

Derivational timing of morphemes: Morphological rule ordering in the Armenian aorist stem

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Abstract

Cross-linguistically, morphemes are empirically robust but have few derivational analyses. We analyze the distribution of present and aorist stems in Western Armenian, an understudied Indo-European language. We show that across most of the paradigm, the aorist suffix is morphomic, i.e., purely formal. Canonically, the aorist encodes perfective aspect, but it is meaninglessly used in different paradigm cells for different conjugation classes. We analyze the data in Distributed Morphology, a post-syntactic morphological framework. We use node-sprouting to model how the spurious morphomic aorist is generated. Despite the aorist's arbitrary distribution, we find various generalizations on its use across Armenian morphology. Aorist insertion references spans delimited by phases. It applies early in the derivation, and it cyclically interacts with vocabulary insertion. It can feed suffix allomorphy, and feed or bleed morph deletion rules that are readjustment rules. In irregular verbs, the aorist marker is covert but we argue that it feeds root allomorphy and other irregular processes. In sum, the morphomic aorist is well-integrated into Armenian morphotactics, and morphomic nodes interact with other morphological operations.

1 Introduction

Inflectional paradigms tend to display patterns which are both systematic and idiosyncratic. These patterns are often called morphemes or morphomic patterns (Aronoff 1994). Morphemes lack any apparent external grounding in phonology, syntax, or semantics. To quote Trommer (2016:60), a morpheme is “a systematic morphological syncretism which does not define a (syntactically or semantically) natural class.” As such, morphemes provide key data for theories of morphology. However, most theoretical work on morphomic patterns focuses on Romance languages and in a non-derivational framework. As an empirical contribution, we describe morphomic patterns

in Western Armenian verbs. As a theoretical contribution, we integrate our analysis of Armenian morphemes within a larger post-syntactic derivational framework to morphology, Distributed Morphology (Halle & Marantz 1993; Arregi & Nevins 2012).

Armenian is an Indo-European language with two standard dialects: Western and Eastern. We focus on the conjugation system of Western Armenian, but the generalizations apply to Eastern as well (Kozintseva 1995; Dum-Tragut 2009).¹ In descriptive grammars, Armenian verbs have two stems: a present stem (1a) and the aorist stem (1b) (Kogian 1949). In regular verbs, the aorist stem involves the use of the aorist suffix \widehat{ts} . For example, for the two regular verb classes (E-Class and A-Class), the aorist is used meaningfully in the past perfective paradigm (1b) as an Aspect marker (as ASP[PFV]). However, the aorist is used meaninglessly or spurious (as ASP₀) in other contexts, such as the imperative 2PL (1c). The presence of this spurious aorist is also class-specific (1d): it surfaces in the subject participle of A-Class verbs, but not E-Class verbs, with no semantic or syntactic difference.

(1) *Illustrating aorist stems*

	E-Class 'to scratch'	A-Class 'to read'	
a. Infinitival	<i>ker-e-l</i>	<i>gart-a-l</i>	$\sqrt{-\text{TH-}\text{INF}}$
b. Past perf. 3PL	<i>ker-e-\widehat{ts}-i-n</i>	<i>gart-a-\widehat{ts}-i-n</i>	$\sqrt{-\text{TH-}\text{ASP}[\text{PFV}]-\text{T}[\text{PST}]-\text{AGR}[3\text{PL}]}$
c. Imp. 2PL	<i>ker-e-\widehat{ts}-ek</i>	<i>gart-a-\widehat{ts}-ek</i>	$\sqrt{-\text{TH-}\text{ASP}_0-\text{MOOD}[\text{IMP}].\text{AGR}[2\text{PL}]}$
d. Subj. part.	<i>ker-oy</i>	<i>gart-a-\widehat{ts}-oy</i>	$\sqrt{(-\text{TH-}\text{ASP}_0)-\text{SPTCP}}$

The distribution of the spurious aorist suffix is meaningless but systematic. We analyze the distribution of the suffix and show that it is indeed morphomic. However, it still displays morphological regularities with respect to morphological rule ordering and implicatory relationships. As an analytical framework, we assume a piece-based realization model like Distributed Morphology (Halle & Marantz 1993). Following Trommer (2016), we illustrate that DM is capable of generating morphomic patterns. We utilize insertion rules to generate a meaningless aorist suffix within specific morphological contexts. These insertion rules have recently been renamed *node sprouting* rules (Choi & Harley 2019). We argue that the spurious aorist is deeply ingrained into the morphotactics of Armenian.

The paper is organized as follows. We first present the basic data in §2 for simple regular verbs. Prototypically, the aorist or perfective suffix \widehat{ts} is a semantic marker of perfectivity, occurring only in the past tense (§2.1). However, it is used in different non-past or non-perfective contexts

¹Data is from our native judgments, corroborated with extensive paradigms can be found in Boyacioglu (2010), and accessible online from Boyacioglu & Dolatian (2020). A general analysis of the conjugation system of Armenian can be found in Dolatian & Guekguezian (accepted). Our glossing using the Leipzig glossing rules with the following additions: TH (theme), ASP₀ (spurious aorist), T (tense), PTCP (participle), SPTCP (subject participle), RPTCP (resultative participle), EPTCP (evidential participle), INCH (inchoative), LV (linking vowel), X (meaningless infix/suffix). In terms of transcription for Western Armenian, We do not mark aspiration on consonants, and we transcribe the segments /ɑ,ɛ,ɔ,ɪ,ɣ,β/ as /a,e,o,r,x,y/. When useful, glosses are placed in text with brackets.

for different classes of regular verbs (§2.2). In these contexts, the aorist suffix appears formally but does not make any semantic contribution, perfective or otherwise. When the suffix is used this way, we call this suffix the ‘spurious aorist’. When inserted, the spurious aorist can bleed other morphological rules by acting as an intervener. In §3, complex verbs like causatives and inchoatives show that the aorist can trigger or feed a host of later morphological processes, specifically suffix allomorphy.

Section §4 discusses our data in a larger theoretical framework. We establish the data as concerning morphomic nodes in §4.1. Given the aorist as morphomic, we then place node-insertion within a larger derivation grammar like DM (§4.2). We show that it displays locality conditions, bleeding and feeding relations with other morphological processes, and it interacts cyclically with vocabulary insertion and allomorphy.

Moving on to irregular verbs in §5, we reinforce the generalization that the spurious aorist is morphomic, systematic, and integrated into a derivational framework. While the spurious aorist is overt in regular verbs, irregular verbs do not display an overt aorist suffix, either meaningful or spurious. Instead, irregular verbs show other operations, such as root allomorphy. However, the contexts for these idiosyncratic operations in irregular verbs mostly line up with the contexts for the spurious aorist in regular verbs. To unify the behavior of regular and irregular verbs, we argue that the spurious aorist node is inserted in irregular verbs, just as in regular verbs (§6). For irregular verbs, the aorist morpheme or slot is not realized with an overt Vocabulary Entry, but its effects are still visible. Conclusions are in §7

2 Morphomic aorist in regular verbs

In this section, we go through the morphotactics of simple regular verbs (i.e., regular verbs without additional voice or valency suffixes). We focus on their aorist forms. The aorist suffix marks perfective aspect, as seen in past perfective verbs (§2.1). However, we display a suite of contexts where the aorist marker is added without marking perfectivity or making any other contribution, i.e., as a morphomic morph (§2.2). These contexts lack any semantic connection to perfectivity and can be combined with non-perfective semantics. Additionally, these context can vary by verb class, which is a purely morphological category. We develop a piece-based structure based on work in DM. In this structure, the morphomic or spurious aorist is generated via a node-sprouting rule.

2.1 Primary paradigms of simple verbs

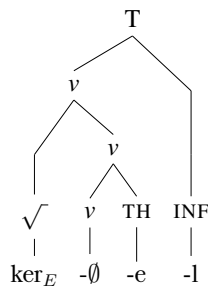
In simple regular verbs, the infinitival consists of three overt morphs: a root, theme vowel, and an infinitival suffix *-l*. There are 3 basic conjugation classes of simple regular verbs based on 3 theme vowels *-e-*, *-i-*, *-a-*. Following Dolatian & Guekguezian (accepted), we call them the E-, I-, and A-Classes. The choice of class is fundamentally root-specific, though it can sometimes be influenced by transitivity.

(2) Conjugation classes of regular verbs

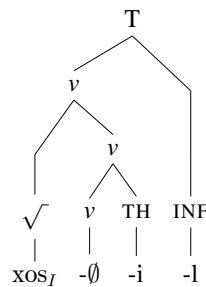
E-Class	I-Class	A-Class	$\sqrt{\text{-v-TH-INF}}$
<i>ker-\emptyset-e-l</i>	<i>xos-\emptyset-i-l</i>	<i>gart-\emptyset-a-l</i>	
‘to scratch’	‘to speak’	‘to read’	

We make the following assumptions about Armenian verb morphology, though the crucial facts of aorist morphotactics do not rest on these assumptions. The infinitival is an exponent of tense T. The theme vowel is adjoined to a covert verbalizer v (Oltra-Massuet 1999). In the narrow syntax, roots are just indexes (Harley 2014). After vocabulary insertion applies, the root’s exponent carries a diacritic feature that specifies its class. We don’t gloss the covert v for the rest of this paper. See Guekguezian & Dolatian (in press) for discussion on the morphological role of theme vowels and v .

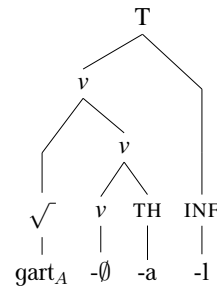
(3) a.



b.



c.



Similarly, the present and past imperfective verb forms consist of a root, a theme vowel, and a post-theme sequence of segments. This sequence encodes both tense T and agreement AGR. T and Agr are fused in the present, but can be analyzed as separate morphs in the past (Karakas et al. in press). In the past imperfective, past T is covert in the 3SG and /i/ elsewhere. As a minor complication, the -i- theme vowel changes to -e- in the past because of an independent morphological process in Armenian (Dolatian press); we do not address this further.²

(4) Present and past imperfective of E-Class, I-Class, and A-Class

	Present			Past Imperfective		
	E-Class ‘to scratch’	I-Class ‘to speak’	A-Class ‘to read’	E-Class	I-Class	A-Class
1SG	<i>ker-e-m</i>	<i>xos-i-m</i>	<i>gart-a-m</i>	<i>ker-e-i</i>	<i>xos-e-i</i>	<i>gart-a-i</i>
2SG	<i>ker-e-s</i>	<i>xos-i-s</i>	<i>gart-a-s</i>	<i>ker-e-i-r</i>	<i>xos-e-i-r</i>	<i>gart-a-i-r</i>
3SG	<i>ker-e-\emptyset</i>	<i>xos-i-\emptyset</i>	<i>gart-a-\emptyset</i>	<i>ker-e-\emptyset-r</i>	<i>xos-e-\emptyset-r</i>	<i>gart-a-\emptyset-r</i>
1PL	<i>ker-e-nk</i>	<i>xos-i-nk</i>	<i>gart-a-nk</i>	<i>ker-e-i-nk</i>	<i>xos-e-i-nk</i>	<i>gart-a-i-nk</i>
2PL	<i>ker-e-k</i>	<i>xos-i-k</i>	<i>gart-a-k</i>	<i>ker-e-i-k</i>	<i>xos-e-i-k</i>	<i>gart-a-i-k</i>
3PL	<i>ker-e-n</i>	<i>xos-i-n</i>	<i>gart-a-n</i>	<i>ker-e-i-n</i>	<i>xos-e-i-n</i>	<i>gart-a-i-n</i>
	$\sqrt{\text{-TH-T[PRS]}}/\text{AGR}$			$\sqrt{\text{-TH-T[PST]}}-\text{AGR}$		

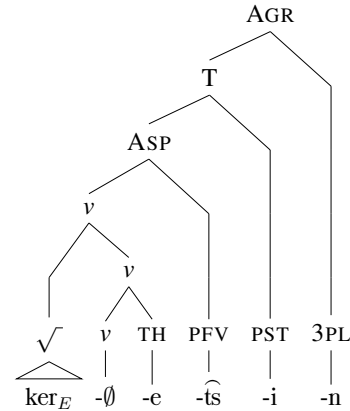
²There is an epenthetic glide between theme vowels and the past suffix -i: *ker-e[j]-i* ‘I was scratching’. We don’t transcribe this glide.

The simple past or past perfective has only a slightly different form than the past imperfective. The main difference is that the perfective suffix $\widehat{-ts}$ is inserted between the theme vowel and tense. For E-Class and A-Class, the past perfective and past imperfective use almost the same set of T/AGR suffixes. They only differ in the 3SG: $ker\text{-}e\text{-}\emptyset\text{-}r$ ‘he was scratching’ vs. $ker\text{-}e\text{-}\widehat{ts}\text{-}\emptyset\text{-}\emptyset$ ‘he scratched’.

(5) a. Past perfective of simple verbs

	E-Class 'to scratch'	I-Class 'to speak'	A-Class 'to read'
1SG	$ker\text{-}e\text{-}\widehat{ts}\text{-}i\text{-}\emptyset$	$xos\text{-}e\text{-}\widehat{ts}\text{-}a\text{-}\emptyset$	$gart\text{-}a\text{-}\widehat{ts}\text{-}i\text{-}\emptyset$
2SG	$ker\text{-}e\text{-}\widehat{ts}\text{-}i\text{-}r$	$xos\text{-}e\text{-}\widehat{ts}\text{-}a\text{-}r$	$gart\text{-}a\text{-}\widehat{ts}\text{-}i\text{-}r$
3SG	$ker\text{-}e\text{-}\widehat{ts}\text{-}\emptyset\text{-}\emptyset$	$xos\text{-}e\text{-}\widehat{ts}\text{-}a\text{-}v$	$gart\text{-}a\text{-}\widehat{ts}\text{-}\emptyset\text{-}\emptyset$
1PL	$ker\text{-}e\text{-}\widehat{ts}\text{-}i\text{-}nk$	$xos\text{-}e\text{-}\widehat{ts}\text{-}a\text{-}nk$	$gart\text{-}a\text{-}\widehat{ts}\text{-}i\text{-}nk$
2PL	$ker\text{-}e\text{-}\widehat{ts}\text{-}i\text{-}k$	$xos\text{-}e\text{-}\widehat{ts}\text{-}a\text{-}k$	$gart\text{-}a\text{-}\widehat{ts}\text{-}i\text{-}k$
3PL	$ker\text{-}e\text{-}\widehat{ts}\text{-}i\text{-}n$	$xos\text{-}e\text{-}\widehat{ts}\text{-}a\text{-}n$	$gart\text{-}a\text{-}\widehat{ts}\text{-}i\text{-}n$
	$\sqrt{\text{-TH-ASP[PFV]-T[PST]-AGR}}$		

b.



For the E-Class and A-Class, the past perfective uses a zero morph in the 3SG, and /i/ elsewhere. The /i/ morph is used throughout the past imperfective. We call this morph the primary T allomorph. In the I-Class, T has the allomorph /a/, which we call the secondary T allomorph. These allomorphs use the vocabulary insertion (VI) rules. We use double-sided arrows \leftrightarrow for VI rules. Morphs are presented in slashes /. The allomorphy is tangential to this paper, but see Dolatian & Guekguezian (accepted) and Karakaş et al. (in press) for more complete insertion rules.

(6) **Allomorphy:** Vocabulary Insertion rules for the past tense allomorphy

$T[+PST] \leftrightarrow$ /-a/ / $\sqrt{I\text{-Class}} \dots ASP[+PFV] \frown _$ (among other classes and irregular roots)
 /-∅/ / $_ \frown AGR[-1, -2, -pl]$
 /-i/ / elsewhere

The perfective suffix $\widehat{-ts}$ occurs with verbs that have past perfective semantics (Donabédian 2016). We treat suffix $\widehat{-ts}$ as a marker of perfective viewpoint aspect (ASP). Briefly, the event is complete by the time of reference, which can be modeled as event time either preceding reference time (Hornstein 1990) or being contained within reference time (Smith 1997). Armenian follows the typologically common pattern of perfective aspect only occurring with the past tense (e.g. Dahl 1985). The $\widehat{-ts}$ perfective suffix uses the following VI rule.

(7) Vocabulary Insertion rule for aorist suffix

$ASP \leftrightarrow$ /-ts-/

This perfective morph is often called the *aorist* suffix in the descriptive literature on Armenian. This is because of its diachronic origin as the sigmatic aorist marker of Proto-Indo-European.

(Kortlandt 1987, 1995, 2018; Vaux 1995; Kocharov 2018; Martirosyan 2018; Kim 2018). For illustration, we follow this practice of using the term “aorist” for the $-\widehat{ts}$ - morph unless perfective aspectuality is at stake.

2.2 Distribution of morphomic or spurious aorist

For past perfective verbs, the suffix $-\widehat{ts}$ - is meaningful. It contributes perfective semantics to the verb. In a post-syntactic framework, the aorist head ASP is added in the narrow syntax for perfective verbs. However, throughout the Armenian verb paradigm, there are many paradigm cells where the aorist suffix is present *without* contributing any semantic function. We show that the aorist suffix’s appearance in these cells does not correlate with any individual semantic parameter, and it does not add any perfective or past semantics. Rather, the appearance of the aorist suffix is sensitive to *morphological* class. We argue that such cases of the aorist are inserted after the narrow syntax. Throughout this paper, we shade table cells that use a meaningless or spurious aorist.

2.2.1 Morphomic aorist in mood paradigms

The first case we consider comes from imperatives and prohibitives (i.e., negative imperatives). For I-Class verbs, the imperative 2SG uses an overt suffix: *xos-i-r* ‘speak!’. For the E-Class and A-Class, the imperative 2SG is formed by just pronouncing a root and theme vowel without an overt imperative suffix: *ker-e* ‘scratch!’. Imperative mood is thus covert for the 2SG of E- and A-Class. But for the 2PL imperative, the aorist suffix $-\widehat{ts}$ - is added between the theme vowel and a imperative 2PL marker $-ek$: *ker-e- \widehat{ts} -ek* ‘scratch!’.³ Throughout this paper, we shade the cells with the spurious aorist.

(8) Imperatives for simple verbs

	E-Class ‘to scratch’	I-Class ‘to speak’	A-Class ‘to read’	
2SG	<i>ker-e</i>	<i>xos-i-r</i>	<i>gart-a</i>	$\sqrt{-TH(-MOOD[IMP])/AGR[2SG]}$
2PL	<i>ker-e-\widehat{ts}-ek</i>	<i>xos-e-\widehat{ts}-ek</i>	<i>gart-a-\widehat{ts}-ek</i>	$\sqrt{-TH-ASP_0-MOOD[IMP])/AGR[2PL]}$

There is no perfective viewpoint aspect in either the imperative 2SG or imperative 2PL. There is no sense that number implies perfectivity either, nor that commands imply perfectivity. In fact,

³In the imperative 2SG, some (more archaic) Western speakers use a zero morph for the I-Class along with changing the $-i$ - theme vowel to $-e$ -: *xos-e*- ‘speak (imp. 2SG)’ (Boyacioglu 2010:37). In Eastern Armenian, the imperative 2SG marker for the E-Class is $-ir$ without a theme vowel: *k^her-ir* ‘scratch!’. In fact, the imperative suffix is different for most verbs in Eastern Armenian, see paradigms in Dum-Tragut (2009:271). For the imperative 2PL, Eastern is more complicated than Western. The A-Class uses the aorist. For the E-Class, some sources say Eastern does use the aorist (Dum-Tragut 2009:271), but other sources report the aorist is restricted to colloquial non-standard Eastern (the Eastern Armenian National Corpus: Khurshudian et al. 2009).

there are no semantic differences between 2SG and 2PL imperatives other than the trivial fact that the former is addressed to one listener and the latter to multiple listeners. We are not aware of any claim in the descriptive Armenian literature that 2SG and 2PL imperative differ semantically in perfectivity or any other temporal category.

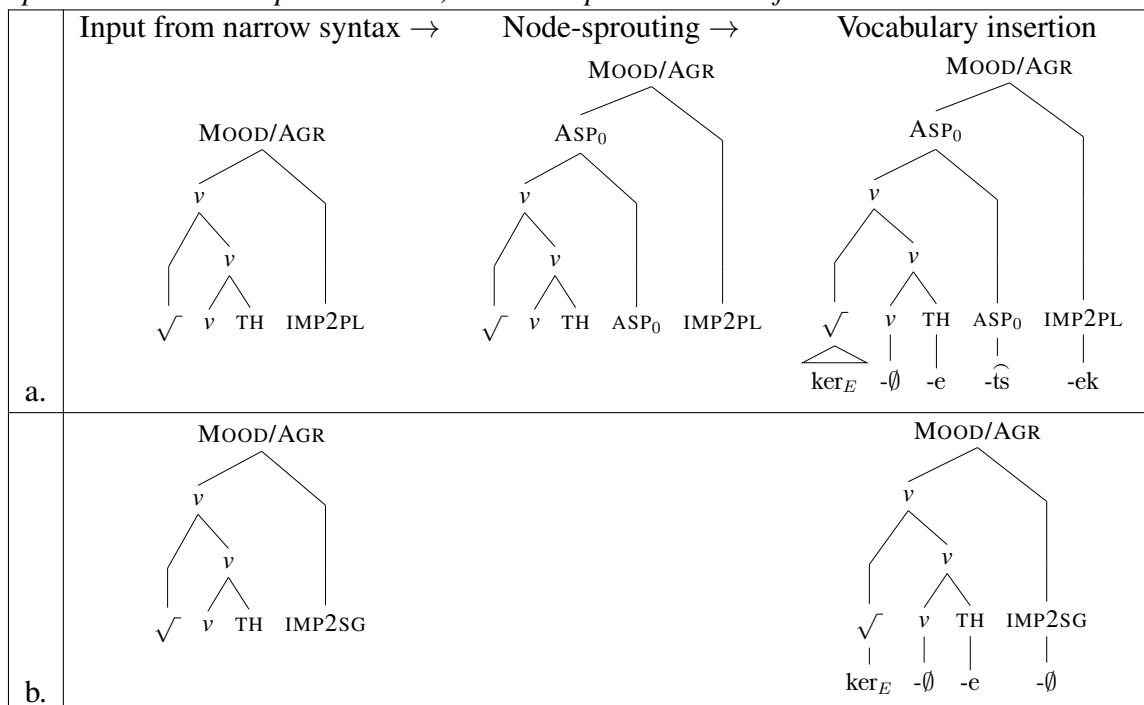
For constructions like the imperative 2PL, therefore, we argue that the use of the aorist suffix $-\widehat{ts}$ is morphomic. We call it the *spurious aorist*. In our glosses, we denote it as ASP_0 . Semantically, the morph is not connected to any aspectual meaning when it is used morphomically. In a post-syntactic, Minimalist framework to morphology like DM, this spurious aorist is absent in the narrow syntax, but inserted later in the Morphology component. Since there is no (perfective) Asp head in the narrow syntax, no associated aspectual semantics can be present at LF.

We formalize the insertion of the spurious aorist with the following rule. Insertion rules use a two-layered right-arrow \Rightarrow . Informally, we add a meaningless and purely formal aspect morpheme before the imperative 2PL suffix.

- (9) **Node-sprouting:** *Spurious aorist insertion in 2PL imperative*
 $\emptyset \Rightarrow ASP_0 / _ \neg \text{MOOD}[+\text{IMP}]/\text{AGR}[+2, +\text{PL}]$

This rule acts as a node-sprouting rule because it creates an extra terminal node (Choi & Harley 2019). The inserted node can be called a meaningless dissociated morpheme (Embick 1998, 2015). This inserted aorist then undergoes VI (7) to surface as $-\widehat{ts}$. We illustrate below the application of this rule for a 2PL imperative, and the lack of application in the 2SG imperative. For illustration, we treat VI in this context as a single non-cyclic step. We revise this later in the paper.

- (10) *Spurious aorist in imperative 2PL, but not imperative 2SG of ker-e-l ‘to scratch’*



Interestingly, although the imperative 2PL uses the spurious aorist, the prohibitive does not. Prohibitives have the template PROH- $\sqrt{\text{ }}$ -TH-AGR. The verb takes a prohibitive proclitic *mi*, which we assume is a Mood marker. After the theme vowel, agreement is marked by *-r* for the 2SG⁴ and *-k* for the 2PL.⁵

(11) *Prohibitives in simple verbs*

	E-Class 'to scratch'	I-Class 'to speak'	A-Class 'to read'
2SG	<i>mi ker-e-r</i>	<i>mi xos-i-r</i>	<i>mi gart-a-r</i>
2PL	<i>mi ker-e-k</i>	<i>mi xos-i-k</i>	<i>mi gart-a-k</i>
	PROH- $\sqrt{\text{ }}$ -TH-AGR		

Thus, even though both prohibitive and imperative mood are semantically similar, only the imperative 2PL triggers the spurious aorist. There is no evidence nor any claims in the descriptive literature on Armenian that prohibitives and imperatives differ in aspectual semantics.

The above discussion illustrated how the spurious aorist is inserted in the imperative 2PL. In the next sections we look at a larger set of constructions where the spurious suffix is added for some but not all conjugation classes. In other words, the spurious aorist is sensitive to conjugation class features, which are purely morphological (Dolatian & Guekguezian accepted; Guekguezian & Dolatian in press; Karakaş et al. in press). This necessitates the use of multiple insertion rules.

2.2.2 Morphomic aorist in participles

This section shows that the use of the spurious aorist can be class-specific. The spurious aorist is used in participles of the A-Class, but not of the E- or I-Classes.

Western Armenian verbs display three basic types of participles: the subject participle (SPTCP), resultative participle (RPTCP), and evidential participle (EPTCP). These are marked by the suffixes *-oy*, *-adź*, *-er* respectively.⁶ When added to an E-Class or I-Class verb, the participial suffixes delete the preceding theme vowel. But when added to an A-Class verb, the spurious aorist is inserted before the suffix.

⁴Some Western speakers optionally change the *-i-* to *-e-* for the 2PL prohibitive: *mi xos-e-k* (Hagopian 2005:359). In Eastern Armenian, prohibitive verbs use the same suffixes as imperatives: E-Class *mi k^her-ir*, A-Class *mi kart^h-a* (Hagopian 2005:359). In Eastern Armenian, the prohibitives use the aorist if the corresponding imperative has the aorist, e.g., in imperative 2PL of the A-Class, but variably for the imperative 2PL of the E-Class.

⁵We use the term 'proclitic' descriptively. Orthographically, there is a space between the prohibitive morpheme and the root. But phonologically, the prohibitive is always left-adjacent to the verb. It carries stress. Morphophonologically, it is likely a stressed or accented prefix.

⁶In Eastern Armenian, there is no evidential participle. Instead, Eastern Armenian uses a single participle called the resultative with the suffix *-el* instead of *-er*. It handles both evidential and non-evidential resultative perfects Dum-Tragut (2009:213), while Western Armenian uses separate participles for those purposes (Donabédian 2001).

(12) *Participles of simple verbs*

	E-Class 'to scratch'	I-Class 'to speak'	A-Class 'to read'
Subject participle	<i>ker-oy</i>	<i>xos-oy</i>	<i>gart-a-ts-oy</i>
Resultative participle	<i>ker-adz</i>	<i>xos-adz</i>	<i>gart-a-ts-adz</i>
Evidential participle	<i>ker-er</i>	<i>xos-er</i>	<i>gart-a-ts-er</i>
	√-PTCP	√-PTCP	√-TH-ASP ₀ -PTCP

Structurally, we assume that the participle suffixes realize a participle morpheme PTCP. Semantically, the subject participle denotes continuous action; it is loosely translatable to English gerunds (13a) and is more often used as a noun to denote the doer of actions (13b). The resultative participle is also called the perfect resultative and has resultative semantics (Dum-Tragut 2009). It can be used either as a modifier (13c) or in verbal periphrasis with an inflected auxiliary (13d).⁷ The evidential marks a wide-range of evidential meanings, especially such as hearsay or surprise (Donabédian 2001). It is also called the mediative participle (Donabédian 1996). It is limited to verbal constructions with an inflected auxiliary (13e).

- (13) a. *ker-oy mart-ə jev gart-a-ts-oy mart-ə*
 scratch-SPTCP man-DEF and read-TH-ASP₀-SPTCP man-DEF
 'The man who is scratching and the man who is reading.'
- b. *ker-oy-ə jev gart-a-ts-oy-ə*
 scratch-SPTCP-DEF and read-TH-ASP₀-SPTCP-DEF
 'The scratcher (= person who scratched) and the reader (= person who read).'
- c. *ker-adz verk-əs jev gart-a-ts-adz kirk-ət*
 scratch-RPTCP wound-1SG.POSS and read-TH-ASP₀-RPTCP book-2SG.POSS
 'The wound that I scratched and the book that you read.'
- d. *ker-adz e-m jev gart-a-ts-adz e-s*
 scratch-RPTCP is-PRS.1SG and read-TH-ASP₀-RPTCP is-PRS.2SG
 'I have scratched and you have read.'
- e. *ker-er e-m jev gart-a-ts-er e-s*
 scratch-EPTCP is-PRS.1SG and read-TH-ASP₀-EPTCP is-PRS.2SG
 'I have scratched and you have read (I think).'

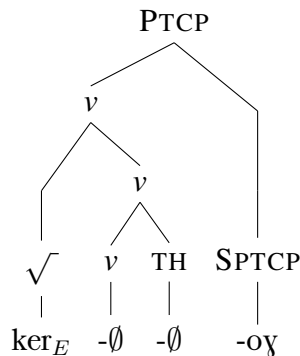
Both the resultative and evidential are semantically types of perfects and include non-imperfective viewpoint aspects (Iatridou et al. 2001). So, at first glance it is not too surprising why these participles might take the aorist for A-Class verbs. But there is no semantic sense in which the resultative and evidential participles have perfective meaning for A-Class verbs like *gart-a-l* 'to read', but not for the E-Class *ker-e-l* 'to scratch' or I-Class *xos-i-l* 'to speak'. Again, we find no

⁷The resultative participle has a complex syntactic distribution. It can form participle clauses such as in (13c). See (Ackerman & Nikolaeva 1997).

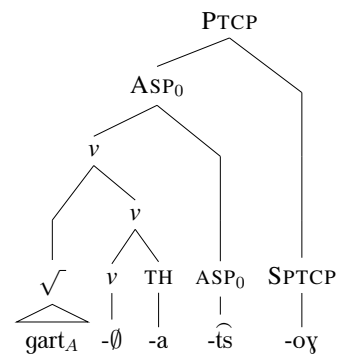
evidence and no claims in the Armenian descriptive literature for any semantic contrast between A-Class participles and their E-Class and I-Class counterparts.

Nor is there any reason to think that subject participles have perfective semantics. As we state above, subject participles denote continuous actions and thus should have *imperfective* semantics. Thus, for completely idiosyncratic reasons, the participle suffixes trigger the deletion of the theme vowel for the E-Class and I-class, but they trigger the insertion of the spurious aorist in the A-Class.

(14) a. ‘scratcher’



b. ‘reader’



We formalize this distribution with the following rules. The spurious aorist is inserted between the theme vowel of an A-Class root and the participle suffixes (15a). In contrast, we assume that there is a readjustment rule which deletes theme vowels before participle suffixes (15b). We represent morph deletion rules with a simple right-arrow \rightarrow , to distinguish them from node-sprouting (\Rightarrow) and vocabulary insertion (\leftrightarrow). The more specific aorist insertion rule bleeds the theme deletion rule for A-Class verbs, while E-Class and I-Class verbs get theme deletion as the default.

(15) *Rules for participles*

a. **Node-sprouting:** *Spurious aorist insertion in participles of A-Class*

$$\emptyset \Rightarrow \text{ASP}_0 \ / \ \sqrt{\text{A-Class}} \ \frown v \ \frown \text{TH} \ \frown _ \ \frown \text{PTCP}$$

b. **Deletion:** *Theme-vowel deletion before participles*

$$\text{TH} \rightarrow \ /-\emptyset-/ \ / \ _ \ \frown \text{PTCP}$$

We illustrate a derivation for the subject participles of an E-Class and A-Class verb. Because the spurious aorist is class-conditioned for the A-Class verb, we need to assume either of the following strategies for how to make node-sprouting access class diacritics. Either 1) vocabulary insertion and node-sprouting are cyclic such that roots (and their class diacritics) are expounded first which feeds node-sprouting, or 2) root class diacritics are accessible from the narrow syntactic input via root indexes. We assume the first cyclic approach. We treat spell-out as cyclic, bottom-out, starting from the root (Bobaljik 2000). Because theme vowels are adjuncts, we assume that they’re spelled out at the same time as little *v*.

(16) *Cyclic derivation of spurious aorist insertion in subject participles*

	E-Class ‘scratcher’				A-Class ‘reader’				
Narrow syntax input:	$\sqrt{\text{scratch}}$	<i>v</i>	TH	SPTCP	$\sqrt{\text{read}}$	<i>v</i>	TH		SPTCP
Vocabulary insertion:	ker_E	<i>v</i>	TH	SPTCP	gart_A	<i>v</i>	TH		SPTCP
Node-sprouting (15a):					gart_A	<i>v</i>	TH	ASP ₀	SPTCP
Vocabulary insertion:	ker_E	$-\emptyset$	-e	SPTCP	gart_A	$-\emptyset$	-a	ASP ₀	SPTCP
Deletion (15b):	ker_E	$-\emptyset$	$-\emptyset$	SPTCP					
Vocabulary insertion:	ker_E	$-\emptyset$	$-\emptyset$	-o γ	gart_A	$-\emptyset$	-a	$-\widehat{\text{ts}}$	SPTCP
					gart_A	$-\emptyset$	-a	$-\widehat{\text{ts}}$	-o γ

In the above cyclic derivation, root VI applies first and generates class diacritics. Node-sprouting applies as early as possible whenever its conditions are met, i.e., whenever the right class features and morphological contexts are present. The application of node-sprouting bleeds theme vowel deletion. We treat theme deletion as the deletion of morphs or exponents, via readjustment (Trommer 2012:330), thus they must apply after the target exponent is first expounded. We emphasize that the above deletion rule targets morphs, and does not delete the actual morpheme in the morphological tree (cf. unlike obliteration rules in Arregi & Nevins 2012).⁸

2.2.3 Morphomic aorist in valency derivation

Besides simple verbs, Armenian likewise has productive causativization and passivization. For these processes, we again find that the A-Class triggers the spurious aorist in some but not all contexts. Interestingly, these derived verbs show that the spurious aorist does not add any past or perfective meaning. The spurious aorist can be used alongside non-past tenses.

For causativization, the causative suffix $-\widehat{\text{ts}}\text{ən}$ is added after the root’s theme vowel. The causative takes its own *-e-* theme vowel. It does not trigger the spurious aorist.

(17) *Causativization for simple verbs*

	E-Class	I-Class	A-Class	
Infinitival	ker-e-l ‘to scratch’	xos-i-l ‘to speak’	gart-a-l ‘to read’	$\sqrt{\text{-TH-INF}}$
Causative	$\text{ker-e-}\widehat{\text{ts}}\text{ən-e-l}$ ‘to make scratch’	$\text{xos-e-}\widehat{\text{ts}}\text{ən-e-l}$ ‘to make speak’	$\text{gart-a-}\widehat{\text{ts}}\text{ən-e-l}$ ‘to make read’	$\sqrt{\text{-TH-CAUS-TH-INF}}$

⁸There is morphophonological evidence that the deleted theme vowels are expounded and overt at an earlier phonological cycle, syllabifying with the root, and then getting deleted before certain suffixes (Dolatian prepb). The theme deletion rule likewise cannot be a purely phonological rule. Although it is tempting to argue that a theme vowel is deleted to repair vowel hiatus $^*\text{ker-e-o}\gamma$, the general hiatus repair rule in Armenian is glide epenthesis: $\text{markare-ov} \rightarrow \text{markarej-ov}$ ‘prophet-INST’. Although deletion is possible when the first vowel is *i* before a derivational suffix (Dolatian 2020, 2021), deletion is not a common repair rule for *e* or *a* (Vaux 1998). In fact, epenthesis is used to resolve vowel hiatus between theme vowels and Agr suffixes. In the past imperfective ker-e-i ‘I was scratching’ (4), the surface form is pronounced with a glide [kereji].

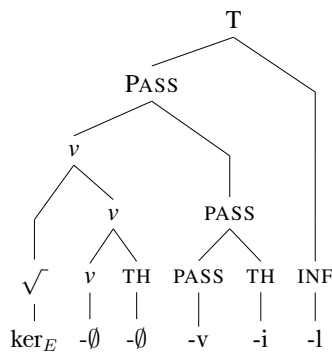
Passivization is however more complicated. For the E-Class and I-Class, passives are formed by adding the the passive suffix *-v-* after the root. The root’s theme vowel is deleted, and the passive takes its own *-i-* theme vowel. However for the A-Class, the passive suffix triggers the insertion of the spurious aorist. The root’s theme vowel is not deleted.

(18) *Passivization for simple verbs*

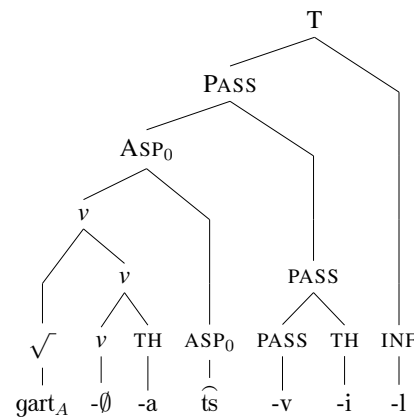
Infinitival	E-Class <i>ker-e-l</i> ‘to scratch’	I-Class <i>xos-i-l</i> ‘to speak’	A-Class <i>gart-a-l</i> ‘to read’
Passive infinitival	<i>ker-v-i-l</i> ‘to be scratched’	<i>xos-v-i-l</i> ‘to be spoken’	<i>gart-a-ts-v-i-l</i> ‘to be read’
	$\sqrt{\text{-PASS-TH-INF}}$		$\sqrt{\text{-TH-ASP}_0\text{-PASS-TH-INF}}$

Structurally, we assume the passive suffix expones a VOICE node, though our analysis does not change if the passive suffix is instead an extra little *v* layer. The passive takes its own theme vowel. We assume that it’s built over the root’s *v*, with or without a theme vowel. Evidence for these two layers of little *v* plus VOICE come from passive semantics (Haig 1982; Bruening 2013; Dolatian & Guekguezian accepted) and from passive phonology (Dolatian prepb). The aorist in the passivized A-class verb is, again, semantically meaningless. We later show that these verbs can be used with imperfective viewpoint aspect in the past imperfective.

(19) a. Passive of E-Class verb



b. Passive of A-Class verb



Morphotactically, the passive and participles trigger an analogous set of morphological rules. For A-class verbs, the rule for aorist insertion in passives is essentially the same as for participles. The passive likewise triggers the truncation of preceding theme vowels. The former bleeds the latter in A-Class verbs, just as it did with participles above.

(20) *Rules for passives in simple verbs*

a. **Node-sprouting**: *Spurious aorist insertion in passive of A-Class*

$$\emptyset \Rightarrow \text{ASP}_0 / \sqrt{\text{A-Class}} \text{ } \sim \text{v} \text{ } \sim \text{TH} \text{ } \sim \text{PASS}$$

b. **Deletion:** Theme-vowel deletion before the passive suffix
$$\text{TH} \rightarrow /-\emptyset-/ \quad / \quad _ \curvearrowright \text{PASS}$$

We illustrate a derivation for passives below. Once the A-Class root is exponed, its class features trigger node-sprouting when in the context of the passive. Theme vowels are then exponed in the same step as their hosts (little *v* or PASS). Theme deletion applies when immediately before the passive.

(21) *Cyclic derivation of spurious aorist insertion in passives*

	E-Class ‘to be scratched’						A-Class ‘to be read’						
Input:	$\sqrt{\text{scratch}}$	<i>v</i>	TH	PASS	TH	INF	$\sqrt{\text{read}}$	<i>v</i>	TH	PASS	TH	INF	
VI:	ker_E	<i>v</i>	TH	PASS	TH	INF	gart_A	<i>v</i>	TH	PASS	TH	INF	
Sprouting (20a):							gart_A	<i>v</i>	TH	ASP ₀	PASS	TH	INF
VI:	ker_E	$-\emptyset$	$-e$	PASS	TH	INF	gart_A	$-\emptyset$	$-a$	ASP ₀	PASS	TH	INF
Deletion (20b):	ker_E	$-\emptyset$	$-\emptyset$	PASS	TH	INF							
VI:	ker_E	$-\emptyset$	$-\emptyset$	$-v$	$-i$	INF	gart_A	$-\emptyset$	$-a$	$-\widehat{\text{ts}}$	PASS	TH	INF
	ker_E	$-\emptyset$	$-\emptyset$	$-v$	$-i$	$-l$	gart_A	$-\emptyset$	$-a$	$-\widehat{\text{ts}}$	$-v$	$-i$	INF
							gart_A	$-\emptyset$	$-a$	$-\widehat{\text{ts}}$	$-v$	$-i$	$-l$

As before, the aorist in A-class-derived passives is spurious, meaningless, and morphomic. There is no sense that A-class-derived passives encode any past or perfective semantics. For example, A-class-derived passive verbs can be used in the present tense while keeping the spurious aorist suffix. Furthermore, in order to actually encode the past tense, these verbs need an additional aorist suffix *after* the passive suffix. Only this second instance of the aorist suffix is actually meaningful. For easier contrast, we provide the passive of both E-Class verbs and A-Class verbs, which have the same inflectional semantics. Only the latter keeps the post-root theme vowel and uses the spurious aorist.⁹

(22) *Distribution of spurious aorist in passive A-class verbs*

	E-Class	A-Class
Active INF	$\text{ker-}e\text{-}l$ ‘to scratch’ $\sqrt{\text{-TH-INF}}$	$\text{gart-}a\text{-}l$ ‘to read’ $\sqrt{\text{-TH-INF}}$
Passive INF	$\text{ker-}v\text{-}i\text{-}l$ ‘to be scratched’ $\sqrt{\text{-PASS-TH-INF}}$	$\text{gart-}a\text{-}\widehat{\text{ts-}}v\text{-}i\text{-}l$ ‘to be read’ $\sqrt{\text{-TH-ASP}_0\text{-PASS-TH-INF}}$
Present 3PL	$\text{ker-}v\text{-}i\text{-}n$ ‘they are scratched’ $\sqrt{\text{-PASS-TH-PRS.3PL}}$	$\text{gart-}a\text{-}\widehat{\text{ts-}}v\text{-}i\text{-}n$ ‘they are read’ $\sqrt{\text{-TH-ASP}_0\text{-PASS-TH-PRS.3PL}}$
Past perf. 3PL	$\text{ker-}v\text{-}e\text{-}\widehat{\text{ts-}}a\text{-}n$ ‘they were scratched’ $\sqrt{\text{-PASS-TH-ASP[PFV]-PST-3PL}}$	$\text{gart-}a\text{-}\widehat{\text{ts-}}v\text{-}e\text{-}\widehat{\text{ts-}}a\text{-}n$ ‘they were read’ $\sqrt{\text{-TH-ASP}_0\text{-PASS-TH-ASP[PFV]-PST-3PL}}$

For clearer illustration, we show the morphological structure of passive A-Class in the past tense 3PL: $\text{gart-}a\text{-}\widehat{\text{ts-}}v\text{-}e\text{-}\widehat{\text{ts-}}a\text{-}n$. It includes a meaningless or morphomic aorist suffix (between the first

⁹Passives are I-Class verbs. Their theme vowel $-i-$ becomes $-e-$ in disparate morphological contexts, many of them due to stress shift. These verbs likewise use the past T node $/a/$. See Dolatian & Guekguezian (accepted).

theme vowel and the passive) and a meaningful aorist suffix (between the second theme vowel and past tense).

- (23) $gart_A-$ $-\emptyset$ $-a$ $-\widehat{ts}$ $-v$ $-e$ $-\widehat{ts}$ $-a$ $-n$
 $\sqrt{\text{read}}$ v TH ASP₀ PASS TH ASP[PFV] T[PST] AGR[3PL]
 ‘They were read.’

This completes the distribution of the spurious aorist in simple regular verbs. The takeaway is that the spurious aorist is inserted in specific morphological contexts without adding any perfective semantics. It is purely a morphological phenomenon, triggered by surrounding morphemes. Spurious aorist insertion cannot be explained by either syntactico-semantic or phonological analyses. And, as we have seen, this insertion can be conditioned by class features on roots, which are purely morphological. It bleeds theme deletion rules. This all shows that the spurious aorist is active in the cyclic morphological derivation.

3 Aorist and rule ordering in complex verbs

The previous section showed that for simple verbs, the spurious aorist is a morphomic entity that is absent in the narrow syntax, created in the Morphology, and fed by vocabulary insertion for class diacritics. This section adds further nuances on the derivational timing of the spurious aorist. We survey the spurious aorist in causatives (§3.1) and inchoatives (§3.2). From causatives, we show that the spurious aorist is triggered by the causative but then feeds the allomorphy of the causative. From inchoatives, we find that the spurious aorist is triggered by the inchoative, but then causes the inchoative to become covert. Both these processes reinforce the argument that node-sprouting happens as early as possible, feeding allomorphy.

3.1 Aorist and allomorphy in causatives

Causatives are E-Class verbs because they use the $-e-$ theme vowel. However, causatives do not show the same morphotactics as simple E-Class in terms of the spurious aorist. In fact, causatives trigger the spurious aorist in more contexts than simple E-verbs do, but in fewer contexts than simple A-verbs. In the presence of either the meaningful or spurious aorist, the causative suffix undergoes allomorphy.

Recall that causatives are formed by adding the causative suffix $-\widehat{ts}\partial n-$ after the root’s theme vowel. We treat the causative suffix as an E-Class morpheme because it takes the $-e-$ theme vowel. Like simple verbs, causatives do not trigger the spurious aorist in the present tense or past imperfective.

(24) *Simple paradigm of causatives*

	E-Class	Causative of E-Class
	‘to scratch’	‘to make scratch’
Infinitival	<i>ker-e-l</i>	<i>ker-e-t̂sən-e-l</i>
Present 3PL	<i>ker-e-n</i>	<i>ker-e-t̂sən-e-n</i>
Past imperfective 3PL	<i>ker-e-i-n</i>	<i>ker-e-t̂sən-e-i-n</i> √-TH-CAUS-TH-T[PST]-AGR[3PL]
Past perfective 3PL	<i>ker-e-t̂s-i-n</i>	<i>ker-e-t̂su-t̂s-i-n</i> √-TH-CAUS-ASP[PFV]-T[PST]-AGR[3PL]

In the past perfective, the aorist suffix is used as expected. A complication is that the causative suffix uses a suppletive allomorph *-t̂su-* (underlined). We analyze the data by treating *-t̂su-* as the pre-aorist allomorph of the causative (25a). The theme vowel has a covert exponent between the causative and aorist (25b).

(25) *Allomorphy: Vocabulary Insertion rules for causatives*

- a. CAUS ↔ /-*t̂su*-/ / $_ \frown \text{TH} \frown \text{ASP}$
 CAUS ↔ /-*t̂sən*-/ / elsewhere
- b. TH ↔ /- \emptyset -/ / CAUS $\frown _ \frown \text{ASP}$

Unlike simple verbs, causatives verbs use the spurious aorist in some but not all participles. Like E-Class verbs, the causative does not use a spurious aorist in subject participles. But like A-Class verbs, the causative uses a spurious aorist in resultative and evidential participles. Before the spurious aorist, the causative uses the past allomorph *-t̂su-*.¹⁰

(26) *Participles of causatives*

	E-Class ‘to scratch’	Causative of E-Class ‘to make scratch’	A-Class ‘to read’
Infinitival	<i>ker-e-l</i> √-TH-INF	<i>ker-e-t̂sən-e-l</i> √-TH-CAUS-TH-INF	<i>gart-a-l</i> √-TH-INF
Subject participle	<i>ker-oy</i> √-PTCP	<i>ker-e-t̂sən-oy</i> √-TH-CAUS-PTCP	<i>gart-a-t̂s-oy</i> √-TH-ASP ₀ -PTCP
Resultative participle	<i>ker-adz</i>	<i>ker-e-t̂su-t̂s-adz</i>	<i>gart-a-t̂s-adz</i>
Evidential participle	<i>ker-er</i> √-PTCP	<i>ker-e-t̂su-t̂s-er</i> √-TH-CAUS-ASP ₀ -PTCP	<i>gart-a-t̂s-er</i> √-TH-ASP ₀ -PTCP

¹⁰In Eastern Armenian, the causative’s past allomorph is *-t̂s^hr-*. In the past perfective, the theme vowel and aorist suffix are optional: *k^her-e-t̂s^hr-(e-t̂s^h)-i-n* [√-TH-CAUS-TH-ASP[PFV]-PST-3PL] ‘they caused to scratch’ (Hagopian 2005:358; Dum-Tragut 2009:208). The meaningful aorist can be argued to be covert in the past perfective. Whenever we expect the Western past allomorph *-t̂su-* and the spurious aorist in Western Armenian, the Eastern form uses the past allomorph *-t̂s^hr-* and no overt aorist. Contrast the A-derived causative’s resultative participle in Western *gart-a-t̂su-t̂s-adz* with Eastern *k^hart^h-a-t̂s^hr-at̂s* [√-TH-CAUS-(ASP₀)-RPTCP] (Dum-Tragut 2009:208). The imperative 2SG uses a unique Agr suffix *-u*: *kart^h-a-t̂s^hr-u*.

The above facts are captured by the following rule. The aorist is inserted in the above participle contexts. It feeds the rule for the causative allomorph \widehat{tsu} - (25a), and it feeds the rule for covert theme vowel (25b).

(27) **Node-sprouting:** *Spurious aorist insertion in causative participles*

$$\emptyset \Rightarrow \text{ASP}_0 / \text{CAUS} \frown \text{TH} \frown _ \frown \text{PTCP}[\neg \text{SPTCP}]$$

Interestingly, causative verbs show that the spurious aorist and the meaningful aorist are the same morph, not two separate homophonous morphs. The causative allomorph \widehat{tsu} - is triggered by both types of aorist suffixes: by the meaningful aorist in the past perfective, and by the spurious aorist in some participles. The follow derivation illustrates this with the causative in the past perfective and resultative participle. For space, we gloss the root $\sqrt{\text{scratch}}$ as just $\sqrt{\text{ }}$, and we skip the first two cycles for exponing the root and theme.

(28) *Cyclic derivation of spurious aorist insertion in causatives*

	'they made scratch'						'scratched (RPTCP)'							
Input:	$\sqrt{\text{ }}$	v	TH	CAUS	TH	ASP[PFV]	PST	3PL	$\sqrt{\text{ }}$	v	TH	CAUS	TH	RPTCP
Sprouting (27):									$\sqrt{\text{ }}$	v	TH	CAUS	TH	ASP ₀ RPTCP
VI:	ker _E - \emptyset -e			CAUS	TH	ASP[PFV]	PST	3PL	ker _E - \emptyset -e			CAUS	TH	ASP ₀ RPTCP
Allomorphy (25)	ker _E - \emptyset -e	\widehat{tsu}	\emptyset			ASP[PFV]	PST	3PL	ker _E - \emptyset -e	\widehat{tsu}	\emptyset			ASP ₀ RPTCP
	ker _E - \emptyset -e	\widehat{tsu}	\emptyset	\widehat{ts}			PST	3PL	ker _E - \emptyset -e	\widehat{tsu}	\emptyset	\widehat{ts}		RPTCP
	ker _E - \emptyset -e	\widehat{tsu}	\emptyset	\widehat{ts}	-i			3PL	ker _E - \emptyset -e	\widehat{tsu}	\emptyset	\widehat{ts}	-adz	
	ker _E - \emptyset -e	\widehat{tsu}	\emptyset	\widehat{ts}	-i	-n			ker _E - \emptyset -e	\widehat{tsu}	\emptyset	\widehat{ts}		

For the participle, node-sprouting applies early in the derivation because its context is present. Eventually, vocabulary insertion will reach the causative. The causative surfaces as its past allomorph \widehat{tsu} - in the context of the aorist, whether meaningful or spurious.

Matters are slightly complicated in causative imperatives and prohibitives. As for simple verbs, the prohibitive does not trigger the spurious aorist in causatives. Unsurprisingly, the imperative 2PL triggers the spurious aorist and the causative allomorph \widehat{tsu} -. However in the imperative 2SG, the spurious aorist is not used but the causative unexpectedly use the past allomorph \widehat{tsu} -, and there's no theme vowel. There is likewise an overt 2SG suffix: *ker-e-tsu-r*.

(29) *Imperatives and prohibitives of causatives*

	E-Class 'to scratch'	A-Class 'to read'	Causative of E-Class 'to make scratch'	
Infinitival	<i>ker-e-l</i>	<i>gart-a-l</i>	<i>ker-e-tsan-e-l</i>	$\sqrt{\text{ }}$ -TH-CAUS-TH-INF
IMP 2SG	<i>ker-e</i>	<i>gart-a</i>	<i>ker-e-tsu-r</i>	$\sqrt{\text{ }}$ -TH-CAUS-IMP.2SG
IMP 2PL	<i>ker-e-ts-ek</i>	<i>gart-a-ts-ek</i>	<i>ker-e-tsu-ts-ek</i>	$\sqrt{\text{ }}$ -TH-CAUS-ASP ₀ -IMP.2PL
PROH 2SG	<i>mi ker-e-r</i>	<i>mi gart-a-r</i>	<i>mi ker-e-tsan-e-r</i>	PROH $\sqrt{\text{ }}$ -TH-CAUS-2SG
PROH 2PL	<i>mi ker-e-k</i>	<i>mi gart-a-k</i>	<i>mi ker-e-tsan-e-k</i>	PROH $\sqrt{\text{ }}$ -TH-CAUS-2PL

No additional rules are needed to generate the prohibitives or imperative 2PL. For the imperative 2SG, we need to induce the use of the past allomorph of the causative $\widehat{-tsu-}$ in this context. This seems to be just arbitrary morphological conditioning. We don't provide a VI rule for the 2SG marker $-r$ or for deleting the theme vowel.

(30) *Use of past causative allomorph in 2SG imperative*

CAUS \leftrightarrow $/\widehat{-tsu-}/$ / $_ \text{MOOD/AGR}[+\text{IMP}, 2, -\text{PL}]$

Lastly, causatives can be passivized like simple verbs. The causative suffix uses a special allomorph $\widehat{-ts-}$. Like an E-Class verb, it does not trigger the spurious aorist.

(31) *Passivization of causative verbs*

	E-Class 'to scratch'	Causative of E-Class 'to make scratch'	A-Class 'to read'
Infinitival	$ker-e-l$	$ker-e-\widehat{ts}\acute{o}n-e-l$	$gart-a-l$
Passive infinitival	$ker-v-i-l$	$ker-e-\widehat{ts}-v-i-l$	$gart-a-\widehat{ts}-v-i-l$
	$\sqrt{\text{-PASS-TH-INF}}$	$\sqrt{\text{-CAUS-PASS-TH-INF}}$	$\sqrt{\text{-TH-ASP}_0\text{-PASS-TH-INF}}$

In sum, causatives show a distribution of the spurious aorist that is similar to the E-Class in some cells, but similar to the A-Class in other cells. The takeaway is further evidence that the distribution of the spurious aorist is class-specific and meaningless. Crucially, the meaningful and spurious aorists both trigger causative allomorphy. Thus the spurious aorist must be inserted early in the morphological structure in order to condition allomorphy.

3.2 Aorist and zero allomorphy in inchoatives

For causatives, we saw that they use the spurious aorist in more contexts than the E-Class, but fewer contexts than the A-Class. Whenever the spurious aorist was used, it conditioned allomorphy on the causatives. In this section, we show that inchoatives are at the other end of the spectrum. The inchoative uses the spurious aorist in more contexts than the A-Class. Derivationally, the inchoative suffix becomes covert in the context of the aorists.

Inchoative verbs are derived from nouns and adjectives by adding the sequence of morphs $-a-n-a$. The first vowel $-a$ acts as a linking vowel (LV) which is also used in compounds; less commonly the linking element is $-e$ (Dolatian & Guekguezian accepted). The nasal $-n$ is the inchoative marker and it takes its own theme vowel $-a$. We treat the inchoative as carrying the A-Class diacritic because it selects the $-a$ theme vowel.

(32) *Derivation of inchoatives*

Base	Inchoative	cf. compound
<i>urax</i> √ 'happy'	<i>urax-a-n-a-l</i> √-LV-INCH-TH-INF 'to become happy'	<i>urax-a-pajl</i> √-LV-√ 'happy-LV-shine' = 'shining with happiness'
<i>ənger</i> 'friend'	<i>ənger-a-n-a-l</i> 'to become friends'	<i>ənger-a-ser</i> 'friend-LV-love' = 'sociable'
<i>mod</i> 'near'	<i>mod-e-n-a-l</i> 'to get close'	<i>ḏzayg-e-puntf</i> 'flower-LV-bunch' = 'bouquet'

In the present and past imperfective, these verbs are conjugated the same as simple verbs. The infinitival is simply replaced by the appropriate T/Agr morpheme.

(33) *Paradigm of inchoatives*

	E-Class 'to scratch'	A-Class 'to read'	Inchoative 'to become happy'	
Infinitival	<i>ker-e-l</i>	<i>gart-a-l</i>	<i>urax-a-n-a-l</i>	√-LV-INCH-TH-INF
Present 3PL	<i>ker-e-n</i>	<i>gart-a-n</i>	<i>urax-a-n-a-n</i>	√-LV-INCH-TH-PRS.3PL
Past imperf. 3PL	<i>ker-e-i-n</i>	<i>gart-a-i-n</i>	<i>urax-a-n-a-i-n</i>	√-LV-INCH-TH-PST-3PL
Past perf. 3PL	<i>ker-e-t̂s-i-n</i>	<i>gart-a-t̂s-i-n</i>	<i>urax-a-t̂s-a-n</i>	√-LV-ASP[PFV]-PST-3PL

But in the past perfective, inchoatives display quite complicated changes. First off, inchoatives use the /a/ morph for the past T node; see Dolatian & Guekguezian (accepted). But more interestingly, the inchoative suffix (and its theme vowel) become covert in the presence of the aorist suffix. This makes the surface exponents of inchoative resemble that of A-class verbs, except for the difference in T-Agr exponents: *gart-a-t̂s-i-n* vs. *urax-a-t̂s-a-n*.

(34) *Past perfective of inchoatives*

- a. *urax* -∅ -a -∅ -∅ -t̂s -a -n
 √ -a -LV -INCH -TH -ASP[PFV] -PST -3PL
 'They became happy.'
- b. **urax* -∅ -a -n -a -t̂s -a -n
 √ -a -LV -INCH -TH -ASP[PFV] -PST -3PL

We assume a covert adjectivizer between the root and the linking vowel (Dolatian & Guekguezian accepted; Guekguezian & Dolatian in press). We treat the inchoative as a flavor of little *v*: INCH. In the past perfective, the aorist suffix causes the preceding inchoative and theme vowel to be covert. The meaning of the covert inchoative is still present in the past perfective; it is the covert inchoative which causes the word to be interpreted as a verb. It is likewise the covert inchoative which triggers the marked past T morph /a/. We analyze these facts as allomorphy conditioned by the aorist, though morph deletion is also a possible alternative.

(35) **Allomorphy:** *Allomorphy of the inchoative conditioned by the aorist*

INCH	↔	/-∅/	/	$_ \frown \text{TH} \frown \text{ASP}$
INCH	↔	/-n-/	/	elsewhere
TH	↔	/-∅-/	/	$\text{INCH} \frown _ \frown \text{ASP}$

As for the causative, we show that both the spurious aorist and the meaningful aorist trigger the above zero-exponence. Like simple A-Class verbs, inchoatives take the spurious aorist in all participles. The spurious aorist causes the inchoative to become covert.

(36) *Participles of inchoatives*

	E-Class 'to scratch'	A-Class 'to read'	Inchoative 'to become happy'
Infinitival	<i>ker-e-l</i>	<i>gart-e-l</i>	<i>urax-a-n-a-l</i>
Subject participle	<i>ker-oy</i>	<i>gart-a-t̂s-oy</i>	<i>urax-a-t̂s-oy</i>
Resultative participle	<i>ker-adz</i>	<i>gart-a-t̂s-adz</i>	<i>urax-a-t̂s-adz</i>
Evidential participle	<i>ker-er</i>	<i>gart-a-t̂s-er</i>	<i>urax-a-t̂s-er</i>
	$\sqrt{\text{-PTCP}}$	$\sqrt{\text{-TH-ASP}_0\text{-PTCP}}$	$\sqrt{\text{-LV-ASP}_0\text{-PTCP}}$

We utilize the following node-sprouting rule that inserts the spurious aorist between an inchoative and participle marker.

(37) **Node-sprouting:** *Spurious aorist insertion in participles of inchoatives*

\emptyset	\Rightarrow	ASP_0	/	$\text{INCH} \frown \text{TH} \frown _ \frown \text{PTCP}$
-------------	---------------	----------------	---	---

We show a derivation below for the inchoative resultative participle. Node-sprouting applies as early as possible because the context is met: the inchoative marker and theme vowel are underlyingly adjacent to the participle marker. Vocabulary insertion then applies root-outwards, eventually reaching the inchoative and its theme vowel. The spurious aorist triggers a covert zero for the inchoative and its theme. The aorist is then spelled-out and vocabulary insertion continues.

(38) *Cyclic derivation of spurious aorist insertion and deletion in inchoatives*

	'become happy' (resultative)						
Narrow syntax input:	$\sqrt{\text{happy}}$	<i>a</i>	LV	INCH	TH		RPTCP
Node-sprouting (37):	$\sqrt{\text{happy}}$	<i>a</i>	LV	INCH	TH	ASP_0	RPTCP
Vocabulary insertion:	<i>urax</i>	<i>a</i>	LV	INCH	TH	ASP_0	RPTCP
	<i>urax</i>	$-\emptyset$	LV	INCH	TH	ASP_0	RPTCP
	<i>urax</i>	$-\emptyset$	-a	INCH	TH	ASP_0	RPTCP
Allomorphy (35)	<i>urax</i>	$-\emptyset$	-a	$-\emptyset$	$-\emptyset$	ASP_0	RPTCP
	<i>urax</i>	$-\emptyset$	-a	$-\emptyset$	$-\emptyset$	$\widehat{\text{-ts}}$	RPTCP
	<i>urax</i>	$-\emptyset$	-a	$-\emptyset$	$-\emptyset$	$\widehat{\text{-ts}}$	$-\widehat{\text{adz}}$

In the above derivation, there is a degree of rule-ordering opacity because the inchoative triggers the spurious aorist which then makes the inchoative trigger become covert. In terms of surface exponents, the opacity resembles self-destructive feeding (Baković 2011).¹¹ As we go through the rest of the inchoative paradigm, the general takeaway will be that the inchoative morpheme triggers the spurious aorist, which then causes the inchoative morph to become covert.

As with simple A-class verbs, the spurious aorist is not inserted in prohibitives. It is inserted in imperative 2PL. But unlike simple verbs, the inchoative takes the spurious aorist in the imperative 2SG, along with an overt agreement suffix. Whenever the spurious aorist is inserted, the inchoative is deleted.

(39) *Imperative and prohibitive of inchoatives*

	E-Class 'to scratch'	A-Class 'to read'	Inchoative 'to become happy'	
IMP 2SG	<i>ker-e</i>	<i>gart-a</i>	<i>urax-a-t̂s-ir</i>	√-LV-ASP ₀ -IMP.2SG
IMP 2PL	<i>ker-e-t̂s-ek</i>	<i>gart-a-t̂s-ek</i>	<i>urax-a-t̂s-ek</i>	√-LV-ASP ₀ -IMP.2PL
2SG	<i>mi ker-e-r</i>	<i>mi gart-a-r</i>	<i>mi urax-a-n-a-r</i>	PROH √-LV-INCH-TH-2SG
2PL	<i>mi ker-e-k</i>	<i>mi gart-a-k</i>	<i>mi urax-a-n-a-k</i>	PROH √-LV-INCH-TH-2PL

To trigger the spurious aorist in the inchoative, we simply add the following rule. As before, we set aside the task of realizing the overt 2SG marker. These rules generates the spurious aorist (40), and thus feed the rule for making the inchoative covert.

(40) *Node-sprouting: Spurious aorist insertion in the imperatives and passives of inchoatives*
 $\emptyset \Rightarrow \text{ASP}_0 / \text{INCH} \sim \text{TH} \sim _ \sim \text{MOOD}[\text{+IMP}]$

As for causativization and passivization, inchoatives generally resist these operations. The most unambiguous cases involve inchoative verbs which are actually transitive: *əst-a-n-a-l* 'to receive'. Here, the inchoative morpheme is bleached of its inchoative meaning. These verbs are causativized by deleting the inchoative marker. Interestingly, they are passivized in the same way as A-Class words. The passive suffix triggers a spurious aorist which then triggers the covert inchoative.

(41) *Valency morphology over bleached 'inchoative' verbs*

	E-Class 'to scratch'	A-Class 'to read'	Inchoative 'to become happy'	
Infinitival	<i>ker-e-l</i>	<i>gart-a-l</i>	<i>əst-a-n-a-l</i>	√-LV-INCH-TH-INF
Causative	<i>ker-e-t̂sən-e-l</i>	<i>gart-a-t̂sən-e-l</i>	<i>əst-a-t̂sən-a-l</i>	√-LV-CAUS-TH-INF
Passive	<i>ker-v-i-l</i>	<i>gart-a-t̂s-v-i-l</i>	<i>əst-a-t̂s-v-i-l</i>	√-LV-ASP ₀ -PASS-TH-INF

¹¹But in terms of underlying morphological features (which trigger the feeding), it is arguably non-self-destructive (Eric Baković, p.c).

For the passive, we simple a node-sprouting rule (42a). As for the causative of inchoatives, it seems that the causative can trigger a covert inchoative without triggering a spurious aorist (42b). This seems to be just arbitrary morphological conditioning.

- (42) a. *Node-sprouting: Inserting the spurious aorist between inchoative and passive*
 $\emptyset \Rightarrow \text{ASP}_0 / \text{INCH} \frown \text{TH} \frown _ \frown \text{PASS}$
- b. *Allomorphy: Deleting the inchoative before the causative*
 $\text{INCH} \leftrightarrow /-\emptyset-/ / _ \frown \text{TH} \frown \text{CAUS}$
 $\text{TH} \leftrightarrow /-\emptyset-/ / \text{INCH} \frown _ \frown \text{CAUS}$

4 Status and derivation of morphomic nodes

This paper started out by discussing the distribution of the aorist marker in regular simple verbs. We presented two arguments. The first concerns the status of morphemes in Armenian. The second concerns the derivational timing of generating morphomic units. In brief, we argued that the distribution of the aorist was morphomic and merited a node-sprouting analysis. We then went over the entire paradigms of regular verbs in order to pinpoint when node-sprouting must apply. We discuss these two arguments in the next two subsections.

4.1 Spurious aorist is morphomic

Our first argument is that the Armenian paradigm displays a morphomic distribution of the aorist (past perfective) marker. This marker is used meaningfully in the past perfective, but idiosyncratically in other slots such as participles, imperatives, and valency-changing contexts. In these constructions, the aorist suffix is added even though it is semantically inactive, i.e., doesn't add past tense or perfective aspect. Such a distribution is morphological, and ignores any semantic or phonological motivations. This section reinforces our finding in light of debates in morphological theory.

In traditional grammars, the unmotivated use of the aorist suffix is used to motivate *stems*. Descriptive grammars label these spurious uses of the aorist as *aorist stems* to contrast them with the absence of spurious aorists in *present stems*. In a theoretical context, the use of the aorist in these contexts is morphomic (Aronoff 1994). Here, the affix is acting as a meaningless dummy morph that doesn't affect the verb's meaning.

Since their coinage in Aronoff (1994), morphemes have been a controversial phenomenon in morphological theory (Luís & Bermúdez-Otero 2016). On the hand, some argue that morphemes don't synchronically exist at all (Embick & Halle 2005). Some show that putative morphomic distributions can be reduced to systematic non-arbitrary patterns, whether from phonology (Stearns 2016) or semantics (Koontz-Garboden 2016). This is feasible on a per-language basis. For example, many Iranian languages use a present stem and a past stem (Haig 2008). In some Iranian

languages, the distribution of the stems can be semantically explained (Kalin & Atlamaz 2018; Atlamaz 2019). Crucially, this reduction is not possible in all Iranian languages (Kaye 2013).

But on the other hand, the above controversy does not mean that *all* purported cases of morphemes can be reduced to semantics or phonology. There is ample diachronic evidence for the sustainability and extension of morphemes (Maiden 2016; Enger 2019). A morpheme can gain and lose productivity during the course of language (Nevins et al. 2015). Morphemes are cross-linguistically widespread (Herce 2020b,a), can be subject to interactions amongst each other (Herce 2019), be sensitive to conjugation class (Arkadiev 2012). They can form an integral part of a language's morphotactics (Bonami & Boyé 2002; Round 2016), morphological predictability (Blevins 2006; Maiden 2021), and stratal phonology (Bermúdez-Otero 2013).

Regardless of theoretical preconceptions, most morphological theories are capable of creating morphomic patterns (Bermúdez-Otero & Luís 2016), including the use of class features and head insertion in Distributed Morphology (Trommer 2016). The concept of the morpheme can also be taken over by DM approaches to the semantic bleaching of affixes, i.e. allosemy (Marantz 2013).

For Armenian, we treat the spurious aorist as morphomic for two reasons. One is that the general meaning of the aorist affix is past tense or perfectivity (Donabédian 2016; Giorgi 2011; Plungian 2018). Neither meanings are found in cases of the spurious aorist, making it semantically vacuous. Second, the spurious aorist is conditioned by disparate constructions across some but not all conjugation classes. For example, all regular classes use the spurious aorist in the imperative 2PL but none do in the prohibitive. Among participles, the A-Class uses the spurious aorist in all participles, the causative uses it in the resultative and evidential participles, while the E-Class never does. Furthermore, the Armenian aorist is diachronically stable (Donabédian 2016:8), and there is ample work on the origin and development of the aorist (Martirosyan 2018; Kim 2018; Kortlandt 1987, 1995, 2018; Vaux 1995; Kocharov 2018).

In sum, our first argument is that the spurious aorist is a morphomic item. The next section discusses how to incorporate the generation of this morphomic node into a larger derivational framework.

4.2 Derivational nature and timing of the morphomic aorist

Our second argument builds on the first. If the spurious aorist is morphomic, then it must be added after the narrow syntax through some mechanism in the Morphology component. The spurious aorist is then expected to interact with other morphological processes. We have so far proposed multiple rules which affect or are affected by the spurious aorist. In this section, we synthesize those rules and show they show a clear rule ordering between node-sprouting and other morphological processes (Choi & Harley 2019; Georgieva et al. 2021).

To formalize the distribution of the aorist marker, we argued that the the aorist marker $\widehat{-ts-}$ is used meaningfully in the past perfective. The narrow syntax places generates an aorist marker as the Aspect head in this context. For other contexts like the imperative 2PL, the aorist is added in the

Morphology component as a form of node-sprouting. The table below lists all the node-sprouting rules that we needed for regular verbs.

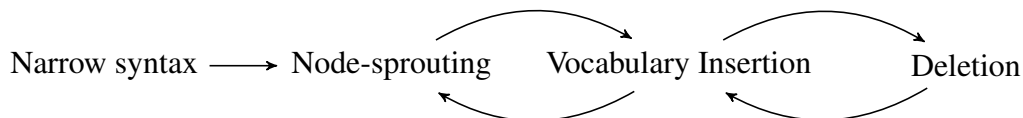
(43) *Insertion rules for the spurious aorist in regular verbs*

Imperative 2PL	$\emptyset \Rightarrow \text{ASP}_0 / _ \neg \text{MOOD}[+\text{IMP}]/\text{AGR}[+2, +\text{PL}]$
A-Class participle	$\emptyset \Rightarrow \text{ASP}_0 / \sqrt{\text{A-Class}} \neg v \neg \text{TH} \neg _ \neg \text{PTCP}$
Inchoative participle	$\emptyset \Rightarrow \text{ASP}_0 / \text{INCH} \neg \text{TH} \neg _ \neg \text{PTCP}$
Causative non-subject participles	$\emptyset \Rightarrow \text{ASP}_0 / \text{CAUS} \neg \text{TH} \neg _ \neg \text{PTCP}[-\text{SPTCP}]$
Passive of A-Class	$\emptyset \Rightarrow \text{ASP}_0 / \sqrt{\text{A-Class}} \neg v \neg \text{TH} \neg _ \neg \text{PASS}$
Passive of inchoative	$\emptyset \Rightarrow \text{ASP}_0 / \text{INCH} \neg \text{TH} \neg _ \neg \text{PASS}$
Imperative inchoative	$\emptyset \Rightarrow \text{ASP}_0 / \text{INCH} \neg \text{TH} \neg _ \neg \text{MOOD}[+\text{IMP}]$

In terms of locality, the above insertion rules reference a rather large window of morphological triggers. For example, for the passive of A-Class verbs, node-sprouting uses a window of 4 morphemes plus the inserted aorist: the root, little *v*, TH, and PASS. In terms of locality, these resemble spans (Merchant 2015). The intervening theme vowels do not however affect node-sprouting because the main trigger on the left are either the root or valency-suffixes, and the main triggers on the right are a single suffix. One could argue that theme vowels are just ignored by node-sprouting because they are structurally adjuncts (Bobaljik 2012; Gribanova 2015).

As an interesting correlation, the triggers on the left (categorized roots, valency suffixes) are arguably phase heads (Marvin 2002; Newell 2008; Embick 2015). Phases thus delimit the left-context for node-sprouting. Phases do play a role in other areas of Armenian morphology (Dolatian & Guekguezian accepted), so it is not surprising that phases could also play a role in generating morphomic nodes.

In terms of derivational timing, we argue that node-sprouting applies as early as possible, can apply cyclically with vocabulary insertion, can feed allomorphy, and it can bleed theme vowel deletion rules (readjustment rules).

(44) *Derivational pipeline for node-sprouting*

Focusing just on node-sprouting and its triggers, the above table lists some rules that reference the class of the root, such as for A-Class participles (§2.2.2). Node-sprouting in this context thus must follow vocabulary insertion of the root in a cyclic system so that class features can license node-sprouting. In the other contexts, node-sprouting can apply as the first step in the derivation because the contexts are present in the input from narrow syntax, e.g., imperative 2PL (§2.2.1).

Alongside these insertion rules, there are a set of suffixes which trigger the deletion of adjacent theme vowels. For example, the subject participle suffix *-oy* and passive suffix *-v-* trigger the

deletion of theme vowels in E-Class verbs: *ker-e-l* ‘to scratch’ vs. *ker-oy* ‘scratcher’ and *ker-v-i-l* ‘to be scratched’. These theme-deletion rules are summarized below.

(45) *Deleting theme vowels before certain suffixes*

Participle suffixes	TH → /-∅-/ / $_ \frown$ PTCP
Passive suffixes	TH → /-∅-/ / $_ \frown$ PASS

The above deletion rules target spelled-out exponents or morphs, not morphemes, as a type of readjustment rule (Trommer 2012). Crucially, the aorist insertion rules **bleed** the theme-deletion rules. For example in the A-Class, the root and participle morphemes trigger the insertion of the spurious aorist (§2.2.2). The aorist in turn intervenes between the theme vowel and participle suffix, thus blocking deletion: *gart-a-ts-oy* instead of **gart-oy* ‘reader’. No such insertion or blocking is found in the E-Class.

Besides bleeding rules, the insertion rules likewise feed other rules (§3). The inchoative and causative trigger the insertion of the spurious affix in different contexts. Both the meaningful and spurious aorist then trigger a special allomorph of the causative (see node-sprouting feeding root allomorphy in Korean: Choi & Harley 2019:1347).¹² The meaningful and spurious aorists also cause a covert allomorph for the inchoative.

(46) *Rules that are fed by the aorist*

Past allomorph of causative	CAUS ↔ /-tsu-/ / $_ \frown$ TH \frown ASP
	CAUS ↔ /-tsən-/ / elsewhere
Covert allomorphy the inchoative:	INCH ↔ /-∅-/ / $_ \frown$ TH \frown ASP
	INCH ↔ /-n-/ / elsewhere

For the causative and inchoative, we argue that the inserted aorist conditions allomorphy on morphemes that are lower than it. In the case of the causative, the causative suffix triggers node-sprouting in the presence of some participles: CAUS-TH-RPTCP ⇒ CAUS-TH-ASP₀-RPTCP. The causative then undergoes allomorphy conditioned by the aorist. This shows that node-sprouting within some location X can temporarily precede vocabulary insertion for locations X-1. Thus, node-sprouting applies as early as possible whenever its context is met.

As for the inchoative, the feeding rules resemble self-destructive feeding rules (Baković 2011) in that the inchoative morpheme triggers the aorist, which then triggers a covert inchoative morph. Inchoatives show that covert morphs are not just deleted morphemes (deleted features). If the inchoative morpheme were deleted, then it would be unable to license the right past T allomorph.

The take-away from this section is thus twofold. One that the spurious aorist is a morphomic item that is inserted via node-sprouting. Two is that node-sprouting applies early in the Morphology component, and it can cyclically interact with vocabulary insertion. The next section shows how the aorist behaves in irregular verbs, thus further reinforcing the morphological role of the aorist.

¹²The allomorph is also used in the imperative 2SG even though there is no spurious aorist. This seems to be just arbitrary morphological conditioning.

5 Covert aorists in irregular verbs

This paper so far discussed the morphomic nature of the spurious aorist for regular verbs. We found a nuanced derivational structure for node-sprouting based on just regular verbs. For regular verbs, the meaningful or spurious aorists are overt and they trigger processes such as allomorphy and theme vowel deletion.

This section discusses irregular verbs. Irregular verbs show two common characteristics. One is that irregulars do not use an overt aorist suffix, whether meaningful or spurious. Two is that these irregular verbs display irregular processes in paradigm slots that would otherwise have an overt aorist in the corresponding regular verbs. We argue that in an abstract representation, these irregular verbs contain either a meaningful or spurious aorist which triggers these various processes. This is evidence that the aorist morpheme is truly present in the morphology's hierarchical structure, after the narrow syntax but early in the derivation.

5.1 Spurious aorist can be covert

A common property of many irregular verbs is that they never show an overt aorist morph on the surface. This section discusses a handful of irregular verbs which are irregular only because they never use aorists.

In regular verbs, the infinitival and past imperfective never trigger the aorist, the perfective takes a meaningful aorist, while the imperative 2PL triggers the spurious aorist. However, there are some irregular verbs like *per-e-l* 'to bring' which idiosyncratically cannot surface with an aorist suffix. Both the meaningful and spurious aorist are absent for this verb.

(47) *No aorist for some irregulars like per-e-l 'to bring'*

	E-Class 'to scratch'		Irregular <i>per-e-l</i> 'to bring'	
Infinitival	<i>ker-e-l</i>	√-TH-INF	<i>per-e-l</i>	√-TH-INF
Past imperfective 3PL	<i>ker-e-i-n</i>	√-TH-PST-3PL	<i>per-e-i-n</i>	√-TH-PST-3PL
Past perfective 3PL	<i>ker-e-ts-i-n</i>	√-TH-ASP[PFV]-PST-3PL	<i>per-i-n</i>	√-PST-3PL
Imperative 2PL	<i>ker-e-ts-ek</i>	√-TH-ASP ₀ -IMP.2PL	<i>per-ek</i>	√-IMP.2PL

The disappearance of morphemes in irregular morphology is cross-linguistically common (Calabrese 2015). Within Armenian, irregular verbs which lack the aorist suffix are often called strong verbs (Kim 2018; Plungian 2018). Other irregular verbs which pattern like *per-e-l* include *əs-e-l* 'to say' and *təb-i-l* 'to touch'.¹³

¹³These irregular verbs differ in the choice of exponents for some cells, such as for the imperative 2SG: *per* [√bring], *əs-e* [√say-TH], *təb-i-r* [√touch-TH-IMP.2SG].

Although the aorist is not shown on the surface, there are two pieces of evidence that the aorist is present in an intermediate representation. First for the meaningful aorist, the past perfective's semantics requires an abstract ASP in the morphological structure, in order to distinguish the past perfective *per-i-n* [$\sqrt{\text{PST-3PL}}$] from the past imperfective *per-e-i-n* [$\sqrt{\text{-TH-PST-3PL}}$].

Second, in contexts where we expect the spurious aorist, the theme vowel is likewise absent: imperative 2PL *per-ek* instead of **per-e-ts-ek*. It is not the case that theme vowel is phonologically deleted for simple vowel hiatus repair. The regular repair for vowel hiatus is glide epenthesis as in the past imperfective *per-e-[j]i-n*. The fact that this *e-i* sequence is repaired with hiatus in the past imperfective, but via deletion in the past perfective *per-i-n* cannot be explained phonologically.

We argue that what happens is the following. Past perfectives have a meaningful ASP node that was generated in the narrow syntax. The imperative 2PL lacks such a node in the narrow syntax, but the it triggers node-sprouting for a spurious aorist, just like in a regular verb. The irregular root then triggers covert exponents or covert allomorphs for theme vowel and the aorist. This allomorphy applies for both the meaningful and spurious aorist. We call this allomorphic pattern *Aorist drop*.

(48) **Allomorphy: Aorist drop in some words**

$$\begin{array}{l} \text{ASP} \leftrightarrow /-\emptyset-/ \quad / \quad \sqrt{\text{---}} \text{---} v \text{---} \text{TH} \text{---} \text{---} \quad (\text{where root is irregular roots } \sqrt{\text{bring}}, \dots) \\ \text{TH} \quad \leftrightarrow /-\emptyset-/ \quad / \quad \sqrt{\text{---}} \text{---} v \text{---} \text{---} \text{---} \text{ASP} \quad (\text{where root is irregular roots } \sqrt{\text{bring}}, \dots) \end{array}$$

We illustrate the allomorphy below. with the past perfective 3PL and the imperative 2PL¹⁴

(49) **Spurious aorist insertion and aorist dropping in irregular per-e-l ‘to bring’**

	‘they brought’						‘bring (pl)!’				
Input:	$\sqrt{\text{bring}}$	v	TH	ASP[PFV]	PST	3PL	$\sqrt{\text{bring}}$	v	TH		IMP2PL
Sprouting (9):	$\sqrt{\text{bring}}$	v	TH		ASP ₀		$\sqrt{\text{bring}}$	v	TH	ASP ₀	IMP2PL
VI:	per	v	TH	ASP[PFV]	PST	3PL	per	v	TH	ASP ₀	IMP2PL
	per	- \emptyset	- \emptyset	ASP[PFV]	PST	3PL	per	- \emptyset	- \emptyset	ASP ₀	IMP2PL
Aorist drop (48)	per	- \emptyset	- \emptyset	- \emptyset		PST	per	- \emptyset	- \emptyset	- \emptyset	IMP2PL
	per	- \emptyset	- \emptyset	- \emptyset		-i	per	- \emptyset	- \emptyset	- \emptyset	-ek
	per	- \emptyset	- \emptyset	- \emptyset		-i	per	- \emptyset	- \emptyset	- \emptyset	-n

Some irregular verbs optionally show aorist dropping. Recall that regular I-Class verbs are like E-Class verbs. They use the meaningful aorist in the past perfective with the past T allomorph /a/. They trigger the spurious aorist in the imperative 2PL. However, some irregular verbs like *nast-i-l* can optionally drop the aorist in both the meaningful and spurious contexts: *nast-e-ts-a-n* or *nast-a-n* ‘they sat’. When the aorist is dropped, the preceding theme vowel is also dropped: **nast-e-a-n*.

¹⁴In the past perfective 3SG, the irregular verb *per-e-l* shows idiosyncratic use of the T-Agr allomorphs /-a-v/: *per-a-v* [$\sqrt{\text{-PST-3SG}}$] ‘he brought’. The choice of this exponent requires referencing both the root and the covert aorist morpheme. If the aorist morpheme was absent, we would incorrectly expect the verb to take the same past markers as in the past imperfective 3SG: *per-e- \emptyset -r* [$\sqrt{\text{-TH-PST-3SG}}$] ‘he was bringing’. It is the covert presence of the perfective aorist which licenses the right T and Agr morphs.

(50) *Optional aorist drop in irregular nəst-i-l ‘to sit’*

	I-Class ‘to speak’	Irregular ‘to sit’	
Infinitival	<i>xos-i-l</i>	<i>nəst-i-l</i>	√-TH-INF
Past imperfective 3PL	<i>xos-e-i-n</i>	<i>nəst-e-i-n</i>	√-TH-PST-3PL
Past perfective 3PL	<i>xos-e-ts-a-n</i>	<i>nəst-e-ts-a-n</i>	√-TH-ASP[PFV]-PST-3PL
		<i>nəst-a-n</i>	√-PST-3PL
Imperative 2PL	<i>xos-e-ts-ek</i>	<i>nəst-e-ts-ek</i>	√-(TH-ASP ₀)-IMP.2PL
		<i>nəst-ek</i>	√-IMP.2PL

For these irregular roots, the above aorist dropping rule is marked as optional. Other common irregular verbs which pattern like *nəst-i-l* include *əsgəs-i-l* ‘to start’ and *dʒən-i-l* ‘to be born’. These forms show the optional aorist only in the past perfective and imperative 2PL; they do not show the aorist elsewhere.

The takeaway from this section is that these irregular verbs on the surface either never or optionally take an aorist suffix. However, their paradigms behave as if the aorist was inserted and then made covert, along with the root’s theme vowel. More evidence for this insertion and covert allomorphy comes from the next section on infixes.

5.2 Covert spurious aorist triggers exponent deletion

For simple regular verbs, there is no intervening material between the root and theme vowel. In contrast, there is a class of around 30 irregular verbs where the root and theme vowel are separated by a nasal *ants-n-i-l* ‘to cross’ or affricate *təb-tʃ-i-l* ‘to touch’. In general, the affricate affix takes the *-i-* theme vowel, while the nasal affix can take *-e-*, *-a-*, or both depending on the root. For illustration, we call these affixes ‘infixes’.¹⁵ We call these irregulars the *infixes* verbs.

(51) *Irregular infixes verbs.*

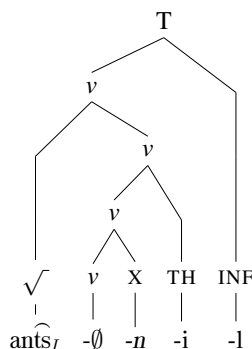
√-n-e-l	√-n-i-l	√-tʃ-i-l	√-n-e-l or √-n-a-l
<i>ar-n-e-l</i> ‘to take’	<i>has-n-i-l</i> ‘to reach’	<i>təb-tʃ-i-l</i> ‘to touch’	<i>kəd-n-e/a-l</i> ‘to find’
<i>xadz-n-e-l</i> ‘to bite’	<i>ants-n-i-l</i> ‘to cross’	<i>pax-tʃ-i-l</i> ‘to escape’	<i>itʃ-n-e/a-l</i> ‘to descend’
<i>bak-n-e-l</i> ‘to kiss’	<i>mer-n-i-l</i> ‘to die’	<i>tər-tʃ-i-l</i> ‘to fly’	<i>məd-n-e/a-l</i> ‘to enter’
	<i>hak-n-i-l</i> ‘to wear’	<i>pak-tʃ-i-l</i> ‘to stick to’	<i>hedz-n-e/a-l</i> ‘to ride’
	<i>has-n-i-l</i> ‘to reach’	<i>pəl-tʃ-i-l</i> ‘to collapse’	<i>des-n-e/a-l</i> ‘to see’

Diachronically, this nasal is a reflex of the PIE nasal infix (Greppin 1973; Hamp 1975; Kocharov

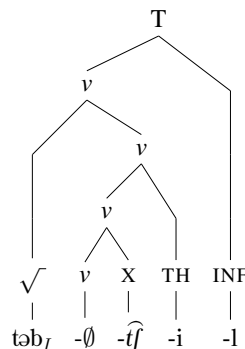
¹⁵Many of the affricate-infixes verbs have a synonymous lexeme without the infix: *təb-i-l* ‘to touch’. Some nasal-infixes words have synonymous words without the nasal, especially in Eastern Armenian: *xats-e-l* ‘to bite’. They are conjugated as irregular verbs with aorist dropping (§5.1).

2019). The affricate is another reflex of the PIE nasal (Galstyan 2004).¹⁶ Synchronically, the infixes are present in a handful of irregular verbs. They are treated as meaningless stem-extenders (Johnson 1954:81), i.e., as meaningless morphs much like a theme vowel. We treat them as adjoined to little *v*. We gloss them as just X because they don't have a meaning. The choice of allomorph for X as either *-n-* or *-tʃ-* is root-specific.

(52) a.



b.



For these irregular verbs, the infix surfaces in the infinitival, present, and past imperfective. In the past perfective, the infix is dropped, and there is no theme vowel or aorist: *xos-e-tʃ-a-n* ‘they spoke’ vs. *ants-a-n* ‘they crossed’.¹⁷ The infix and theme vowel are likewise dropped in contexts like the imperative 2PL where we would expect a spurious aorist: *ants-ek* not **ants-n-e-tʃ-ek*.

(53) *Paradigm of irregular infixed verbs*

	E-Class ‘to scratch’	I-Class ‘to speak’	Nasal-infixed ‘to cross’	Affricate-infixed ‘to touch’
Infinitival	<i>ker-e-l</i> √-TH-INF	<i>xos-i-l</i>	<i>ants-n-i-l</i> √-X-TH-INF	<i>təb-tʃ-i-l</i>
Present 3PL	<i>ker-e-n</i> √-TH-3PL	<i>xos-i-n</i>	<i>ants-n-i-n</i> √-X-TH-3PL	<i>təb-tʃ-i-n</i>
Past imperfective 3PL	<i>ker-e-i-n</i> √-TH-PST-3PL	<i>xos-e-i-n</i>	<i>ants-n-e-i-n</i> √-X-TH-PST-3PL	<i>təb-tʃ-e-i-n</i>
Past perfective 3PL	<i>ker-e-tʃ-i-n</i> √-TH-ASP[PFV]-PST-3PL	<i>xos-e-tʃ-a-n</i>	<i>ants-a-n</i> √-PST-3PL	<i>təb-a-n</i>
Imperative 2PL	<i>ker-e-tʃ-ek</i> √-TH-ASP ₀ -IMP.2PL	<i>xos-e-tʃ-ek</i>	<i>ants-ek</i> √-IMP.2PL	<i>təb-ek</i>

¹⁶Diachronically, some argue that these infixes are derived from the inchoative sequence *-a-n* (Galstyan 2004; Margaryan 1997:174), but this is debated (Greppin 1973:196).

¹⁷In the past perfective, some of these infixed verbs use the secondary past T allomorph *-a*, while some use this T allomorph only the 3SG, i.e., in a split or heteroclitic system (Stump 2006). The choice of T allomorph depends on the root.

Diachronically, the reason why both the infix and aorist are absent in the past perfective is because the presence of the infix itself marked imperfectivity (cf. Khanjian 2013:39).¹⁸ But synchronically, the infix is unproductive and bleached. As with aorist drop, we analyze these facts in the following way. The meaningful aorist is underlyingly present in the past perfective. The spurious aorist is added in the same contexts as other verbs, such as the imperative 2PL. These irregular roots trigger the insertion of a meaningless stem-extender infix (54a). The infix is made covert in the presence of the aorist (54b). We call this allomorphy rule *Infix dropping*. The exponents of the theme-vowel and aorist are also made covert whenever the aorist is present in these verbs (54c).

(54) *Allomorphy: Infix drop in aorist contexts for irregular infixed verbs*

- a. $\emptyset \Rightarrow X \quad / \quad \sqrt{\quad} \sim v \sim _ \quad$ (where root is infixed verb $\sqrt{\text{touch}}$, ...)
- b. $X \Leftrightarrow /-\emptyset-/ \quad / \quad _ \sim \text{TH} \sim \text{ASP}$
 $X \Leftrightarrow /-\widehat{\text{tj}}-/ \quad / \quad \sqrt{\quad} \sim v \sim _ \quad$ (where root is infixed verb)g
 $X \Leftrightarrow /-\text{n}-/ \quad / \quad \text{elsewhere}$
- c. $\text{TH} \Leftrightarrow /-\emptyset-/ \quad / \quad \sqrt{\quad} \sim v \sim X \sim _ \sim \text{ASP}$ (where root is infixed verb)
 $\text{ASP} \Leftrightarrow /-\emptyset-/ \quad / \quad \sqrt{\quad} \sim v \sim X \sim \text{TH} \sim _ \quad$ (where root is infixed verb)

Although the aorist does not have a surface exponent, its morphological features are still present. The features of the perfective aorist morpheme must still be present somewhere in the tree in order to license the right past allomorph /a/. We illustrate a derivation below. For space, we gloss the root $\sqrt{\text{cross}}$ as just $\sqrt{\quad}$.

(55) *Spurious aorist insertion and infix dropping in irregular $\widehat{\text{ants-n-i-l}}$ ‘to cross’*

	Past perfective 3PL ‘they crossed’						Imperative 2PL ‘cross!’						
Input:	$\sqrt{\quad}$	v	X	TH	ASP[PFV]	PST	3PL	$\sqrt{\quad}$	v	X	TH	IMP2PL	
Sprouting (9):	$\sqrt{\quad}$	v	X	TH	ASP ₀	IMP2PL		$\sqrt{\quad}$	v	X	TH	ASP ₀	IMP2PL
VI:	$\widehat{\text{ants}}$	v	X	TH	ASP[PFV]	PST	3PL	$\widehat{\text{ants}}$	v	X	TH	ASP ₀	IMP2PL
Infix drop (54)	$\widehat{\text{ants}}$	- \emptyset	- \emptyset	- \emptyset	ASP[PFV]	PST	3PL	$\widehat{\text{ants}}$	- \emptyset	- \emptyset	- \emptyset	ASP ₀	IMP2PL
	$\widehat{\text{ants}}$	- \emptyset	- \emptyset	- \emptyset	- \emptyset	PST	3PL	$\widehat{\text{ants}}$	- \emptyset	- \emptyset	- \emptyset	- \emptyset	IMP2PL
	ants	- \emptyset	- \emptyset	- \emptyset	- \emptyset	-a	3PL	ants	- \emptyset	- \emptyset	- \emptyset	- \emptyset	-ek
	ants	- \emptyset	- \emptyset	- \emptyset	- \emptyset	-a	-n						

The covertness of the infix happens in different slots in the Armenian paradigm. It occurs essentially wherever we could expect a spurious aorist. In the table below, we shade the cells where we see the spurious aorist for regular verbs and where we see infix dropping. Unlike any class of regular verbs, these irregular verbs use a ‘spurious aorist’ (= infix dropping) in the imperative 2SG and non-subject participles, but not the subject participle.¹⁹

¹⁸Coincidentally, Lithuanian has a nasal infix (Ambrazas et al. 2006:285ff). The nasal surfaces in morphemic present stems in some verbs, but not in the morphemic past stem nor the morphemic infinitive stem (Arkadieva 2012). The Lithuanian nasal infix is likely diachronically related to the Armenian nasal infix. The infix displays morphemic behavior in both languages.

¹⁹In the imperative 2SG, the post-root sequence of segments varies by lexeme. Some use the sequence *-i-r*: *mer-n-*

(56) *Distribution of spurious aorist in regular verbs vs. of infix drop in irregular verbs*

	E-Class 'to scratch'	A-Class 'to speak'	Nasal-infixed 'to cross'	Affricate-infixed 'to touch'
Infinitival	<i>ker-e-l</i> √-TH-INF	<i>gart-a-l</i>	<i>ants-n-i-l</i> √-X-TH-INF	<i>təb-tʃ-i-l</i>
Prohibitive 2sg	<i>mi ker-e-r</i>	<i>mi gart-a-r</i>	<i>mi ants-n-i-r</i>	<i>mi təb-tʃ-i-r</i>
Prohibitive 2pl	<i>mi ker-e-k</i> PROH √-TH-AGR	<i>mi gart-a-k</i>	<i>mi ants-n-i-k</i> PROH √-X-TH-AGR	<i>mi təb-tʃ-i-k</i>
Imperative 2PL	<i>ker-e-ts-ek</i> √-TH-ASP ₀ -IMP.2PL	<i>gart-a-ts-ek</i>	<i>ants-ek</i> √-IMP.2PL	<i>təb-ek</i>
Resultative participle	<i>ker-adz</i>	<i>gart-a-ts-adz</i>	<i>ants-adz</i>	<i>təb-adz</i>
Evidential participle	<i>ker-er</i> √-PTCP	<i>gart-a-ts-er</i> √-TH-ASP ₀ -PTCP	<i>ants-er</i> √-PTCP	<i>təb-er</i>
Subject participle	<i>ker-oγ</i> √-PTCP	<i>gart-a-ts-oγ</i> √-TH-ASP ₀ -PTCP	<i>ants-n-oγ</i> √-X-PTCP	<i>təb-tʃ-oγ</i>
Imperative 2SG	<i>ker-e</i> √-PTCP	<i>gart-a</i>	<i>ants-i-r</i> √-TH-IMP.2SG	<i>təb-i-r</i>

Thus, the distribution of irregular infix dropping is correlated with the presence of the spurious aorist in regular verbs. To explain this generalization for infix dropping, we simply need to assume that a spurious aorist is inserted in the above contexts. The aorist then triggers the covertness of both itself and the infix. Aorist insertion thus feeds infix deletion.

(57) **Node-sprouting:** *Spurious aorist insertion in non-subject participles and imperatives for irregular infixed verbs*

- ∅ ⇒ ASP₀ / √ ◡ v ◡ X ◡ TH ◡ _ ◡ PTCP[¬SPTCP] (where root is infixed verb)
 ∅ ⇒ ASP₀ / √ ◡ v ◡ X ◡ TH ◡ _ ◡ MOOD[+IMP] (where root is infixed verb)

Furthermore, some of these irregular verbs license causatives or passives. In general, the passive -v- does not trigger infix dropping, while the causative -tsən- does. But there are exceptions and variation. Infix dropping in the causative can sometimes happen without also deleting the theme vowel. These irregularities are unlike the distribution of the spurious aorist in any regular verb.²⁰

i-l 'to die' vs. *mer-i-r* 'die!'. Others use the bare root: *ar-n-e-l* 'to take' and *ar* 'take!'. Others can use either option depending on the speaker: *xadz-n-e-l* 'to bite' and *xadz(-i-r)* 'bite!'. But regardless of what agreement exponent or theme exponent is used, the infix is dropped.

²⁰Note the passive triggers schwa epenthesis after a consonant cluster: *des-n[ə]-v-i-l* 'to be seen' (Dolatian prepb).

(58) *Distribution of spurious aorist vs. infix drop in derived verbs*

	Usual forms	Varied forms
Infinitival	‘to touch’ ‘to reach’ <i>təb-tʃ-i-l</i> <i>has-n-i-l</i> √-X-TH-INF	‘to wear’ ‘to see’ ‘to descend’ ‘to flee’ <i>hak-n-i-l</i> <i>des-n-e-l</i> <i>itʃ-n-e-l</i> <i>pax-tʃ-i-l</i> √-X-TH-INF
Passive	<i>təb-tʃə-v-i-l</i> √-X-PASS-TH-INF	<i>hak-(nə)-v-i-l</i> <i>des-nə-v-i-l</i> √-(X)-PASS-TH-INF
Causative	<i>təb-tʃən-e-l</i> <i>has-tʃən-e-l</i> √-CAUS-TH-INF	<i>hak-tʃən-e-l</i> <i>des-(n)-e-tʃən-e-l</i> <i>itʃ-e-tʃən-e-l</i> <i>pax-(tʃ-e)-tʃən-e-l</i> √-(X)-(TH)-CAUS-TH-INF

For imperatives and participles, infix dropping is exceptionless. But causatives and passives present variable behavior. Causativization variably triggers infix dropping in irregular infixed verbs on a lexeme-by-lexeme basis; whereas causatives never spurious aorist insertion for regular verbs. We don’t formalize their insertion rules.

Thus, these infixed verbs drop their infix in a diverse set of morphological contexts. Except for causative constructions, the infix is dropped exactly when we could predict a meaningful or spurious aorist in a regular verb. We argue that it is the covert presence of the aorist which triggers the covert infix.

5.3 Covert spurious aorist feeds root suppletion

Besides irregular processes, Armenian has a handful of suppletive verbs. The distribution of root allomorphs parallels the distribution of the overt spurious aorist in regular verbs, and of the covert spurious aorist in other irregular verbs. We argue that the covert aorist feeds root allomorphy, whether as a meaningful or spurious aorist.

Among suppletive verbs, there are two subclasses which we call Suppletive Class A and Suppletive Class B. Representative examples are *dan-i-l* ‘to send’ and *əll-a-l* ‘to be’ respectively. In the infinitival, present, and past imperfective, these two verbs use the elsewhere allomorphs *dan-*, *əll-* respectively. But in the past perfective, they use the marked allomorphs *dar-*, *jeɣ-* (underlined). Similar to the previously discussed irregular verbs, the presence of the marked allomorph blocks the theme vowel and aorist suffix. The marked allomorph is likewise used whenever we expect a spurious aorist, such as the imperative 2PL.

(59) *Paradigm of suppletive verbs*

	I-Class ‘to speak’		Suppletive A ‘to send’	Suppletive B ‘to be’	
Infinitival	<i>xos-i-l</i>	√-TH-INF	<i>dan-i-l</i>	<i>əll-a-l</i>	√-TH-INF
Present 3PL	<i>xos-i-n</i>	√-TH-3PL	<i>dan-i-n</i>	<i>əll-a-n</i>	√-TH-3PL
Past imperf. 3PL	<i>xos-e-i-n</i>	√-TH-PST-3PL	<i>dan-e-i-n</i>	<i>əll-a-i-n</i>	√-TH-PST-3PL
Past perf. 3PL	<i>xos-e-tʃ-a-n</i>	√-TH-ASP[PFV]-PST-3PL	<u><i>dar-i-n</i></u>	<u><i>jeɣ-a-n</i></u>	√-PST-3PL
Imperative 2PL	<i>xos-e-tʃ-ek</i>	√-TH-ASP ₀ -IMP.2PL	<u><i>dar-ek</i></u>	<u><i>jeɣ-ek</i></u>	√-IMP.2PL

There are two analytical options for treating the marked allomorphs *dar-*, *jeɣ-*. The first option is

to treat them as the realization of the root before the covert aorist suffix (60a). Their presence is stipulated to trigger aorist dropping like some irregular verbs (60b). The second option is to treat this allomorph as the fused realization of the root, theme vowel, and aorist suffix. Both options would capture the relevant facts, and it is unclear if one is empirically superior to the other based on just the Western Armenian data.²¹ But for consistency with previous irregular verbs, we take the former non-fusional approach.

(60) *Allomorphy: Root suppletion and covert aorists*

- a. $\sqrt{\text{send}}$ ↔ *dar-* / $_ \curvearrowright v \curvearrowright \text{TH} \curvearrowright \text{ASP}$
 $\sqrt{\text{send}}$ ↔ *dan-* / elsewhere
 $\sqrt{\text{be}}$ ↔ *jey-* / $_ \curvearrowright v \curvearrowright \text{TH} \curvearrowright \text{ASP}$
 $\sqrt{\text{be}}$ ↔ *əll-* / elsewhere
- b. TH ↔ */-∅-/* / $\sqrt{_ \curvearrowright v \curvearrowright _ \curvearrowright \text{ASP}}$ (for suppletive roots like $\sqrt{\text{send...}}$)
 ASP ↔ */-∅-/* / $\sqrt{_ \curvearrowright v \curvearrowright \text{TH} \curvearrowright _}$ (for suppletive roots like $\sqrt{\text{send...}}$)

We show a derivation below for the Suppletive Class A verb ‘to send’ in the past perfective and imperative 2PL. These contexts use the marked allomorph, triggered by either the meaningful or spurious aorist. Node-sprouting must thus apply before the root is exponed.

(61) *Spurious aorist insertion and root allomorphy in dan-i-l ‘to send’*

	Past perfective 3PL ‘they sent’						Imperative 2PL ‘send!’				
Input:	$\sqrt{\text{send}}$	<i>v</i>	TH	ASP[PFV]	PST	3PL	$\sqrt{\text{send}}$	<i>v</i>	TH		IMP2PL
Sprouting (9):	$\sqrt{\text{send}}$	<i>v</i>	TH	ASP ₀			$\sqrt{\text{send}}$	<i>v</i>	TH	ASP ₀	IMP2PL
VI (60):	<u>dar</u>	<i>v</i>	TH	ASP[PFV]	PST	3PL	<u>dar</u>	<i>v</i>	TH	ASP ₀	IMP2PL
	<u>dar</u>	-∅	-∅	ASP[PFV]	PST	3PL	<u>dar</u>	-∅	-∅	ASP ₀	IMP2PL
	<u>dar</u>	-∅	-∅	-∅	PST	3PL	<u>dar</u>	-∅	-∅	-∅	IMP2PL
	<u>dar</u>	-∅	-∅	-∅	-i	3PL	<u>dar</u>	-∅	-∅	-∅	-ek
	<u>dar</u>	-∅	-∅	-∅	-i	-n					

As expected, the marked allomorphs are also triggered by the potential presence of a covert spurious aorist. For Suppletive Class A verbs, the marked allomorph is used in the imperative 2SG but not subject participles (like infixed verbs); while for Suppletive Class B verbs, the marked allomorph is used in the imperative 2SG and all participles (like inchoatives). We shade the cells which use the marked allomorphs in ‘spurious aorist’ contexts. For contrast, we provide irregular infixed and regular inchoative verbs.

²¹There is some cross-dialectal evidence for the deletion approach. In Western Armenian, the suppletive verb *d-a-l* [$\sqrt{_ \text{-TH-}} \text{-INF}$] ‘to give’ has a suppletive root in the past perfective along with theme and aorist deletion: *dəv-i-n* [$\sqrt{_ \text{-PST-}} \text{-3PL}$] ‘they gave’. In Eastern Armenian, we find suppletion but no deletion: *təv-e-tsh-i-n* [$\sqrt{_ \text{-TH-ASP[PFV]-PST-}} \text{-3PL}$] ‘they gave’. Here we see that root allomorphy triggers deletion in Western, but not in Eastern.

(62) *Root suppletion across the paradigm*

	Infix verb 'to cross'	Suppletive A 'to send'	Suppletive B 'to be'	Inchoative 'to become happy'
Infin.	$\widehat{ants-n-i-l}$ $\sqrt{-X-TH-INF}$	$\widehat{dan-i-l}$ $\sqrt{-TH-INF}$	$\widehat{\partial ll-a-l}$ $\sqrt{-TH-INF}$	$\widehat{urax-a-n-a-l}$ $\sqrt{-LV-INCH-TH-INF}$
Proh. 2SG	$mi \widehat{ants-n-i-r}$	$mi \widehat{dan-i-r}$	$mi \widehat{\partial ll-a-r}$	$mi \widehat{urax-a-n-a-r}$
Proh. 2PL	$mi \widehat{ants-n-i-k}$ PROH $\sqrt{-X-TH-AGR}$	$mi \widehat{dan-i-k}$ PROH $\sqrt{-TH-AGR}$	$mi \widehat{\partial ll-a-k}$ PROH $\sqrt{-TH-AGR}$	$mi \widehat{urax-a-n-a-k}$ PROH $\sqrt{-LV-INCH-TH-AGR}$
Imp. 2PL	$\widehat{ants-ek}$ $\sqrt{-IMP.2PL}$	$\widehat{dar-ek}$ $\sqrt{-IMP.2PL}$	$\widehat{jey-ek}$ $\sqrt{-IMP.2PL}$	$\widehat{urax-a-ts-ek}$ $\sqrt{-LV-ASP_0-IMP.2PL}$
Result. part.	$\widehat{ants-adz}$	$\widehat{dar-adz}$	$\widehat{jey-adz}$	$\widehat{urax-a-ts-adz}$
Evid. part.	$\widehat{ants-er}$ $\sqrt{-PTCP}$	$\widehat{dar-er}$ $\sqrt{-PTCP}$	$\widehat{jey-er}$ $\sqrt{-PTCP}$	$\widehat{urax-a-ts-er}$ $\sqrt{-LV-ASP_0-PTCP}$
Subj. part.	$\widehat{ants-n-oy}$ $\sqrt{-X-PTCP}$	$\widehat{dan-oy}$ $\sqrt{-PTCP}$	$\widehat{jey-oy}$ $\sqrt{-PTCP}$	$\widehat{urax-a-ts-oy}$ $\sqrt{-LV-ASP_0-PTCP}$
Imp. 2SG	$\widehat{ants-i-r}$ $\sqrt{-TH-IMP.2SG}$	\widehat{dar} $\sqrt{\quad}$	$\widehat{jey-ir}$ $\sqrt{-IMP.2SG}$	$\widehat{urax-a-ts-ir}$ $\sqrt{-LV-ASP_0-IMP.2SG}$

The use of the marked allomorphs is predicted if we inserted the spurious aorist in the above relevant contexts (63a). The spurious aorist is then spelled-out as a covert morph. The only caveat is that Class B inserts the spurious aorist for all participles (63b), while Class A blocks it for the subject participle (63c).

(63) *Inserting spurious aorist after suppletive verbs*

- a. $\emptyset \Rightarrow ASP_0 / \sqrt{\quad} \sim TH \sim MOOD[+IMP]$ (where $\sqrt{\quad}$ is Suppletive Class A or B)
 b. $\emptyset \Rightarrow ASP_0 / \sqrt{\quad} \sim TH \sim PTCP[-SPTCP]$ (where $\sqrt{\quad}$ is Suppletive Class A)
 c. $\emptyset \Rightarrow ASP_0 / \sqrt{\quad} \sim TH \sim PTCP$ (where $\sqrt{\quad}$ is Suppletive Class B)

We show a derivation below for the subject participle of the Suppletive Class A and B verbs. Node-sprouting must reference the exact index of the root in order to know if the root is part of the right suppletive class. Such information is accessible from the narrow syntax, thanks to root indexes (Harley 2014). We underline the marked root allomorph. The theme vowel deletes in 'sender' because of pre-participle theme vowel deletion; while it is covert for 'be-er' because of aorist-conditioned allomorphy.

(64) *Spurious aorist insertion and root allomorphy in subject participles*

	Suppletive A 'sender'				Suppletive B 'be-er'			
Narrow syntax:	$\sqrt{\widehat{send}}$	v	TH	SPTCP	$\sqrt{\widehat{be}}$	v	TH	SPTCP
Node-sprouting (63):					$\sqrt{\widehat{be}}$	v	TH	ASP ₀ SPTCP
Vocabulary insertion (60):	\widehat{dan}	v	TH	SPTCP	\widehat{jey}	v	TH	ASP ₀ SPTCP
	\widehat{dan}	$-\emptyset$	$-i$	SPTCP	\widehat{jey}	$-\emptyset$	$-\emptyset$	ASP ₀ SPTCP
Theme deletion (15b)	\widehat{dan}	$-\emptyset$	$-\emptyset$	SPTCP				
Vocabulary insertion:					\widehat{jey}	$-\emptyset$	$-\emptyset$	$-\emptyset$ SPTCP
	\widehat{dan}	$-\emptyset$	$-\emptyset$	$-\oy$	\widehat{jey}	$-\emptyset$	$-\emptyset$	$-\oy$

Besides *dan-i-l* and *əll-a-l*, the other members of Suppletive Classes A and B are listed below. Within each class, these suppletive verbs show the same distribution of marked vs. default allomorphs.²²

(65) *Set of suppletive verbs in Western Armenian*

	Infinitival	Meaning	Default root allomorph	Marked root allomorphy
Class A	<i>dan-i-l</i>	‘to send’	<i>dan-</i>	<i>dar-</i>
	<i>jell-e-l</i>	‘to rise’	<i>jell-</i>	<i>jel-</i>
	<i>ən-e-l</i>	‘to do’	<i>ən-</i>	<i>ər-</i>
	<i>ud-e-l</i>	‘to eat’	<i>ud-</i>	<i>ger-</i>
	<i>zarn-e-l</i>	‘to hit’	<i>zarn-</i>	<i>zarg-</i>
	<i>tən-e-l</i>	‘to put’	<i>tən-</i>	<i>tər-,t-</i>
Class B	<i>əll-a-l</i>	‘to be’	<i>əll-</i>	<i>jey-</i>
	<i>in-a-l</i>	‘to fall’	<i>in-</i>	<i>ing-</i>
	<i>k-a-l</i>	‘to come’	<i>k-</i>	<i>jeg-</i>
	<i>tarn-a-l</i>	‘to become’	<i>tarn-</i>	<i>tarts-</i>
	<i>pan-a-l</i>	‘to open’	<i>pan-</i>	<i>pats-</i>
	<i>d-a-l</i>	‘to give’	<i>d</i>	<i>dəv-,du-</i>
	<i>jert-a-l</i>	‘to go’	<i>jert-</i>	<i>k-, kən-</i>

Among these suppletive verbs, most never appear with the aorist suffix. The exception is the Suppletive Class B verb *jert-a-l* ‘to go’. Outside of the imperative 2SG, this verb does not delete the aorist suffix. This verb has two marked root allomorphs *k-*, *kən-*. The allomorph *kən-* is used in the imperative 2SG and the past perfective 3SG *kən-a-t̂s* ‘he went’. The allomorph *k-* is used elsewhere whenever we see an aorist, such as in the past perfective 3PL and imperative 2PL.

(66) *Complications from the Suppletive Class B ‘to go’*

Infinitival	<i>jert-a-l</i>	√-TH-INF
Present 3PL	<i>jert-a-n</i>	√-TH-3PL
Past imperf. 3PL	<i>jert-a-i-n</i>	√-TH-PST-3PL
Past perf. 3SG	<i>kən-a-t̂s</i>	√-TH-ASP[PFV]
Past perf. 3PL	<i>k-a-t̂s-i-n</i>	√-TH-ASP[PFV]-PST-3PL
Imp. 2SG	<i>kən-a</i>	√-TH
Imp. 2PL	<i>k-a-t̂s-ek</i>	√-TH-ASP ₀ -IMP.2PL

²²The root in *ud-e-l* ‘to eat’ is variably Class A or B. Its subject participle is based on the elsewhere root *ud-oy* [√-SPTCP] ‘eater’, but the marked root is also sometimes allowed *ger-oy* [√-SPTCP] ‘eater’. In Class A, the verb *jell-e-l* ‘to rise’ can take the *-a-* theme vowel: *jell-a-l*. In Class B, some of the suppletive verbs like *pan-a-l* [√-TH-INF] ‘to open’ can arguably be re-analyzed as irregular inchoatives *p-a-n-al* [√-LV-INCH-TH-INF]. The verbs *tən-e-l*, *d-a-l* ‘to put, to give’ [√-TH-INF] each have two marked allomorphs *tər-,t-* and *dəv-,du-*. The second of each pair is restricted to imperative 2SG: *t-ir*, *du-r* [√-IMP.2SG]. While the first of each pair is used elsewhere whenever we expect an aorist: past perfective 3PL *tər-i-n*, *dəv-i-n* ‘they put, they gave’ [√-PST-3PL]. It is possible to reanalyze these allomorph pairs as derived from a single allomorph *tir-,du-* which reduces to *tər-,dəv-* before a vowel via vowel reduction and glide fortition (cf. rules in Dolatian 2021).

As a further complication, these suppletive verbs differ amongst themselves in the passive and causative. A few are transitive and can be passivized. Of these verbs, some Class A verbs use a marked allomorph (A1) while some use the elsewhere allomorph (A2). One Class B verb uses a marked allomorph (B1), and another verb uses a unique allomorph that's only found in the passive (B2). Furthermore, some of these verbs can also be causativized, often with the marked allomorph.

(67) *Distribution of suppletion in the passive*

	Infinitival	Passive	Causative
Class A1	<i>dan-i-l</i> 'to send' <i>tən-e-l</i> 'to put'	<i>dar-v-i-l</i> 'to be sent' <i>tər-v-i-l</i> 'to be put'	
Class A2	<i>ud-e-l</i> 'to eat' <i>zarn-e-l</i> 'to hit'	<i>ud-v-i-l</i> 'to be eaten' <i>zarnə-v-i-l</i> 'to be hit'	<i>ger-t̂sən-e-l</i> 'to feed'
Class B1	<i>pan-a-l</i> 'to open' <i>in-a-l</i> 'to fall'	<i>pats-v-i-l</i> 'to be opened'	<i>ing-a-t̂sən-e-l</i> 'to make fall'
Class B2	<i>d-a-l</i> 'to give'	<i>dər-v-i-l</i> 'to be given'	
	√-TH-INF	√-PASS-TH-INF	√-(TH)-CAUS-TH-INF

It is an arbitrary fact whether some suppletive verb uses a marked allomorph in the passive. Those which do use a marked allomorph are essentially patterning like regular A-Class and inchoative verbs which use the spurious aorist in the passive. Those which use the elsewhere allomorph are patterning like E-Class verbs which don't use the spurious aorist in the passive. As for causativization, the few suppletive roots which exist license the marked allomorph in the causative. But because there are so few causativized suppletive verbs, it is difficult to be certain that this is a true generalization or just a coincidence.²³

To summarize, the contexts for verbal suppletion patterns largely parallel the distribution of the spurious aorist in regular verbs. An economic analysis is to posit that a spurious aorist is inserted in these contexts. The aorist then feeds root allomorphy. The aorist is then deleted.

6 Connecting irregular verbs to regular verbs

The previous section discussed irregular verbs. On the surface, irregular verbs do not use a meaningful or spurious aorist. Instead, they exhibit irregular morphological processes in slots where we could expect a spurious aorist. These processes include deleting the aorist marker (aorist drop), deleting meaningless infixes (infix drop), and root allomorphy. We argued that these slots display a covert aorist which triggers irregular morphology.

To showcase our argument, the table below lists the paradigm slots where we find spurious aorists in regular verbs, and where we find irregular morphology in irregular verbs. The count is taken

²³The suppletive verb 'to eat' *ud-e-l* is causativized with the marked allomorph *ger-t̂sən-e-l* 'to feed'. Some dictionaries also list *ud-e-t̂sən-e-l* [√-TH-CAUS-TH-INF] with the elsewhere allomorph. We speculate that the elsewhere form is more common in Eastern Armenian than in Western.

from the verb list in Boyacioglu (2010) of 3258 lemmas.²⁴ A software version of the book's verb list can be found in Boyacioglu & Dolatian (2020).

(68) *Distribution of special morphology across regular and irregular verbs*

	Spurious aorist in regular verbs				Irregular processes in irregular verbs			
	E-Class I-Class	Causative	A-Class	Inchoative	Aorist Drop	Infix Drop	Suppletion Class A	Suppletion Class B
	72.96% (n=2377)	10.41% (n=339)	4.05% (n=132)	9.09% (n=296)	0.71% (n=23)	0.95% (n=31)	0.18% (n=6)	0.31% (n=10)
Infinitival								
Present								
Past imperf.								
Proh. 2SG/2PL								
Causativized		N/A				(✓)	(✓)	(✓)
Past perf.	✓	✓	✓	✓	(✓)	✓	✓	✓
Imp. 2PL	✓	✓	✓	✓	(✓)	✓	✓	✓
Result. part.		✓	✓	✓		✓	✓	✓
Evid. part.		✓	✓	✓		✓	✓	✓
Subj. part.			✓	✓				✓
Passivized			✓	✓		(✓)	(✓)	✓
Imp. 2SG				✓		✓	✓	✓

Many generalizations can be derived from the above table. The first generalization is that for regular verbs, the distribution of the spurious aorist is arbitrary. This reinforces the role of the spurious aorist as morphomic and as agnostic to semantic motivation.

Second, for regular verbs, the distribution of the spurious aorist displays implicatory relations or monotonicity. As a morpheme, the spurious aorist is expected to have an arbitrary distribution of contexts. On the one hand, this is true. The contexts which trigger the morphomic aorist do not show any semantic correlations or connections with perfectivity. But on the other hand, there is a degree of language-internal predictability between pairs of arbitrary contexts that trigger the spurious aorist. In fact, these contexts show monotonicity (Graf 2019; Moradi 2019, 2020, 2021) and implicational relations or dependencies (Bonami & Boyé 2002; Blevins 2006). That is, they display an *ABA restriction (Bobaljik 2012). For example, all regular verbs use the spurious aorist in the imperative 2PL. If a regular verb uses the aorist subject participles, then it must also use it in evidential participles (A-Class verbs). This implication does not hold in the reverse because causatives have the spurious aorist in the evidential but not the subject participle.

This second generalization reinforces the stability of the spurious aorist as a grammatical process that is likely psychologically real. Coincidentally, the formal concept of monotonicity has been

²⁴Parentheses mark variation. The distribution does not equal to 100%. We omit 5 A-Class verbs which optionally show the spurious aorist in the imperative 2SG like *mən-a-l* 'to stay': *mən-a-(ts-ir)* [$\sqrt{\text{-TH-(ASP}_0\text{-IMP.2SG)}$] 'stay!'. We omit 30 archaic verbs which follow obsolete conjugation classes; they are no longer used in Lebanon. We omit 7 defective verbs. We omit the verb *əntun-i-l* 'to accept' which is generally an I-Class verb but optionally takes the primary past tense allomorph *-i* like an E-Class verb. We omit the verb *tək-n-e-l* 'to spit' which is arguably a suppletive infixing verb, but it is obsolete; it has levelled towards the regular lemma *tək-e-l*. The additional suppletive items in the table are lemmas that are derived from the previously discussed suppletive verbs, such as *ver-a-tarn-a-l* 'to return' [$re\text{-LV-}\sqrt{\text{turn-TH-INF}}$] from *tarn-a-l* 'to become'.

invoked in other guises in previous work on morphemes, such as the concept of subset-superset relations across paradigms (Herce 2019:§3.2.2). Typological evidence from Herce (2020b:207-210) suggests that monotonicity is cross-linguistically attested in morphomic distributions.

The third generalization can be seen by comparing the regular verbs with the irregular verbs. For the past perfective, whereas regular verbs use the meaningful aorist, irregular verbs apply irregular morphology such as root allomorphy. Similarly, setting aside causativization, if some context can trigger the spurious aorist in regular verbs, then that context can also trigger irregular morphology in irregular verbs. For example, the imperative 2PL triggers allomorphy in suppletive roots, and it triggers the spurious aorist in regular verbs.

To capture this connection, we argued that these irregular verbs trigger node-sprouting of the aorist. The aorist then triggers irregular morphology, and then ‘surfaces’ as a covert allomorph. We illustrate this connection below. We show the imperative 2PL of a simple E-Class verb that uses a spurious aorist. We also show the imperative 2PL of a suppletive verb *dan-i-l* ‘to send’. The spurious aorist is inserted before the imperative 2PL marker. It surfaces as $-\widehat{ts}$ for regular verbs. But for the suppletive verb, the aorist triggers allomorphy of the root as *dar-* and then becomes covert.

(69) *Spurious aorist insertion for imperative 2PL of regular and irregular verbs*

	E-Class ‘scratch!’					Suppletive ‘send!’				
Input:	$\sqrt{\text{scratch}}$	v	TH		IMP2PL	$\sqrt{\text{send}}$	v	TH		IMP2PL
Sprouting (9):	$\sqrt{\text{scratch}}$	v	TH	ASP ₀	IMP2PL	$\sqrt{\text{send}}$	v	TH	ASP ₀	IMP2PL
VI (60):	<u>ker</u>	v	TH	ASP ₀	IMP2PL	<u>dar</u>	v	TH	ASP ₀	IMP2PL
	ker	-∅	-e	ASP ₀	IMP2PL	<u>dar</u>	-∅	-∅	ASP ₀	IMP2PL
	ker	-∅	-e	$-\widehat{ts}$	IMP2PL	<u>dar</u>	-∅	-∅	-∅	IMP2PL
	ker	-∅	-e	$-\widehat{ts}$	-ek	<u>dar</u>	-∅	-∅	-∅	-ek

The fourth generalization ties irregular morphology with implicatory relations. For regular verbs, the contexts of the spurious aorist form a clear monotonic order. But for irregular verbs, it seems that they pick and choose which contexts can trigger these irregular processes. This makes it difficult to set up a clear, monotonic, and consistent implicational hierarchy for both regular and irregular verbs. It is possible that the above contexts form a partial order (cf. tense-based partial orders in Moradi 2020). Alternatively, the lack of clear monotonicity can be evidence that irregular morphology is chaotic enough that speakers don’t create clear implicatory generalizations over irregular morphology, thus further cementing the status of these paradigms as irregular.²⁵

In sum, for a given irregular verb and paradigm cell, a consistent and near-perfect generalization is that these irregularities in this paradigm cell are correlated with the use of the spurious aorist in regular verbs. We argue that this dependence on the spurious aorist is the *primary* generaliza-

²⁵We thank Borja Herce for discussing this alternative explanation with us. A similar interpretation is that, because regular verbs display monotonicity, then a constructive approach is efficient for organizing regular verbs. In contrast, because irregular verbs are chaotic and seem to need cell-by-cell information, then an abstractive approach is more efficient for them (O’Neill 2014).

tion behind irregular verbs. By analyzing these irregularities in terms of the spurious aorist, we arrive at a consistent, coherent, and economical analysis of Armenian morphology (cf. similar generalizations in Round 2016).

7 Conclusion

This paper catalogued the systematic but arbitrary distribution of the aorist suffix across verbal paradigms in Western Armenian. In its canonical function, the aorist suffix is a marker of past perfectivity. But, it is used in many paradigm cells where no such perfective semantics are created. Instead, the use of the aorist in these positions is morphomic, meaningless, and arbitrary.

But beneath the arbitrariness, the morphomic aorist obeys systematic generalizations on its use. We analyze the spurious morphomic aorist as generated via a node-sprouting rule. This applies in the Morphology component after the narrow syntax. The entire window or context for insertion forms a span that is delimited by phases. Insertion applies as early as possible once its context is met. Insertion can happen at the beginning of the morphological derivation, or cyclically after vocabulary insertion of roots.

The aorist is fully integrated into the morphotactics of Armenian. It can feed and bleed other morphological rules that affect the shape of other morphs in the word, such as suffix allomorphy or morph deletion. To showcase this integration, we see that the morphomicity of the aorist likewise pop up in irregular paradigms. In these paradigms, there is no actual aorist suffix that is used. In its place, a host of other irregular processes are triggered such as root suppletion. We analyze these facts as using covert aorist nodes.

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