Abstract The theory of applicatives analyzes the relationship between verbs and their dative arguments. This paper provides evidence that nouns can introduce dative experiencers and benefactives without being derived from verbs. These findings are interesting because current theories of datives need to be modified to accommodate them. The discussion in the paper focuses on the syntax, morphology and semantics of a Caused Experience construction in Icelandic. The theoretical discussion is presented in the context of the theory of applicatives in the Minimalist Program but the empirical generalizations involved are relevant for any formal framework which aims to characterize the nature of dative arguments across languages and constructions.

Keywords Applicatives · Nominalization · Distributed Morphology

1 Introduction

This paper defends the hypothesis that dative experiencers and benefactives can be introduced internal to nominal structures that are not verbs on the inside. Nouns vary with respect to how much they manifest properties of verbs. This fact is amply demonstrated in English in the difference between the so-called derived nominals, like 

1 Conflating experiencers and benefactives means losing an empirical distinction that is quite real, see Bosse and Bruening (2011); Bosse et al. (2012) about teasing the two apart. We assume that both of these types are introduced by Appl which relates them to an event. The distinction between the two Appl heads is not important here. A more fine grained
one empirical property that is traditionally associated with verbs. One commonly adopted view is that such datives are introduced as specifiers of Applicative heads as in the framework of Pylkkänen (2002, 2008) who proposes an explicit restricted typology of applied datives. They can be generated in two structural positions, but always immediately local to a verb.

In this paper, we discuss one way in which this typology is too restrictive. We show that the mechanism that relates dative experiencers to events is independent of verbal morphosyntax and can occur with nominal predicates whose formal properties do not relate systematically to verbs. In the context of separating elements from the verb (Kratzer 1996; Pylkkänen 2008), we get rid of the verb altogether for Applicative purposes. We draw on data from an Icelandic Caused Experience (CEx) construction, a type of a root nominalization of which four variants are shown in (1-4). The dative CEx argument stelpunum ‘the girls’ is interpreted as an experiencer of the event denoted by the CEx predicate skemmtun ‘entertainment’.

**CEx, DP causing event:**

(1) Dansinn var stelpunum göð skemmtun.
   dance.the.NOM was girls.the.DAT good entertainment.NOM
   ‘The dancing entertained the girls well.’

**CEx, PP causing event:**

(2) Stelpunum var skemmtun *(af dansinn).*
   girls.the.DAT was entertainment.NOM *(by dance.the)*
   ‘The girls were well entertained by the dancing.’

**til-CEx, DP causing event:**

(3) Dansinn var [stelpunum til skemmtunar].
   dance.the.NOM was [girls.the.DAT for entertainment.GEN]
   ‘The dancing was for the girls’ entertainment.’

**til-CEx, Sentence causing event:**

(4) Þeir dönsuðu [stelpunum til skemmtunar]
   they danced [girls.the.DAT for entertainment.GEN]
   ‘They danced for the girls’ entertainment’

Note that the preposition til ‘for’ is part of (3-4) and takes a genitive complement as it normally does in Icelandic. Here, the dative experiencer appears in Spec,P although it can also optionally follow the noun skemmtun. The dative in (1) is assumed to have moved from its base position to a specifier of some functional projection FP which it also moves through in (2). Displacement is not of primary interest here but it will be discussed below to the extent it is relevant for the main hypothesis. The obligatory by-phrase in (2) is returned to in Section 4 and the constituency indicated in (3-4) in Section 3.3. Some other representative examples of CEx predicates are shown in (5).

view will distinguish Appl\textsubscript{exp} and Appl\textsubscript{ben} which have a different meaning. For example the specifier of Appl\textsubscript{exp} needs to be restricted to sentient individuals.

A (base-generated) analysis, to be elaborated, is given in (6). Its crucial property is that the closest category-defining head to the root is n.² This n_	ext{cause} is realized with a a causative interpretation in the semantics. A detailed analysis of the causative semantics which is presented in Section 4 serves a crucial role in accounting for certain properties of the construction. The morphology of skemmtun ‘entertainment’, on the right in (6), is derived by head movement and by attaching the nominal inflection nInfl as a dissociated morpheme (see Embick 1997). The present argument is also compatible with the alternative that the nominal inflection realizes Num(ber) or some other functional head on the nominal spine.

(6)  

Case syntax and argument structure in Icelandic clausal syntax have been studied in great detail in a number of works by several researchers throughout the last few decades (see Thráinsson 1979; Zaenen et al. 1985; Yip et al. 1987; Sigurðsson 1989; Jónsson 1996; Barðdal 2001; Thráinsson 2007; Wood 2015, to name a few). Interestingly, much less attention has been paid to arguments in the Icelandic noun phrase³ and to my knowledge there is no previous systematic treatment available of the dative experiencers in (1-4). In fact, previous work on Icelandic nominalizations explicitly assumes that datives of this type cannot be part of nominalizations. In the approach taken by Yip et al. (1987:233-234), “the presumably lexical operations of nominalizations have, as one component, the removal of lexical case”, which rules out noun phrase internal dative experiencers in their system, and Maling (2001:447-451) specifically

² Under a view in which a DM root phrase corresponds to a big VP in non-DM Minimalism, the syntactic difference between this Appl analysis and the theory of Pykkänen (2008) is that an event Appl can be selected by other category heads than v, e.g., by n. We are not concerned with the implementation details of clausal applicatives here. The crucial facts here are that this dative is an applied argument and the closest category head to the root is nominal.

³ There is a literature though that puts a primary focus on the ordering of elements in the noun phrase, e.g. Magnússon (1984); Sigurðsson (1993); Julien (2005); Pfaff (2015).
rules out non-PP goal arguments in the Icelandic noun phrase. The current study shows that these generalizations need to be reconsidered by examining facts that have escaped notice.

The argument is presented from the inside out. Section 2 shows that a CEx predicate is a noun both externally and internally, unlike for example English gerund nominals which are internally verbal. We examine a series of evidence in support of the view that the category-defining head closest to the root is nominal. Section 3 shows that applicatives are independent of verbal morphosyntax. We introduce the framework of Pylkkänen (2008) and present arguments that the CEx dative is an applied argument which is introduced as part of the noun phrase. We propose a Root-Selecting Event Applicative, a structure which allows noun-internal applicative heads. Compatibility of a root and an applicative structure is acquired separately for nouns and verbs under this analysis. Section 4 focuses on the empirical generalization that whenever a CEx dative is introduced by a CEx predicate, the construction is interpreted as a causative, and there must be an overt mention of a causing event. A causative analysis explains (i) the obligatory by-phrase adjunct in (2), (ii) the distribution of external environments in which CEx appears, and (iii) the way the causing event and the caused event enter into modification relationships. Section 5 concludes.

2 The Icelandic Caused Experience predicate is a noun

This section shows that the CEx predicate is a noun, internally as well as externally. The external status of skemmtun ‘entertain’ as a noun in examples (1-4) is uncontroversial. It bears overt nominalizing morphology -un, as well as morphological case which is in accordance with other nouns in the same positions. For example, the element til ‘for’ in (3) and (4) is a preposition which standardly assigns genitive case to its complement. The main focus of the section is therefore to rule out that the CEx predicate is internally a verb.

It has been widely known since Chomsky (1970) that nouns can differ systematically in how much they resemble verbs. The difference between derived nominals and gerunds in English is a clear example of such a difference. In addition to a sharp split between the syntactic properties of the two types of nouns, diverse allomorphy is attested in the case of derived nominals whereas gerunds always surface with the -ing suffix.

<table>
<thead>
<tr>
<th>(derivied) nominal</th>
<th>gerund</th>
</tr>
</thead>
<tbody>
<tr>
<td>marri-age</td>
<td>marry-ing</td>
</tr>
<tr>
<td>destruct-ion</td>
<td>destroy-ing</td>
</tr>
<tr>
<td>refus-al</td>
<td>refus-ing</td>
</tr>
<tr>
<td>confus-ion</td>
<td>confus-ing</td>
</tr>
</tbody>
</table>

4 The thematic role ‘goal’ covers recipients, experiencers and benefactives in her terminology.
It is a well motivated syntactic analysis to say that gerunds, unlike derived nominals, are verbs internally, as reflected by the structural contrast in (8) (Marantz 1997; Embick 2010). For example, gerunds are compatible with adverbs and accusative objects as shown by *violently and the city* in (9a) whereas derived nominals are not (9b).

(9)  a. The army’s violently destroying the city.
    b. *The army’s violently destruction the city.

The following discussion presents evidence in support of the analysis that the Icelandic CEx predicate patterns with derived nominals and against gerunds in lacking an internal verbal layer.

2.1 The category-defining head closest to the root is nominal

We can now proceed to show that the predicate in the Icelandic CEx construction is internally a noun and not of the English gerund type. In current theoretical terms, the category-defining head closest to the root is a nominalizing n. A gerund-type analysis predicts lack of n-allomorphy, and it predicts systematic mappings between formal properties of CEx predicates and their verbal counterparts. The first argument comes from allomorphy. Repeating the examples in (5), now splitting off the n morphology and the nominal inflection layer nInfl, it is obvious that the list in (10) patterns with derived nominals and not gerunds. We find root-conditioned allomorphy in CEx nouns and this allomorphy is evidence that n is the closest category head to the root. Representative examples of CEx predicates are listed in (10) (Nom.Sg. forms) and they pattern with derived nominals rather than gerunds in their allomorphy.

(10) Root-conditioned allomorphy in CEx:

<table>
<thead>
<tr>
<th>Root</th>
<th>ncause</th>
<th>nInfl</th>
</tr>
</thead>
<tbody>
<tr>
<td>skemmt</td>
<td>-un</td>
<td>-∅</td>
</tr>
<tr>
<td>lét</td>
<td>-∅</td>
<td>-ir</td>
</tr>
<tr>
<td></td>
<td>-ir</td>
<td>-∅        (alternative segmentation of ‘relief’)</td>
</tr>
<tr>
<td>hvat</td>
<td>-ning</td>
<td>-∅</td>
</tr>
<tr>
<td>yndisauk</td>
<td>-∅</td>
<td>-i</td>
</tr>
<tr>
<td>hress</td>
<td>-ing</td>
<td>-∅</td>
</tr>
<tr>
<td>dægradvöl</td>
<td>-∅</td>
<td>-∅        (‘recreation’)</td>
</tr>
<tr>
<td>skapraun</td>
<td>-∅</td>
<td>-∅        (‘annoyance’)</td>
</tr>
<tr>
<td>vonbrigði</td>
<td>-i</td>
<td>-∅        (‘disappointment’)</td>
</tr>
<tr>
<td>niðurleit</td>
<td>-ing</td>
<td>-∅        (‘humiliation’)</td>
</tr>
<tr>
<td>álítshnekk</td>
<td>-∅</td>
<td>-ir</td>
</tr>
<tr>
<td></td>
<td>-ir</td>
<td>-∅        (alternative segmentation of ‘reputation damage’)</td>
</tr>
</tbody>
</table>
The cases of skemmt-an, hvat-ning, hress-ing, vonbrigð-i and yndisauk-∅-i show that the nominalization morphology can be conditioned by the root in CEx nouns. The same applies to lětt-ir and álítshnekk-ir when -ir is segmented as a nominalizer by speakers, a non-standard but widely attested pattern. These root-specific phonological exponents of n contrast with English gerunds in which the nominalization morphology is always -ing. The cases which involve null nominalizers furthermore show that the nominal inflection layer in CEx can be conditioned by the root when it is adjacent to the root. This is shown by the difference between yndisauk-i and the standard segmentation of lětt-ir and álítshnekk-ir. While the “weak declension” masculine -i for nominative singular in yndisauk-i might be seen as a default, -ir is associated with specific roots and it is a rare pattern. The root-conditioned allomorphy is evidence against a verbal layer inside these nouns.

According to Embick (2010), the allomorphy contrast between derived nominals and gerunds is explained by the second version of Chomsky’s Phase Impenetrability Condition (PIC2) (Chomsky 2001). The empirical picture is likely to have a parallel impact in other frameworks, but this approach is adopted here because it facilitates precise discussion of the relationship between syntax and realization at the interfaces. The inventory of phase heads is introduced in (11).

(11) Phases
Category-defining heads, at least v, n, a (Marantz 2001, 2007), as well as D and C, and possibly others, trigger Spell-Out of their complements; they are the phase heads. These phase heads are often realized as ‘derivational morphemes’.

The cyclic Spell-Out means that only a sub-part of the structure is visible (active) at any given point. In this type of a theory, every syntactic terminal is a morpheme, and cyclicity constrains interaction between morphemes.

(12) Phase locality
A phase head cannot see morphemes across the next phase head. A non-phase-head can see other non-phase-heads across the next phase head but not further than that.

(13)

\[
\begin{tikzcd}
nP \ar[dr] & XP \\
\arrow{dr} & vP \\
X & v \arrow[dr] & Y \\
& v
\end{tikzcd}
\]

In (13), n and v are cyclic (phase) heads, whereas X and Y are not. Because of (12), n sees X and v but it does not see Y. In contrast, X sees v and Y. This understanding of phase locality has consequences for the realization of
morphemes. Let contextual allomorphy refer to the situation when phonological exponents of morphemes are determined based on properties of other immediately local morphemes.

(14) **Phase locality and morphology** (Embick 2010)

Conditions on contextual allomorphy cannot be stated in terms of invisible (inactive) material.

When a category-defining head $n$ is attached outside another category-defining head $v$, the root is inactive, and therefore no longer an identifiable morpheme, at the point in the derivation at which the phonological exponent of $n$ is determined. Thus, $n$ cannot make reference to the identity of the root in a gerund. However, derived nominals in English and Icelandic CEx predicates clearly allow root-specific phonological exponents on $n$ and the allomorphy is evidence against such nouns being verbs on the inside.

2.2 The noun does not inherit properties from a verb

If a noun is derived from a verb, it is to be expected that the noun and the verb share certain properties. The current section considers cases where Icelandic CEx predicates fail to correspond with a verb. The evidence examined in the section supports the view that the nominal CEx predicate and the most closely corresponding verb are separate elements and the noun is not derived from the verb. The results of the section will be summarized for several predicates in a table in (28).

When considering a gerund type alternative to our analysis, it is reasonable to be concerned with whether the underlying verb exists. We find that sometimes it does, but not always. The noun *yndisauki* ‘pleasure, lit. pleasure-increase’ is compatible with the CEx construction (15), but there is no *yn-disauka* ‘to pleasure-increase’ verb as (16) shows. A non-compound verb auka ‘increase’ exists (3rd pers. plural past juku), but it does not allow for paraphrasing the CEx predicate (16b).

(15) Þeir dönsuðu stelpunum til yndis-auka.

_They danced for the girls’ pleasure._


_They gave the girls pleasure._

b. *Þeir juku stelpunum yndi.

_They gave the girls pleasure._

The case of *yndisauki* ‘pleasure’ demonstrates that the existence of a CEx predicate does not guarantee the existence of a verb that is made from the same root material. The CEx predicate _dægra-dvöl_ ‘recreation, lit. day-dwelling’ in
(17) is another informative example. As in the case of *ýndisauki ‘pleasure’ above, there is no *dægradvöldja verb, but here it is possible to separate the roots as in (18c).

(17) Peir dönsuð sér til dægra-dvalar.
they danced **REFL**.DAT for day-dwelling,**GEN**
‘They danced for their own recreation.’

(18) a. *Peir dægradvöldu við dansa.
they,NOM day-dwelled at to dance
Intended: ‘They experienced recreation from dancing.’

b. *Peir dægradvöldu sér.
they,NOM day-dwelled **REFL**.DAT
Intended: ‘They experienced recreation.’

c. Peir dvöldu fáein dægur í skálanum.
they,NOM dwelled few **ACC** days in the cabin
‘They dwelled a few days in the cabin.’ (no recreation meaning)

Example (18c) shows that while it is possible in this case to construct a sentence and use the root material from the CEx construction in a verbal context, separating the roots makes the ‘recreation’ meaning unavailable.5

If the CEx predicate is made from a verb, the special meaning of *dwell in the CEx construction should be available in a verbal context. It is not, which provides another piece of evidence that *n is the category-defining head which is closest to the root in CEx. An analysis of meaning dependencies between inner and outer category-defining heads is developed in Marantz (2013) in the context of the current type of a theoretical framework (see also Arad 2003). The following condition is a counterpart of the morphological condition in (14) for realization of meaning.

(19) Phase locality and meaning
A meaning of a root that has been excluded at an inner phase head is unavailable at an outer phase head.

Consider the polysemy of English *globe* as an example (see Marantz 2013 for a more detailed discussion).

(20) a. √GLOBE ‘abstract sphere, something spherelike’

b. √GLOBE ‘the world’

Once the polysemy variation of the root has been restricted by a phase head (derivational morpheme), the excluded meanings are unavailable to outer phases. At the root, the range of possible meanings includes both of the above. Making *globe* a noun allows for both meanings, whereas the adjective *global* excludes the ‘spherelike’ meaning. This contrast is shown in (21).

5 Clause adjoined DP adjuncts are often accusative in Icelandic when they have a temporal or measure interpretation.
As the rightmost example shows, the meaning that is excluded at the a phase head remains unavailable at the outer v phase head. Once a possible meaning has been excluded from the range of options, it cannot be brought back. In the context of the Icelandic, this pattern indicates that a CEx predicate is not derived from a verb. If it were, we would predict the verb to be compatible with any special interpretation associated with the noun.

Another point of comparison comes from the compatibility of a predicate and a dative argument. If the mechanism that introduces thematic datives crucially depends on composition with a verb, we would expect verbs that correspond to CEx predicates to also take dative arguments. We find that sometimes they do, but not always. For example, consider the CEx predicate hvatning ‘encouragement’ in (22). It contrasts with the verb hvetja ‘to encourage’ which does not take dative arguments, as shown in (23).

(22) Þeir hrópuðu stelpunum til hvatningar.
    they cheered DAT for encouragement GEN
    ‘They cheered and there was an intention to encourage the girls.’

(23) a. *Þeim hvatti húrrahrópin.
    they.DAT encouraged cheers.NOM
    Intended: ‘They experienced encouragement from the cheering.’

b. *Þeir hvöttu stelpum.
    they.NOM encouraged girls.DAT
    Intended: ‘They encouraged the girls.’

c. Þeir hvöttu stelpurnar.
    they.NOM encouraged girls.ACC
    ‘They encouraged the girls.’

The verb hvetja ‘to encourage’ is a NOM-ACC verb and is appropriately used as in (23c). This non-compatibility with a dative argument further undermines any account that derives the noun from a verb. A parallel observation can be made for niðurlæging ‘humiliation’, where the verb niðurlægja ‘to humiliate’ does not take dative arguments:

(24) Forsetinn beitti neitmarvaldi ríkisstjórninni til niðurlægningar.
    president used veto-authority government.DAT for humiliation
    ‘The president vetoed (the law) much to the government’s humiliation.’
Examples (22-25) show that a dative-compatible CEx predicate does not entail that the most closely corresponding verb is also compatible with a dative argument. This fact provides convincing evidence to the effect that the ability of the noun to take a dative is not inherited from an underlying verb. If the mechanism that introduces thematic datives depends on the immediate presence of a verb, we would expect verbal correspondences of CEx predicates to take arguments that can be interpreted as experiencers. Consider the noun álits-hnekkir ‘reputation-damage’, which takes a negative experiencer (or a malefactive argument, depending on terminology).6

(26) Slíkt varð stéttinmi til álítshnekkis.
  such.NOM be.SBJV the.profession.DAT for reputation-damage
  ‘That would inflict damage on the reputation/image of (our) profession.’

The verb hnekkja by itself means ‘lift (a curse), overturn’ and the other root that is part of the noun, álit, can mean ‘reputation’ or ‘opinion’. The experiencer/malefactive reading is unavailable on the dative if we use these parts in a verbal context:

(27) a. Þetta hnekksti [áliti stéttarinnar].
    this overturned [reputation/opinion.DAT profession.the.GEN]
    * ‘It inflicted damage on the reputation of the profession.’
    ✓ ‘It overturned the opinion of the profession.’

b. Stoke City hnekkti álögnum.
    Stoke City.NOM lifted the.curse.DAT
    ‘Stoke City lifted the curse.’

Example (27b) also has a dative, and it differs with respect to the meaning on the verb hnekkja, here ‘lift (a curse)’. Again, in this verbal variant an experiencer/benefactive reading is unavailable. This finding casts doubts on any proposal where the introduction of a CEx dative with these thematic properties depends on an underlying verb. To wrap up this round of argumentation,

6 The glosses do not do justice to the meaning. The dative with the image problem needs to be a sentient experiencer who cares about their image, here a group of people.
we can examine whether the non-matching properties of CEx predicates and verbs correlate with each other or with allomorphs of the nominalizer. Table (28) gives an overview. 7

(28) Lack of a pattern in potential verb/noun correspondences

<table>
<thead>
<tr>
<th>CEx predicate (-nomlz)</th>
<th>gloss</th>
<th>closest verb</th>
<th>matching root(s)</th>
<th>dative argument</th>
<th>experimenter argument</th>
<th>meaning available</th>
</tr>
</thead>
<tbody>
<tr>
<td>skemmt-un</td>
<td>entertainment</td>
<td>skemmta</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>létta-ir</td>
<td>relief</td>
<td>létta</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>hvat-ning</td>
<td>encouragement</td>
<td>hvetja</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>yndisauk-i</td>
<td>pleasure</td>
<td>auka</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
<td>(+)</td>
</tr>
<tr>
<td>hress-ing</td>
<td>refreshment</td>
<td>hressa</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>dægradvöl-∅</td>
<td>recreation</td>
<td>dvelja</td>
<td>(+)</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>skapraun-∅</td>
<td>annoyance</td>
<td>skaprauna</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>vonbrigð-i</td>
<td>disappointment</td>
<td>bregða</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>niburlæg-ing</td>
<td>humiliation</td>
<td>niburlægja</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>álítshnekk-ir</td>
<td>reputation damage</td>
<td>hnekkja</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

The first column shows the CEx predicate with the nominalizer split off, followed by a gloss and the most closely corresponding verb. The last four columns have a ‘+’ when the verb shares the respective property with the noun. The first of these columns indicates the existence of a verb with the same root material. The second column shows compatibility with a dative argument, and the third one whether an argument of the verb can have the thematic properties in question. The final column indicates when the meaning of the CEx construction can be paraphrased using the verb. The fact that there is no obvious pattern is easily explained if the noun is not derived from the verb.

2.3 Section summary

This section presented evidence that the CEx predicate is a noun, not just externally, but also internally. The allomorphy facts show that the closest

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7 Jónsson (2005:402) gives the following for a st-middle of dvelja:

(1) Honum dvaldist á bænum.
    he.DAT stayed at the farm
    ‘He stayed at the farm.’

We do not control this usage and most examples we can find seem to be from older stages of the language. The meaning does not seem compatible with an experiencer reading. Even if some Modern Icelandic speakers have this, it does not impact the overall point here. For auka ‘increase’, compatibility with a dative seems to depend on specific nouns like bjartsýni ‘optimism’. While interesting, we do not pursue that construction here.

(2) Þessi fundur eykur okkur bjartsýni.
    this meeting increases us.DAT optimism
    ‘This meeting makes us feel more optimistic.’
category-defining head to the noun is \( n \), and there is no systematic mapping between the properties of such nouns and corresponding verbs. While we can imagine an analysis where an underlying verb loses all of its properties when nominalized, this does not serve an obvious purpose. A language learner therefore has to acquire compatibility of a root and this type of \( n \) independently of her learning which verbs go with particular verbal constructions, an analysis that we will discuss in more detail in the following section. Having determined the category of the predicate, we turn to the applicative analysis of the dative.

3 Applicatives are independent of verbal morphosyntax

Facts that are traditionally associated with the notion of an ‘indirect object’ are in current theoretical syntax often analyzed in terms of argument introducing Appl(licative) heads. The discussion that follows is framed with respect to the framework of Pylkkänen (2008), and an extension of this framework is proposed to account for our facts. The first part of the section introduces the framework, then we argue that the current set of facts belongs in such a framework, and finally we show that Appl is internal to a structure that excludes the syntax of the clause.

3.1 Framework

Dative experiencers/benefactives/malefactives are commonly analyzed as specifiers of Appl in clausal syntax (Pylkkänen 2002, 2008), see also McGinnis (2001); Cuervo (2003). A main distinction is made between High Event Applicatives (29) and Low Individual Applicatives (30).

(29) High Event Applicative (\textbf{individual-eventP}; Pylkkänen’s High Appl)

\[ \text{ApplP} \]
\[ \text{DP} \quad \text{individual} \quad \text{Appl} \quad \text{VP} \]
\[ V \quad \ldots \]

(30) Low Individual Applicative (\textbf{individual-individual}; Pylkkänen’s Low Appl)

\[ \text{VP} \]
\[ V \quad \text{ApplP} \]
\[ \text{DP} \quad \text{individual} \quad \text{Appl} \quad \text{DP} \quad \text{individual} \]

The High/Low distinction loses some of its terminological appeal in the current analysis, and therefore we will refer to Event/Individual applicatives instead.
Event Applicatives relate an individual to an event, and their specifier is typically interpreted as a benefactive or an experiencer by virtue of being merged into that position. Individual Applicatives relate an individual to another individual, where the specifier of Appl is typically interpreted as a recipient of the complement of Appl. Individual applicatives are used for true double object predicates and they are only included here for contrast; their analysis is orthogonal to the current discussion. Since we are focusing on the Icelandic CEx construction, we will only be concerned with Event Applicatives here, the type selected by our \( n_{\text{cause}} \). To accommodate our facts, we propose an extension of the theory, a Root-Selecting Event Applicative which does not need to combine with a verb.\(^8\)

\[ \text{(31) Root-Selecting Event Applicative (individual-} \sqrt{\text{EVENT}}: \text{CEx construction)} \]

\[ \text{AppP} \]

\[ \text{DP} \text{ individual} \]

\[ \text{Appl} \]

\[ \sqrt{\text{EVENT}} \]

The Root-Selecting applicative relates an experiencer to an event described by the root before the category is determined. In this structure, the properties of a nominalization are not predictable from looking at an underlying verb, because there is none. The availability of a root in a particular construction depends on compatibility of this root and the relevant category-defining head, which in our analysis of the Icelandic CEx construction is \( n_{\text{cause}} \). This compatibility is acquired separately for different category-defining heads. It may seem undesirable to list such apparently non-local compatibility relationships that extend beyond the head-to-head selectional mechanism that is responsible for the basic structure building, but in the current type of a theory, machinery with such capabilities is unavoidable. For example, see Wood (2015) on the compatibility of specific roots and flavors of Voice. A root-to-Voice dependency involves a compatibility configuration that is even more prima-facie non-local than the current root-to-category setting since it extends beyond the category-defining phase head, but it is nevertheless crucially phase-local under the spell-out system outlined in the preceding section because Voice is not a phase head. We will assume for the present purpose that the compatibility of a root with a given surrounding structure is determined within a domain which is restricted by phase locality.

\(^8\) The causative analysis is described in detail in section 4

\(^9\) An alternative theoretical approach would be to say that the nominalizer is merged above the root and below Appl. Such an analysis is within the bounds of the current proposal in that the closest category-defining head to the root is still nominal. Different theoretical issues arise under such an analysis. In that case, Appl would sometimes have to be the highest element of the nominal spine and the complement of P. The analysis of the causative semantics below would also be affected. To the extent that such an analysis satisfies other theoretical commitments, it is compatible with the core of the current proposal. We do not pursue this avenue here.
The types of denotations that implement the argument introduction are given in (32). Event Appl is a function of type \(\langle\langle s,t \rangle, \langle e,\langle s,t \rangle \rangle \rangle\) and the predicate is of type \(\langle s,t \rangle\). Following a commonly used convention, we use the variable name \(x\) for individuals and \(e, e', e'', e'''\) for events.

\[(32)\]

a. \[\llbracket \text{Appl}_{\text{exp}} \rrbracket = \lambda P_{\langle s,t \rangle} . \lambda x . \lambda e . \text{experiencer}(e,x) \& P(e)\]
b. \[\llbracket \sqrt{\text{Entertain}} \rrbracket = \lambda e . \text{entertaining}(e)\]

This formulation of Appl derives the same truth conditions as the high event applicative of Pylkkänen (2008) without needing the operation Event Identification from Kratzer (1996). The composition is driven by Functional Application. The choice is motivated by theoretical parsimony and the practical fact that Functional Application is more widely known than Event Identification. Functional Application is defined in (33) and it applies when the semantic type of an element is an appropriate input to the function its sister denotes.

\[(33)\] **Functional application**

If \(\alpha\) is a branching node, \(\{\beta, \gamma\}\) is the set of \(\alpha\)’s daughters, and \(\llbracket \beta \rrbracket\) is a function whose domain contains \(\llbracket \gamma \rrbracket\), then \(\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket(\llbracket \gamma \rrbracket)\).

For our syntax in (6), the LF derivation proceeds as below.

\[(34)\]

\[
\text{ApplP} \\
\frac{\lambda e. \text{experiencer}(e, \text{the girls}) \& \text{entertaining}(e)}{\text{By Functional Application}}
\]

\[
\text{DP} \\
\frac{\lambda x. \lambda e. \text{experiencer}(e,x) \& \text{entertaining}(e)}{\text{By Functional Application}}
\]

\[
\frac{\lambda P_{\langle s,t \rangle} . \lambda x . \lambda e. \text{experiencer}(e,x) \& P(e) \lambda e . \text{entertaining}(e)}{\text{Appl}}
\]

\[
\frac{\sqrt{\text{Entertain}}}{\text{By Functional Application}}
\]

ApplP therefore denotes the set of events \(e\) where the girls are experiencers of \(e\) and \(e\) is an entertaining event. The semantic effect of the Root-Selecting Event Applicative is exactly the same as what is commonly described as a “High” Appl. The only difference here is that Appl combines with a root (rather than a verb) in the syntax before its syntactic category is determined. This means that Appl can introduce an experiencer with a noun as in the CEx construction. We will focus on the noun phrase, but in principle this type of analysis may carry over to adjectives in languages that have the relevant Appl head. In fact, Icelandic adjectives also take dative experiencers:
(35) a. Stelpurnar eru kaldr.
girls.the.NOM are.3P.PL cold.3P.FEM
‘The girls are cold.’ (a fact about their skin temperature)

b. Stelpunum er kalt.
girls.the.DAT is.3P.SG cold.3P.NEUT
‘The girls feel cold.’ (experience being cold)

The contrast in (35) highlights the relationship between case and thematic interpretation. The temperature of the nominative subject is cold, regardless of how or whether the subject feels anything; the girls might as well be dead. In contrast, the dative girls feel cold; they are experiencers and therefore (35b) is infelicitous if they are dead. We leave it for future work to further explore the syntax of experiencer adjectives. Now that we have introduced the applicative framework, the following section turns to showing that the CEx dative is an applied argument.

3.2 The dative is an applied argument

The dative experiencer in the CEx is always interpreted as an individual that experiences or benefits from the event described by the predicate, thus patterning empirically with the theoretical notion of an Appl specifier. A basic observation to that effect is that the meaning of CEx can be naturally paraphrased using words like ‘experience, feel, enjoy’, e.g. ‘the girls experienced entertainment’. Moreover, the dative argument in the CEx position cannot be an agent:

(36) a. *Þeir sendu vopn óvinum til eyðileggjina.
   they sent weapons enemy.the.DAT for destruction
   Intended: ‘They sent weapons for the (agentive) enemy’s destruction.’

b. Þeir dönsuðu [stelpunum til skemmtunar].
   They danced [girls.the.DAT for entertainment.GEN]
   *‘They danced such that the girls entertained somebody.’
   *‘The girls used their dancing to entertain.’

In (36a), an agent cannot be merged into the dative position. For a sentence like (36b), where the CEx type experiencer interpretation is available, any interpretation where ‘the girls’ have an agentive role is impossible. This is in line with generalizations that relate meaning and case morphology in the Icelandic clause and have been amply discussed in the literature (see e.g. Zaenen et al. 1985; Yip et al. 1987; Jónsson 1997-98, 2003; Barðdal 2008). An example that involves Facebook is illustrative.

(37) a. Mér líkaði hundurinn.
   me.DAT liked dog.the.NOM
‘I experienced liking the dog.’ /  
‘I clicked the like button on Facebook (for the dog picture, etc.).’

b. Ég líkaði hundinn.  
I.NOM liked dog.the.ACC  
‘I experienced liking the dog.’ /  
‘I clicked the like button on Facebook (for the dog picture, etc.).’

The Icelandic verb for ‘like’ is historically a strictly dative subject verb. Facebook has changed this because liking things on Facebook is an agentive activity where the subject must be realized with nominative morphology as in (37b). The facts we have just reviewed therefore show that (i) the CEx dative patterns with Appl specifiers with respect to generalizations about thematic properties and case, and (ii) these same generalizations are a productive part of Modern Icelandic grammar.

One alternative to an Appl analysis that we can consider is to treat the CEx dative as a dative possessor. The Icelandic poetic dative possessor is a useful comparison in this respect (see Thráinsson 2007). An example of the poetic dative from the IcePaHC corpus is given in (38a). Importantly, these datives alternate with less poetic, but truth-conditionally equivalent genitives, as in (38b).

\begin{align*}
\text{(38) a. Er það komið til eyrna mér ...} \\
\quad \text{is it come to ears.GEN me.DAT} \\
\quad \text{‘It has come to my ears ...’} \\
\text{b. Er það komið til eyrna minna ...} \\
\quad \text{is it come to ears.GEN my.GEN} \\
\quad \text{‘It has come to my ears ...’}
\end{align*}

Unlike the poetic possessors, the experiencer datives do not alternate with genitives.

\begin{align*}
\text{(39) * Þeir dönsuðu stelpnanna til skemmtunar.} \\
\quad * \text{they danced girls.the.GEN to entertainment.GEN} \\
\quad \text{Intended: ‘They danced for the girls’ entertainment.’}
\end{align*}

The lack of a dative/genitive alternation shows that CEx datives are different from possessors. It also emphasizes how the CEx dative patterns with other Appl specifiers, because in general Appl-associated dative case is resistant to alternations by syntactic context, even where other datives alternate (Wood 2015:226). The comparison with dative possessors strongly suggests that an Appl analysis is appropriate.

A final alternative to an Appl analysis is to say that these dative experiencers are in fact arguments of some other morpheme and not of a special argument introducing head. However, if we want to maintain the Appl theory for clausal syntax, it seems unattractive to treat experiencers differently in the...
noun phrase even if experiencer datives otherwise pattern together empirically, in a way that is distinct from possessors. We might bundle the properties of Appl and n in the noun phrase if we wanted to avoid an Appl projection in the noun, but this would simply be another way of writing down that the noun introduces a dative experiencer and it needlessly obscures a compositional semantics for Appl which is already available in the theory.

Now that we have provided evidence that an applicative analysis is appropriate, we turn to showing that the Spec,Appl position is part of the noun phrase, and that it is not associated with the clausal syntax.

3.3 The dative is part of the noun phrase

Summarizing the preceding discussion, the CEx dative is an applied argument which is the experiencer of an event denoted by a noun. We analyzed these facts in terms of a noun-phrase internal applicative. This section argues against an alternative analysis where the dative case depends on some position in the clause.

Trees in the spirit of (40) where a DP moves out of a noun phrase are sometimes discussed for other cases of non-nominative experiencers associated with nouns, and in the context of possessor raising (see Adger and Ramchand 2006; Preminger 2009). We argue that such an analysis is not appropriate for the CEx construction. The argument is based on (i) constituency tests, and (ii) on facts about the dative’s base position, and (iii) on the lack of a plausible external source of the dative case.

Looking at the CEx variant where the construction is embedded under a sentence-adjoined prepositional phrase, we can show that this whole unit is a constituent, based on topicalization (41), clefting (42) and replacement by a wh-word (43).

(41) [Stelpunum til skemmtunar] dönsaðu þeir.
[girls.the.DAT for entertainment.GEN] danced they
‘They danced for the girls’ entertainment.’

11 There can be some variation in whether it is more natural to have the dative in Spec, til or in Spec, Appl to the right of the predicate. This issue is orthogonal to the constituency.
‘It is for the girls’ entertainment that they dance.’

‘Why did they dance? For the girls’ entertainment.’

In contrast, the ‘for entertainment’ PP excluding ‘the girls’ is not a constituent. This is shown by the unavailable topicalization below.

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In contrast, the ‘for entertainment’ PP excluding ‘the girls’ is not a constituent. This is shown by the unavailable topicalization below.

The constituency facts support the proposal that the dative is part of the noun phrase and they speak against an analysis in the spirit of (40). An nP-internal analysis receives further support from examining the base-generated position of the dative. When the dative appears with til ‘for’, it often precedes this word, but it can also surface to the right of the predicate as (45) shows, where the position to the right can be bad/acceptable/preferable, depending on the usual heaviness/discourse reasons. A movement relationship between the two positions is supported by quantifier floating as will be shown below.

The optionality in where to realize the dative plausibly reflects a base-generated Spec,Appl position and some type of an EPP movement to the specifier of til ‘for’.
Quantifier floating supports the view that the variability in (45) is due to a movement relationship in the CEx construction. Under a commonly adopted analysis (Sportiche 1988), the entire dative is base generated in the lower position.

Moreover, the dative case is not tied to the til in til-CEx, since there is no til in the non-til variants like (48).

The dative is also not tied to vera ‘be’, because there is no such verb in (4), repeated as (49).

Putting together the pieces of evidence examined in this section, there are no good alternatives to our analysis that associate the dative with a position outside the noun phrase.

3.4 Section summary

In this section we reviewed the applicative theory and proposed an extension of it in the form of a Root-Selecting Event Applicative. We presented evidence that the dative in the CEx construction is an applied argument, and we showed that it is part of the noun phrase. A previous section showed that the noun
which is the CEx predicate is a noun internally as well as externally, and therefore the overall message to be taken from the discussion so far is that applied arguments are indeed independent of verbal morphosyntax, at least in Icelandic. The remaining part of the puzzle involves accounting for the range of possible external environments under which the CEx construction can be embedded, and this is the topic of the following section.

4 A causative nominalizer

This section gives some background on a bieventive causative semantics and shows how such an analysis can be applied to the CEx construction to explain the environments in which it appears.

4.1 Bieventive CAUSE

One common approach to causatives assumes that CAUSE is a relationship between two events, a causing event and a caused event (Parsons 1990; Pylkkänen 2008). We will adopt this semantics without modification, but in the current analysis it will (unconventionally) be associated with the nominalizer. The denotation of \( n_{\text{cause}} \) is as follows:

\[
\[ n_{\text{cause}} \] = \lambda P, t. \exists e' [P(e') \land \text{CAUSE}(e, e')]
\]

We will first spell out the mechanics of the semantics for a sentence of type (1), repeated as (51). The syntax of this variant is given in (52). The tree focuses on base-generated positions and abstracts away from TP. The subject moves to Spec,TP and the finite verb to T as is generally the case in the language. We assume that the surface position of ‘the girls’ results from ‘the girls’ moving to the specifier of some functional projection FP above nP which is omitted from the tree because it is not important for the semantics below. The link between the surface position and the base position is detectable by floating a quantifier in Spec,Appl. The curly bracket subscript notation Pred\(_{\text{evt}(D)} \) indicates that this variant of Pred requires an externally merged DP in its specifier.\(^{12}\)

\[
(51) \quad \text{Dansinn var stelpunum góð skemmtun.}
\quad \text{the.dance.NOM was the.girls.DAT good entertainment.NOM}
\quad \text{‘The dancing entertained the girls well.’}
\]

\(^{12}\) The curly subscript notation is adopted from Schäfer (2008); Wood (2015).
AspP
  Asp
    PredP
      DP
        the dance
          Pred_{evt(D)}
            was
              nP
                n_{cause}
                  -ment
                    ApplP
                      the girls entertain-

The denotations of the nodes in the tree are given below.

(53)  a. \[ \text{Asp} = \lambda P_{(s,t)}, \exists e. [P(e)] \]

b. \[ \text{Pred}_{evt(D)} = \left[ \text{Pred}_{evt()} \right] \]
   \[ = \lambda P_{(s,t)}, \lambda e''. \lambda e'''. \text{identity}(e'', e''') \& P(e''') \]

c. \[ \text{ApplP} = \lambda e. \text{experiencer(e,girls)} \& \text{entertaining(e)} \]
   \[ = \lambda e. \text{applP}(e) \] (Shorthand notation)

d. \[ \text{the dance} = \text{the dance} \]

The Asp head in (53a) denotes the assumed default aspect which is the existential closure of events. Other aspectual operators could be merged in the same syntactic position but this basic flavor of Asp is sufficient for the purpose of the derivations below. Pred_{evt} in (53b) is an argument introducer for event denoting arguments and it can vary with respect to whether it requires an externally merged D in its specifier, Pred_{evt(D)}, or not, Pred_{evt(1)}. This flavor of Pred introduces an element that can be appropriately used to identify an event. The role of identity will become clear in the derivations below. The mechanism is esimilar to the Restrict operation of Chung and Ladusaw (2004) in providing information about a variable without closing it off. The semantics of Pred is not affected by the purely syntactic specifier requirement. The entry in (53c) repeats the ApplP semantics that was derived in (34) and provides the shorthand notation \( \lambda e. \text{applP}(e) \). Entry (53d) abstracts away from the internal structure of the DP. The LF derivation is shown in (54-56).

(54)

\[ nP \]
\[ \boxed{\text{By Functional Application}} \]
\[ \lambda e. \exists e'[\text{applP}(e') \& \text{CAUSE}(e,e')] \]

\[ n_{cause} \]
\[ \boxed{\text{From (50)}} \]
\[ \lambda P_{(s,t)}, \lambda e. \exists e'[P(e') \& \text{CAUSE}(e,e')] \]

\[ \boxed{\text{From (53c)}} \]
\[ \lambda e. \text{applP}(e) \]
The \( nP \) which is derived above is a causative structure which has closed off the caused event and is still building the causing event. The \( nP \) combines with \( \text{Pred}_{\text{evt}(D)} \) as shown below.

(55)

\[
\text{PredP} \\
\text{By Functional Application} \\
\lambda e^{''''}.\text{identity}(\text{the dance},e^{''''}) \& \exists e'[\text{applP}(e') \& \text{CAUSE}(e^{''''},e')]
\]

\[
\text{DP} \\
\text{By Functional Application} \\
\lambda e^{''''}.\text{identity}(\text{the dance},e^{''''}) \& \exists e'[\text{applP}(e') \& \text{CAUSE}(e^{''''},e')]
\]

From (53d)

\[
\lambda P_{(s,t)}.\lambda e^{''''}.\text{identity}(\text{the dance},e^{''''}) \& \exists e'[\text{applP}(e') \& \text{CAUSE}(e^{''''},e')]
\]

From (55)

\[
\lambda P_{(s,t)}.\lambda e^{''''}.\text{identity}(\text{the dance},e^{''''}) \& \lambda e.\exists e'[\text{applP}(e') \& \text{CAUSE}(e,e')]
\]

\[
\text{Pred}_{\text{evt}(D)} \\
\text{From (54)}
\]

\[
\lambda P_{(s,t)}.\lambda e^{''''}.\text{identity}(\text{the dance},e^{''''}) \& \exists e'[\text{applP}(e') \& \text{CAUSE}(e^{''''},e')]
\]

Pred\(_{\text{evt}(D)}\) establishes an identity relation between its specifier and the causing event without closing off the event. Existential closure is provided by Asp as shown below.

(56)

\[
\text{AspP} \\
\text{By Functional Application} \\
\exists e.[\text{identity}(\text{the dance},e) \& \exists e'[\text{applP}(e') \& \text{CAUSE}(e,e')]]
\]

\[
\text{Asp} \\
\text{From (53a)}
\]

\[
\lambda P_{(s,t)}.\exists e.[P(e)]
\]

\[
\text{PredP} \\
\text{From (55)}
\]

\[
\lambda e^{''''}.\text{identity}(\text{the dance},e^{''''}) \& \exists e'[\text{applP}(e') \& \text{CAUSE}(e^{''''},e')]
\]

The effect of (53b) is that ‘the dance’ names the identity of the causing event before it is closed off existentially. Because the DP refers to the causing event, not all nouns are appropriate in this position. For example, the sentence in (51) is infelicitous if ‘the dance’ is replaced with ‘John’:

(57)  
\#Jón var stelpunum góð skemmtun.  
John.NOM was girls.dat good entertainment.NOM  
‘John entertained the girls well.’

With some pragmatic effort it is possible to coercively accept (57), but then ‘John’ refers to ‘something that John did’ or ‘some property of John’ rather
Applicatives in the noun phrase 23

than the individual John. This type of a situation is not unusual for a DP. The English example below enforces a similar interpretation of John.

(58) John concerned me.

Empirically, it seems that the subject in (51) needs to name an event. The need to account for event denoting DP’s arises independently in other work. Pylkkänen (2008) invokes a similar event identity analysis for Japanese adversity constructions, and Wood (2015) has a special interpretation mechanism for interpreting a DP as an appropriate argument to CAUSE. We assume that nouns which fit into event frames of type (59) have a root of type \( \langle s, t \rangle \) and that the definite article is dynamically typed as in (60). Therefore, the dance denotes an event. In contrast, the cat is an individual because the root is of type \( \langle e, t \rangle \). There is more to be said about event-denoting nouns, especially it the case of more complex morphology, (see Grimshaw 1990 for discussion) but for the present purpose empirical compatibility with positions like (59) diagnoses the case where \( \phi \) in (60) is s (an event).

(59) a. the dance/\#cat took place yesterday.
   b. the duration of the dance/\#cat was 2 hours.

(60) \[ D = \lambda P \in D_{\langle \phi, t \rangle} . \alpha \in D_{\phi} . P(\alpha) \quad (\phi \text{ is a type and } \phi \neq t) \]

In the CEx construction, at least one of the events of CAUSE, and sometimes both of them, are expressed as nouns. A bieventive analysis of such strongly nominal structures should of course not be taken for granted. To demonstrate independently that there are two events in the structure, we can apply antonymous adverbial modification to the two events, first focusing on the case where the causing event is a sentence:

(61) a. Strákarnir dönsuðu á hættulegan hátt gegnum eldinn
   the.boys danced in dangerous manner through the fire
   stelpunum til skemmtunar á hættulausan hátt.
   the.girls.DAT for entertainment in safe manner
   ‘The boys danced in a dangerous manner through the fire for the girls’ entertainment in a safe manner.’

b. #Strákarnir dönsuðu á hættulegan hátt gegnum eldinn á
   the.boys danced in dangerous manner through the fire in
   safe manner
   ‘The boys danced in a dangerous manner through the fire in a safe manner.’

We take the difference in pragmatic naturalness in (61) to stem from the fact that the first example is a causative with two event variables, whereas the second example only describes one event which is not easily interpreted as both dangerous and safe. The examples below which involve antonymous adjectives are also most straightforwardly a manifestation of the same pragmatic contrast.
(62) a. Hættulegi dansinn var stelpunum hættulaus skemmtun.
   dangerous dance.the was the.girls.DAT safe entertainment
   ‘The dangerous dancing caused safe entertainment for the girls.’

b. #Hættulegi dansinn var hættulaus íðja.
   dangerous dance.the was safe activity
   ‘The dangerous dancing was a safe activity.’

The CEx construction can naturally include both dangerous and safe. In contrast, the simple equivalence denoting copula usage in (62b) is infelicitous with the same modifiers. The difference between the two examples in (62) must be related to the fact that the antonymous modifiers need to target distinct objects in the world, which in these cases are events. Although adjectives like dangerous can modify individuals, as in the dangerous cat, ‘the dance’ and ‘entertainment’ in (62) clearly have a different status as shown by the event frames in (59).

4.2 CEx requires an overt causing event

The hypothesis that n\textsubscript{cause} is a special flavor of a nominalizer with a causative semantics is the part of the analysis which accounts for the range of possible environments in which the CEx construction can appear. In terms of restrictions on external environments, one of the notable facts is that the causing event can be expressed as a \textit{by}-phrase adjunct, but this adjunct cannot be omitted.

(63) Stelpunum var skemmtun *(af dansinum).
   the.girls.DAT was entertainment.NOM *(by the.dance)
   ‘The girls were entertained by the dancing.’

Empirically, the attested pattern can be subsumed under the broader generalization in (64).

(64) \textbf{Causing event requirement:}

\begin{quote}
Whenever a dative experiencer/benefactive argument co-occurs with a CEx predicate, a causing event must be overtly expressed.
\end{quote}

The ungrammaticality of (63) with the \textit{by}-phrase omitted needs to be explained. Syntactically, adjuncts are not expected to be obligatory, and superficially similar \textit{by}-phrases in clausal passives never are: 13

(65) Stelpunum var skemmt *(af Jóni).
   the.girls.DAT was entertained (by John)
   ‘The girls were entertained (by John).’

13 There might be interesting parallels to explore in discussions about \textit{by}-phrases being syntactic arguments rather than adjuncts. The “smuggling” analysis of the passive by Collins (2005) is one such proposal. We do not pursue this possibility here, but any solution along these lines would have to motivate why some \textit{by}-phrases are obligatory and not others.
We hypothesize that the obligatory adjunct in (63) is explained by the causative semantics. Let us assume that the syntax is as below, where the by-phrase is adjoined to PredP. In this case, we have Pred_{evt}, the variant of Pred which does not require an externally merged D in its specifier. Here, the dative is the highest argument and therefore ‘the girls’ will move to Spec,TP.

The status of the dative that raises from the noun phrase is interesting in the context of non-nominative subjects (see Thráinsson 1979; Zaenen et al. 1985; Sigurðsson 1989; Jónsson 1996; Eythórsson and Barðdal 2005; Thráinsson 2007), but exploring this matter is beyond the scope of the paper. We merely note in passing that for us the dative passes usual tests for subject-hood, including the ability to be PRO.

In order to calculate the truth conditions for the sentence, we will need to clarify the semantic status of the by-phrase. We will simply assume that (at least this) by is a semantically vacuous piece of syntactic glue, λ.e.e, and therefore (68) holds. The LF derivation of (66) proceeds as in (69-70).

\[
\text{[ the dance ] = [ by the dance ] = the dance}
\]
The *by*-phrase provides the identity of the causing event in (69) in exactly the same way as the specifier of PredP did in the Pred\textsubscript{evt}{D} variant of the sentence and existential closure of the causing event takes place at Asp (70). The truth conditions are equivalent. We can now also observe that the *by*-phrase is predicted to be obligatory. Syntactically, the adjunct in (66) can be omitted as shown in the partial tree in (71), but then Asp, which is of type \langle\langle s, t \rangle, t \rangle, cannot combine semantically with PredP which is of type \langle s, \langle s, t \rangle \rangle. The type mismatch leads to a crash at LF, appropriately predicting the ungrammaticality of omitting the *by*-phrase.

While the analysis makes the correct predictions about the construction under investigation, it does not explain why this type of a *by*-phrase is obligatory when the *by*-phrase of the passive is always optional. We leave it for future
work to develop a motivated account of the relevant differences but note that the passive involves an individual, the agent, whereas the CEx construction, perhaps importantly, involves a relationship between two events. The general issue of understanding exactly when and why elements are obligatory and when they are not is complicated. We are unable to provide conclusive answers to such general questions here but we hope that the present discussion and analysis will provide fruitful inspiration for future work on the topic.

It should be noted that the empirical generalization in (64) can also be fulfilled by a causing event that is described by an entire sentence. This is exemplified by (4), repeated as (72), where the CEx construction is part of a clause-joined PP.

(72) Þeir dönsuðu [stelpunum til skemmtunar]
   they danced [the.girls.DAT for entertainment.GEN]
   ‘They danced for the girls’ entertainment’

Syntactically, til ‘for’ takes the CEx construction as its complement and is itself able to right-adjoin to a sentence. We take the adjunction site to be VoiceP; crucially lower than the existential closure of the event. Semantically, til adds an intensional purpose component as captured semi-formally below:\(^{14}\)

\[
\begin{align*}
(73) \quad a. \quad \lbrack \mathbb{P}_{\text{plan}} \rbrack &= \lambda (s,t). \lambda e. \text{plan}(w_{\text{evt}}, p(e)) \\
               & = \lambda (s,t). \lambda e. \text{plan}(w_{\text{evt}}, p(e)) = \text{in all worlds } w' \text{ compatible with a salient plan in } w_{\text{evt}}, p(e) = 1
\end{align*}
\]

This plan semantics has the effect that successful causation is restricted to possible worlds compatible with some plan in the world of the event. We will also need another composition rule, Predicate Conjunction (Kratzer 2009; Wood 2015).

(74) **Predicate Conjunction**

If \(\alpha\) is a branching node, \(\{\beta, \gamma\}\) is the set of \(\alpha\)’s daughters, and \(\lbrack \beta \rbrack\) and \(\lbrack \gamma \rbrack\) are both in \(D_{\mathbb{G}}\), and \(f\) is a semantic type which takes \(n\) arguments, then \(\lbrack \alpha \rbrack = \lambda(a_1, ..., a_n). \lbrack \beta \rbrack \lambda(a_1, ..., a_n) \land \lbrack \gamma \rbrack \lambda(a_1, ..., a_n)\).

Predicate Conjunction is a generalized type-independent version of Predicate Modification (Heim and Kratzer 1998) which applies whenever two sisters are of the same semantic type. The operation conjoins their meaning. Now consider the syntax of (72) as analyzed in (75).

\(^{14}\) This could be translated into a more proper intensional treatment in the type of system which is developed in Fintel and Heim (2011), but this would lead to unnecessary notational complications in the current discussion.
(75)  
\[
\begin{array}{c}
\text{AspP} \\
\text{Asp} \quad \text{VoiceP} \\
\text{VoiceP} \quad \text{PP} \\
\text{John danced} \quad \text{P}_{plan} \quad \text{nP} \\
\end{array}
\]

\[\text{for} \quad \text{the girls’ entertainment}\]

The causing event is now interpreted to be the dancing of John. At the level where the purpose adjunct combines with the clause, we have two functions of type \((s,t)\), and they are conjoined in the semantics before the combined event is closed off existentially.

(76)  
\[
\begin{array}{c}
\text{PP} \\
\text{By Functional Application} \\
\lambda e.\text{plan}(w_{evt},(\exists ! e') \text{ appP}(e') \land \text{CAUSE}(e,e')) \\
\end{array}
\]

\[\text{From (73)} \quad \text{From (54)} \]

\[\lambda P_{(s,t)} \lambda e.\text{plan}(w_{evt},P(e)) \quad \lambda e.\exists ! e' [\text{appP}(e') \land \text{CAUSE}(e,e')]\]
An abbreviated LF derivation that demonstrates the crucial mechanics is shown above. The purpose PP is derived by Functional Application in (76) and it combines with VoiceP in (77) by Predicate Conjunction. Here, both events are closed of existentially, the caused event at $n$, and the causing event at Asp. The sentence is true if there was a dancing event where John was the agent, and if everything went according to the plan there was an entertainment event where the girls were experiencers and the dancing event caused the entertainment. This reflects the intuitive meaning of the sentence quite well. The causative analysis captures the truth conditions of (1-4) and it explains the obligatory by-phrase.

Furthermore, the analysis that $n_{\text{cause}}$ is a distinct type of a nominalizer, motivated by its distinct semantics, allows us to state further restrictions on the distribution of CEx in terms of syntactic selection. Notably, CEx cannot combine syntactically with the definite article (78) and the CEx nP cannot appear as the direct object of a verb (79).

(78) * Peir dönsuðu [stelpunum til skemmtunarinnar]  
    * they danced [girls.the.DAT to entertainment.the.GEN]  
    ‘They danced for the girls’ entertainment’

(79) Jón skildi skemmtun (*stelpunum).  
    John understood entertainment.ACC (*girls.the.DAT)  
    ‘John understood entertainment (for the girls).’

The ungrammaticality of (78) is accounted for if D selects $n$ but not $n_{\text{cause}}$. In syntactic positions where the $n$ cannot be causative, compatibility with Appl selection is lost, hence the unavailability of the dative argument in (79).
4.3 Section summary

This section gave an account of the positions where the CEx nP can appear. We motivated a bieventive causative analysis, and adapted it to the noun phrase by associating CAUSE with n. An obligatorily overt expression of a causing event was accounted for in terms of the causative n, and in terms of a type of Pred which requires the identity of an event to be named overtly. Spelling out the details of the formal semantics explained an obligatory by-phrase adjunct which is surprising from a purely syntactic point of view. The analysis correctly predicts that n\textit{cause} can have a different distribution from n because the two are different syntactic objects.

5 Conclusion

In this paper we argued that dative experiencers can be introduced as part of noun phrases that are not internally verbal. Applying the locality theory as implemented in Distributed Morphology, we argued that the predicates in the Icelandic Caused Experience construction are nouns, internally as well as externally. We showed that the dative experiencer in the CEx construction patterns empirically with other Spec,Appl datives and it is introduced as part of the CEx nominal structure. Finally, we accounted for the external environments under which CEx can be embedded by developing a causative analysis where the CAUSE semantics is associated with the nominalizer.

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