S)
Nom-PP	Acc-PP	Dat-PP	
Nom-S	Acc-S	Dat-S	

Table 9. Case and argument structure constructions in Japanese

Nom	Acc	Dat	Gen
Nom			
Nom-Acc		Dat-Nom	
Nom-Dat			
		Dat-PP	
Nom-PP		Dat-S	
Nom-S			

Therefore, since the Indo-European language branches have at least three different morphological cases functioning as non-canonical subject markers, there is no issue of "dative" here. That is, since non-canonical subject marking is divided across three different case categories in our five Indo-European languages, the dative case is not a specific third case, used for functions other than the ordinary subject and object functions. Hence, any claims that the use of the dative as a non-canonical subject case in the Indo-European languages is motivated by typological considerations or universal conceptual constraints are not well founded, as they abstract away from a considerably more complex situation.[4] Notice also that the Indo-European languages display non-canonical case patterns that are extremely rare typologically, for instance Acc-Gen and Dat-Gen, which further strengthens our point that these argument structure constructions are inherited from a common proto-stage. This means that even though there may be a "universal" dative experiencer construction, perhaps motivated by conceptual constraints, that far from excludes that such a construction may be inherited from an earlier proto-stage.

The last point we want to bring up relates to the semantics of the Dative Subject Construction in our five Indo-European languages, compared to the semantics of dative experiencer constructions cross-linguistically. In particular, we want to emphasize that all five Indo-European language branches have happenstance predicates instantiating the Dative Subject Construction, although to a varying degree. This use of the dative for subjects and subject-like arguments is little motivated by

any cross-linguistic considerations, although these predicates clearly denote a lack of control on the behalf of the subject referent, and in that sense they are similar to experience-based predicates. In a cross-linguistic overview of the predicates typically occurring with non-canonical subject marking, Onishi (2001) discusses happenstance predicates. However, all his examples are from Icelandic and Bengali, which are both Indo-European languages, and no examples are given from any other language family. In fact, as far as we know, it is only in research on the Indo-European languages that happenstance predicates of this type are discussed in relation to non-canonical subject marking. It therefore seems that this construction is highly specific for Indo-European, supporting our assumption that the Dative Subject Construction under investigation is inherited in the Indo-European languages.

7. Summary

Our primary goal in this article has been to develop a methodology of use when reconstructing constructional semantics for dead languages, based on the theoretical framework of Cognitive Construction Grammar in combination with the Semantic Map Model. As semantic reconstruction has hitherto mostly focused on lexical items and morphemes, reconstructing the meaning of larger and more complex and abstract linguistic units, such as argument structure constructions, represents a greater challenge. This task, however, is made possible by the basic assumptions of Cognitive Construction Grammar where the semantics of semantically general constructions are assumed to be derived from the semantics of the predicates instantiating them. A task like the present one is a theoretical impossibility within linguistic frameworks which do not assume that constructions are form–meaning correspondences. Hence, in non-constructional approaches, there can be no meaning to syntactic structures, let alone to abstract syntactic constructions like argument structure constructions.

In order to lay out the method, we have collected and compared predicates instantiating the Dative Subject Construction in Old Norse-Icelandic, Ancient Greek, Early/Classical Latin, Old Russian, and Old Lithuanian. This data collection has uncovered between 50 and 380 predicate types in each of the five branches considered. As several of these predicates are synonymous or near-synonymous, the data collection resulted in a total of 232 sememes, which in turn may be divided into different higher-level semantic categories, i.e. experience-based, happenstance, modal, possessive, and epistemic predicates. The experience-based and happenstance predicates may be further divided into 14 different subcategories in total. A further analysis of all these into narrowly-circumscribed semantic verb classes yielded 49 such semantic classes.

After a comparison of how different kinds of semantic overlap may represent different types of historical scenarios, ranging from an independent development with no overlap to an early common development with a considerable partial overlap, we have shown in Figure 7, based on the 14 higher-level semantic categories, what the five different Indo-European branches have in common and how they differ. We have also carried out a Principal Component Analysis(PCA), of the 49 narrowly-circumscribed semantic classes, for all five language branches, which has revealed that Latin and Ancient Greek are most similar to each other, while Old Norse-Icelandic, Old Russian, and Old Lithuanian show signs of individual developments making these three more distinct from each other. This is expected on the hypothesis that the category, the Dative Subject Construction, has been a dynamic and a productive category throughout early history. The PCA analysis, however, has not revealed any specific clustering of verb classes based on language branch, which is expected given that these languages are genetically related, in turn corroborating the assumption that the Dative Subject Construction is an early Indo-European inheritance. We have therefore suggested a reconstruction of the semantic structure of the Dative Subject Construction, found in Figure 10, based on the core of the semantic category, i.e. the semantic subcategories found in at least four of five language branches. We do not necessarily claim that this reconstruction is valid for Proto-Indo-European, as it is only based on five out of 11 Indo-European subbranches, but believe that it may reflect a common West-Indo-European language stage, if such a stage existed. Through this enterprise, we have shown how the constructional semantics of earlier language stages and dead languages may be reconstructed with the aid of Cognitive Construction Grammar in combination with the Semantic Map Model.

Notes

1. One exception to this is Jónsson (1997–98, 2003).

2. See Malchukov (2008) and Mithun (2008) for a different use of the term *transimpersonal*.

3. In contrast to the claims of Bauer (2000) and Lühr (2011) who argue that cognates across the early IE languages are almost nonexistent, Barðdal & Smitherman (2013) have in fact documented a few well-defined sets of cognate predicates instantiating the Dative Subject Construction across the early Indo-European languages. To be sure, the number of cognates is not high, approximately a dozen or so, at this initial stage of their research.

4. Here we can also add that some of the morphological cases have merged with each other in the history of the Indo-European languages, such as dative, locative, and instrumental in Ancient Greek, and dative, ablative, instrumental, and locative in Germanic (cf. Luraghi 1987, Barðdal & Kulikov 2009, inter alia). This, however, seems to have affected object marking and prepositional phrases rather than subject marking in our languages.

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Appendix: Narrowly-circumscribed lexical semantic verb classes

LIKE/PLEASE:
like: falla (í geð) (ON-I), areskein (Gr), paktikti (OLith), ougažati (OR), placere (Lat)
like to hear: fallast í eyru (ON-I)
be pleased: finnast (ON-I), arestōs einai (Gr), liūba būti (OLith), vъsladěti (OR), libere (Lat)
find pleasant: smagu būti (OLith), philos einai (Gr)
love: leika ást á (ON-I), dabotis (OLith)
appreciate: vera virkt á (ON-I)
find praiseworthy: eukleēs einai (Gr), laudi esse (Lat)
find preferable: praestare (Lat)

DISLIKE:
dislike: leiðast (ON-I), displicere (Lat), nepatikti (OLith)
be(come) unhappy: forþokkast (ON-I)
find unpleasant: amarus esse (Lat), echthros einai (Gr)
detest: mrъzьko byti (OR), contemptui esse (Lat)

LONG:
have desire: fýsast (ON-I), ougodьno byti (OR)
long: lengjast (ON-I)
want: norėtis (OLith)
have interest for: vera hugur (ON-I), interesse (Lat)
be eager: vera tíðkan á (ON-I)
feel tempted: rozvratьno byti (OR)

ENJOY/HAPPINESS:
feel good: bjóða þekt (ON-I)
be(come) happy: oudobьnъ byti (OR)
enjoy: hēdeōs einai (Gr), contingere (Lat), smagu būti (OLith), radostьnъ byti (OR)
feel delighted: terpsis einai (Gr)
feel amused: gaudium esse (Lat)

FEEL/EXPERIENCE:
feel: búa í skapi (ON-I)
feel at rest: eira (ON-I)
feel/think: finnast (ON-I), měnitisja (OR)
experience: empeiria gignesthai (Gr)
be in a spirit: liggja á (ON-I)

FEAR/DANGER:
have fear/agony: ofbjóða (ON-I), timori esse (Lat) baisėtis (OLith)
become terrified: renna kalt vatn milli skinns og hörunds (ON-I)
shudder: blikra (ON-I)
be condemned: damnationi esse (Lat)
be in danger: standa mein að (ON-I), molestus esse (Lat), kindunos einai (Gr)
be out of danger: vera borgið (ON-I), tutus esse (Lat)
be detrimental: detrimento esse (Lat)
bring to ruin: exitio esse (Lat)

bring punishment: zēmian ameibesthai (Gr)

SUFFER/DISTRESS:
suffer: paschesthai (Gr), gore byti (OR)
be in distress: dolor esse (Lat), olethros einai (Gr)
be anxious: curae esse (Lat)
be in misery: miser esse (Lat), pēma einai (Gr)
be offended: bdeluktos einai (Gr)

ANGER/IRRITATION:
become angry: renna í skap (ON-I)
be vexed: skaprauna (ON-I), odiosus esse (Lat)
be irritated: taedio esse (Lat)
find intolerable: intolerabilis esse (Lat)

BORED/TIRED:
be bored: leiðast (ON-I), nusibosti (OLith)
be tired: pailgti (OLith), taedio esse (Lat)

RELIEVE/EASE:
feel relief: léttast (ON-I), levationi esse (Lat)
become at ease: hægjast um (ON-I), solacium esse (Lat)
feel comfort: consolationi esse (Lat)
be easy: facilis esse (Lat), oudobъ byti (OR), anesis einai (Gr), lengva būti (OLith)
be helpful: prothumos einai (Gr), utilis esse (Lat)
be good: bene esse (Lat), lusitelein (Gr), blago byti (OR)

BURDEN/LOAD:
be bothered: angra (ON-I)
worry: rūpėti (OLith), thorubos einai (Gr)
regret: angra (ON-I)
feel burdened: thlipsis einai (Gr), odiosus esse (Lat)
have problems with sth: vandræðast (ON-I), laboriosus esse (Lat), mętežьno byti (OR)
find (im)possible: hlýðast (ON-I), adunatein (Gr), močьno byti (OR)
be bad: hrigos einai (Gr), malum esse (Lat)
be difficult: acerbus esse (Lat), argaleon einai (Gr), sunku būti (OLith), vъstoužiti (OR)
be of cost: gratus esse (Lat)
find strength in sth: vera styrkur að (ON-I), firmus esse (Lat), pora byti (OR)
be awkward: vera um hönd (ON-I)

SORROW/SADNESS:
be in sorrow: oiktos empiptein (Gr), gailti (OLith), pečalь byti (OR), dolori esse (Lat)
feel sad: lupē einai(Gr)

PAIN:
cause pain: sárna (ON-I)
be in pain: algeinōs einai (Gr), skandėti (OLith), zъlo byti (OR), dolor esse (Lat)
be wounded: vera sár (ON-I), helkousthai (Gr)
feel pinched by sth: há (ON-I)
harm, cause trouble: nocere (Lat)

BITTERNESS/HATE:
bear accusations: krisis einai (Gr), crimini esse (Lat)
be hateful: odium esse (Lat), odussesthai (Gr)
be bitter: pikros einai (Gr)

SHAME:
be shameful: infamiae esse (Lat), vina byti (OR)
be of shame: elenchos einai (Gr), vera skömm að (ON-I), ljutě (OR), gėda būti (OLith), pudor esse (Lat)

CARE:
be dear: carus esse (Lat), miela būti (OLith), čьstьnъ byti (OR), entimos einai (Gr)
care: mellein (Gr), curae esse (Lat)
find lovable: amabilis esse (Lat)
find (un)important for sby: skipta máli (ON-I), levis esse (Lat), luein (Gr), reikalinga būti (OLith)
have something at heart: vera umhugað um (ON-I)
be of smb's business/concern: res esse (Lat), meteinai (Gr), rūpėti (OLith), nadobьnъ byti (OR)
be compassionate: ētor entrepesthai (Gr)
feel pity for: gailėti (OLith), žalь byti (OR)

SUFFICE/BE OF USE:
be sufficient/suffice: duga (ON-I), satis esse (Lat), exarkein (Gr), kakti (OLith), dovъlati (OR)
have use of sth: verða gagn að (ON-I), lusitelein (Gr), usus esse (Lat)

SUIT/BE PROPER/CORRECT:
suit, become: sama (ON-I), commodus esse (Lat), prepein (Gr), derėti (OLith), prijętьnyi byti (OR)
be proper for sby: sama (ON-I), decori esse (Lat), dikaion einai (Gr), tikti (Olith), godě byti (OR)
be acceptable: prijętьnyi byti (OR)
be approved: ratus esse (Lat)
be accustomed to: eoika (Gr)
be correct: lěpo byti (OR)
be just: aisimon einai (Gr)

HAVE HOPE/WISH:
be hopeful: spes esse (Lat)
have faith: verьno byti (OR)
have a wish: optatus esse (Lat), poluarētos einai (Gr), xotětisę (OR)
gather courage: ageiresthai thumos (Gr)

BENEFIT:
benefit: aflast (ON-I), prodesse (Lat), kerdiōn einai (Gr), polьza byti (OR)
get, receive: áskotnast (ON-I), tekti (OLith), imati (OR)
have (bad) luck: aka (ON-I)
have/gain time: vacare (Lat)
be ordained by fate: auðnast (ON-I), moira einai (Gr)
have an advantage: perisson einai (Gr)
manage to collect: safnast (ON-I)
produce a (lawful) witness: fullnast vitni (ON-I), testis esse (Lat)

serve as an argument/example/proof: argumento/documento/indicio esse (Lat)

BE ALLOWED:
be offered: bjóðast (ON-I)
be allowed: licere (Lat), exeinai (Gr), lьzě byti (OR)
be permitted: fas esse (Lat)

GROW:
gain strength: vaxa fiskur um hrygg (ON-I), menos aexein (Gr)
grow: vaxa fjaðrir (ON-I), crescere (Lat)
prosper: euodos einai (Gr)

BODILY TEMP:
feel warm: hitna (ON-I), teplo byti (OR), thermē einai (Gr)
(start to) freeze: kólna (ON-I)
have fever: febris esse (Lat)

GET BETTER/WORSE:
get better (health): batna (ON-I)
get worse: daprast (ON-I)
grow weak: förlast (ON-I)

GET YOUNGER/OLDER:
get younger: pomoloděti (OR)

SLEEP/CONSCIOUSNESS:
get a clouded vision: draga ský (ON-I)
feel sleepy: gera svefnhöfugt (ON-I)
fall/be asleep: epʼ ommasi hupnos hizanein (Gr)
lose consciousness: sortna fyrir augum (ON-I)

SWALLOW/CHOKE:
go down the wrong way (about food): svelgjast á (ON-I)
feel disgusted: aēdia einai (Gr), fastidio esse (Lat)

DISEASE (SYMPTOMS):
bleed: blæða (ON-I)
itch: niežěti (OLith), súrna í augu (ON-I)
have a disease: morbus esse (Lat)
become dry: tersesthai (Gr)
shiver: gnolla (ON-I)

HUNGER/THIRST
hunger: lakati (OR)
by thirsty: sitis esse (Lat)

SUSPECT
suspect: boða hugur (ON-I)
have apprehension: segja hugur um (ON-I)

(COME TO) THINK:
occur to one's mind: hugsast (ON-I), succurrere (Lat), eperchesthai (Gr), priiti vъ oumъ (OR)

consider/count: vъslovesitisja (OR), skepsis einai (Gr)
expect: vera von (ON-I), expectatio esse (Lat), epanamenein (Gr)
have an understanding (or not): skiljast (ON-I), adēlein (Gr)

BE (IN)DETERMINED:
be determined: certus esse (Lat)
be sure: constare (Lat)
have a reason: causa esse (Lat)
change one's mind: gangast hugur við (ON-I)
be hesitant: vera um og ó (ON-I)
be in doubt: dubium esse (Lat), onar einai (Gr)
have (good) intentions: hilaos einai (Gr), consilium esse (Lat)

BE SURPRISED/CONFUSED:
be confounded: fipast (ON-I)
forbode: furða (ON-I)
be amazed: hnykkja við (ON-I)
be surprised: thauma einai (Gr), dyvėti (OLith), divъnyi (OR)
be in confusion: taragmos empiptein (Gr)
be startled/shocked: blikra (ON-I)

(CHANGE OF) KNOWING:
know: vera (ó)kunnleiki á (ON-I), (ig)notus esse (Lat), vedomo byti (OR), gnōstos einai (Gr)
forget: fyrnast (ON-I)
remember: loða í eyrum (ON-I),
be curious: skeyta forvitni (ON-I)
be wise: mētis einai (Gr)
be ignorant: skotos einai (Gr)
be senseless: insania esse (Lat)

PERCEPTION:
hear: heyrast (ON-I)
hear news: spyrjast (ON-I)
dream: vera draums (ON-I)
have a vision: vitra (ON-I)
sound in ears: skambėti (OLith)
smell: subolere (Lat)
be tasteful: gardu būti (OLith)
perceive: paristasthai (Gr)

SPEAKING:
say: kveðast (ON-I)
speak well: mælast (ON-I)
have a slip of the tongue: verða á mismæli (ON-I)
misspeak: vefjast tunga um tönn (ON-I)
accidentally speak out a poem: verða vísa á munni (ON-I)
be struck dumb: verða orðfall (ON-I)
chatter incautiously: verða létthjalað (ON-I)
complain: leschē einai (Gr)

SUCCESS:
make progress: fara fram (ON-I)
fare well: farast vel (ON-I), sektis (OLith)
do well: ganga (ON-I), žitisja (OR)
have victory over: sigrast (ON-I)
succeed: takast (ON-I), succedere (Lat), sumbainein (Gr), sektis (OLith), ougoditisę (OR)
manage: takast (ON-I), sumbainein (Gr)

HINDER:
get a hindrance/stay: dveljast (ON-I)
get caught: áhankast (ON-I)
be delayed/hindered: verða seint (ON-I), protivitisja (OR)
get impeded: hlekkjast á (ON-I), impedimento esse (Lat)
be slow: lata (ON-I)
lead to death: draga til dauða (ON-I),

FAIL:
fail, do wrong: gefask yfir (ON-I)
go amiss with sby: misfarast (ON-I)
not succeed/go wrong: mistakast (ON-I)
falter: skjátlast (ON-I)
see wrongly: missýnast (ON-I)
escape one's notice: yfirsjást um (ON-I)

SLIP/LOSE:
slip/stagger: missa (ON-I)
lose: atimti (OLith)

(DIS)SIMILARITY:
turn into one's kin: kippa í kynið (ON-I)

DIS/AGREE:
come in collision with: lenda saman (ON-I)
agree: lynda (ON-I), keisthai (Gr), constare (Lat)
disagree: missemja (ON-I)
have in common: communis esse (Lat)

SUPERIORITY:
have power: potestas esse (Lat), vyložitsę (OR)
be wealthy: amplus esse (Lat)
be worthy: axios einai (Gr)
be noble: gennaiotatos einai (Gr)
be worthy of: dignus esse (Lat)
feel honored by sth: vera höfuðburður at (ON-I), honori esse (Lat)

ONTOLOGICAL STATES:
be in a certain way: vera farið (ON-I)
have a mother (of a certain type): mæðra (ON-I)
be left: reliquus esse (Lat)
make a difference: muna (ON-I)

be due: tunchanein (Gr), sukakti (OLith)
be accompanied by: opādein (Gr)

PROPERTIES/ABILITIES:
never smile: stökkva eigi bros á vör (ON-I)
have an ability: vera gefið (ON-I)
be able to: pareikein (Gr), мочь(no) byti (OR)
be audible: slyšano byti (OR)
one's hands be amiss: vera mislagðar hendur (ON-I)
have a sound mind: mens esse (Lat)

HAPPEN:
happen: accedere (Lat), apobainein (Gr), atistikti (OLith), loučitisja (OR)
come upon: dostatisę (OR)
have a journey: cursus esse (Lat)
not the fate for sby: něstъ (OR)

OBLIGATION:
be obliged: bera (ON-I), privalu būti (OLith)
be destined to/must: menein (Gr)
have to/must: opheilein (Gr), reikėti (OLith), noužda byti (OR)
have a tie of hospitality: hospitium esse (Lat)

LACK:
run out of: dospětisja (OR)
lack: bila (ON-I), deesse (Lat), elleipein (Gr), stokoti (OLith), lixъ byti (OR)
need: vera þörf á (ON-I), oportere (Lat), dein (Gr), reikėti (OLith), nadobě byti (OR)

SEEM/APPEAR:
seem: virðast (ON-I), videri (Lat), dokein (Gr), regėtis (OLith), javitisę (OR)
be clear/apparent to sby: liquere (Lat), viděti (OR)
appear: birtast (ON-I), apparere (Lat), phainesthai (Gr), dozъrěti (OR)

POSSESSION:
be called: nomen esse (Lat), onoma einai (Gr)
have, possess: einai (Gr), būti (OLith), esse (Lat), byti (OR)

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