

# Intransitive Causatives in English: Productivity Regularities and Asymmetries<sup>1</sup>

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**Abstract.** We analyze a construction generally overlooked in the literature, with key implications for of argument structure alternations and VP-internal configuration. This construction involves an object-less causative variant of change-of-state verbs (viz. Intransitive Causative). Unlike better-known monadic (inchoative/unaccusative) alternates, this construction selects for an external argument, an inanimate entity, interpreted by default as probable cause of a change of state. Here, intransitivity correlates with noneventivity. Data suggest that this construction renders an Individual-Level Predication—basically, a subject bearing the potential to eventually trigger an associated change of state as defining property. Based on the pure stative behavior of such a construction (clearly seen in Romance and Greek, cf. Mangialavori Rasia, to appear), we show that eventivity is structurally achieved, and that stative instances of these verbs are possible in various languages (Alexiadou and Iordăchioaia, 2014; Mangialavori Rasia, 2018). Such data argue against the prevalent view that verbs undergoing causative alternation involve change of state or eventive denotation as core part of their lexical meaning and that causative interpretation is a byproduct of transitivity (Hale and Keyser, 2002). In the present paper, we shift the empirical focus to English and note that English shows a productive regularity that deserves to be explored. Visible contrasts with null object constructions and related argument structure alternations (Null/Unspecified Object Alternations, Levin, 1993 i.a.) allowed by these verbs are also revealed.

**Keywords:** argument structure, argument alternations, change of state verbs, intransitivity, stativity, causativity.

## 1. Introduction

Argument structure alternations offer a fruitful topic of research on argument structure and verb meaning—as well as on possible relations linking semantic verb classes with specific syntactic behavior patterns—providing insight into deep structural significances of natural languages. A well-known case of alternation is the one allowed by change of state (COS) verbs like *break*. These verbs participate in a major type of transitivity alternation, namely the Causative/Inchoative Alternation (see Levin, 1993; Levin and Rappaport Hovav, 1995; Schäfer, 2008; Koontz-Garboden, 2009; Rappaport Hovav and Levin, 2012; Rappaport Hovav, 2014b; Alexiadou et al., 2015, i.a.), illustrated in (1).

- (1) a. John opened the door.  
b. The door opened.
- (2) a. The toddler shattered the glass.  
b. The glass shattered.

As a result of intense research and discussion over the years, various generalizations have been

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identified, now constituting widely-embraced notions and assumptions bearing on the meaning and behavior of COS verbs. Yet, data from different Romance and non-Romance languages (e.g., Greek) have been recently argued to challenge several of these claims and generalizations (see Mangialavori Rasia, 2017, 2019, to appear).<sup>2</sup> Crucially, such empirical challenges hold up regardless of the specific approach pursued.<sup>3</sup>

For example, consistent patterns in Romance (i.e., Spanish, Italian, Catalan, Portuguese) and Greek pose a problem for the generalized assumption that the internal argument is always present in the Causative/Inchoative Alternation. They also raise questions on the subsequent conclusion that the only variable in the alternation is whether the external argument is present (either deleted, as in Levin and Rappaport Hovav, 1995 i.a., or added in the derivation, as in Hale and Keyser, 2002; Rappaport Hovav and Levin, 2012; Rappaport Hovav, 2014b, a.o.). Romance and Greek data also challenge the notion that the causative frame involves an ‘Event implication rule’ (Hale and Keyser, 2002) holding that if a cause is present, a process is always causally implicated. Such data further challenge the conception of cause(r) interpretation of the external argument depending on (a mere byproduct of) transitivity (as argued in Hale and Keyser, 1993, 2002; Zubizarreta and Oh, 2007; Rappaport Hovav, 2014b). Another corollary put into question is the principle that sole arguments in monadic frames (1b), (2b) are interpreted by default as themes (cf. the Default Linking Rule of Levin and Rappaport Hovav, 1995: 154). In this respect, consider (3).

- (3) “The three linking rules introduced so far do not account for the behavior of all single-argument verbs. They apply only to internally caused verbs, verbs of directed change, and verbs of existence and appearance. But there are monadic verbs that satisfy none of these properties. Here we assume that the default assignment for an otherwise unassigned argument is as a direct internal argument.” (Levin and Rappaport Hovav, 1995: 154)

Apparently, there are two possibilities here. Either all monadic (single-argument) occurrences of COS are expected to yield unaccusative structures (with the unique argument interpreted de facto as theme/undergoer of the designated change), or else, and insofar as unergative structures are indeed possible (according to Romance and Greek data), COS verbs would not ultimately involve the denotations that link them to such a (default unaccusative) behavior (i.e., internal causation, directed change). An interesting question then is the need to reconsider these potential conclusions—especially the first one—in the light of less-known monadic occurrences of verbs widely classified as (internal) COS verbs. In this paper, we extend the discussion to English. The data to be discussed here are still missing from the literature and the general debate on the Causative/Inchoative Alternation—as far as our knowledge goes— even if they promise interesting findings on alternative configurations available for internally-caused COS verbs.

The examples in question (4) instantiate monadic (unique argument) occurrences of verbs generally considered transitive (i.e., supporting argument structure alternations, although invariably involving an internal argument). Yet, what is crucial is that in these constructions

<sup>2</sup>That is, under the assumption that the internal argument is always present in alternates and variation comes from optional realization of the external argument. This constrains the alternation to two possible frames (dyadic transitive and unaccusative), which is the assumption that we want to discuss here.

<sup>3</sup>Essentially, the major debate on what the most adequate theoretical frame ultimately is (lexically vs. syntactically driven accounts) to account for it classically raised by the Causative/Inchoative Alternation.

the sole argument does not seem to line up with a canonical internal argument as in the Causative/Inchoative Alternation. Instead, these unique arguments—which do serve as grammatical subjects, as in unaccusative variants—are rather interpreted as a cause of the COS than as patients, as expected in monadic forms of the Causative/Inchoative Alternation (under current assumptions). Hence, they significantly deviate from (1)-(2). According to the proposed correlation between syntactic realization and argument (theta-role) identification, the instances under analysis here would involve a structure closer to an unergative frame rather than an unaccusative (inchoative) one. As we will see below, these constructions are limited to monadic frames. Moreover, they show distinct semantic properties that shift as soon as an undergoer (even null/unspecified null object) is licensed. In what follows, we will (provisionally) refer to them as Intransitive Causatives (IC), accordingly.

- (4)
- a. Smoking kills.
  - b. Bleach disinfects.
  - c. Alcohol dehydrates.
  - d. Laser light burns.
  - e. Normal dryers wrinkle.
  - f. Rice constipates.
  - g. Bleach whitens.
  - h. Wool itches.

If the above assumption happens to be true (i.e., an unergative layout with a subject interpreted by default as cause), several problems arise. First, and as anticipated, ICs would then fly in the face of central assumptions related to the Causative/Inchoative Alternation. Notably, the general assumption that the internal argument is a constant/invariable constituent across alternating frames (Hale and Keyser, 1993, 2002). They would also fly in the face of the rule predicting that unique arguments in COS verbs are by default interpreted as undergoers (Levin and Rappaport Hovav, 1995, 2005). Instead, ICs suggest that cause interpretation of unique arguments in COS verbs (especially in the internally-caused-change-of-state type, Levin and Rappaport Hovav, 1995; Rappaport Hovav and Levin, 1998; Alexiadou, 2014) is perfectly feasible—or rather, that unergative structures with verbs denoting internal causation and/or directed change (COS) are possible.

ICs also suppose a problem for the so-called Manner/Result Complementarity (Rappaport Hovav and Levin, 2010). In particular, result verbs, i.e., those verbs entailing either a COS (e.g., *break*, *kill*) or a change of location (e.g., *arrive*, *send*), have been argued to disallow unspecified or unrealized objects (Levin, 1993, 1999). Notably, Rappaport Hovav and Levin (2010) argue that if a verb encodes a COS, the theme—i.e., the undergoer of such a COS—must necessarily be given (overt) lexical-syntactic expression (further see Rappaport Hovav and Levin, 1998; Levin and Rappaport Hovav, 2013, 2014; Rappaport Hovav, 2008, 2014a, 2017; Levin, 1999, 2015, 2017). Result verbs thus contrast with manner verbs (e.g., *wipe*, *scrub*)—the opposite type on this partition—, which readily allow unspecified objects/object deletion (cf. *All last night, John swept* vs. *\*All last night, John broke*). Quite crucially, ICs would instantiate result verbs in intransitive frames with unrealized themes, as analytic data (below) indicates.

Third, ICs show (pure) stative behavior. This is somehow unexpected under the general assumption that change denotation and eventivity are part of the core semantic content lexical-

ized in the (COS) verbs relevant to the Causative/Inchoative Alternation (Rappaport Hovav and Levin, 2012; Alexiadou, 2014). Nevertheless, the stativity noted in ICs can be readily explained inasmuch as it correlates with an unergative VP configuration—and to this the absence of a null/unrealized theme is crucial—which is the structure proposed here. This is also especially important since direct mapping between semantic (event) structure and syntactic structure (argument realization) is a hallmark of the Causative/Inchoative Alternation. An unergative syntactic configuration, in line with pure stative behavior—an alternative thus far underexplored—would crucially preserve the (event-syntax) homomorphism expected under this assumption (no internal-argument-licensing structure, no denotation of COS event). Further, stativity could be directly involved in a major crosslanguage divergence setting English apart from other languages which are fully productive in this variant, like Romance. This would uncover a major cross-language asymmetry directly relevant to productivity patterns in the Causative/Inchoative Alternation and the association of certain classes of verbs with it.

The present paper is structured as follows: in Section 2, we analyze the syntax and semantics of Intransitive Causatives, as well as their aspectual properties and their relation to other argument alternations where genericity and stativity are also defining properties. In Section 3, we focus on the productivity of Intransitive Causatives and the verb classes that are productive in this respect. Section 4 concludes the paper.

## 2. The syntax and semantics of Intransitive Causatives

There are two assumptions that figure prominently in the discussion on the Causative/Inchoative Alternation. The first one is that semantics maps directly into syntax and vice versa. The second is that there is a strict, transparent correlation between (sub)eventive structure and syntactic configuration, as cursorily sketched in (5). This means that a transitive (dyadic) structure will feature two relevant subevents (CAUSE and PROCESS), while a monadic alternate is expected to feature only one subevent (i.e., the PROCESS). Given this direct (event-syntax) mapping, while a dyadic (transitive) construction will be transparently reflected by a complex (two subevents) aspectual structure, a monadic alternate would simply feature an unaccusative structure with a unique argument licensed by the process (COS) layer.

- (5) a. [DP<sub>1</sub> CAUSE [DP<sub>2</sub> BECOME [STATE]]]  
 b. [<sub>v</sub>P [DP<sub>1</sub> v' [<sub>v</sub>P EVENT [DP<sub>2</sub> V' [V<sup>o</sup>]]]]]

Further, direct (event/syntax) mapping has led to a widely-embraced assumption in constructional(ist) approaches (e.g., Hale and Keyser, 1993, 1997, 2002). The idea is that causation (and the interpretation of the subject as cause) is a purely structural consequence of transitivization (Hale and Keyser, 2002; Zubizarreta and Oh, 2007, i.a.). In other words, the prediction is that cause(r) interpretation of an argument in these verbs will only be possible in dyadic occurrences. More specifically, on such a compositional approach, the possibility to naturally interpret the subject as CAUSE depends on a further derivation. That step takes place when a second head (semantically tied to the denotation of inchoativity/change of state) is embedded under the head licensing the external argument, thus providing the verb with the ability to license an internal argument. In this sense, cause interpretation would be enabled as a result of further structural operations.<sup>4</sup>

<sup>4</sup>In principle, this also applies to the assumption that the primary structure is the unaccusative one, which is shared in approaches rather different to Hale and Keyser's (e.g., Rappaport Hovav and Levin, 2012).



- (9) Fumar (\*en / \*es) mata. (Catalan)  
 smoke.IFV NE / REFL kill.3SG.PRS

Returning to English, (10) shows standard examples of reflexive constructions linked to unaccusative structures (from Lundquist et al., 2016: 10), while (11) makes visible the clash of ICs in amenable contexts.<sup>8</sup> Further tests produce similar results; for instance, the incompatibility with (internal-argument-linked) quantifiers, with an Italian well known example (*molti* ‘many’, Cattaneo, 2008) in (12).

- (10) a. The door opened by itself.  
 b. The butter melted by itself.  
 c. The boat floats by itself.  
 d. The legs move to the beat of their own accord.
- (11) a. Alcohol dehydrates (#by itself/#of its own accord).  
 b. Rice constipates (#by itself/#of its own accord)
- (12) a. Il riso costipa [=provoca costipazione] (\*molti/\*certi). (Italian)  
 b. Rice constipates [=causes constipation] (\*many/\*certain). (English)

Finally, and quite importantly, in Romance, ICs are freely productive with unpassivizable verbs (Object-Experiencer stative like *sadden*), but which do allow reflexive/inchoative morphology (viz., clitic SE/SI). In this respect, the point raised by (14) introduces a major cross-language contrast deserving to be explored in future work, thus bringing up another important reason why ICs should be taken into serious consideration.

- (13) a. Las malas noticias (\*se) entristecen. (Spanish)  
 b. Le notizie cattive (\*si) attristano. (Italian)  
 c. Les males notícies (\*es) entristeixen. (Catalan)  
 the bad news (\*REFL/INCH) sadden  
 ‘Bad news cause sadness.’
- (14) Bad news sadden (\*themselves). (English)

Based on these observations—but also on concomitant, semantic ones, given below—we propose that in ICs an unrealized internal argument is not at stake and, further, that cause reading of the subject is crucially independent of transitivity.<sup>9</sup> Importantly, an intransitive structure follows naturally under foundational accounts of the Causative/Inchoative Alternation, such as Hale and Keyser (1992, 1993). More importantly, though, the proposed structure obtains without the need to assume additional stipulations or operations in the argument structure. Let us briefly elaborate.

In structural terms, transitivity is standardly seen as the result of a composition combining two separate heads (Hale and Keyser, 1993, 2002: 106). In contrast to derivational proposals taking either the unaccusative or the transitive frame as basic, the original mainstream derivational

<sup>8</sup>In fact, Lundquist et al. (2016: 10) conclude that “*by itself* is a test for the absence of a volitional causer and does not tell us anything directly about the causal status of” (further see Levin and Rappaport Hovav, 1995; Alexiadou et al., 2015)

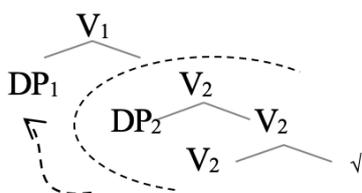
<sup>9</sup>Specifically, the importance of conceiving the external layer as a noneventive eventuality (Ramchand, 2008, i.a.) or, ultimately, as an event-unmarked one (Hale and Keyser, 1993, 2002).

proposal takes the upper layer in VP as the defective one.<sup>10</sup> To say that a verb participates in the Causative/Inchoative Alternation hence simply means that “an independent notional type of V [which] is a dynamic event” (Hale and Keyser, 1993: 71) (i.e.,  $V_2$ ) can freely appear as the complement of the monadic configuration yielded by  $v^o$  ( $V_1$ ).

From this perspective, ICs would simply instantiate original  $vP$  occurrences of COS verbs in a primary stage; that is, before further derivation is operated—basically, the composition with an inner V head or VP shell (in more Larsonian terms). This second derivation is the one that provides the verb with the ability to license an internal argument, something that in ICs would simply not happen (at least there is no evidence for it, as just shown). Under these conditions, atransitivity therefore represents a logically possible frame for verbs entering the alternation which the combinatorial system naturally allows—apparently, even in English.

In turn, the notion that it is the inner (internal-argument-licensing) V head that instantiates the dynamic (COS) event (cf. BECOME in (5) above), which is the second central assumption in most frameworks, including Hale and Keyser’s, leads us to further, consistent data linking syntactic and semantic representation. These facts will be seen next.

(15) Alcohol dehydrates [the cells].



## 2.2. Aspect and eventivity

Insofar as direct event/syntax mapping holds in causative alternations, the absence of an internal argument is predicted to correlate with absence of a process (event) component. Interestingly, this seems to be exactly the case in ICs.

Consonant with stativity, in ICs present tense does not yield habitual readings (16)-(17) (cf. Dowty, 1979; Krifka et al., 1995). Also, and unlike transitive causative variants, ICs are infelicitous in frames and contexts generally forcing eventive readings, e.g., *what-x-did* (18) or *what-happened-was* (19) (Cruse, 1973; further see Lakoff, 1976; Jackendoff, 1990; Dowty, 1991; Rappaport Hovav and Levin, 2001).

- (16) a. John disinfects the kitchen. (= John habitually disinfects the kitchen)  
 b. Bleach disinfects. ( $\neq$  Bleach habitually disinfects)
- (17) a. My dad wrinkles my clothes. (= My dad habitually wrinkles my clothes)  
 b. Normal dryers wrinkle. ( $\neq$  Normal dryers habitually wrinkle)
- (18) a. #What alcohol did was dehydrate. (cf. What John did was kill animals)  
 b. #What rice did was constipate. (cf. What the wildfire did was burn the forest)

<sup>10</sup>According to Hale and Keyser, transitive alternants are obtained through merge of an independent V ( $V_2$  in (15)) with the original monadic structure yielded by the  $v^o$  implicating the external subject ( $V_2$  on this notation). This step is the one that supplies the verb with the capacity to license an internal argument.

- (19) a. #What happened was that shaving creams irritated. (cf. What happened was that the wind broke the window)  
 b. #What happened was that bleach disinfected. (cf. What happened was that the earthquake shattered the vase)

Furthermore, ICs resist perception reports (20) and fail to be located in space (21) (see Maienborn, 2007; Rothmayr, 2009). Finally, modals give epistemic readings (22), as opposed to the clear deontic readings seen in eventive predications (23) (Copley, 2018). The latter three observations are crucial, as they not only point to a stative layout, but rather, such behaviors are specifically associated with Individual-Level Predication and, more importantly, with pure states (as opposed to Davidsonian states; see Dowty, 1979; Maienborn, 2007; Rothmayr, 2009, i.a.).<sup>11</sup>

- (20) a. #Tom saw smoking kill. (cf. Tom saw John kill the men)  
 b. #Tom saw intense light burn. (cf. Tom saw the fire burn the forest)  
 c. #Tom saw normal dryers wrinkle. (cf. Tom saw his dad wrinkle his clothes)
- (21) a. #Bleach whitens in the dry cleaners. (cf. John killed the animals in the forest)  
 b. #Rice constipates in the kitchen. (cf. The wildfire burned the forest in that region)  
 c. #Wool itches in the bedroom. (cf. The toddler broke the vase in the room)
- (22) a. Smoking must kill.  
       **OK** Smoking probably has property *x*.  
       #Smoking is under obligation to kill.  
 b. Intense light must burn.  
       **OK** Intense light probably has property *x*.  
       #Intense light is under obligation to burn.
- (23) a. John must kill the animals.  
       **OK** John is under obligation to kill the animals.  
       #John probably has property *x*.  
 b. John must burn the books.  
       **OK** John is under obligation to bum the books.  
       #John probably has property *x*.

To the extent that the derivation proposed above is correct, our prediction holds up, along with the subsequent challenge to several major generalizations on causative-alternating verbs anticipated above. Interestingly, the same transparent mapping traditionally accounting for (1)-(2) would nicely account also for this logical possibility at the same time that it shows that transitivity is not a necessary condition for causativity.<sup>12</sup> Importantly, all this follows nicely—and

<sup>11</sup>Vs. statives with mixed eventive-stative behavior (e.g., ‘davidsonian’ states, on the standard ontology). For instance, statives with mixed eventive behavior in principle allow perception reports as well (see Maienborn, 2007, i.a.), thus drawing an even deeper contrast with the alleged (pure) stativity of ICs.

<sup>12</sup>We consider stativity a welcome result not only because it confirms the expected aspectual (eventive) layout of a construction arguably lacking the internal-argument-licensing component. It is moreover important because it contrasts with the eventive (COS) denotation naturally expected in some covert transitive (say, null/unspecified object) construction. In this sense, we argue stativity—further, of a pure type—supports both the transparent semantics/syntax correlation expected from verbs undergoing Causative/Inchoative Alternation and the proposal of an unergative structure for the same reasons.

quite automatically—from (5) (see above). The relevant addenda—or, rather, caveat—, however, bears on the agreed conception of the causal component as a stative or noneventive eventuality (Ramchand, 2008, a.o.).

In any event, the findings above are crucial insofar as neither these constructions nor the possibility of pure stative behavior in verbs centrally known for allowing Causative/Inchoative Alternation have been discussed in English thus far.

### 2.3. Genericity and other argument alternations

In this section, we briefly explore English data further reflecting findings in Romance and Greek, bearing on the relation between ICs and middle constructions (Mangialavori Rasia, 2019). In English, as in Romance, ICs share two key properties with middle constructions (e.g., *This vase breaks easily*), namely stativity and genericity. While the former is directly relevant to the analysis for the reasons just exposed, the latter is relevant as it shows a property shared with other types of transitivity alternation.

Regarding genericity, ICs, like middles, do not license episodic readings and do not necessarily refer to actual events that have occurred. Instead, they report an inherent property of the subject. More specifically, ICs instantiate *dispositional generics* (Lekakou, 2005, but see also Schäfer, 2008, i.a.). Such predications are thus true in virtue of the properties inherent to the subject, rather than of whether there were actual events of the specific type in the past denoted by it. As Krifka et al. (1995: 17) note, in such cases, there is no “semantic generalization over events; rather, the generalization would appear to be over characterizing properties of individuals”. From this perspective, ICs and middles come to contrast with so-called *dispositional habituals* (Krifka et al., 1995) which “assert the existence of a pattern of regularly recurring events” (Lekakou 2008: 256); that is, the latter are true insofar as there were actual events designated by it. Contrary to ICs (24), transitive forms, in examples like (25), are true only if there have been (previous) actual events of hunting wild animals or helping people.

- (24) a. Chromic acid burns (... that is why it has never been used before).  
 b. This vase breaks easily (... that is why it is kept inside the box).
- (25) a. John helps homeless people.  
 b. US citizens hunt wild animals for fun.

In these respects, both middles and ICs seem to share the genericity of an otherwise eventive predicate. Crucially, however, in the case of ICs, the unique argument is not an internal but an external one. This means that the dispositional property is not attributed to an undergoer of a COS but rather to the cause(r)—due to some inherent property. Restriction to generic tenses is therefore criterial here (26). It helps to contend that ICs’ basic denotation is in line with the definition of so-called *dispositional causation* (Copley, 2018), as defined as in (27). Essentially, ICs also relate a disposer *y* which is the holder of some inherent property, a dispositional state *d*, a manifestation *e*’ and a non-episodic eventuality description *p*. That the disposer *y* must have the relevant property in order to be able to generate the COS denoted by the verb (Fara, 2001) naturally falls out.

- (26) a. \*Smoking killed.  
 b. #Alcohol dehydrated. (cf. Mirabilite quickly dehydrated when exposed to dry air)

- c. #Shaving creams irritated. (cf. Foam discolored when exposed to air and glue)
  - d. #Rice constipated. (cf. Check to see if it wrinkled)
- (27) Dispositional causation: (a) **y** is the holder of **e**, (b) **e** is a state that directly causes **e'** ceteris paribus, (c) **e'** instantiates **p**, (d) **y** is disposed toward **p**. (Copley, 2018: 13)

In addition, and also reflecting Romance findings (Mangialavori Rasia, to appear), genericity draws connections but also important contrasts between ICs and Characteristic Property of Agent Alternations (e.g., *This dog bites*, see Levin, 1993: 39). Specifically, two properties—genericity and the expression of a property attributed to the sentential subject—link ICs to this other type of (apparent) ‘intransitive’ alternation, but which would be more closely classed as an *unexpressed object alternation*. This follows as the patterns seen below are closer to configurations able to license an internal argument (even if null/unrealized), rather than to those expected in constructions in which this component has not been embedded under *v*. Notably, they radically differ in distinct aspect-related properties arguably following from dramatically distinct underlying argument structure reflecting the desired event/syntax transparency correspondingly. Crucially, (in)transitivity (i.e., a structure with a null/unexpressed object) correlates with (non)eventive patterns also here.

- (28) a. This dog bites (#but it hasn’t bitten anybody yet).  
 b. Stand back! This horse kicks (#but it hasn’t kicked anybody yet).  
 c. These cats scratch (#but they haven’t scratched anybody yet).

Moreover, the alternations at hand radically contrast in interpretative and selectional restrictions on the subject. While ICs take inanimate entities as subject, Characteristic Property of Agent Alternations instead select for entities that must qualify as animates—and, moreover, be agentive to some extent. In this sense, the latter type shows what Dowty (1991: 572) calls “volitional involvement in the event”, adding in turn a strong argument to our claim, i.e., that they constitute a radically different type of intransitive alternation. Further, the observation is key to the problem presented next—that is, those aspects in which English shows puzzling contrasts with Romance and Greek. Crucially, the verb type in such constructions is different: while ICs are seen in verbs classed as result verbs (COS verbs), unexpressed object alternations involve manner verbs.

### 3. The productivity of Intransitive Causatives

Finally, ICs raise a compelling question on causativity and availability of certain types of argument structure alternation. Clearly, in English not all COS verbs—or, more specifically, not all (transitive) result verbs classed as COS—are productive for IC. Here, we consider a tentative answer coming from the so-called Manner/Result Complementarity (Rappaport Hovav and Levin, 2010), especially if combined with proposals like Beavers and Zubair (2013)’s which argue that verbal roots vary with regards to the type of causing eventuality they select for—essentially, either a proper event or a state (cf. *John broke the window with a hammer* vs. *John’s stupidity killed us all*). If correct, the data discussed below could provide further insights into the role played by (verb) lexical content in the capacity to enter certain argument structure alternations, capturing relevant distributional patterns and productive asymmetries.

### 3.1. Manner/Result Complementarity and productivity asymmetries

There is a major complementary distribution between verb types. Basically, the so-called Manner/Result Complementarity builds on the premise (e.g., Rappaport Hovav and Levin, 2010, i.a.) that verbs fall in two wide semantic classes, i.e., manner verbs which encode a manner of action (but not a result state from that action), and result verbs which encode a result state (and not the manner of action that brought about such a state) instead.<sup>13</sup>

- (29) a. Manner verbs: *run, poison, suffocate, wipe, kick*, etc.  
 b. Result verbs: *kill, clean, cool, open, shatter*, etc.

Given the empirical problem at the table, the key point here is that verbs systematically failing to render ICs seem to line up with one of the classes differentiated by this complementarity, i.e., those allowing only manner interpretation. This particular condition could hence receive a natural explanation. Insofar as there is no (root-verb-linked) state interpretation available in the verb, provided the verb only makes reference to a (manner of) action, an IC—recall, an Individual-Level Property related to the potential to eventually give place to a specific state—is, apparently, not computable here. Consider the following examples:

- (30) a. #This new substance poisons.  
 b. #The heat in Africa suffocates.  
 c. #This new product washes.

If correct, an interesting observation arises concerning transitivity alternation types and (a)symmetric productivity. Quite interestingly, verbs like *kill*, which encode a result state, freely allow both ICs and Characteristic Property of Agent Alternations (cf. *This dog bites*, see Levin, 1993). Yet, availability of either alternation seems to depend on the (semantic) type of subject involved: while subjects denoting human entities readily yield Characteristic Property of Agent Alternation readings, subjects denoting inanimate entities give in turn IC interpretations. The upshot, it seems, is that that both manner denotation and agentive interpretation block IC productivity.

- (31) a. John kills (impulsively). (= Characteristic Property of Agent Alternation)  
 b. Smoking kills. (= Intransitive Causative)

Another challenge, which can be also answered on these grounds, now arises. Note that other verbs also classified as *verbs of killing* in the literature (cf. Levin, 1993) do not allow ICs. Apparently, a divergent pattern holds for the (sub)class of verbs restricted by necessarily entailing a result state (say, death). Instead, these verbs yield Characteristic Property of Agent Alternation interpretations. This seems to be the case of *murder, slaughter, massacre, assassinate, slay* and their kin (Ausensi, 2019a, submitted; see also Ausensi et al., 2020).

- (32) a. CIA spies murder silently. (= Characteristic Property of Agent Alternation)  
 b. #This poison murders. (cf. *This poison kills*). (#Intransitive Causative)

Now, insofar as certain result verbs like *kill* allow both alternations, the question emerges as to

<sup>13</sup>Rappaport Hovav and Levin make the strong claim that a single (simplex) verb cannot make reference to both a manner of action and a result state, i.e., there are no manner-result encoding verbs. Manner/Result Complementarity, in this sense, has been challenged and shown not to hold categorically, see Goldberg (2010), Beavers and Koontz-Garboden (2012, 2017), Ausensi (2019a, submitted).

whether there is coexistence or mutual exclusion of argument structure alternations. According to Ausensi (2019a) (see also Ausensi to appear, submitted), other challenging English data can be accounted for by arguing that verbs like *murder* (i.e., *murder*, *slaughter*, *massacre*, *assassinate* and *slay*) actually encode both a manner of action and a result state. Such verbs would hence deviate from *kill*, which only encodes a result state. If correct, the basic proposal might help explaining why only verbs of killing of the *kill* sort, but not of the *murder* sort, permit ICs, based on (un)availability of manner. If it is true that verbs of the *murder* sort encode a result state but also a manner of action, the conclusion follows that the latter blocks IC productivity, pointing back to observations just discussed (recall (30)). In principle, *murder* type verbs restrict the subject to a specific (Agent) type—required by the manner component. This crucially deviates from the basic structure and properties defining ICs. In ICs, the subject only needs to be interpreted as possible cause (see also Folli and Harley, 2005, 2007 on similar restrictions and subject type distribution). Therefore, verbs whose subject needs to qualify as an Agent to some extent (cf. Dowty, 1991) will only yield Characteristic Property of Agent Alternation interpretations accordingly.

Further evidence comes from other verbs also claimed to encode a manner of action and a result state. Notably, so-called *manner-of-killing verbs* (as opposed to verbs of killing that only encode death but not manner), i.e., *guillotine*, *drown*, *hang*, *crucify* and *electrocute* (see Beavers and Koontz-Garboden, 2012) do not produce ICs. For these verbs also, Characteristic Property of Agent Alternation becomes the only possible reading in frames apparently involving a unique argument.<sup>14</sup> Specifically here, a subject whose denotation is necessarily computed as ‘human’.

- (33) a. French revolutionaries guillotine (when they feel attacked).  
 b. Romans crucify (when they want to assert power).  
 c. Wardens in the US electrocute (when they have no other option).

In short, availability of different (in)transitivity alternations suggest that verbs encoding result states are potential candidates for ICs, whereas verbs that encode a manner of action component—either only manner or both manner and result—disallow ICs, yielding Characteristic Property of Agent Alternation readings in turn.

Now, consider this: arguably, result verbs are derived from roots that denote states (Rappaport Hovav and Levin, 2010, but see also Alexiadou et al., 2015; Rappaport Hovav, 2017; Levin, 2017). Apparently, the fact that result roots denote states makes verbs derived from such roots compatible with IC derivation. In principle, this stands insofar as ICs basically denote that the causer subject holds an inherent property allowing it to enter the universe of entities capable of triggering the state named by the root—i.e., insofar as *Smoking kills* can be (re)paraphrased as *Smoking (has the ability to) cause death*, and taking death as the state the root names—due to some inherent property (e.g., because tobacco contains cancer-causing chemicals). By contrast, manner verbs are taken to derive from roots that denote actions but not (potentially caused) states. This type can hence be expected to disallow ICs. In principle, there would be no state available in these verbs’ denotation (potentially) triggered by the cause(r), which is essentially what ICs predicate.

<sup>14</sup>Given that Characteristic Property of Agent, as event tests shows, does necessarily involve an inner V—and, quite probable, an unspecified/null object—, contrary to ICs.

### 3.2. Manner/Result Complementarity and unexpressed objects

As already mentioned, ICs pose a problem for Rappaport Hovav and Levin (2010)'s claim that (transitive) COS verbs disallow unspecified objects.<sup>15</sup> This particular problem is also important in the frame of Manner/Result Complementarity. Specifically, Rappaport Hovav and Levin claim that the distinction between manner and result denotation is grammatically relevant, as verbs classed as manner and result differ in argument realization. While canonical manner verbs (e.g., *sweep*, *run*) permit unspecified and nonselected objects, canonical result verbs like *dim* or *break* (apparently) do not. Quite crucially, ICs instantiate cases of result verbs with (apparent) unrealized themes (e.g., *wrinkle*, *whiten*, *burn*)—actually, without theme-licensing structure at all.<sup>16</sup>

- (34) a. All last night, John swept. MANNER  
 b. The joggers ran the pavement thin. (Levin and Rappaport Hovav 1995: 53)
- (35) a. \*All last night, John broke. RESULT  
 b. \*We dimmed the room empty. (Rappaport Hovav 2008: 23)

Interestingly, Rappaport Hovav and Levin's basic assumption can in fact provide a strong argument for assuming an unergative structure. Let us flesh out the idea. According to Rappaport Hovav (2008: 24), the difference in argument (un)realization follows from the fact that result verbs lexicalize scales of change and such scales "require that the participant whose property is measured by them be overtly realized". Result verbs would hence not permit unspecified objects or nonselected objects insofar as these involve nonrealization of a mandatory argument. Yet, syntactic evidence consistently shows that ICs behave quite differently from null/unspecified object constructions. In this sense, an unergative structure emerges as a more likely option to explain data such as ICs.

An intransitive verb configuration in keeping with unergative syntax also makes sense in semantic terms for various reasons. Namely, Levin (2017: 583) argues that the objects of result verbs must be expressed based on the principle that "to know that a state that holds requires looking at the entity it holds of", what she calls the 'Patient Realization Condition'. Result verbs therefore "cannot be found with unspecified objects or nonselected objects, nor can they be found in constructions where anything but their patient argument is the object" as a consequence of this semantic condition. In this respect, ICs are not necessarily a problem to Rappaport Hovav and Levin's claim for a simple reason: they predicate over the subject (the cause). That is, they do not necessarily counterexemplify such a principle but rather merely escape it. The argument holds also on syntactic grounds, as ICs instantiate intransitive variants of result verbs in objectless constructions with consequent semantics: the state named by the COS verb does not hold of the theme but rather of the causer—and, if any scalar property is involved related to the verb root denotation, it would be associated to the thematic role cause(r).<sup>17</sup> Thus, ICs fall outside the

<sup>15</sup>We keep the original terminology by Rappaport Hovav and Levin (2010), which is not necessarily the one embraced in our account, and which can turn out specifically problematic for a constructional framework—or else for a lexically-based theory taking these verbs not as basic transitives (e.g., basic unaccusatives, cf. Rappaport Hovav and Levin, 2012).

<sup>16</sup>Rappaport Hovav and Levin's claim that result verbs necessarily disallow nonselected and unspecified objects has been previously questioned, see Goldberg (2001); Rissman (2015); Mateu and Acedo-Matellán (2012); Ausensi (2019b, to appearb).

<sup>17</sup>Think of Romance examples like *La mantequilla engrasa ?mucho/bastante* 'Butter greases (causes greasiness)

scope of the Patient Realization Condition for semantic and for syntactic reasons: there is simply no object deletion, nonrealization nor null/unspecified internal (theme) argument licensing. Instead, ICs would provide strong counterevidence only if the Patient Realization Condition is rather held as a sweeping restriction on COS verbs, strictly limiting them to transitivity.<sup>18</sup>

The same observation can be posed for a different but closely related argument. Notably, Beavers and Koontz-Garboden (2012) point out that the key difference between manner and result verbs in argument realization actually follows from Rappaport Hovav and Levin's (2001: 779) Argument-Per-Subevent Condition, as defined in (36). From this perspective, manner and result verbs differ in their (sub)event structure. Essentially, manner verbs are simplex: they only involve one subevent (37a), i.e., an action. By contrast, result verbs would be more complex—they involve two distinct subevents: a causal eventuality and an eventive component expressing the COS (BECOME in (37b)).

(36) Argument-Per-Subevent Condition: There must be at least one argument XP in the syntax per subevent in the event structure.

- (37) a. [x ACT <ROOT>]  
 b. [ [x ACT] CAUSE [y BECOME <ROOT>] ] ]

The Argument-Per-Subevent Condition makes two predictions. First, that result verbs will disallow constructions where the patient, whose property is measured out, is not overtly expressed—which would be the case for nonselected objects or unspecified object constructions. Second, manner verbs will in turn allow nonselected objects as well as unspecified objects as they do not encode any result, and therefore do not involve an inner subevent whereby a property (result) is ascribed to a theme. Another tentative derivation, however, would be that only manner verbs can be intransitive in the sense that (36) holds only for derivational accounts taking the complex structure as basic.

Turning back to ICs, two observations emerge: first, ICs would escape the Argument-Per-Subevent-Condition for the same reasons just raised in answer to the Patient Realization Condition. Also here, ICs would contradict the condition if and only if seen as an inescapable productivity restriction, or else if internal-argument-licensing was conceived as some necessary syntactic condition on these verb roots.

Again, data clearly show that there is not a patient in ICs (whose property is measured out) which is not overtly expressed or unspecified for different semantic and syntactic reasons just summarized in relation to the Patient Realization Condition. Moreover, the basic notion behind (37a) is, ultimately, consistent with our proposal. As only the upper layer is realized in ICs it follows that a cause eventuality, correctly correlated with the presence of an external argument, will be the basic composition behind ICs, and hence the only predicational relation at stake. That is, a simplex (single) eventuality composition.

Significantly, IC productivity in English involves other relevant asymmetries which, for reasons

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a lot/enough'; and how they could, if ultimately tolerated, only be computed as gradable properties ascribed to a cause (i.e., degree to which butter bears the relevant inherent property) but not as null/unspecified quantifier (i.e., \*Butter greases many).

<sup>18</sup>Or, at least, for defective or mandatory licensing of internal arguments. Of course, this also depends on the type of VP derivation assumed (e.g., derivational vs. nonderivational accounts).

of space, we will not elaborate on in detail here.<sup>19</sup>

#### 4. Conclusion

In this paper, we focus on what we have called Intransitive Causatives, i.e., intransitive realizations of COS verbs in English. ICs are important as they pose problems for some widely-adopted assumptions in the literature on argument structure and verb alternations. Notably, the idea that sole arguments in COS verbs are defectively interpreted as themes (cf. Default Linking Rule, Levin and Rappaport Hovav, 1995, 2005). Conversely, ICs show that the interpretation of a sole argument as cause is possible and natural with these verbs, but also that non-realization of the internal argument systematically correlates with lack of COS-event instantiation (attributed to the internal-argument licensing head). This, in turn, poses a challenge and invites to a necessary reconsideration of more specific characterizations of COS verbs based on semantic and/or syntactic restrictions generally tied to argument realization. Two specific cases introduced here are the Patient Realization Condition and the Argument-Per-Subevent-Condition, where transitivity (internal-object licensing) of COS verbs and a well-known distribution—Manner/Result Complementarity—are intertwined. We note that Manner/Result Complementarity could capture important and interesting productivity restrictions seen in English, along with issues like the (un)availability or coexistence of distinct argument structure alternations for certain verb classes. Semantic properties on which such a complementarity builds could likely explain productivity patterns and regularities, whereby English visibly differs from other languages like

<sup>19</sup>There is a final issue about IC productivity here taking us back to Manner/Result Complementarity. It might be clear that not all result verbs, i.e., those that only encode a result state, allow ICs in English. In this respect, canonical result verbs like *break*, *destroy*, *shatter*, etc., seem to systematically resist ICs.

- (i) a. ??A strong gust of wind breaks. (cf. A strong gust of wind broke the windows)
- b. ??Wildfires destroy. (cf. A wildfire destroyed the city)
- c. ??Earthquakes shatter. (cf. An earthquake shattered all the plates)

To account for these patterns, we suggest that Beavers and Zubair (2013)'s hypothesis might be worth exploring. The backbone of the proposal, recall, is that verbal roots appear to select for the type of causing eventuality. In this respect, Beavers and Zubair argue that certain verbal roots are specified for the type of causing eventuality they allow for. On their account, causing eventualities fall in two types, namely events or states. They observe that there are verbal roots such as *kill* or *break* that are actually unspecified for the type of causing eventuality and therefore allow both events and states as causing eventualities. See the examples below.

- (ii) a. John killed all the citizens with this machine gun.
- b. John's stupidity killed all the citizens (as he forgot to warn them about the incoming hurricane).

Other verbal roots, such as *murder*, would be specified for a causing eventuality that is an event and therefore disallow states.

- (iii) a. John murdered all the citizens with this machine gun.
- b. #John's stupidity murdered all the citizens (as he forgot to warn them about the incoming hurricane).

A possible solution for the problematic data at hand could come from the identification of a third type of causing eventuality—say, dispositional properties—for, namely, the type of causation (dispositional) seen in ICs. A gradient would thus ensue. Verbs like *kill* would be, in principle, unspecified for the causing eventuality since they allow for events, states and dispositional properties as causing eventuality (hence, the data above). *Break* (and its kin), on the other hand, would select for either events or states but not for dispositional properties, therefore disallowing ICs. Finally, verbs like *murder* would be highly specified in the sense that only events are permitted, unproductivity of ICs automatically follows accordingly.

- (iv) a. John broke the vase with a hammer.
- b. John's irresponsibility broke the vase (as he left it out in the yard on a windy day)
- c. \*A strong gust of wind breaks.

We are not unaware that the answer is somehow stipulative and ad-hoc. Future work is needed to establish whether an additional type applies to other empirical instances or render relevant to capture wider systematicities.

Romance.

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