

The Verbal Domain

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The Verbal Domain

Edited by

ROBERTA D’ALESSANDRO, IRENE FRANCO,
and ÁNGEL J. GALLEGÓ

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General preface

The theoretical focus of this series is on the interfaces between subcomponents of the human grammatical system and the closely related area of the interfaces between the different subdisciplines of linguistics. The notion of “interface” has become central in grammatical theory (for instance, in Chomsky’s Minimalist Program) and in linguistic practice: work on the interfaces between syntax and semantics, syntax and morphology, phonology and phonetics, etc. has led to a deeper understanding of particular linguistic phenomena and of the architecture of the linguistic component of the mind/brain.

The series covers interfaces between core components of grammar, including syntax/morphology, syntax/semantics, syntax/phonology, syntax/pragmatics, morphology/phonology, phonology/phonetics, phonetics/speech processing, semantics/pragmatics, and intonation/discourse structure, as well as issues in the way that the systems of grammar involving these interface areas are acquired and deployed in use (including language acquisition, language dysfunction, and language processing). It demonstrates, we hope, that proper understandings of particular linguistic phenomena, languages, language groups, or inter-language variations all require reference to interfaces.

The series is open to work by linguists of all theoretical persuasions and schools of thought. A main requirement is that authors should write so as to be understood by colleagues in related subfields of linguistics and by scholars in cognate disciplines.

The verb phrase is a core component of the syntactic structure of sentences, and its proper analysis has developed over the decades from a very intuitive notion (the verb and some of its arguments and modifiers) to an expanded and more theoretically articulated structure, where functional elements do the work of creating the relevant linkages between meaning and form. In the present volume, the editors have brought together recent work on verbal syntax, focusing on the analysis of the verb phrase covering the three main areas of current research: how verbal roots are connected with the syntactic structures which they give content to, how transitivity and agentivity are expressed, and how the verbal domain is embedded in larger structures that signal the temporal contours of the event denoted by the root. The chapters present contrasting perspectives on one of the most central and controversial aspects of current syntactic theory.

David Adger
Hagit Borer

List of abbreviations

ABS	absolutive case
ACC	accusative case
ACT	active voice
AG	agent
Agr	agreement
ANAPH	anaphoric
aP	adjectivizer phrase
AdjP	adjectivizer phrase (in Anagnostopoulou)
Appl	applicative voice
ApplP	applicative phrase
Asp	aspect
ATTR	attributive
AUG	augmentative
AV	actor voice
CAUS	causative
CausP	Causative phrase
CI	conceptual-intentional
CL	classifier (noun class)
COP	copula
CONT	contessive
CP	complementizer phrase
CVB	converb
DAT	dative case
DEM	demonstrative
DIR	direct
DP	determiner phrase
DM	Distributed Morphology
EA	external argument
ECM	exceptional case marking
ecause	caused dynamic event
edyn	dynamic event

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EL	elative case
EMPH	emphatic
EPP	Extended Projection Principle
ERG	ergative case
ESS	essive case
EV	epenthetic vowel
EVID	evidential
EXCL	exclusive person
EXIST	existential
EXPL	expletive
F	feminine
F:—	unvalued feature
F:val	valued feature
<u>F:val</u>	feature valued during the derivation
FIN	finalis
FUT	future
GB	Government and Binding
GEN	genitive case
HPL	human plural
IA	internal argument
IMPF	imperfective (IMPFV in Panagiotidis, Spyropoulos, and Revithiadou)
INCH	inchoative
INCL	inclusive
IND	indicative
INDIR	indirect
INF	infinitive
Infl	inflection
initP	initiator phrase
INST	instrumental
INTR	intransitive
IP	inflectional phrase
LAD	Language Acquisition Device
LOC	locative case
LOM	long object movement
LV	locative voice

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M	masculine
MID	middle
MS	masdar
NACT	non-active (morphology)
NEC	Northeast Caucasian
NEG	negative
N	neuter
NHPL	non-human plural
NOM	nominative
NMLZ	nominalizer
NPL	non-plural, number-neutral
NPN	non-possessed noun marker
OBL	oblique case
P	person
PASS	passive voice
Perf	perfective
PF	phonological form
PFV	perfective (PRF in Harley)
PL	plural
PL	Pazar Laz
POL	politeness marker
POSS	possessive
pP	prepositionalizer phrase
PP	prepositional phrase
PredP	predicative phrase
PREP	prepositional case
PRES	present tense
procP	process phrase
PROG	progressive aspect
PRT	participle
PST	past tense
PV	preverbal marker
PV	patient voice
Q	question marker
RC	restructuring complement

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REAL	realis
REFL	reflexive
ResultP	result phrase (<i>resP</i> in Ramchand)
RootP	root phrase
RSAP	resultant state adjectival passives
SBJ	subject
SE	“reflexive pronoun”
SG	singular
SOD	spell-out domain
Spec,IP	specifier inflectional phrase
ST	Icelandic <i>-st</i> morphology
STATE	state
StatP	stativizer phrase
SUP	superessive
TP	Tense phrase
TR	transitive
TrP	transitive phrase
TS	thematic suffix
TSAP	target state adjectival passives
uCL	unvalued class feature
UG	universal grammar
□ _v	empty vocalic slot
VAL	valency marker
VoiceP	Voice phrase
VOC	vocative case
vP	(light) verb phrase
VP	verb phrase
VRB	verbalizer
v _{tr}	transitive v
XP	phrase

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Introduction: the verbal domain

ROBERTA D’ALESSANDRO, IRENE FRANCO,
AND ÁNGEL J. GALLEGÓ

The verb phrase (VP) is the core of the sentence, and one of the oldest projections ever postulated. In the generative tradition, Chomsky (1957) already talks about a VP, but the definition of a verb phrase, *albeit* different from the one we use today, dates back at least to Saussure (1916). The VP was intuitively and primitively defined as the phrase containing the verb and its arguments.

The existence and importance of VP within the clause has never been in doubt; however, the structure of the VP and the argument positions within it have been the subject of extensive debate, even as far back as the Government and Binding (GB) era (Chomsky 1981).

The VP head is the verb: even this simple assumption has been controversial. Different hypotheses have been proposed: one is that the whole verb is base-generated (or first-merged) in V (for instance, as in Chomsky’s (1995) early Minimalist Program, according to which fully inflected material is merged and subject to feature matching). A second hypothesis is that the verbal root is base-generated, and inflection is acquired via verb movement (Belletti 1990; Kayne 1989, and many others) or via affix hopping, in languages in which the verb does not move (Lasnik 1994).

Another possibility, formulated in the Distributed Morphology (DM) framework, is that only bare roots, with minimal semantic content but no functional/categorical specification, constitute the core of a V. In order to build a verb, a V root must combine with a “verbalizing” head, *v*, turning the root into a “base,” i.e., into a verb. Inflection is acquired later on in the derivation. While most researchers share the idea that roots are category-neutral elements encoding non-compositional and encyclopedic information, there is disagreement on whether these units can encode other types of information (cf. Harley 2009: 13).

With regard to the other constituents of the VP—the arguments—the discussion was not centered so much on their nature, which is usually that of a determiner phrase (DP) or a complementizer phrase (CP), but on their position with respect to the verb, or to the VP, and their theta-roles. The Extended Projection Principle (EPP) for instance, formulated as a universal principle, together with the idea that subjects should be defined structurally and not semantically, led to the idea of externalization

of the subject, base-generated in specifier inflectional phrases (Spec,IP). Given that the subject receives its thematic role from the verb (but see Marantz 1984), however, it is plausible for it to be first-merged in the verbal domain, as argued by Sportiche (1988) on the basis of evidence from floating quantifiers, as well as maintained by McCloskey (1997). The co-occurrence of the subject with an expletive in sentences like, 'There is someone in the garden' also seemed to call for a VP-internal subject position (as discussed extensively by Kitagawa 1986; Speas 1986; Kuroda 1988; Sportiche 1988; and more recently McIntyre 2004; among others). Regarding the subject, then, the debate during the GB era mainly revolved around whether it should be base-generated within the VP or directly in Spec,IP. The two positions have been reconciled with the postulation of *v* as a head hosting the external argument as its first-merge position, as proposed by Chomsky (1995) and Kratzer (1996).

To arrive at this hypothesis, different paths and analyses had to converge. One of the key papers proposing the hypothesis of a complex V field was Larson (1988), in which the Split-VP Hypothesis is formulated. This hypothesis argues for a layered verbal projection in which the highest head is a light verb. While Larson's paper was mainly concerned with double-object constructions, and hence with identifying the position of the two internal arguments of the verb, the idea of a layered *v* gained a foothold and opened the way to the discussion of the complexity of *v*.

Dating from a similar time to Larson's paper, Marantz (1984) shows, mainly by means of idioms, that internal and external arguments have a different degree of connection to the verb. Before assigning an external theta-role, the verb must first combine with its internal argument(s). This hypothesis suggests a looser link between the external argument and the verb.

Taking inspiration from these papers, Hale and Keyser (1993) introduce an outer VP as the locus of merge of the Agent, and Kratzer (1996) proposes the existence of a Voice phrase (VoiceP), a projection hosting the external argument. Finally, Chomsky (1995) proposes a *v* as an agent-introducing, transitivity head: a head which would soon become crucial for his theory of phases (Chomsky 2000 and subsequent work).

These three proposals all converged in assuming a layered V field, with a head, *V*, introducing the lexical verb, and a *v/V/Voice* head introducing the Agent/external argument.

The last step in the history of the verbal domain consists of interpreting *v* as the head transforming a root (*V*) into a verb: this is a DM hypothesis, as in Harley (1995) and Marantz (1997).

Since its first formulation, *v/Voice* has been conceptualized in different ways: as a phase head (Chomsky 1998 et seq.), as a light verb head (like in Larson 1988), as the head encoding transitivity (with direct connection to phasehood, but not necessarily; see the discussion in D'Alessandro and Scheer 2015), and as a verbalizer (in the DM tradition). The first decade of the Minimalist Program "conflates" the two heads, *v* and Voice, into one: the head introducing the external argument.

Others claim that the VP—now conceived as a lexical V and a functional v—can be more complex, i.e., it can be composed of more layers. In this perspective, Voice and v arguably need to be kept separate. Specifically, several works propose that different v-features are not encoded on a single head, but on distinct functional heads. Belletti (2005) proposes that the v field may also encode discourse-related features in the so-called lower left periphery.

The way Aktionsart is encoded in the VP, and the inner structure of the event encoded in it, has given rise to a parallel line of research, notably represented by Ramchand's (2008) monograph and also debated in this volume.

The structure of the VP, its complexity, its semantics, its function, and the universality of the heads that it contains continue to be debated even today, 20 years after the appearance of Kratzer's paper. A lot of progress has been made: this volume features cutting-edge research on the verbal domain, while tackling the problem of the nature and structure of the vP-VP domain. The book includes some chapters based on papers presented at the "Little v" workshop, which was held at Leiden University on October 25–26, 2013.

The volume is divided into three main sections, representing the areas in which contemporary debate on the verbal domain is most active. The first part, entitled *Root and Verbalizer*, includes four chapters discussing the set-up of verbal roots, their syntax, and their combination with other functional heads like Voice and v. This part focuses on the V head. The second section, *Voice*, discusses the content and necessity of a Voice head in the structure of a clause, and whether Voice is different from v. Voice was originally intended as the head hosting the external argument in its specifier, but what is its role in expressing transitivity? And what about voice, intended as the alternation between actives and passives?

The third section is dedicated to event structure, inner aspect, and Aktionsart. The main issue it tackles is the one-to-one relation between argument structure and event structure, and whether there can be minimal structural units at the basis of the derivation of any sort of X phrase (XP), including the VP.

I. Roots and verbalizers

The idea of a complex verbal domain featuring a light verb, or an extra verbal projection, was originally adopted to distinguish between different verb classes. Along with aspectual (achievements, accomplishments, etc.), argument-taking (transitives, unergatives, etc.), and semantic (epistemics, volitives, etc.) properties, verbs have been classified into different classes in the recent literature (cf. Hale and Keyser 1993; Harley 1995, 2005; Arad 2003; Folli and Harley 2005, 2006; Marantz 2009a,b; Ramchand 2008, among others) according to the basic (non-decomposable) predicate they instantiate: BE, BECOME, GO, HAVE, DO, CAUSE, PUT, PROVIDE, etc. Typically, these meanings are attributed to the v head, and referred to as "flavors of v."

Flavors of *v* are regarded as primitives in most theories, although some authors have argued that they can be derived contextually (Acedo-Matellán and Mateu 2014; Harley 2005), just as the nominal or verbal nature of a root is determined by the type of functional morpheme it is merged with (cf. Marantz 1997). Thus, the specific flavor of *v* can be determined configurationally, roughly as in (1), where EA and IA stand for external and internal argument, respectively:

- (1) a. *v* = CAUSE, if there is EA and the IA is an adjectival small clause (e.g., *break*)
- b. *v* = DO (HAVE), if there is EA and the IA is a $\sqrt{\text{ROOT}}$ (e.g., *drink*)
- c. *v* = BECOME, if there is no EA and the IA is an adjectival small clause (e.g., *sink*)
- d. *v* = GO, if there is no EA and the IA is an adpositional small clause (e.g., *leave*)
- e. *v* = PUT, if there is EA and the IA is an adpositional small clause (e.g., *shelve*)

For some of these authors (e.g., Harley 2009, 2012, 2013; Hallman 2013), *v* and Voice are not to be treated as one and the same functional head. This assumption has non-trivial implications for phenomena like Case assignment and argument licensing.

In Chapter 1 of this volume Harley discusses the possibility, first explored by Pykkänen (2002, 2008), that *v* and Voice are in fact distinct but can bundle into a unique head in some languages. The proposal raises a series of theoretical and empirical questions for the theory of parameters, and has important consequences for the articulation of the verbal domain. Building on data from languages like Chol, Persian, Hiaki, Chemehuevi, English, and Italian, Harley shows that the [$\pm$ bundling] option has very specific effects. Under the hypothesis that Voice introduces the external argument and checks accusative Case, whereas *v* encodes agentive/causative semantics and verbalizes roots, Harley shows that in languages in which Voice and *v* bundle, the facts listed above are all present at the same time.

In DM and some other frameworks (Hale and Keyser 2002; Ramchand 2008; Starke 2009) *v* is typically clouded by a process of incorporation (cf. Baker 1988; see Haugen 2009 for recent discussion) that provides *v* with a phonological matrix, a process that is subject to parametric variation. This is visible in Basque (3a–f) and Tanoan (3g–l) (taken from Hale and Keyser 1998), where *v* is lexicalized with a morpheme that is translated by ‘do’ below.

- (2) a. Negar egin (cry-do) g. Sae-’a (work-do)
- b. Eztul egin (cough-do) h. Se-’a (speech-do)
- c. Barre egin (laugh-do) i. T_ɛu-’a (whistle-do)
- d. Jolas egin (play-do) j. H_ɛi il-’a (laugh-do)
- e. Oihu egin (shout-do) k. Shil-’a (cry-do)
- f. Lo egin (sleep-do) l. Zaae-’a (song-do)

In Chapter 2 Panagiotidis, Revithiadou, and Spyropoulos discuss morphological evidence from Greek in favor of the existence of a *v* head. Specifically, the authors

argue that virtually any verb in Greek has either an overt or a covert verbalizing suffix that corresponds to *v*. In cases in which there is no overt suffix lexicalizing *v*, Greek has an empty *v*(owel)-slot in the phonological representation which can also be analyzed as a verbalizing suffix. Despite exceptions such as γράφω, Panagiotidis et al. conclude that every verb in Greek shows something that can only be understood as an abstract suffix. Since this suffix does not correlate in any way with Aktionsart, tense, ϕ -features, or any other feature beyond verbhood, we have to conclude that it is a “pure” *v*.

A different approach to *v*, revealing some more interesting properties of this syntactic head, is presented in Chapter 3. There, Polinsky, Radkevich, and Chumakina argue for a layered *v* to explain an unusual agreement pattern in Archi. In Archi there seems to be an agreement between first person pronouns and absolutive-marked arguments. In other words, we see an agreement between arguments that is not mediated by the verb. This is quite unusual, given that we are talking about person agreement, and not a sort of concord. Polinsky, Radkevich, and Chumakina solve this issue as follows: they first postulate a condition for the existence of DPs in Archi: all DPs must have a class feature, or they will not be interpretable at the interfaces. Next, they show that pronouns in Archi are not uniform: first person pronouns are weak and thus need to be “licensed” by *v*, while first person exclusive pronouns, which always feature a focus marker (a D head according to the authors), receive their class feature via agreement with *v*. Were *v* not layered, it would be impossible for these pronouns to get their class feature from it, because of positional constraints. Evidence for this layering is thus given indirectly in this chapter.

We have seen that there is disagreement regarding the information encoded on roots. Another key property of roots concerns their categorization. In Embick and Marantz’s (2008) work it is claimed that these units must be categorized before they are transferred to the interpretive components. More precisely, the little heads could be regarded as categorizers that turn concepts (non-linguistic units) into lexical items (linguistic units):

(3) $\sqrt{\text{CAT}}$, $\sqrt{\text{LIKE}}$, $\sqrt{\text{SAD}}$, $\sqrt{\text{SING}}$, etc. (concepts)

(4)
$$\begin{array}{c} xP \\ \swarrow \searrow \\ x \quad \sqrt{\text{ROOT}} \end{array} \quad (\text{lexical item})$$

Though acategorial, roots have been argued to correspond to different denotations/semantic types:

- (5) $\sqrt{\text{ROOT}}$ denotations
- a. States = $\sqrt{\text{clean}}$
 - b. Manners = $\sqrt{\text{hurry}}$
 - c. Entities? = $\sqrt{\text{hammer}}$
 - d. Relations? = $\sqrt{\text{await}}$

(from Marantz 2001a: 20)

After reviewing the different approaches to root types in the literature, Alexiadou and Lohndal argue in Chapter 4 that there is a typology to be drawn depending on the meaning a root encodes independently of its syntactic categorization. This language typology is proposed according to a division of labor between *v* and roots: in some languages, there are highly general roots that can appear with a range of different meanings; in others, roots impose severely restricted meanings. The typology is illustrated by an in-depth discussion of three languages: English, Greek, and Hebrew. Hebrew is argued to represent one end of the scale where the root encodes a minimal and highly abstract meaning. English represents the other end where the root has a severely restricted meaning. The two languages differ in terms of the role of functional morphology, which is crucial in Hebrew but not at all a central part of English. Greek is important in the sense that the language falls in between English and Hebrew: it has some highly general and abstract roots, and it has some roots with highly determined and specified meanings. The chapter offers suggestions on how to formalize the typology in question.

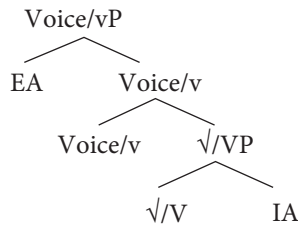
II. Voice

In the 1990s the standard take on Kratzer's (1996) Voice and Chomsky's (1995) *v* was to regard them as two sides of the same coin, as they indeed seem to perform the same functions: they introduce the external argument, signal a cyclic domain (phase), encode causative semantics, verbalize the root, and assign accusative (absolutive) Case to the internal argument. A closer inspection, though, reveals that these are "too many things" for a single head to do. Today the standard approach to the internal scaffolding of the *v*P assumes at least two independent functional heads right above roots: Voice and *v*, which can be bundled to form a single lexical item in certain languages (as noted above). The division of labor between Voice and *v* is as indicated in (6):

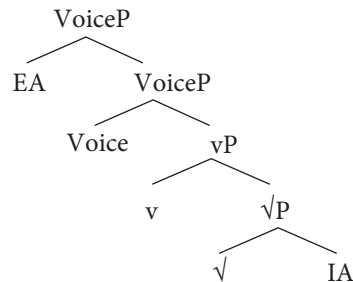
- | | |
|----------------------------------|--|
| (6) a. Chomsky's (1995) <i>v</i> | b. Kratzer's (1996) voice |
| (i) encodes causative semantics | (i) introduces the external argument |
| (ii) verbalizes the root | (ii) checks accusative (absolutive) Case |
| | (iii) delimits a phase |

The introduction of a Voice projection in addition to Chomsky's (1995) original little *v* head, yields the more articulated *v*P configuration in (7b), instead of the original formulation in (7a), which is only available via Voice-*v* bundling (Harley this volume; Pytkäinen 2008, and references therein):

(7) a. VoiceP/vP bundling structure



b. VoiceP/vP splitting structure



As argued by Harley (2012), evidence from applicative-deploying languages, such as Chichewa, Kinyarwanda, or Hiaki, suggests that Voice and *v* heads are independent. Hiaki provides morphological evidence of a causative head that also verbalizes the root. This is shown in (8), where the element bolded is the spell-out of *v*:

- | | |
|------------------------------|----------------------|
| (8) English | Hiaki |
| a. to red den (red) | a. sikisi (siki) |
| b. to fatt en (fat) | b. awia (awi) |
| c. to soft en (soft) | c. bwalkote (bwalko) |
| d. to sharpen (sharp) | d. bwawite (bwawi) |

(from Harley 2012: 16)

The contributions contained in this part of the book are related to the role of Kratzer's (1996) Voice, whose properties we have only just started to consider. In Chapter 5 Anagnostopoulou argues in favor of the coexistence of *v* (introducing an event variable) and Voice (introducing the external argument), and finds evidence for this articulation in adjectival passives, which split into several types that can be described in terms of this architecture. The chapter summarizes the main arguments for postulating *v* and Voice in adjectival passives, assuming that the two verbal layers are required in order to account for two distinctions: the distinction between participles without event implications vs. participles with event implications (the former lacking and the latter containing a *v*), and the distinction between resultant state adjectival passives with event implications vs. target state adjectival passives with event implications (the former possibly containing Voice, but the latter being unable to). The discussion also focuses on the absence of Voice in target state adjectival passives, providing evidence from constraints on verb classes that are allowed and disallowed to form adjectival passives, and from a phenomenon of coercion of manner, instrument-based denominal verbs into result verbs in target state adjectival passives. Building on Kratzer's (2000) distinction between target and resultant states (the latter being transitory, and therefore compatible with the adverb *still*), Anagnostopoulou shows that *by*-phrases, instrumental prepositional

phrases (PPs), and agent-oriented adverbials are incompatible with target states participles, which in her analysis lack Voice:

- (9) a. *Ta lastixa ine akoma fuskomena apo tin Maria (Greek)
 the tires are still inflated by the Mary
 'The tires are still inflated by Mary.'
- b. *Ta lastixa ine akoma fuskomena me tin tromba (Greek)
 the tires are still inflated with the pump
 'The tires are still inflated with the pump.'
- c. *Ta lastixa ine akoma fuskomena prosektika (Greek)
 the tires are still inflated carefully
 'The tires are still carefully inflated.'

(from Anagnostopoulou this volume)

Anagnostopoulou further shows that the presence of Voice forces a manner reading of instrument denominal verbs, which, in the absence of Voice, can be construed as expressing results in target state adjectival passives. A coercion phenomenon of this type challenges the Manner-result Complementarity Hypothesis because the instrument is still entailed in adjectival passives with coercion, even though the verb has a result interpretation.

In Chapter 6 Schäfer outlines an analysis of medio-passives and the distribution of *by*-phrases, developing his previous work for a typology of Voice heads. Schäfer designs a typology of Voice based on two dimensions: syntactic and semantic transitivity. Each of these dimensions can have a positive or a negative value (yielding transitive and intransitive verbs, and so on). A verb is syntactically transitive if Voice has a D-feature to be checked by a DP in its specifier. A verb is semantically transitive if Voice can introduce a semantic argument (as a variable to be saturated or as an existentially bound variable). The typology is made more complex by the double nature of *se*, which can be a variable, when it saturates an argument slot, or an expletive, when there is no argument slot to be saturated (and in the absence of a c-commanding antecedent). The result of the interaction of all these primitives is a six-point matrix, featuring: (i) active Voice (Voice with a D feature and an external argument), (ii) medio-passive Voice (with no D feature and existentially bound external argument), (iii) active expletive Voice (with a D feature but no external argument), (iv) medio-marked expletive Voice (no D feature and no external argument), (v) transitive medio-passive Voice (D feature which is existentially bound and external argument), and (vi) passive input Voice (no D feature and external argument). In this approach, the *by*-phrase is allowed in constructions that have an external theta-role which cannot be saturated by an argument DP.

Inspired by cartography-based approaches, Chapter 7 introduces McFadden and Sundaresan's idea that the verbal space right above the root should actually be

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decomposed into four independent functional heads. With Tamil (a highly inflected, agglutinative Dravidian language) providing the empirical basis, these authors argue for the existence of a Trans(itive) head, distinguishing accusative from unaccusative variants of the same verb, having a specific phonological impact on the verb, and introducing the external argument; a Pass(ive) head, which is added to transitive variants of verbs, and is crucially independent from Trans; a Caus(ative) head, verbalizing the root base and introducing the event semantics; and finally a Mid(dle) head, a particularly complex functional item that is related to a series of notions (self-benefaction, volitionality, accident, inchoation from a state, etc.) associating the highest argument with an additional semantic role. Accordingly, the complete vP structure should be as in (10):

- (10) $[_{\text{Pass(ive)P}} \text{Pass } [_{\text{Mid(dle)P}} \text{Mid } [_{\text{voiceP}} \text{voice } [_{\text{VP}} \text{v } [\sqrt{\text{ROOT}}]]]]]$

Chapter 8, by Wurmbrand and Shimamura, analyzes the behavior of restructuring across a wide variety of languages, and takes on the difficult task of building a comprehensive theory of restructuring able to deal with all the empirical facts presented. Starting from the assumption that restructuring configurations involve a deficient clausal (functional) domain, Wurmbrand and Shimamura illustrate how the properties of these constructions allow us to identify different components of the Voice domain. Specifically, the authors discuss the phenomenon of long object movement (LOM), in which the object of the embedded predicate is promoted to matrix subject due to a passive-like operation of the matrix predicate. Wurmbrand and Shimamura show how the LOM construction challenges existing accounts of restructuring and of the Voice domain more generally. The authors propose an analysis that is based on a VP-complementation approach, in which the restructuring complement has a Voice domain that is shown to be systematically deficient. The morphological, syntactic, and semantic properties of restructuring clauses are thus derived from a split-Voice hypothesis (v/Voice- vs. ϕ -features), which is combined with a cyclic spell-out approach in a valuation-based Reverse Agree framework.

III. Event and argument structure

Argument structure refers to the syntactic structure linking a verb with its arguments. Over the years, this notion has been interpreted in many different ways, mainly focusing either on the lexical verb or on the structure associated with it. According to the “lexicalist” view, starting in the generative tradition with Chomsky’s (1970) “Remarks on Nominalization,” the verb determines the structure associated with it. This also implies that argument structure alternations (like, for instance, the transitive-unaccusative alternation) are to be computed on the verb and its thematic grid as a whole, not excluding the verb from the computation. Lexicalist analyses assume thus that the specification of the number of arguments a verb can take and

their theta-role marking all stem from the verb and are codified in the corresponding lexical entry (Hale and Keyser 1993).

Argument-structure alternations, such as the transitive-unaccusative alternation involving verbs like *sink* or *open*, target the verb and the syntactic structure with the theta grid associated with it (cf. Chierchia 1989/2004; Reinhart and Reuland 1993; Pesetsky 1995; and many others), which is generally referred to as a subcategorization frame.

While sharing the same assumptions, some lexicalist approaches focus more on the thematic side than on the structural side of the VP. A more semantically oriented approach is taken, for instance, by Levin and Rappaport-Hovav (1995) and Levin (1993).

Events also involve participants, bearing different theta-roles. The distinction between a theta-role grid and an “event-participant” grid is somewhat blurred; this is why the two notions (event structure and argument structure) were very often treated as one and the same, much like the different sorts of *v* discussed above. Aktionsart (Vendler 1967; Taylor 1977; Dowty 1979) and event participants were thus often treated on a par with the subcategorization frame of the verb. In some cases this correspondence is made explicit. Dowty (1991), for instance, proposes the following definition of Agent and Patient proto-roles, linking thematic roles to events:

- (11) Contributing properties for the Proto-Agent:
 - a. volitional involvement in the event or state
 - b. sentience (and/or perception)
 - c. causing an event or change of state in another participant
 - d. movement (relative to the position of another participant)
 - e. exists independently of the event named by the verb.

(from Dowty 1991: 572)
- (12) Contributing properties for the Proto-Patient:
 - a. undergoes change of state
 - b. being an incremental theme
 - c. causally affected by another participant
 - d. stationary relative to movement of another participant
 - e. does not exist independently of the event named by the verb.

(from Dowty 1991: 572)

A different approach, focusing on events only and deconstructing them into eventuality atoms, is taken by Borer (2005b). Ramchand (2008) also proposes a decomposition of events into subevents, each of which featured on its own head, but she takes a less radical view of the atomicity of subevents than Borer. The subevent phrases identified by Ramchand (2008) are the “causing projection,” with an *init*

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head, the “process projection,” with a *proc* head, and the “result projection” with a *res* head.

The lexicalist approach was heavily challenged by the advent of DM (Halle and Marantz 1993), which introduced the idea that a root can form any possible structure depending on the functional head it is merged with (a “nominalizer” *n*, a “verbalizer” *v*, and so on,) and that VP acquires a semantics derivationally, and not because of the predetermined selectional “template” it is merged with (Embick and Marantz 2008).

The extent to which event structure and argument structure overlap, and the way in which they are built up, are the issues addressed in this last part of the book.

While the first two chapters, one by Öztürk and Erguvanlı Taylan and one by Ramchand, take Ramchand’s view on argument structure as their background, the third and final chapter, by Marantz and Wood, takes the opposite path.

In Chapter 9 Öztürk and Erguvanlı Taylan examine Voice alternations in Pazar Laz. This language exhibits a three-way voice system, with options they call initiator voice, undergoer voice, and active impersonal voice. Öztürk and Erguvanlı Taylan argue that, despite this apparent “alternation,” there is no valency reduction in Pazar Laz: all verbs feature transitive structures. Verbs that are usually believed to feature only one argument, like unaccusatives and unergatives, also involve a transitive structure with an undergoer and initiator. While syntactically these two classes have an identical (transitive) structure, morphologically they display some differences. Morphological patterns, in fact, reflect the difference between these two classes of verbs, which consists in a change of perspective, either that of an undergoer or that of an initiator.

The chapter continues with the authors showing that an undergoer position is also present in unergative verbs, and that an initiator position is also present in unaccusative verbs, as reflected in the morphology. Initiator and undergoer cannot be dissociated in syntax, but they can be brought to the foreground or to the background depending on the perspective in which the event is presented. This gives the impression that the language has the same monoargumental verbal categories as English. In Pazar Laz, though, it is impossible to conceptualize events featuring only an initiator or only an undergoer.

In Chapter 10 Ramchand challenges once again the assumption that event structure and argument structure are essentially the same, and that therefore event participants and verb arguments always overlap. Firstly, Ramchand presents a theoretically and empirically grounded argument for a fine-grained distinction of the different properties that much literature ascribes to little *v*, under the assumption that functional heads must be semantically motivated.

Reviewing some studies on argument and event structure, Ramchand identifies three major domains into which current empirical generalizations fall. The first group includes the representations of event structure and event participants in syntax, like those put forward by Ramchand (2008). The second group consists of generalizations about the nature and ordering of morphemes in the extended verbal

projection. These generalizations are at the core of DM, represented by works such as Harley (1995). The third group consists of generalizations about domains, detecting locality effects in syntax and morphology. A significant contribution in this sense is the seminal work of Kratzer (1996). These three types of generalization are usually not compatible with one another. This chapter offers a unifying solution: Ramchand proposes a functional structure that encodes the roles of Voice and of the verbalizer without conflating them.

After discussing some open issues concerning the hierarchy of functional projections, Ramchand proposes a finer-grained structure for the VP, rejecting the hypotheses that the verbal domain corresponds to one single v-head or has Voice as its highest head. Specifically, event structure decomposition is shown to differ from argument externalization, although these two aspects are somewhat related. The argument for the splitting of the event domain in a number of functional projections finds empirical support in the syntax of English progressive and perfective forms, which are shown to respectively belong and not belong to first-phase syntax. Ramchand grounds her empirical observations in the first-phase semantics, and suggests a head which could possibly, from a syntax-semantics interface viewpoint, be closing up the first derivation cycle, in line with Ramchand and Svenonius (2014).

The last chapter, by Marantz and Wood, maintains that the syntax and semantics of external arguments depend on the autonomy of the syntax of argument structure, in line with Marantz (2013b). In contrast to the model proposed by Ramchand, as well as by Öztürk and Erguvanlı Taylan (this volume), Chapter 11 challenges theories that associate both the semantic interpretation and the morphophonological spell-out with a distinct syntactic head. Marantz and Wood argue instead for a simplification of the primitives that introduce argument structure in the syntax, proposing a unifying analysis for heads that typically introduce an external argument, such as Voice (which introduces the external argument of verb phrases), little *p* (which introduces figures, i.e., the external argument of a prepositional phrase (PP)), and low applicatives (which introduce the external argument related to a DP). Marantz and Wood argue that these constructions are syntactically identical, and differ from prepositions and high applicatives only because of the absence of a lexical root adjoined to them.

This chapter thus proposes that one single head, with distinct semantic and morphological realizations that are context-sensitive, can account for several empirical facts. The argument that there is only a single argument-introducing head is supported by a detailed discussion of three constructions: Icelandic figure reflexives, Japanese adversity causatives, and possessor-raising constructions.

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Part I

Root and Verbalizer

1

The “bundling” hypothesis and the disparate functions of little *v*

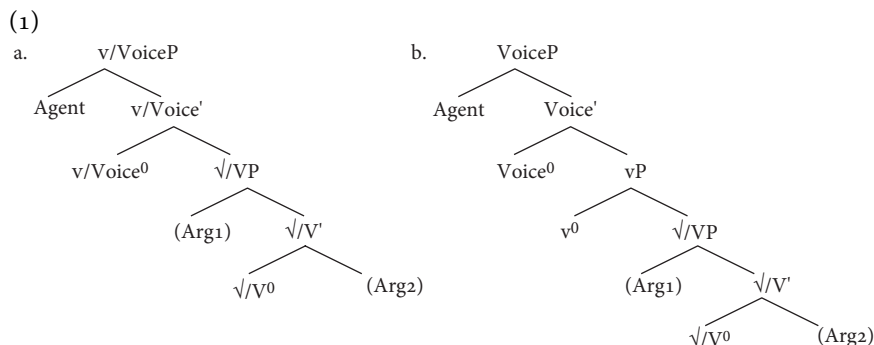
HEIDI HARLEY

1.1 Introduction

The split-verb phrase hypothesis first appeared in Larson (1988), and was taken up in various guises by Hale and Keyser (1993), Kratzer (1994, 1996), Chomsky (1995), and Marantz (1997). Each ascribed a different subset of properties to the new external argument-introducing projection. The new projection also had a variety of names—verb phrase (VP), *v*P, or VoiceP. Some considered it functional (especially Kratzer 1996); others treated it as lexical, or left its functional or lexical status unaddressed.

However, all these proposals had in common the assumption that the external argument was introduced in the new phrase’s specifier, and the projection of the lexical verb or its root was the new phrase’s complement. That is, the overall picture was as illustrated in (1a). The new projection also variously (i) checked accusative case, (ii) served as a verbalizer for the head of its complement, (iii) introduced agentive or causative semantics and/or (iv) an initiating subevent, and (v) delimited a cyclic domain.

Later proposals further subdivided the VP, including, among many others, Borer (1994, 2005b), Travis (2000), Pytkänen (2002, 2008), and Ramchand (2008). In Pytkänen (2002, 2008), the single *v*P/VoiceP projection became VoiceP and *v*P, as in (1b). The VoiceP introduced an external argument, checked accusative case, and delimited a cyclic domain; the *v*P introduced agentive or causative semantics and verbalized the head of its complement.



Unlike other subdivision proposals, Pykkänen also introduced a “Voice-bundling” parameter, allowing both (1a) and (1b) to occur in a language, depending on the setting of its Voice-bundling parameter. A Voice-bundling language would have the structure in (1a), unifying the functions of Voice and *v* in a single projection, and a Voice-splitting language would have the structure in (1b), with each functional head independently performing their different functions. The central idea is similar to the “Split-IP” parameter (Thráinsson 1996; Bobaljik and Thráinsson 1998), where rich agreement paradigms were argued to motivate learners to posit separate projections for agreement and tense marking, with consequences for the syntax of subjects (Rohrbacher 1994, 1998; Vikner 1995, 1997; Bobaljik and Jonas 1996; Thráinsson 1996; Bobaljik and Thráinsson 1998; Conradie 2007). In the case of the Voice-bundling parameter, the Language Acquisition Device (LAD) looks for morphological evidence that *v* and Voice are independently realized, and for morphosyntactic and semantic evidence that they function independently. Absent such evidence, the LAD posits a single *v/Voice* head consisting of a “bundle” of all the relevant features and serving the relevant functions. Given such evidence, the LAD projects separate *v* and Voice heads, with the former bearing certain features and the latter others. (Alternative technical formulations of the bundling parameter are possible, e.g., a Spanning view (Svenonius 2012; Merchant 2015) or a selection-based/Adjacency-requirement view (Marantz p.c.). In a Spanning treatment, a nanosyntactic series of projections—one for each feature—might be expected to arise. We will use Pykkänen’s original metaphor throughout—feature-bundling—and comment occasionally when the data might differentiate alternative technical implementations.)

We first consider several case studies that suggest that Pykkänen’s Voice-bundling parameter is on the right track. There are bundling languages where it appears that both *v* and Voice functions are tightly correlated, appearing and disappearing together; and there are splitting languages where the functions are distributed across two distinct projections and can be manipulated independently. The bundling languages we will consider in section 1.2 are Chol and Persian, while for splitting

languages we look at Hiaki and Chemehuevi in section 1.3. We apply the predictions of the splitting/bundling parameter to the interaction of passive and light verb constructions in Italian, suggesting that it is Voice-bundling.

We then focus narrowly on *v* (section 1.4), reviewing arguments from Key (2013) and Jung (2014) about productive causatives, applicatives, and passive, looking at Key’s treatment of Turkish causatives and Jung’s discussion of Korean and Hiaki applicatives and causatives. These patterns indicate that productive causatives are not a recursive *v*, as assumed in Harley (1995, 2013), but instead realize a pure “Caus” category. The verbalizing *v* and the causativizing Caus are categorically and morphosyntactically distinct. Finally, a sketchy, possibly cartographic picture of the hierarchy of derivational verbal projections begins to emerge (section 1.5).

1.2 The case for bundling: all functions in one head

What if accusative assignment, external argument introduction, and verbalization were all accomplished by a single head? There would certainly be a tight connection between case assignment and the presence of an external argument, as per Burzio’s Generalization (Burzio 1986: 178). Such a language should also show a tight connection between an external argument and the category of the main predicate: lack of external argument would entail lack of verbalizing projection, so the main predicate would be non-verbal. Coon and Preminger (2013) argue that Chol, a Mayan language, exhibits this constellation of properties, and constitutes robust evidence for the *vP* as originally conceived.

1.2.1 Chol (Coon and Preminger 2013)

Coon and Preminger propose that the following biconditional holds in Chol (Coon and Preminger 2013: 11):

- (2) a. All internal arguments must be assigned case (absolutive) by a v^0 head.
- b. All v^0 heads must assign absolutive case to an internal argument.

That is, v^0 is the locus of absolutive case. If a v^0 with absolutive case is present in the derivation, it must discharge it. If this is true, and if v^0 when present also introduces an Agent and verbalizes the lexical projection below, then the biconditional makes clear predictions:

- (3) *Predictions:*
 - a. Clauses without a case-marked internal argument will be headed by non-verbal predicates (since no internal case means no v^0 , and hence no verbalizing projection).

- b. Only structures *with* case-marked internal arguments will include an Agent (since no absolutive case means no v^0 , and no v^0 means no external argument).

Coon and Preminger show that both predications are true of Chol. Consider an optionally transitive root like *dance*. The unergative version is a nominal that cannot inflect as a verb, while the transitive version with an absolutive determiner phrase (DP) complement is a verb, with an overt verbalizing morpheme on the non-verbal stem (Coon and Preminger 2010: 11):

- (4) a. Choñkol-oñ tyi soñ
 PROG-ABS.1P PREP dance
 ‘I am dancing.’
 b. Choñkol k-soñ-iñ bals
 PROG ERG.1P-dance- v_{tr} waltz_N
 ‘I am dancing a waltz.’

In (4b), although the 3p absolutive case borne by *bals* ‘waltz’ is null on both noun and verb, its morphosyntactic presence can be detected by the fact that the first person marker on the transitive verb comes from the ergative A-series, while in the intransitive version in (4a), the first person marker comes from the absolutive B-series. In (4b), the null absolutive case on *bals* ‘waltz’ conditions the ergative marking of the subject. The presence of absolutive case assigned to an internal argument thus correlates with whether the verb root *soñ-* is verbal or not, as predicted by the bundling hypothesis.

The second prediction concerns the relationship between case assignment and the introduction of an Agent argument. Only roots with a case-marking complement should introduce an Agent. To express the agent of an unergative intransitive root, or a root with a caseless incorporated object, a light verb structure is required; the lexical stem cannot behave as a verb. The light verb takes a nominal version of the lexical stem as its complement. In consequence, the light verb (not the main verb) is able to introduce an Agent argument, since it case-marks that nominalized main predicate.

- (5) a. Tyi a-cha'l-e k'ay unergative verb with agent
 PRF A.2P-DO- v_{tr} song_N
 ‘You sang.’ (Lit. You did song)
 b. Tyi a-cha'l-e wuts'-pisil incorporated caseless object noun
 PRF A.2P-DO- v_{tr} wash-clothes_N with agent
 ‘You washed clothes.’ (Lit. You did clothes-washing)

In Chol, then, only verbalized things take case-marked complements, and only verbalized things have Agent arguments, and only case-marked complement-takers are verbal. The three properties—verbalizing, case-licensing a complement, and Agent-introducing—go together. This pattern is nicely accounted for if v^0 is associated with all three properties.

- (6) a. v^0 verbalizes
 b. v^0 carries a case feature that *must* be checked (a property of Chol)
 c. v^0 makes possible the introduction of an Agent

Coon and Preminger show that this constellation of effects leads to a neat explanation for a puzzle in the progressive, which is headed by a non-agentive auxiliary (exemplified in (4a) above). Since this auxiliary is non-agentive, the only case available in progressive clauses comes from Infl^0 . This follows from the bundling hypothesis, according to which non-agentive elements, lacking v^0 , cannot assign case to an internal argument. Consequently, the progressive auxiliary behaves differently when combined with transitive verbs than when combined with intransitive verbs. With intransitive verbs, as in (4a), Infl^0 is able to directly case-mark the single argument of the lexical verb, and a preposition case-marks the nominalized lexical verb itself. In progressives of transitive verbs, in contrast, the auxiliary instead selects a nominalized clause whose two arguments are internally licensed. For a full discussion, see Coon and Preminger (2013).

We next turn to another bundling case study, of Persian, considering the predictions of the bundling hypothesis for the passive.

1.2.2 Persian (Folli, Harley, and Karimi 2005)

The argumentation below depends on the assumption, common in syntacticocentric views of morphology, that one terminal node corresponds to one morpheme. If the functions of Voice^0 and v^0 are subsumed by a single head, there should only be a single morpheme that accommodates all functions.

This has implications for languages like Persian, where virtually all verbal expressions consist of a light verb, realizing v^0 , and a separate non-verbal predicate supplying lexical content. If the v^0 head in Persian bundles both Voice and *v* functions together, then the only way to demote the Agent is to change the light verb, i.e., if there is a single v^0 head, then the agent-introducing version should be in complementary distribution with the non-agent-introducing version. In fact, that is what we see (Folli et al. 2005). In (7a), there is an agentive light verb, *dâdan* ‘to give,’ and the clause contains an agent argument. In (7b), the best translation of an English passive is provided. Rather than passivize the light verb *dâdan*, an entirely different, non-agentive light verb is substituted, *xordan* ‘collide.’ In short, if there is no separate Voice^0 in a language, that language will lack a true passive, instead implementing passive-like meanings via argument structure alternations that require distinct light verbs.

- (7) a. tim-e mâ unâ-ro shekast *dâd*
 team-EZ we they-râ defeat gave
 ‘Our team defeated them.’

- b. tim-e mâ az unâ shekast *xord*
 team-EZ we of they defeat collided
 ‘Our team was defeated by them.’
 (Lit-ish: ‘Our team encountered defeat from them.’)
- (8) a. Minu bachcha-ro kotak *zad*
 Minu child-râ beating hit
 ‘Minu hit the child.’
- b. Bachche kotak *xord*
 child beating collided
 ‘The child got hit.’

This kind of light verb alternation is indistinguishable from causative/inchoative alternations in Persian, which also involve substituting a non-agentive for an agentive light verb:

- (9) a. âb be jush âmad
 water to boil came
 ‘The water boiled.’
- b. Nimâ âb-ro be jush âvard
 Nima water-râ to boil brought
 ‘Nima boiled the water.’

That is, the same head, as diagnosed by complementary distribution, is responsible for passive-like structures, inchoative structures, causative structures, and agentive structures. Passive-like structures aren’t built on top of agentive structures,¹ rather, passive-like structures and agentive structures are in an equipollent relationship.² Further, the light verb head that is substituted to eliminate an Agent argument is the only verb in the clause. The main predicate in all Persian complex predicates is non-verbal. The two properties of Agent-introduction and verbalization, then, are united in a single head in Persian.

¹ See section 1.4 for discussion of Bruening’s (2013) view of passive, which does build passive structures on top of agentive structures.

² Likely the most accurate way to characterize the Persian situation is to say that there is no passive whatever, no productive construction that does what we normally think of a passive as doing. Negin Ilkhanipour (p.c.) has pointed out a couple of counterexamples, including the following, where the light verb *keshidan* ‘pull’ appears in a participial form in construction with *shodan* ‘become’ apparently functioning as a passive auxiliary.

(i) ?in xune be ?âtash keshide shod
 this house to fire pull.prt beome.pst.3sg
 ‘This house was burned.’

Such constructions are rare in the language, however; whatever status they have, Persian does not have a *productive* passive in the same way that English, German, or Hiaki do.

In many accounts (see, e.g., Borer 2005b, among others) a further connection between verbalization and interpretation is posited: only verbalized elements can have event structure. If the verbalizing head introduces events, then we might expect Persian to reflect the dynamic/stative distinction in its light verbs. That is, stative predicates should involve a stative *v*, while eventive predicates involve an eventive *v*, in complementary distribution with each other. This expectation is also borne out (Folli et al. 2005). Consider the translation of the ambiguous eventive/stative verb *remember* in Persian, in (10a) and (10c). A sentence like *Kimea remembers her name* can be translated in two ways, both using the same non-verbal predicate, *be yâd* ‘in memory.’ If the stative light verb *dâshtan* ‘have,’ appears, the construction is necessarily stative, as shown by its incompatibility with progressive, (10b). If the eventive light verb *âvardan* ‘bring,’ is used instead, the present tense implies habitual aspect, as typical for eventive verbs, (10c), and the progressive construction is possible, also typical for eventive verbs (10d).

- (10) a. Kimea esm-e un-o be yâd dâr-e
 K. name-Ez her-râ to memory have-3s
 ‘Kimea remembers her name’ (stative)
 (Lit. Kimea_i has her_k name in her_i memory)
- b. *Progressive
 *Kimea esm-e un-o dâr-e be yâd dâr-e
 K. name-Ez her-râ have-3SG to memory have-3SG
 (Lit. *Kimea is having her name in her memory)
- c. Kimea esm-e un-o be yâd mi-yâr-e
 K. name-Ez her-râ to memory hab-bring-3SG
 ‘Kimea is remembering her name.’
 (Lit. Kimea is bringing her name to memory)
- d. ✓Progressive
 Kimea esm-e un-o dâr-e be yâd mi-yâr-e
 Kimea name-Ez her-râ have-3SG to memory hab-bring-3SG
 ‘Kimea is remembering her name.’

Thus another property of verbalization, eventiveness, is associated with the *v*⁰ position in Persian. Persian thus appears to be a bundling language, where verbalization, Agent-introduction and eventiveness are all controlled in a single *v*⁰ head.

1.3 The case for splitting: Voice⁰ functions and *v*⁰ functions on independent heads

Pylkkänen shows that Finnish and Japanese exhibit properties suggesting that *v*⁰ and Voice⁰ are separate projections in those languages. Harley (2013) provides a further

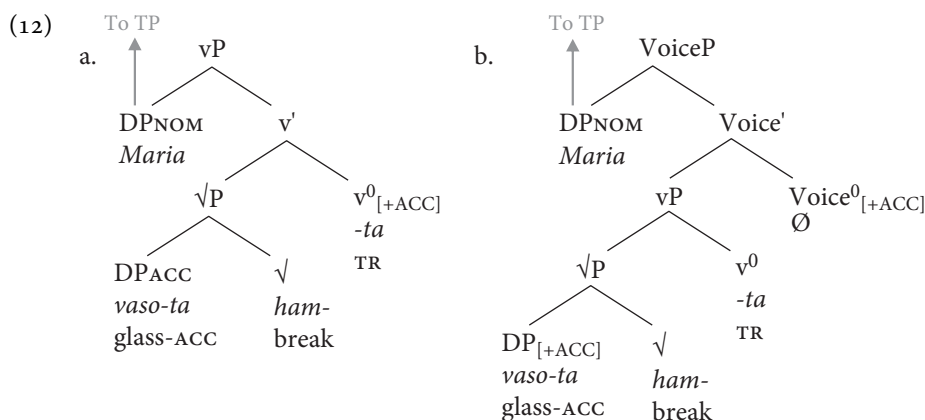
illustration of Voice-splitting in the Uto-Aztecan language Hiaki. Serratos (2008) also argues that Chemehuevi is a Voice-splitting language, adducing evidence from Causer-less causatives. Let us briefly review these accounts.

1.3.1 Hiaki passives and Causee-less causatives

Hiaki³ is agglutinating. The frequently realized causative/inchoative alternation is equipollent; the alternation changes the verbalizer on a non-categorized $\sqrt{\text{ }}$, which cannot stand alone. Verbalization and causative or inchoative semantics are thus simultaneously encoded by a single morpheme, a clear realization of v^0 :

- (11) a. Maria vaso-ta ham-ta-k
 Maria glass-ACC break-TR-PRF
 ‘Maria broke the glass.’
 b. Uu vaaso ham-te-k
 The.NOM glass break-INTR-PRF
 ‘The glass broke.’

If Hiaki is a Voice-bundling language, the transitive sentence in (11a) should have the structure in (12a). On the other hand, if Hiaki is a Voice-splitting language, the structure of (11a) should be (12b), in which *-ta* accomplishes only verbalization and causativization, and a null Voice head introduces the external argument and checks accusative case.



³ Hiaki is spoken in northern Mexico and southern Arizona. Everything I know about the language is thanks to the generosity, patience, and interest of our consultants, Maria Florez Leyva and Santos Leyva.

Recall the key assumption that a single terminal node is realized by a single morpheme. If (12a) were correct, we would expect that eliminating the external argument would involve changing the properties of *-ta* itself. A passive might involve a third morpheme, neither *-ta* nor *-te*. If (12b) is correct, on the other hand, we could affect the external argument by adjusting Voice⁰, leaving *-ta* unaffected; we might see a passive morpheme “stack” outside of the *-ta* morpheme. The latter is what happens: to get a passive of (11a), instead of substituting a third morpheme for *-ta/-te*, the passive suffix *-wa* is stacked outside *-ta*:

- (13) Uu vaaso ham-ta-wa-k.
 The.NOM glass break-TR-PASS-PRF
 ‘The glass was broken/Someone broke the glass.’

Given the one-morpheme one-terminal hypothesis, the discrete *v*⁰ and Voice⁰ morphemes in Hiaki suggest separate heads for *v*⁰ and Voice⁰, i.e., that Hiaki is a Voice-splitting language.

Hiaki’s patterns of productive causativization also point in this direction. Hiaki has a “direct” causative *-tua*, where the Causee appears marked as a direct object (14a), and an “indirect” one, *-tevo*, where the Causee cannot appear (14b):

- (14) a. Juan Maria-ta vaso-ta ham-ta-tua-k.
 Juan Maria-ACC glass-ACC break-TR-CAUS.DIR-PRF
 ‘Juan made Maria break the glass.’
 b. Juan vaso-ta ham-ta-tevo-k
 Juan glass-ACC break-TR-CAUS.IND-PRF
 ‘Juan had the glass broken/had someone break the glass.’

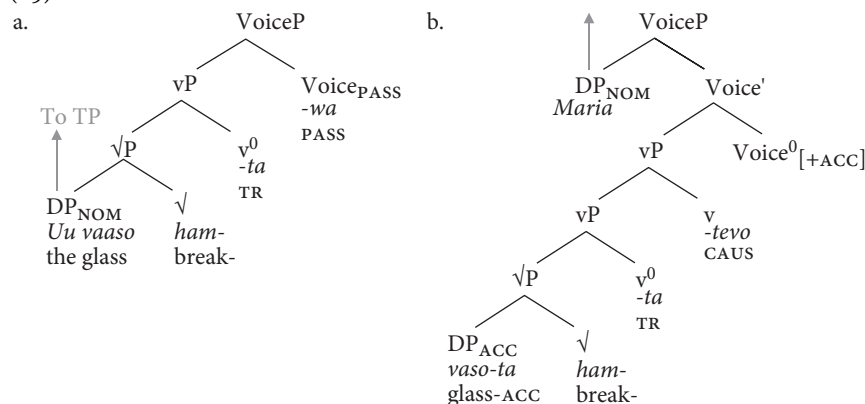
In the *-tevo* causative of *ham-ta* ‘break-TR,’ the embedded Agent is absent from the structure without affecting the causative *-ta* morpheme in *hamta*. That is, *-tevo* embeds an external-argument-less structure without affecting the morphology associated with the external argument in (11).

In a syntacticocentric morphology, we would not expect *-tevo* or *-wa* to be able to “subtract” or “delete” a structural Agent from structure in its complement (i.e., a syntacticocentric morphology must obey the Monotonicity Hypothesis; Koontz-Garboden 2007). Instead, both *-wa* and *-tevo* select a structure that semantically includes an unsaturated Agent argument, but which does not include a syntactic DP argument to saturate that position.

That is, passive *-wa* selects for a *vP* whose head introduces an external argument in its semantic denotation. Because Hiaki is a Voice-splitting language, the external argument position is not saturated at the *vP* level. An active Voice head would introduce a syntactic DP argument to saturate that open position, but the passive Voice head does not; instead the open position is existentially bound.

Similarly, *-tevo* selects for a vP complement. The semantic external argument is introduced by the v in the complement of *-tevo*, but that argument is not saturated by any DP, since *-tevo*'s complement lacks a VoiceP. It ends up existentially bound.

(15)



In addition to this morphosemantic argument, Harley (2013) introduces syntactic evidence from the Hiaki high applicative to show that the position in which the external argument is introduced is distinct from the projection headed by the morpheme bearing agentive or causative semantic content; that is, there are separate projections that bring in agentive semantics and the external DP. The Hiaki applicative introduces an internal argument to any agentive predicate (transitive or intransitive). In (16), the applied argument and the applicative morpheme are both in bold. Neither can appear without the other, i.e., the presence of one entails the presence of the other.

- (16) a. Maria **uusi-ta** aa ham-ta-**ria-k**
 Maria child-ACC 3sg.ACC break-TR-APPL-PRF
 'Maria broke it for the child.'
- b. Aapo **uusi-ta** yi'i-**ria-k**
 3sg.NOM child-ACC dance-APPL-PRF
 'He danced for the child.'

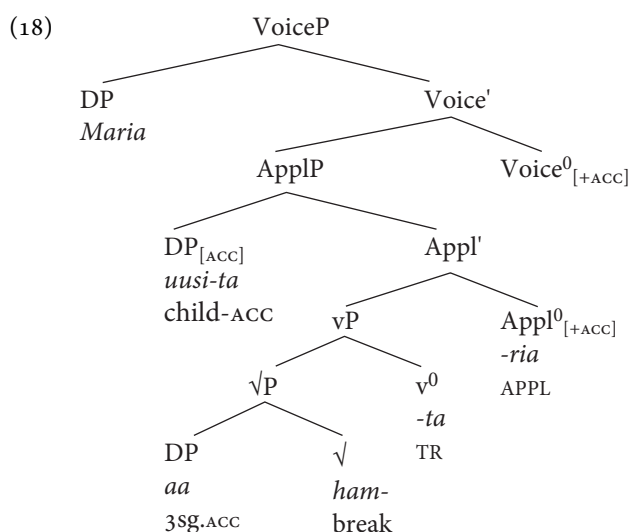
Syntactically, the applied argument is the highest internal argument of the clause, c-commanded by the subject and c-commanding any other internal argument. This accounts for why the applied argument, but not the internal Theme argument, is promoted in a passive of an applicative, as shown in (17). This demonstrates that the applied argument is more local to spec-TP and nominative case than other internal arguments.⁴

⁴ Note the Hiaki applicative head forms part of the array of structural case-checkers of the clause, since the applied argument participates like any other object in A-movement operations.

- (17) Uusi aa ham-ta-ria-wa-k
 Child.NOM 3sg.ACC break-TR-APPL-PASS-PRF
 ‘It was broken for the child/Someone broke it for the child.’
 (Lit. The child was broken it)

Now, the applicative suffix *follows* the v^0 morphology, so by the Mirror principle (Baker 1985), the applicative suffix must occur higher in the structure than v^0 . However, the argument introduced by the applicative head is *lower* than the external Agent argument. This is shown by the fact that the Agent *Maria* receives nominative in (16a) above, while the applied argument *uusi-ta* ‘the child-ACC,’ is accusative. The applied argument, then, must be lower than the Agent.

As McGinnis (1998, 2001) and Pylkkänen (2002) show, this configuration of morphological and syntactic elements is predicted if *vP* and VoiceP are separate projections. The Appl head selects for *vP* and introduces the applied argument above *vP* but below VoiceP. The ApplP is in turn the complement of Voice, which introduces the Agent, above the applied argument:



For a fully detailed exposition see Harley (2103); however, the above should establish some motivation for the split-*vP* picture.

1.3.2 Chemehuevi: Causer-less causative (Serratos 2008)

One final piece of evidence for the independence of the causative projection and the Causer argument comes from Serratos’ (2008) analysis of Chemehuevi, another Uto-Aztecan language. In Chemehuevi, we see a similar pattern as in other non-Voice-bundling languages, where causative morphology appears without a Causer argument being introduced (see also Wood and Marantz (this volume) for

discussion of the Japanese adversity causative). Serratos gives (19) and (20) to illustrate:

- (19) Iva asi-huvi-tu-wa.
 here salt song-caus-pres
 ‘Salt song is going on.’
- (20) Sünawa-vi kani-gai-mi-yü yunakaimü-wa’i-vü,
 coyote-NPN.nom house-have-usit-past company-with-3sg/poss
 ‘Coyote was dwelling with his company
 tüvi-pü-a tügü-tu’i-kwa’i-k’ya.
 earth-NPN-obl hungry-caus-away-perf
 when it was hungry times on earth.’

Both are truly subjectless constructions: neither causative form has an overt subject, nor has a thematic object been promoted. Nonetheless, both are clearly morphologically and semantically causative. In particular, (20) uses the Chemehuevi causative *-tu’i*, whose regular behavior and biclausal status is conclusively independently established by Serratos. A more literal translation would be ‘when hunger was being caused on earth,’ though even this passive translation does not capture the subjectless structure of the original (maybe, ‘when there was hunger-causing happening on earth’ would be closer). The unexpressed Causer argument in this construction is not human, nor another (perhaps supernatural) intentional agent, which would be expected if this were an impersonal construction with a null impersonal subject (see e.g., Maling and Sigurjónsdóttir 2002, among others). Rather, the hunger is understood to be caused by recurring natural processes, implicit from the context. We thus have a clearly causative structure lacking a syntactic Causer argument. This possibility is predicted, as Serratos argues, if Chemehuevi is a Voice-splitting language, in which external arguments are introduced by VoiceP independently of agentive verbal semantics.

1.3.3 Diagnosing bundling of Voice+v: participial passives and light verb constructions

If the “bundling” parameter accounts for crosslinguistic variation, what other kinds of diagnostics might be sensitive to it? If a language lacks a high applicative (as in Pytkänen 2002), or a stacking passive, or Causee-less causatives, can we be sure that it is a bundling language? Might it be a splitting language that just happens to lack these morphemes? How can we decide whether its Voice and *v* are bundled or independent?

The interaction of passivization with the light vs. heavy verb distinction may be telling in this regard. When Voice and *v* are bundled in a given language (as for Persian) we predict that light verbs in that language should fail to passivize, since

adjusting Voice will necessarily involve adjusting v. Passivization of light verb constructions, then, may provide a bundling diagnostic for Voice and v.

Folli and Harley (2007, 2013) argue that Italian participial passives can only be built from main verbs, and that light verbs— v^0 heads—resist passivization. We can see this with *fare* ‘make, do,’ whose main verb and light verb uses can be easily distinguished. Main verb *fare* passivizes felicitously, as in (21):

- (21) a. Gianni ha fatto una torta.
Gianni has made a cake
'Gianni made a cake.'
- b. Una torta è stata fatta da Gianni.
A cake is been made by Gianni
'A cake was made by Gianni.'

Folli and Harley (2007) show, however, that light causative *fare* does not:

- (22) a. Gianni ha fatto ridere Mario.
Gianni has made to.laugh Mario
'Gianni made Mario laugh.'
- b. *Mario è stato fatto ridere da Gianni.
Mario was made to.laugh by Gianni
'Mario was made to laugh by Gianni.'

Similarly, the light verbs in Italian *V-ata* complex predicates (Folli and Harley 2013) resist passivization:

- (23) a. *?Una risata è stata fatta da Giulia. (active: Giulia ha fatto una risata)
A laughing is been made by Giulia (Giulia has made a laughing)
- b. *?Una letta è stata data a Kant da Gaia. (active: Gaia ha dato una letta
a Kant)
A reading is been given to Kant by Gaia. (Gaia has given a reading to
Kant)
- c. *?Una sgridata è stata presa da Gianni. (active: Gianni ha preso una
sgridata.)
A scolding is been taken by Gianni (Gianni has taken a scolding)

Folli and Harley (2007, 2013), working in a framework without an independent VoiceP, argue that participial morphology selects a Root-containing constituent below v^0 to attach to, and this is why Italian light verbs cannot passivize. However, in that work they did not differentiate between VoiceP and vP; effectively, they presumed that Italian was a bundling language.

If Voice and *v* are not bundled, and if light verbs reside in *v*, then we expect Voice morphology to be able to select light verbs as well as main verbs. If light verbs are

instead in complementary distribution with passive voice, as observed in (23) in Italian we can conclude that Voice+v are bundled in that language.⁵ This possibility predicts the failure of passivization with Italian light verb constructions.⁶

1.3.4 Summary so far

We have seen that Pytkänen's typology distinguishing Voice-bundling from Voice-splitting languages may be supported by evidence from Chol, Persian, Hiaki, and Chemehuevi. The evidence we have used to classify a given language are listed below:

- (24) a. *Voice-bundling language*:
- (i) has relationship between verbalizing morphology and Agent introduction
 - (ii) can have relationship between internal case checking and Agent introduction
 - (iii) has a single position of exponence for verbalizing, causativizing, inchoative, and "passivizing" morphology.
- b. *Voice-splitting language*:
- (i) has agglutinating ("stacking") passive morphology
 - (ii) can have high applicatives
 - (iii) can show causative morphology in the absence of a syntactic Causer argument.

⁵ A counterargument to this idea for both English and Italian, however, might be made from the observation that verbalizing morphology is *not* in complementary distribution with passive voice in English (Borer 2003; Harley 2009) or Italian:

- (i) The solution was clar-ifi-ed
- (ii) The verb was nominal-ize-ed.

The same is true for event nominalizations, which have been argued to lack VoiceP (see, e.g., Marantz 1997; Harley and Noyer 1998). On this basis, Borer (2003), and subsequently Harley (2009), argue that English is *not* a Voice-bundling language, since verbalizing morphology can appear without requiring the introduction of an external argument. Marantz (p.c.) suggests that the bundling restriction could be relativized to context, so it might apply only when T is adjacent to Voice, thus explaining why v can receive independent exponence in passives and nominalizations. Such relativization might predict a more fine-grained range of bundling patterns than the context-independent view presented here.

⁶ Here is a point where variations in the technical implementation of the bundling parameter would matter. If one adopted Bruening's (2013) approach to passive, according to which a Pass⁰ head selects for an unsaturated (but "active") Voice head, the conclusions drawn here about the relationship between passive and bundling would be unjustified, since Passive and (active but unsaturated) Voice could and would always co-occur. The facts from Italian and Persian concerning the difficulty of passivizing an agentive light verb construction would then go without an explanation, as would certain Hiaki affixal raising predicates. I suggest, preliminarily, that Bruening's proposal is simply the vP-VoiceP splitting hypothesis in a novel guise: his tests for "active" voice are actually tests for agentive v, which introduces an agentive argument but does not saturate it. This is what passive Voice does in this framework as well, without requiring the Voice recursion (passive and active co-occurring) that Bruening advocates.

Taking separate Voice and *v* nodes to be established, we next consider *v* itself. In previous work, building on Miyagawa (1994, 1998), I argued that productive causatives are a subtype of *v*.⁷ However, work by Key (2013) and Jung (2014) calls this into question. Productive causatives may not be *v* after all, and we may need an even finer grained subdivision: verbalizing *v*P, subject-introducing VoiceP, and productive causative CausP.

1.4 Morphological causatives: recursion of *v*P? Or a dedicated projection in the hierarchy? (Key 2013)

Having looked at the motivation for separating Voice and *v* in at least some languages, we now turn to little *v* itself, and its interactions with causatives and applicatives.

Harley (1995, 2008), following Miyagawa (1994, 1998), suggested that productive causatives and lexical causatives are both *v*⁰. A productive causative of a lexical causative is possible in languages like Hiaki and Japanese, the latter exemplified in (25). If causatives are *v*, then a productive causative of a lexical causative is an example of *v*P embedding *v*P:

- | | | | |
|------|---|--|---------------|
| (25) | kow-as-ase
break-CAUS-CAUS
‘make someone break something’ | ugok-as-ase
move-CAUS-CAUS
‘make someone move something’ | (Kuroda 1993) |
|------|---|--|---------------|

The *v*P-recursion approach predicts arbitrarily long chains of causatives, the way independent causative verbs like *make* do (*John made Bill make Joe make Sam do his homework*). Such a structure would surface as a verb with multiple causative suffixes, *V-caus-caus-caus*.

However, such recursive structures are impossible in both Japanese and Hiaki, and, in a wide-ranging survey, Svenonius 2005 showed that there seems to be a cross-linguistic prohibition against multiple productive causatives. A theory like that of Miyagawa (1994, 1998) or Harley (1995, 2008) must capture this independently: if productive causatives are *v*Ps headed by *v*_{CAUS}, and lexical causatives are also, then the impossibility of recursion of productive causatives is difficult to model; one expects the property of self-embedding to iterate. Elimination of causative recursion has usually been stipulated away by some specific morphological constraint, for example a dispreference for adjacent identical morphemes (Kuroda 1993 suggests such an account for Japanese). The more languages exhibit the constraint, however, the more we are motivated to search for a general, rather than specific, explanation for it.

⁷ This is presupposed in the discussion of Voice-splitting in Chemehuevi in (20) above, since (20) is a productive causative. The independence of Voice and *v* in Chemehuevi is also established by (19), a lexical causative, which Serratos (2008) shows is indubitably a verbalizer.

Key (2013) argues for a syntactic characterization of this prohibition. He suggests that lexical causatives, formed by the verbalizer v_{CAUS} , are distinct from productive causatives, which are a purely causative element in the extended projection above vP : CausP. For Key, the ban on recursion of productive causatives is cartographic in character, rather than morphological. In his account, productive causatives do not verbalize, and verbalizers are not productive causatives: vP and CausP are distinct.⁸

Somewhat ironically, the language that provides the evidence for Key's hypothesis is Turkish, which, on the surface, appears to be an exception to Svenonius's 2005 generalization; Turkish appears to *allow* causative recursion. Key shows, however, that Turkish "causative recursion" is not in fact causative recursion at all; rather, apparent causative recursion is actually focal reduplication. We next will see how Key's proposal accounts for the ban on recursion of productive causatives and informs our understanding of the nature of v .

1.4.1 Turkish productive causatives in comparison to Japanese

Given the Voice-splitting hypothesis, we can ask whether the embedded constituent in a causative construction is VoiceP, or smaller. Japanese productive causatives (like Hiaki *-tua* causatives) seem to embed a VoiceP, with exceptional case marking (ECM) of the embedded Agent argument, patterning biclausally according to several tests. Both matrix Causer and embedded Agent can control a subject-oriented adverbial, (26); binding condition B is satisfied when an embedded object is coindexed with the matrix Causer, so the embedded and matrix clauses count as independent binding domains, (27); and the embedded clause can conjoin with another clause, within the scope of the matrix causative, (28).

(26) Adverbial control: two subjects

Taroo-wa	arui-te	Hanako-o	ik-ase-ta	
Taroo-Top	walk-te	Hanako-acc	go-sase-pst	
Readings:	'Taro made Hanako go, walking.'			
	'Taro, walking, made Hanako go.'			(Harley 2008: 30)

(27) Binding condition B: two domains

a.	Toru _i -wa	Kitahara _j -ni	kare [*] _i / _j -o	syookai si-ta.
	Toru-TOP	Kitahara-DAT	he-ACC	introduction do-PST
	'Toru introduced him to Kitahara.'			

⁸ See Wood and Marantz (this volume) for a proposal that could derive this difference between v and Caus, rather than stipulate it; the relevant information may be deducible from the categorial property of the head's sister at Merge, supplemented with a projection constraint.

- b. Toru_i -wa [Kitahara_j-ni kare_i/*_j-o syookai s]-ase-ta.
 Toru-TOP Kitahara-D_{AT} he-ACC introduction do-CAUS-PAST
 ‘Toru made Kitahara introduce him.’ (Horvath and Siloni 2011b)

(28) Coordination of embedded clause:

- Hanako-ga [[Masao-ni uti-o soozisuru]-ka
 Hanako-NOM Masao-DAT house-ACC clean-or
 [heya-dai-o haraw]]-ase-ru kotoni si-ta
 room-rent-ACC pay- CAUS-INF that to.do-PAST
 ‘Hanako decided to make Masao clean the house or pay room rent.’
 Reading: -(s)ase scopes over ‘or’; Masao has a choice. (Kuroda 2003: 455)

These tests distinguish clearly between productive and lexical causatives in Japanese, since the latter do not pass any of them.⁹

Turkish also exhibits an important distinction between lexical and productive causatives: lexical causatives exhibit root-conditioned allomorphy, while productive causatives never do, just as in Japanese. However, Key (2013) shows that even Turkish *productive* causatives pass none of the tests for biclausality (following Horvath and Siloni 2011b, who show the same for Hungarian). The embedded subject is not a potential controller for a subject-oriented adverbial, (29); a pronominal embedded object cannot be bound by the matrix Causer, (30); and no coordination or disjunction of the embedded event is possible, (31).

(29) Adverbial control: one subject

- Tarkan_i Hakan-a_j Mehmet-i bil-erek_i/*_j döv-dür-dü.
 Tarkan Hakan-DAT Mehmet-ACC know-PART beat-CAUS-PAST
 ‘Tarkan made Hakan beat Mehmet on purpose.’
 (*bil-erek* ‘knowingly,’ only controlled by Tarkan, not Hakan)

(30) Binding condition B: one domain

- a. Hakan_i on-u*_i döv-dü
 Hakan 3SG.ACC beat-PST
 ‘Hakan beat him.’
 b. Tarkan_i Hakan-a_j on-u *_i/*_j döv-dür-dü
 Tarkan Hakan-DAT 3SG beat-CAUS-PST
 ‘Tarkan made Hakan beat him.’

⁹ See Key (2013) for discussion of the embedded scope of negation.

- (31) No coordination of caused events

*Hakan Mahmut-a ev-i temiz-le- veya kira
 Hakan Mahmut-DAT house-ACC clean-v- or rent
 öde-t-me-ye karar ver-di.
 pay-CAUS-NOM-DAT decision give-PAST

Intended: ‘Hakan decided to make Mahmut clean the house or pay rent.’

Key concludes that Turkish causatives are Pylkkänen’s vP-embedding type, in contrast to Japanese causatives, which are Voice-embedding. If these tests diagnose the presence of an embedded VoiceP in Japanese, they are telling us that the Turkish productive causative does not embed a VoiceP.

Without a VoiceP projection, however, it is puzzling how the Causee argument in Turkish productive causatives, for example *Hakan* in (29), is introduced. Key argues that Turkish Causees are adjuncts to vP.¹⁰ This explains two important differences between Turkish and Japanese Causees. In Turkish, the Causee may be omitted (32), while in Japanese, it may not:

- (32) Hasan kutu-yu aç-tır-dı.
 Hasan box-ACC open-CAUS-PAST

‘Hasan made the box be opened/Hasan made (someone) open the box.’

Further, in Turkish, the Causee is immune to passivization, which instead targets the embedded object. In Japanese the Causee is promoted in a passive and the embedded object cannot be.¹¹ (See Key 2013 for examples.)

The Causee-less sentence in (32) is not a case of *pro*-drop, which requires discourse licensing and yields a definite (pronominal) interpretation. Key gives example (33) below to illustrate the interpretation of a *pro*-dropped Turkish subject; it requires an established discourse topic with which the dropped argument co-refers:

- (33) Kapı-yı anahtar-la aç-tı.
 door-acc key-with open-past
 ‘(He) opened the door with a key.’ ←requires established topic
 #(Someone) opened the door with a key/#The door was opened with a key.

In contrast, the omission of the Causee in (324) does not require contextual support and receives an existential interpretation, like the unexpressed Agent of a passive. It cannot receive a pronominal interpretation, as in (34):

¹⁰ It might also be introduced by a null Applicative head, as Jung (in prep) proposes for Korean.

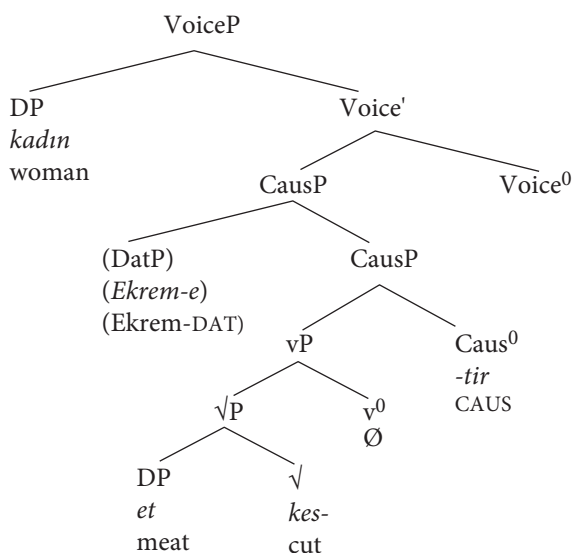
¹¹ Hiaki *-tua* causatives pattern with Japanese *-sase* causatives. See Tubino Blanco (2010). Hiaki *-tevo* causatives resemble Turkish causatives.

(34) Existential interpretation for missing Causee

- a. Hasan kutu-yu aç-tır-di.
 Hasan box-ACC open-CAUS-PAST
 ‘Hasan had the box opened./Hasan had (someone) open the box.’
 #Hasan had (him) open the box.
- b. Kadın et-i kes-tir-di. (Özkaragöz 1986)
 woman meat-ACC cut-CAUS-PAST
 ‘The woman had the meat cut./The woman had (someone) cut the meat.’
 #The woman had (him) cut the meat.

Key proposes that Turkish productive causatives are headed by a dedicated CausP projection embedding a vP. They lack an embedded VoiceP that would introduce a Causee, as illustrated in (35).

(35) Turkish productive causatives



‘The woman had Ekrem cut the meat/had the meat cut.’

Key’s analysis accounts for a puzzling paradox about allomorphy in the Turkish verb. We have seen that Turkish lexical causatives exhibit root-conditioned allomorphy, while productive causatives never do, even when intervening heads are null and the causative is adjacent to the root. One might think that this is because the causative is merged outside the first vP, as Miyagawa (1994, 1998) and Harley (1995, 2008) argue, proposing that allomorphy can only be conditioned within the same phase, and the productive causative head is too far away to be conditioned by the root. That predicts, however, that root-conditioned allomorphy should be impossible outside the vP in

general. Unfortunately, Turkish (like English) shows allomorphy of Tense⁰ when the heads between Tense⁰ and the root are null. How can allomorphy on Tense be conditioned across vP and VoiceP, when allomorphy on causative heads apparently cannot be? The Miyagawa/Harley view cannot be maintained in its most straightforward form. (See Embick 2010 and Merchant 2015 for alternative approaches to Tense/Asp allomorphy.)

Key's explanation depends on his proposal that productive causatives are CausP, not vP. Productive causatives select already verbal complements; no verbalizing properties are needed in the productive causative head (cf. Wood and Marantz on *i*^{*}, this volume). Productive causatives, then, are *pure* causatives, expressing nothing else. In contrast, Key proposes that lexical causatives bundle verbalizing [+v] with [+CAUS].

Crucially, claims Key, the lexical causative allomorphs of Turkish are specified for [+v, +CAUS]. The elsewhere causative morpheme (36), however, is a realization simply of the [+CAUS] feature; it is underspecified for [+v]:

(36) *-Dir* ↔ +CAUS

Consequently, the elsewhere causative morpheme is eligible for insertion into both the causative verbalizing head—the lexical causative head—and the 'pure' causative head, CausP, of productive causatives. When no specific allomorph for lexical causative v exists, the elsewhere causative realizes the lexical causative head due to being underspecified for v.¹²

The Caus⁰ head of a productive causative, in contrast, lacks the verbalizing function, the [+v] feature. Consequently the only Turkish vocabulary item that can be inserted in a Caus⁰ head is elsewhere *-Dir*, not any of the lexical causative allomorphs.¹³ It is the fact that the allomorphs are specified for both [+v] and [+CAUS] that blocks root-conditioned allomorphy in the productive causative, not an intervening phase boundary.¹⁴

Besides explaining the monoclausal character of Turkish causatives, and the optionality of the Causee argument, Key accounts for the puzzle we began this subsection with: the failure of recursion in productive causatives. If productive causatives are the exponent of a pure CausP in the extended functional projection,

¹² Wood and Marantz (this volume) offer a different take on the lexical-causative allomorphs of Japanese, according to which the 'causative' realization of v in Japanese instead indexes transitivity via conditioned allomorphy from Voice.

¹³ The productive causative also has a partially phonologically conditioned allomorph *-t-*; see Key (2013).

¹⁴ A reviewer rightly notes that other constraints on the theory of allomorphy are needed to rule out the possibility of conditioned allomorphs of Caus⁰ itself. Although no morpheme realizing a [+v] feature could be inserted, the existence of *other* conditioned allomorphs of Caus are not in principle ruled out. Since cross-linguistic surveys (Svenonius 2005) suggest that such conditioned allomorphy of Caus⁰ does not occur, an explanation of that is still needed. Key's theory, however, does rule out lexical causative allomorphs in the head of CausP.

we expect the ban on recursion. Just as there cannot be more than one TP or more than one AspP, there cannot be multiple CausPs.

1.4.2 *Turkish causative iteration is not causative recursion*

Before turning to consider the implications of a dedicated CausP, we briefly review Key’s explanation of why examples like (37) below are not, after all, cases of causative recursion, since such recursion, if instantiated, would undermine the extended projection view of CausP. As noted above, Turkish is often presented as an exception to the claim that productive causatives block recursion on the basis of such examples.

- (37) Mektub-u müdür-e kâtip vasıta-si-yile imzala-t-tır-dı-m.
 letter-ACC director-DAT secretary means-3SG-INST sign-CAUS-CAUS-PST-1SG
 ‘With the help of the secretary, I got the director to sign the letter.’ (Aissen 1979)
 (often presented as “I made the secretary make the director sign the letter.”)

Key shows that many languages that have “causative recursion” of this kind independently allow vacuous causative iteration. This is the case for Turkish, Kashmiri, Tsez, and Hungarian. The sentence in (38b), despite containing multiple causative morphemes, is not interpreted as instance of recursive causation; rather, it describes a single causative event:

- (38) a. Saç-ım-ı kes-tir-di-m
 hair-1SG-ACC CUT-CAUS-PST-1SG
 ‘I had my hair cut.’
 b. Saç-ım-ı kes-tir-t-ti-m
 hair-1SG-ACC cut-CAUS-CAUS-PST-1SG
 ‘I had my hair cut.’ (Göksel and Kerslake 2005)

Key shows that iteration of causative morphemes introduces focal emphasis, akin to Ghomeshi et al.’s (2004) “Contrastive Reduplication” in English: “It’s not a *SALAD*-salad, it’s a chicken salad.” In cases like (40b), multiple causative morphemes do not reflect embedding of causative events.

What about the possibility of extra Causees? First, extra Causees need not correspond one-to-one with extra causative suffixes. An instrumental-marked Causee can appear even if the extra causative suffix does not, as Key demonstrates in (39a) and (b):

- (39) a. Müdür, yardımcısı aracılığıyla işçi-ler temsilci-si-ne
 director assistant-3SG by.means.of worker-PL rep.-3SG-DAT
 yeni bir yönetmelik yaz-dır-t-tı.
 new a by-laws write-caus-caus-PST
 ‘The director, via his assistant, had the workers’ representative write new by-laws.’

- b. Müdür, yardımcısı aracılığıyla işçi-ler temsilci-si-ne
 director assistant-3SG by.means.of worker-PL rep.-3SG-DAT
 yeni bir yönetmelik yaz-dır-dı.
 new a by-laws write-**caus**-PST
 ‘The director, via his assistant, had the workers’ representative write new
 by-laws.’

Key notes that the semantics of causation allows for multiple causal links in any causal chain, which can be introduced by adjuncts even in a language like English:

- (40) a. I had the letter signed by the director by means of a courier.
 b. I had my car repaired by Jim through Tom’s mediation.

Such adjuncts can introduce intermediate causal links in Turkish, even in verbs not marked causative at all:

- (41) Şükran kayıp çantasını karakol-da çalış-an bir tanıdık
 Şükran lost purse-3SG-ACC police.station-LOC work-PRT a acquaintance
 aracılığıyla/vasıtasıyla bul-du.
 by.means.of find-PST
 ‘Şükran found her lost purse by means of an acquaintance who
 works at the police station.’

Since additional causal links can be specified via adjuncts without causative iteration, and since causative affixes can vacuously iterate without specifying additional causal links, Key concludes that the “iterated causation” construction is simply the expected intersection of the independently possible causative focus construction with additional causal adjuncts. That is, in the putative Turkish causative recursion cases, vacuous causative iteration and additional causal links happen to co-occur.

1.4.3 Non-bundling *v*+Voice, bundling Caus+Voice (Jung 2014)

Another case that suggests a distinct categorical status for productive causatives in contrast to lexical causatives comes from Jung (2014), who demonstrates that Korean productive causatives interact with passives differently than lexical causatives, and that Hiaki applicatives interact with lexical causatives differently than productive causatives. Jung argues that Korean, like Hiaki, is a non-Voice-bundling language at the “first phase” level. The lexical causative morpheme and a stacking overt passive morpheme can co-occur, as illustrated for Hiaki in (42) and for Korean in (43). The *v*_{CAUS} projection and the Voice projection are therefore distinct.

- (42) Bwa’am on-tua-wa-k.
 food salt-LEX.CAUS-PASS-Perf
 ‘The food was salted.’

[Hiaki]

- (43) Lamyen-i ta kkul-i-eci-ess-ta.
 noodle-NOM all boil_{vi}-LEX.CAUS-PASS-Past-Comp.
 (Lit. The noodle was all boiled. (The noodle is ready.)) [Korean]

In Korean, as in Hiaki, an applicative can appear following a lexical causative, introducing an argument below the Agent in Voice, confirming Korean's non-bundling status:

- (44) Mary-ka tongsayng-eykey lamyen-ul kkul-i-ecwu-ess-ta.
 Mary-Nom brother-Dat noodle-Acc boil_{vi}-LEX.CAUS-APPL-Past-Comp
 ‘Mary cooked noodles for brother.’

In Korean, like Japanese and Hiaki, the Causee of a productive causative behaves as an independent subject. The structures are biclausal, so the productive causative embeds a VoiceP, not a vP.

Interestingly, however, Jung shows that Korean and Hiaki differ in whether or not a passive can stack on top of a *productive* causative, one which embeds an agentive verb. In Hiaki this is fine (45), but in Korean, the equivalent is surprisingly impossible. Korean productive causatives cannot be passivized (46):

- (45) Empo Huan-ta chochon-tua-wa-k
 you John-Acc punch-SYN.CAUS-PASS-Perf
 ‘You were made to punch John.’ (Escalante 1990: 86) [Hiaki]

- (46) *Mary-ka ppang-ul kwup-keyha-eci-ess-ta.
 Mary-Nom bread-Acc bake-SYN.CAUS-PASS-Past-Comp
 ‘Mary was made to bake bread.’ [Korean]

Jung therefore proposes that the *productive* causative in Korean is bundled with its matrix Voice features, while in Hiaki everything projects independently. In Korean, lexical causatives are independent of Voice, heading their own vP projection, but productive causatives are bundled with Voice and are thus not passivizable, since Voice cannot be adjusted without eliminating the productive causative bundled with it.

The different behavior of the Korean lexical and productive causatives is consistent with Key's conclusion that productive causatives are featurally simpler than lexical causatives, and constitute a distinct category. We can state Jung's results in Key's terms, then, by saying that although *v* is not bundled with Voice in Korean, the purely causative head Caus is.

In another line of argument perhaps suggesting a categorial difference between Caus and *v*_{CAUS}, Jung shows that in Hiaki the applicative head can only attach outside lexical causatives, not outside productive causatives. She shows that unaccusative roots with causative suffixes can be applicativized, as in (47), while causativized unergative roots cannot, as in (48):

- (47) Causative unaccusatives + applicative: ok
- a. Mario Alle-ta uka karo-ta wee-tua-ria-k.
 Mario Alex-Acc that car-Acc go-caus-appl-Perf
 ('Mario drove that car for Alex.')
- (Lit. Mario made that car go for Alex)
- b. Mario usi-ta uka vakot-ta sim-tua-ria-k.
 Mario child-Acc the snake-Acc leave-caus-appl-Perf
 'Mario made the snake leave for the child.'
- (48) Causative unergatives + applicative: bad
- a. *Jose Maria-ta uka kawai-ta chepti-tua-ria-k.
 Jose Maria-Acc that horse-Acc jump-caus-appl-Perf
 'Jose made that horse jump for Maria.'
- b. *Nee mala-ta Mario-ta yi'i-tua-ria-k.
 I mother-Acc Mario-Acc dance-caus-appl-Perf
 'I made Mario dance for mother.'
- c. *Jose yoemia-ta uka hamut-ta nok-tua-ria-k.
 Jose people-Acc the woman-Acc speak-caus-appl-Perf
 'Jose made the woman speak for the people.'

Since unergative verbs require an external argument introduced in Spec-VoiceP, causatives of unergatives must be productive, rather than lexical. Cases like (48), then, show us that productive causatives cannot applicativize in Hiaki.

Again, interpreting Jung's result in light of Key's conclusion, this pattern can be explained in selectional terms if the Hiaki high applicative selects for vP, not CausP.¹⁵ Applicatives of lexical causatives (and of other agentive verbs) are hence possible, but not applicatives of productive causatives.

Summarizing, we have seen two further pieces of evidence, from Jung 2014, that lexical and productive causatives behave like different syntactic categories. Korean v_{CAUS} and Caus interact differently with passive, which Jung accounts for by hypothesizing that Caus is bundled with Voice in Korean but v_{CAUS} is not. Similarly, Hiaki applicatives combine with v_{CAUS} but not Caus. Differentiating v_{CAUS} and Caus

¹⁵ A reviewer asked whether such a selectional mechanism could account for the impossibility of high applicatives in Voice-bundling languages, thus obviating the need for the technical notion of bundling in favor of selectional or adjacency requirements. One way to implement this might be to suggest that Voice in bundling languages is subject to an adjacency or selectional constraint between Voice and v that would rule out an intruding ApplP. However, it's not clear that such an approach would be consistent with the need for an intruding ApplP in a high-applicative language to be selected for by the same Voice⁰ as its transitive counterpart; presumably the ApplP in such a language would need to have the same category as its complement to get the selection facts right, so selection might not be able to differentiate between vP and ApplP. See Wood and Marantz (this volume) for discussion of how a featurally unspecified argument-introducing head could allow such selectional "transparency."

categorically could allow an account of this pattern in terms of the particular selectional properties of the applicative head.

1.5 Some puzzles and conclusions

To conclude this whirlwind overview of some recent developments in our understanding of Voice and *v*, we have seen that Pykkänen’s bundling parameter can provide insight into the behavior of Chol (section 1.2.1) and Persian (section 1.2.2) on the one hand and Hiaki (section 1.3.1), Chemehuevi (section 1.3.2) and Korean (section 1.4.3) on the other. The complementary distribution of passivization and light verb constructions in Italian provides further evidence of the patterns predicted by Pykkänen’s taxonomy (section 1.3.3).

However, it appears that further distinctions must be made within the first-phase domain. Key’s study of Turkish suggests that the verbalizing and causativizing functions of *v*_{CAUSE} are only bundled in lexical causatives. Productive causatives are pure projections of a CAUS feature, CausP, devoid of *v*’s categorial signature (sections 1.4.1 and 1.4.2).

The idea that productive causatives are a distinct projection from *v*P might help us understand Jung’s observation that productive causatives are bundled with Voice in Korean, while lexical causatives are not, and that Hiaki applicatives can attach to lexical but not productive causatives (section 1.4.3).

Key’s proposal, and Jung’s results, may suggest that verbal derivational morphology, while apparently scopally interactive, recursive, and subject to the whims of speakers’ expressive intentions, may instead reflect a Cinque-style hierarchy of categorial selection (Cinque 1999), with cross-linguistic variation in the bundling (or perhaps ‘spanning,’ Svenonius 2012) of these features. Assuming that the verb root sits at the bottom of the tree, we would have, minimally, the potential for a fully expanded hierarchy within VoiceP as outlined in (49) with the various patterns of bundling and independence in the different languages.

- (49) *v*P > ApplP > CausP₁ > VoiceP > CausP₂
- a. Turkish: *v*P, CausP₁, VoiceP distinct. No ApplP, no CausP₂
 - b. Hiaki: *v*P, ApplP, CausP₁ (-*tevo*), VoiceP and CausP₂ (-*tua*) distinct.
 - c. Korean: *v*P and ApplP distinct. No CausP₁. CausP₂+VoiceP bundled.
 - d. Italian: *v*P and VoiceP bundled. No ApplP,¹⁶ no CausP₁. (*Faire Infinitif* may exemplify CausP₂.)¹⁷

¹⁶ Or perhaps Italian has an ApplP, but one whose morphological exponent is zero. Folli and Harley (2006, 2007) make use of an ApplP to account for the distribution of certain affected dative arguments, including the Italian equivalent of the *Faire Par* causative construction.

¹⁷ I assume that *Faire Par* causatives involve main verb *fare* embedding a nominalized *v*P (Folli and Harley 2007).

Like other projections in a Cinque-type hierarchy, certain projections would have to be either optional or typically morphologically unexpressed in a given language. The hierarchy expresses Jung's result that applicatives cannot occur outside CausP₁ (or CausP₂, for that matter).

We have seen three positions in which a causative feature can be expressed. The head *v* can bear a [+CAUS] feature that conditions the insertion of the same elsewhere causative element as in either CausP, so long as no root-conditioned allomorph is specified; we see this in Japanese, Hiaki, and Turkish. The Caus heads, whether in a VoiceP-internal or external position, lack the [+*v*] feature, and so cannot be realized by root-conditioned allomorphs of *v*⁰, even causative ones. Both VoiceP-internal and Voice-P external CausPs would be necessary to capture the differences between VoiceP-embedding causatives, like Japanese *-sase* and Hiaki *-tua*, and *v*P-embedding causatives like Turkish *-Dir* or Hiaki *-tevo*.

The overall picture faces many potentially fatal problems, however. If languages can have two distinct kinds of CausP heads—Caus₁ below Voice (like Hiaki *-tevo* or Turkish *-Dir*) and Caus₂ above Voice (like Korean *-keyha* and Hiaki *-tua*)—then the account of the failure of causative recursion evaporates. Some language could use both CausP₁ and CausP₂ and realize each in a single structure with the same elsewhere causative. There would only be a single Causee (associated with the Voice-embedding CausP₂) but two causative events would be entailed. Hiaki *-tevo* and *-tua* can co-occur in some verbs; we have *ni'i-tua-tevo* 'fly-CAUS.DIR-CAUS.INDIR' and *hitto-tevo-tua* 'heal-CAUS.INDIR-CAUS.DIR,' which is predicted by the theory, but their exponence is not identical. If a language can have both Caus₁ and Caus₂, and if both can be realized by an elsewhere causative exponent, then we predict that we might even see *three* nonvacuous iterated instances of causative: lexical, Caus₁, and Caus₂. Since our starting point was the observation that such causative profligacy has not been documented, work remains.

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2

Little *v* as a categorizing verbal head: evidence from Greek

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2.1 The problem with *v*

A great body of literature advocates the existence of a verbal categorizing head *v*, an assumption that is particularly popular in syntactic decomposition approaches to categorization, such as Marantz (1997, 2001a, 2007) and Harley (2005a,b, 2008, 2009).¹ However, in the work concentrating on Phase Theory (Chomsky 2001 et seq.) *v* essentially stands for Kratzer's (1996) Voice, i.e., a causative-transitive or passive head, which hosts the external argument and, when transitive, may assign accusative case. Building on Doron (2003), Pylkkänen (2008), Alexiadou and Schäfer (2010), Harley (2013, this volume), Anagnostopoulou and Samioti (2014), and elsewhere, we take the position that these two heads should be kept distinct. Furthermore, we provide direct morphophonological evidence in support of the existence of the verbalizing head *v* as a separate category, as well as of its systematic realization in Greek.

This is a most welcome step as—with the exception of languages where verbs are customarily expressed as complex predicates—there is very little explicit morphological evidence for little *v* as a verbalizing head. In most cases, only causative morphology and derivational suffixes forming denominal or de-adjectival verbs are discussed as the exponents of *v* (see, for instance, Franchetto 2006 on Kuikuro; Koontz-Garboden 2009b on Ulwa; Embick 2004a Gerdtz and Marlett 2008, Mathieu 2013, 2014, on English *-en*; Alexiadou and Anagnostopoulou 2004 on Greek

¹ See also Harley and Noyer (1998), Embick (1998, 2000, 2004a,b, 2010), Alexiadou (2001), Arad (2003, 2005), Alexiadou and Anagnostopoulou (2004), Folli and Harley (2005, 2007, 2013), Folli et al. (2005), Borer (2005a,b, 2013), Alexiadou et al. (2006), Lowenstamm (2007), Embick and Marantz (2008), Basilico (2008), Ramchand (2008, this volume), Volpe (2009), Panagiotidis (2011, 2014, 2015), Harley (2013, 2014, this volume).

verbal derivational suffixes; Harley 2013 on Hiaki; see also Öztürk and Erguvanli Taylan (this volume), Sundaresan and McFadden (this volume) and the discussion about the articulated *v* layer in Harley (this volume) and Ramchand (this volume)). Additionally, a variety of native American languages provide evidence for the morpho(phono)logical manifestation of such verbalizing heads, mostly in the form of an affixal segment that turns either a category-specified or an a-categorical root into a verb (Gerdtz and Marlett 2008; Mathieu 2013, 2014). In this chapter we offer additional empirical evidence for the morphological manifestation of the verbalizing head *v*—distinct from Voice and Aspect—from a synthetic language, namely Greek.

In Greek, verbalizers have so far been almost exclusively identified with a number of derivational suffixes that derive verbs from nouns, adjectives, and adverbs, namely *-ev*, *-iz*, *-(i)az*, *-on*, *-ar* and *-en* (Alexiadou and Anagnostopoulou 2004; also Ralli 2005; Holton et al. 2012):

- | | | | |
|-----|--|---|--|
| (1) | pal-év-o | < | pál-i |
| | fight-VRB-NONPAST.1SG ² ‘I fight’ | | fight _F -SG.NOM/ACC ‘fight’ |

There is, however, a whole inflectional class, known as the *second conjugation*, which exhibits a distinct morphophonological behavior in that its members take a vocalic extension in certain forms (bold element in (3b)) and avoid stress on the root (Triantafyllidis 1988[1941]; Mackridge 1985; Joseph and Philippaki-Warbuton 1986; Ralli 2005; Holton et al. 2012).

- (2) First conjugation
- | | | |
|----|-----------|-------------------------|
| a. | yráf-o | ‘write-NONPAST.1SG’ |
| | yráf-is | ‘write-NONPAST.2SG’ |
| b. | yráp-s-o | ‘write-PFV-NONPAST.1SG’ |
| | yráp-s-is | ‘write-PFV-NONPAST.2SG’ |
- (3) Second conjugation
- | | | |
|----|-------------|--------------------------|
| a. | ayap-ó | ‘love-NONPAST.1SG’ |
| | ayap-á-s | ‘love-NONPAST.2SG’ |
| b. | ayap-í-s-o | ‘love-?-PFV-NONPAST.1SG’ |
| | ayap-í-s-is | ‘love-?-PFV-NONPAST.2SG’ |

What is important is that the verbalizing suffixes (e.g., */-ev/*, */-iz/*, */-on/*, etc.) are in complementary distribution with the morphophonological properties of second conjugation.

The main ideas and claims advanced in this chapter are as follows: (i) The vast majority of Greek verbs contain the morphophonological exponence of *v* in their stem, either as an overt formative—via derivational suffixation—(first conjugation)

² The following abbreviations are used in the text: ACC: accusative, ACT: active, AUG: augment, F: feminine, GEN: genitive, IMPV: imperfective, M: masculine, N: neuter, NOM: nominative, PASS: passive, PFV: perfective, PL: plural, SG: singular, VRB: verbalizer. The V-subscripted caret symbol □_V is used to indicate an empty vocalic slot.

or as an empty vocalic element $-\square_V$ (second conjugation), as argued in Spyropoulos et al. (2015). (ii) The *v* head is a simple categorizer, in the sense that it combines with a category-specific or an a-categorical root to derive a verb and, crucially, it is not related to transitivity, agentivity, or to argument/event structure. (iii) The verbalizer itself does not encode Aktionsart, causativity, transitivity, Voice or Aspect. And (iv) the choice of the allomorph expressing the *v* head lexically depends on the root.

2.2 First- and second-conjugation verbalizing morphology

Before discussing the morphological exponence of verbalizers in Modern Greek, let us review some facts about the verbal paradigm in the language.³ First of all, Greek verbs inflect for the following features: (i) Voice: $\pm$ active, (ii) Aspect: $\pm$ perfective, (iii) Tense: $\pm$ past, (iv) Subject agreement: 1/2/3sg, 1/2/3pl, and (v) Mood: $\pm$ imperative. The exponents of these inflectional features are suffixes that attach to the verbal stem:

- (4) The verb forms of the verb *minío* ‘I sue’
- | | |
|-----------------|---|
| a. miní-o | $\sqrt{\text{MINI-NONPAST.1SG}}$ |
| b. míni-a | $\sqrt{\text{MINI-PAST.1SG}}$ |
| c. miní-s-o | $\sqrt{\text{MINI-PFV-NONPAST.1SG}}$ |
| d. míni-s-a | $\sqrt{\text{MINI-PFV-PAST.1SG}}$ |
| e. miní-ome | $\sqrt{\text{MINI-NONACT.NONPAST.1SG}}$ |
| f. mini-ómun(a) | $\sqrt{\text{MINI-IMPV.NONACT.PAST.1SG}}$ |
| g. mini-θ-ó | $\sqrt{\text{MINI-PFV.NONACT-NONPAST.1SG}}$ |
| h. miní-θ-ik-a | $\sqrt{\text{MINI-PFV.NONACT-PFV.PAST-PAST.1SG}}$ |

There are three inflectional verb classes, traditionally called *conjugations*, according to some distinct morphophonological properties of the imperfective non-past forms. In first conjugation verbs (e.g., *miní-o* ‘I sue’), the stress falls on the root of all the imperfective non-past forms. *Second-conjugation verbs* (Class A: *ayap-á-o* ‘I love,’ Class B: *ster-ó* ‘I deprive’) exhibit post-root stress in the same forms and opt for the bare non-past agreement suffixes, i.e., the suffixes without the tense-sensitive theme vowel (see Table 2.1).⁴ Finally, there is a small group of verbs, usually referred to as *contracted verbs*, which select for the bare non-past agreement suffixes and exhibit root stress in the imperfective non-past forms. These verbs are classified here as *third conjugation verbs* (e.g., *akú-o* ‘I listen to, I hear’).

³ For descriptions and analyses of the Greek verbal inflection, see: Triantafyllidis (1988[1941]), Hamp (1961), Koutsoudas (1962), Householder et al. (1964), Warburton (1970, 1973), Babinotis (1972), Ralli (1988, 1998, 2003, 2005), Joseph and Smirniotopoulos (1993), Clairis and Babinotis (2005), Galani (2005), Spyropoulos and Revithiadou (2009, 2011), Holton et al. (2012), Merchant (2015).

⁴ Second-conjugation verbs are further classified in two subclasses. Class B verbs do not take the characteristic vowel /a/ between the root and the non-past agreement suffixes in imperfective non-past forms and they do not have the southern Greek alternative formation of imperfective past forms with the formative /-ay/. However, many second-conjugation verbs may inflect in both the Class A and the Class B pattern or follow a mixed pattern; for a list of these verbs, see Holton et al. (2012).

Turning to the verb stem itself, which is the focus of our investigation, it can be formed in three distinct ways. Firstly, there are a handful of Greek verb stems, exclusively of Ancient Greek origin, which exhibit no overt verbalizing morphology, for example, *γράφ-o* ‘I write,’ *βάφ-o* ‘I paint,’ *ράν-o* ‘I sew,’ the deponent *έφx-ome* ‘I wish,’ and the like. Moreover, root and verbal stem are identical (*γράφ-, βάφ-, ράν-* and *έφx-* respectively), as is evident from the corresponding nominal formations, i.e., *γραφ-ί* ‘writing, writing system,’ *βαφ-ί* ‘paint,’ *ραφ-ί* ‘seam,’ *εφx-ί* ‘wish.’ Despite their relatively high frequency, these verbs form a closed class and follow the first-conjugation inflectional pattern.⁵

Secondly, there is a large and productive class of Greek verb stems that are derived by attaching an overt suffix to the root, also all members of the first conjugation. This has already been illustrated in (1) and will be discussed in detail in section 2.3.

Thirdly, as Spyropoulos et al. (2015) discuss, second-conjugation verbs display the following distinct properties:

- (a) non-past imperfective forms exhibit non-root stress and take the bare non-past agreement suffixes, i.e., the suffixes without the tense-sensitive theme vowel⁶
- (b) a vowel appears between the bare non-past agreement suffixes and the root in non-past imperfective forms, for example, *αγap-ά-o* (Table 2.1)

TABLE 2.1. Non-past imperfective verb forms

	First conjugation <i>minío</i> ‘I sue’	Second conjugation		Third conjugation <i>akúo</i> ‘I listen to’
		Class A <i>αγapáo</i> ‘I love’	Class B <i>steró</i> ‘I deprive’	
1SG	<i>miní-o</i>	<i>αγap-ά-o/αγap-ό</i>	<i>ster-ό</i>	<i>akú-o</i>
2SG	<i>miní-is</i>	<i>αγap-ά-s</i>	<i>ster-ί-s</i>	<i>akú-s</i>
3SG	<i>miní-i</i>	<i>αγap-ά-i</i>	<i>ster-ί</i>	<i>akú-i</i>
1PL	<i>miní-ume</i>	<i>αγap-ά-me/αγap-ύ-me</i>	<i>ster-ύ-me</i>	<i>akú-me</i>
2PL	<i>miní-ete</i>	<i>αγap-ά-te</i>	<i>ster-ί-te</i>	<i>akú-te</i>
3PL	<i>miní-un(e)</i>	<i>αγap-ά-n(e)/αγap-ύ-n(e)</i>	<i>ster-ύ-n(e)</i>	<i>akú-n(e)</i>

⁵ There are at least two speculations to be made on their representation: either roots like $\sqrt{\text{γραφ-}}$, $\sqrt{\text{βαφ-}}$, and $\sqrt{\text{εφx-}}$ are inherently verbal or they contain a non-segmental, morphophonologically inert null verbalizer. Here we adopt the second position. Moreover, third-conjugation verbs also follow this pattern, i.e., they have no overt verbalizing morphology.

⁶ A comparison between the agreement non-past suffixes used in first-conjugation verbs and the past suffixes reveals that they contain a vowel that is sensitive to tense. We assume that this is the exponent of a theme element attached to the T functional head at Morphological Structure (see Oltra-Massuet 2000; Oltra-Massuet and Arregi 2005; Embick 2010). Second- and third-conjugation agreement suffixes do not contain such an element; hence we will refer to them as *bare suffixes*.

- (c) the root takes a vocalic extension, normally in the form of the vowel /i/ (with some lexically conditioned exceptions), in perfective forms just before the aspect/voice formative, e.g., *ayap-í-s-o*, *ayap-í-θ-ik-a* (Tables 2.2 and 2.3)

TABLE 2.2. Non-past perfective forms

	First conjugation	Second conjugation		Third conjugation
		Class A	Class B	
1SG	mini-s-o	ayap-í-s-o	ster-í-s-o	akú-s-o
2SG	mini-s-is	ayap-í-s-is	ster-í-s-is	akú-s-is
3SG	mini-s-i	ayap-í-s-i	ster-í-s-i	akú-s-i
1PL	mini-s-ume	ayap-í-s-ume	ster-í-s-ume	akú-s-ume
2PL	mini-s-ete	ayap-í-s-ete	ster-í-s-ete	akú-s-ete
3PL	mini-s-un(e)	ayap-í-s-un(e)	ster-í-s-un(e)	akú-s-un(e)

TABLE 2.3. Past perfective verb forms

	First conjugation	Second conjugation		Third conjugation
		Class A	Class B	
1SG	mini-s-a	ayáp-i-s-a	stér-i-s-a	áku-s-a
2SG	mini-s-es	ayáp-i-s-es	stér-i-s-es	áku-s-es
3SG	mini-s-e	ayáp-i-s-e	stér-i-s-e	áku-s-e
1PL	mini-s-ame	ayap-í-s-ame	ster-í-s-ame	akú-s-ame
2PL	mini-s-ate	ayap-í-s-ate	ster-í-s-ate	akú-s-ate
3PL	mini-s-an / mini-s-ane	ayáp-i-s-an/ ayap-í-s-ane	stér-i-s-an / ster-í-s-ane	áku-s-an/ akú-s-ane

- (d) past imperfective forms have the stressed formative /-ús/ and deviate from the canonical antepenultimate stress pattern of past forms, for example, *ayap-ús-a* vs. *mini-Ø-a* (Table 2.4).⁷

⁷ For the characteristic antepenultimate stress pattern in Greek past forms, see Warburton (1970), Babiniotis (1972), Ralli (1988, 2005), van Oostendorp (2007, 2012), and Spyropoulos and Revithiadou (2009, 2011).

TABLE 2.4. Past imperfective verb forms

	First conjugation	Second conjugation			Third conjugation
		Class A		Class B	
1SG	míni-a	ayap-ús-a	ayáp-ay*-a	ster-ús-a	áku-γ-a
2SG	míni-es	ayap-ús-es	ayáp-ay-es	ster-ús-es	áku-γ-es
3SG	míni-e	ayap-ús-e	ayáp-ay-e	ster-ús-e	áku-γ-e
1PL	miní-ame	ayap-ús-ame	ayap-áy-ame	ster-ús-ame	áku-γ-ame
2PL	miní-ate	ayap-ús-ate	ayap-áy-ate	ster-ús-ate	áku-γ-ate
3PL	míni-an/ miní-ane	ayap-ús-an(e)	ayáp-ay-an/ ayap-áy-ane	ster-ús-an(e)	áku-γ-an/ akú-γ-ane

* The /-ay/ formative occurs only in southern Greek varieties as an alternative to /-ús/ (Holton et al. 2012: 151).

Spyropoulos et al. (2015) propose that these properties are related to each other. More specifically, the vowel that appears between the root and the bare agreement suffixes in the non-past imperfective forms and the vocalic extension in the perfective forms manifest the same position in the morphosyntactic structure. They are all the surface manifestations of an empty vocalic element $-\square_v$, which may be realized with a different vowel, depending on lexical and morphophonological conditions, or it may remain unpronounced. In the latter case, it obliterates the effects of the stress assignment rules that operate on Greek verbs. In short, Spyropoulos et al. (2015) show that the abstract $-\square_v$ slot in second-conjugation verbs is the morphological exponent of a categorizing verbal head *v*.

Let us now turn to examining whether these verbalizing elements that make up verb stems out of roots, i.e., the overt ones such as /-ev/ and the abstract vocalic element $-\square_v$, encode pure “verbness” or more.

2.3 Greek verbal derivational suffixes as exponents of *v*

Robust evidence for the existence of a *v* head in first-conjugation verbs comes from overt morphemes, which are traditionally described as derivational suffixes deriving verbs from nouns, adjectives, and even adverbs (Triantafyllidis 1988[1941]; Ralli 2005; Holton et al. 2012): *-ev*, *-iz*, *-(i)az*, *-on*, *-ar*, *-en*. This piece of morphology exists in addition to the presence of voice, aspect, tense, and agreement morphology and unambiguously signals as verbal the stems in which it appears. As discussed throughout this chapter, once the behavior of these suffixes is examined carefully, it becomes evident that they are morphological exponents of a *v* head (cf. Embick 2000; Alexiadou and Anagnostopoulou 2004 et seq.; Alexiadou et al. 2006). Significantly, identical facts also hold for the abstract vocalic element $-\square_v$.

Before presenting the data, let us recall from the verb forms in (4) above that the overt verbalizing affixes coexist with and thus are independent of voice, aspect, tense, and agreement morphology. The same holds for the various manifestations of the abstract vocalic element /-□_v/. Moreover, it is impossible to form verbal stems directly from a root without these suffixes, or the abstract vocalic element /-□_v/. Any root (with the exception of the handful of ones mentioned in section 2.2) will yield sharply ungrammatical forms if it is directly combined with voice, aspect, tense, and agreement morphology; thus verbalizing suffixes turn roots into legitimate verbal stems. Consequently, they are obligatory (typically the suffix *-ar*, but also *-iz*, *-(i)az*, *-ev*, and *-on*) when coining new verbs from non-native roots, onomatopoeias, etc.

- (5) a. *-ar*
- | | |
|-----------|--------------------------------|
| park-ár-o | ‘I park’ |
| zum-ár-o | ‘I zoom in’ |
| jux-ár-o | ‘I hiss’ |
| gugl-ár-o | ‘I search something in Google’ |
| sol-ár-o | ‘I play a musical solo’ |
- b. *-iz*
- | | |
|-------------|-------------------------------------|
| bajld-íz-o | ‘I get psychologically tired/weary’ |
| sixtir-íz-o | ‘I dismiss (rudely)’ |
| njaur-íz-o | ‘I meow’ |
| bubun-íz-o | ‘I rumble’ |
- c. *-(i)az*
- | | |
|-------------|--|
| daun-jáz-o | ‘I sit down, I am/become depressed’ |
| level-jáz-o | ‘I reach higher levels (in online games) fast’ |
| xuxul-jáz-o | ‘I warm up my hands/face with my breath’ |
- d. *-ev*
- | | |
|---------------|--------------------------|
| xak-év-o | ‘I hack’ |
| rebel-év-o | ‘I am/become lazy, idle’ |
| kuskusur-év-o | ‘I gossip’ |
- e. *-on*
- | | |
|---------------|--|
| xapak-ón-o | ‘I give pills to someone’ |
| katsik-ón-ome | ‘I sit down and refuse to get up’ (a deponent) |
| fas-ón-ome | ‘I make out’ (a deponent) |

Let us now look at some verb formations with overt verbalizing affixes:

- (6) *-ev*
- a. Root: √_{STOX}-
- | | | |
|-----------------|----------------------------|---------------|
| Noun: stóx-os | target _{M-SG.NOM} | ‘target, aim’ |
| Verb: stox-év-o | target-VRB-NONPAST.1SG | ‘I aim at’ |

- b. Root: $\sqrt{\text{FRONIM-}}$
 Adjective: frónim-os prudent-M.SG.NOM 'prudent'
 Verb: fronim-év-o prudent-VRB-NONPAST.1SG 'I become quiet/wise/
 prudent'
- c. Root: $\sqrt{\text{KONT-}}$
 Adverb: kontá 'near, close'
 Verb: kont-év-o near-VRB-NONPAST.1SG 'I approach'
- (7) -en
- a. Root: $\sqrt{\text{ANAS-}}$
 Noun: anás-a breath_F-SG.NOM/ACC 'breath'
 Verb: anas-én-o breath-VRB-NONPAST.1SG 'I breathe'
- b. Root: $\sqrt{\text{VUV-}}$
 Adjective: vuv-ós mute-M.SG.NOM 'mute'
 Verb: vuv-én-o mute-VRB-NONPAST.1SG 'I silence'
- (8) -ar
- a. Root: $\sqrt{\text{FRESK-}}$
 Adjective: frésk-os fresh-M.SG.NOM 'fresh'
 Verb: fresk-ár-o fresh-VRB-NONPAST.1SG 'I refresh, I brush up'
- (9) -on
- a. Root: $\sqrt{\text{SANIÐ-}}$
 Noun: sanið-a lath_F-SG.NOM/ACC 'lath'
 Verb: sanið-ón-o lath-VRB-NONPAST.1SG 'I cover with planks, I
 accelerate at maximum
 speed'
- b. Root: $\sqrt{\text{VEVE-}}$
 Adjective: véve-os certain-M.SG.NOM 'certain'
 Verb: veve-ón-o certain-VRB-NONPAST.1SG 'I confirm'
- c. Root: $\sqrt{\text{SIM-}}$
 Adverb: simá 'near'
 Verb: sim-ón-o near-VRB-NONPAST.1SG 'I draw near'
- (10) -iz
- a. Root: $\sqrt{\text{PSALIÐ-}}$
 Noun: psalið-i scissors_N-SG.NOM/ACC 'scissors'
 Verb: psalið-íz-o scissors-VRB-NONPAST.1SG 'I snip, I shear'
- b. Root: $\sqrt{\text{KOKIN-}}$
 Adjective: kókin-os red-M.SG.NOM 'red'
 Verb: kokin-íz-o red-VRB-NONPAST.1SG 'I make something/
 become red'

- c. Root: $\sqrt{\text{PARAMER-}}$
 Adverb: *parámera* ‘aside’
 Verb: *paramer-íz-o* *aside-VRB-NONPAST.1SG* ‘I set aside’
- (11) *-(i)az*
- a. Root: $\sqrt{\text{KRAVY-}}$
 Noun: *kravy-í* *scream_F-SG.NOM/ACC* ‘scream’
 Verb: *kravy-áz-o* *scream-VRB-NONPAST.1SG* ‘I cry/bawl’
- b. Root: $\sqrt{\text{AYJ-}}$
 Adjective: *áyj-os* *holy-M.SG.NOM* ‘holy’
 Verb: *ayj-áz-o* *holy-VRB-NONPAST.1SG* ‘I become holy’
- c. Root: $\sqrt{\text{PLISI-}}$
 Adverb: *plisión* ‘near’
 Verb: *plisi-áz-o* *near-VRB-NONPAST.1SG* ‘I come close,
 I approach’
- d. Root: $\sqrt{\text{ANEV-}}$
 Verb: *anev-én⁸-o* *go up-IMPV-NONPAST.1SG* ‘I climb/go up’
 Verb: *anev-áz-o* *go up-VRB-NONPAST.1SG* ‘I lift’

From the rich data presentation above, there are a number of conclusions to be drawn. Firstly, the verbalizing suffixes do not encode Aktionsart in the sense that they are neutral with respect to inner aspect. Let us consider *-(i)az*, the last suffix presented above (in (11)). Verb forms with this particular suffix denote both states and changes of state, but also activities and accomplishments.

- (12) *-(i)az*
- a. *apusi-áz-o* ‘be absent’: a state
 (Noun: *apusia_F* ‘absence’)
- b. *nist-áz-o* ‘be/get sleepy’: a state or a change of state
 (Noun: *nista_F* ‘sleepiness’)
- c. *isix-áz-o* ‘be/become still or inert, relax’: a state or a change of state
 (Adjective: *ísix-os/-i/-o* ‘quiet’)
- d. *sxoli-áz-o* ‘I comment’: an activity
 (Noun: *sxolio_N* ‘comment’)
- e. *anev-áz-o* ‘I lift’: an activity or an accomplishment
 (Verb: *anev-én-o* ‘I climb/go up’)

⁸ The status of the formative */-en/* in this kind of verb formation (also *paθ-én-o* ‘I suffer,’ *sop-én-o* ‘I fall silent,’ *anast-én-o* ‘I resurrect,’ *b-én-o* ‘I enter,’ *vy-é-n-o* ‘I get out,’ *piy-én-o* ‘I go,’ etc.) is not clear because it appears only in the imperfective verb forms (see Spyropoulos and Revithiadou 2009, 2011 for a discussion). We leave this issue aside here and we gloss this formative as an imperfective exponent.

Secondly, they may not be considered as exponents of the functional category Voice because these suffixes do not unambiguously encode transitivity and/or causativity. If *v* and Voice were a single syntactic head, then we would expect verbness to be encoded together with transitivity and voice, most probably with causativity too. However, the choice of the overt verbalizing affix in Greek is hardly related to the existence and/or expression of an external argument (Alexiadou and Anagnostopoulou 2004 et seq.). So, let us begin with transitive–intransitive (or causative–anticausative/inchoative) alternations of verbs derived with the same suffix. We will use examples without passive morphology, for simplicity and convenience (see also Alexiadou and Anagnostopoulou 2004; Alexiadou et al. 2006).

- (13) *-en*: *farðéno* ‘I make something/become wide or wider’

(Adjective: *farð-ís/-já/-í* ‘wide’)

a. causative

i	eryátes	farð-én-un	to	ðrómo
the	worker-PL.NOM	wide-VRB-NONPAST.3PL	the	road-SG.ACC

‘The workers make the road wide(r).’

b. anticausative

o	ðrómos	farð-én-i
the	road-SG.NOM	wide-VRB-NONPAST.3SG

‘The road gets wide(r).’

- (14) *-on*: *payóno* ‘I freeze something, I become cold/frozen’ (Noun: *páy_M-os* ‘ice’)

a. causative

o	níkos	páy-o-s-e ⁹	to	krasí
the	Nikos-NOM	ice-VRB-PFV-PAST.3SG	the	wine-SG.ACC

‘Nick froze the wine.’

b. anticausative

to	neró	páy-o-s-e
the	water-SG.NOM	ice-VRB-PFV-PAST.3SG

‘The water froze.’

- (15) *-iz*: *yjalízo* ‘I shine, I polish’ (Noun: *yjal_N-í* ‘glass’)

a. causative

o	fantáros	yjal-íz-i	tis	bótes
the	soldier-SG.NOM	glass-VRB-NONPAST.3SG	the	boot-PL.ACC

‘The soldier is polishing the boots.’

b. anticausative

i	bótes	yjal-íz-un
the	boot-PL.NOM	glass-VRB-NONPAST.3PL

‘The boots are shining.’

⁹ /n/ usually deletes before a sibilant, e.g., /krin-o/ [krino] ‘I judge,’ /krin-si/ [krisi] ‘judgment.’

- (16) -ev: *ḡiskolévo* ‘I make something/become difficult’
 (Adjective: *ḡískol-os/-i/-o* ‘difficult’)

a. causative

i kaθiγítēs ḡiskól-**ep**-s-an¹⁰ tis eksetásis
 the professor-PL.NOM difficult-VRB-PFV-PAST.3PL the exam-PL.ACC
 ‘The professors made the exams more difficult.’

b. anticausative

i eksetásis ḡiskól-**ep**-s-an fétos
 the exam-PL.NOM difficult-VRB-PFV-PAST.3PL this.year
 ‘The exams became/were (more) difficult this year.’

- (17) -ar: *frikáro* ‘I freak out, I horrify/become horrified’

a. causative

aftí i katástasi me frik-ár-i
 this the situation-SG.NOM cl:1-SG.ACC freak-VRB-NONPAST.1SG
 ‘This situation freaks me out.’

b. anticausative

o níkos frik-ar-e
 the Nikos-NOM freak-VRB-PAST.3SG
 ‘Nikos freaked out.’

As has been made evident from the examples above, the choice of the verbalizing suffix does not directly encode transitivity/causativity, since the same verb form with the same suffix and in the same voice may participate in a causative or an anticausative/inchoative construction. This is to be expected if verbalizing suffixes are the morphological expression of a syntactic head *v*, which is distinct from Voice (see also Anagnostopoulou this volume).

Thirdly, the same verbalizing suffix can create verbs with a variety of argument structures. This should provide evidence that these suffixes are not the expression of particular argument-hosting heads, for example Pykkänen’s (2008) applicatives, or similar. Thus, the suffix /-(i)az/ may participate in verb formations that can be transitive, unergative, unaccusative, or even ergative:

- (18) -(i)az

a. Transitive only, agentive

steyázo ‘I cover, I provide shelter’ (Noun: stéy_F-i ‘roof’)

b. Transitive only, psych

xalvaḡjázō ‘I covet’ (Noun: xalvá_M-s ‘halva’)

¹⁰ Suffixes with an initial sibilant trigger manner dissimilation to the preceding fricative of the base they attach to. Moreover, sequences of consonants in Greek obligatorily agree in voicing, e.g., /e-rav-s-a/ [érapsa] ‘AUG-sew-PFV-PAST.1SG.’

- c. Displaying ergative alternation
 ađjázó ‘I (become) empty’ (Adjective: áđj-os/-a/-o ‘empty’)
- d. Unergative
 piyázó ‘I spring out’ (Noun: piy_F-í ‘spring’)
- e. Unaccusative
 xlomjázó ‘I turn pale’ (Adjective: xlom-ós/-í/-ó ‘pale’)

The facts discussed above ((12)–(18)) indicate that the choice of the verbalizing suffix is independent of the syntactic properties of the verb stem, or the verb as a whole. A first approximation, to be elaborated upon in sections 2.4 and 2.5, is that the actual formative that realizes *v*—an overt suffix or an abstract vocalic element—depends on the root that attaches to and not on the *structure* per se.

What we mean by “structure” is this: in a line of inquiry inaugurated by Levin (1993), and loosely following Levin and Rappaport Hovav (2005: 68–75), we can discern systematicity in the kind of alterations verb meanings can undergo. For instance, the verb *to sweat* means ‘make sweat’ but the verb *to butter* does not mean ‘make butter’; the verb *to box* means ‘put in a box’ but in the verb *to brush* the root $\sqrt{\text{BRUSH}}$ is about the instrument of applying something on a surface, and so on. As Levin (1993) points out, these different types of verbs are systematic; moreover, we can attribute these alterations to differences in grammatical structure. They are most likely the result of where the verbal root appears in the argument structure of the verb (Hale and Keyser 2002). Broadly speaking, the root behaves as a direct object in *to sweat* and *to push* and as a predicate designating an end-state in change of state verbs like *clear* and *open*. Equally interestingly, in *location* verbs (e.g., *to box*) the root behaves something like the *object* of a Prepositional Phrase (PP), designating the background. In *locatum* verbs (e.g., *to butter*), however, the root behaves like the *subject* of a PP in a small clause configuration, i.e., the figure to be placed against a background. Finally, in an instrumental verb like *to brush* the root acts as a *manner adjunct* and, more precisely, as an *instrument adjunct*.

So, syntactic terminology like ‘subjects,’ ‘objects,’ ‘adjuncts,’ and ‘predicates’ turns out to be quite useful when talking about the position of a root within the argument structure of the verb. Briefly, and following the lead in Hale and Keyser (1993, 2002), we can claim that different argument structures are actually different syntactic structures. In this respect, we are justified in using syntactic terminology to discuss argument structure because it looks like (such) verbs contain some hidden syntax; what Hale and Keyser (1993) call *L-syntax* and Ramchand (2008) calls *First Phase Syntax*. Harley (2005b) and Marantz (2007) explain in considerable detail how to analyze verbs in this way within a syntactic decomposition framework.

Whatever the details of the above, we observe that in Greek we can have the same verbalizing suffix with very different structures:

- (19) *-on*
- a. Root as possessed property
 pliyóno ‘I wound something’ (Noun: pliy_F-í ‘wound’)
 - b. Root as instrument
 maxeróno ‘I stab something’ (Noun: maxér_N-i ‘knife’)
 - c. Root as resulting state
 payóno ‘I make something/become frozen’ (Noun: páy_M-os ‘ice’)
 - d. Root as resulting state
 erimóno ‘I make something/become deserted’
 (Adjective: érim-os/-i/-o ‘deserted’)
 - e. Root as location, resulting state
 simóno ‘I approach’ (Adverb: simá ‘near’)

At the same time, the same structure may be realized by means of a different verbalizing suffix. To illustrate this, consider the following verb formations, which manifest a structure of a de-adjectival verb that enters in an ergative alternation and in which the root denotes the resulting state:

- (20) ‘De-adjectival’ verbs,¹¹ ergative alternation, root as resulting state:
- a. with *-on*
 erimóno ‘I make something/become deserted’
 (Adjective: érim-os/-i/-o ‘deserted’)
 - b. with *-en*
 vaθéno ‘I make something/become deep(er)’
 (Adjective: vaθ-ís/-já/-í ‘deep’)
 - c. with *-(i)az*
 ađjázno ‘I (become) empty’
 (Adjective: áđj-os/-a/-o ‘empty’)
 - d. with *-ev*
 điskoléno ‘I make something/become (more) difficult’
 (Adjective: đískol-os/-i/-o ‘difficult’)
 - e. with *-iz*
 nostimízo ‘I make something/become tasty’
 (Adjective: nóstim-os/-i/-o ‘tasty’)

As the examples indicate, the same structure can be expressed by means of verb formations that may include any possible verbalizing suffix. Thus, no direct

¹¹ We refrain from claiming here that these verb stems are derived from adjectives and adopt an agnostic view on the issue. We use in this example only roots that otherwise emerge as adjectives for consistency and in order to control for as many factors as possible.

correlation can be drawn between the verbalizing suffix and the (argument) structure that the verb form manifests. In other words, the verbalizing suffixes may not be considered direct exponents of a relevant argument structure, in the sense that their distribution seems not to be conditioned directly by such factors.

To conclude this section, the evidence presented above shows that the Greek verbal derivational suffixes can only be exponents of a verbalizing head *v* that is distinct from Voice and their distribution is not correlated in a one-to-one fashion with agentivity, transitivity, and inner aspect/Aktionsart.

2.4 The morpho(phono)logy of *v* in Greek

In section 2.2 we concluded that second-conjugation verb forms contain an empty vocalic element, which is responsible for the distinct properties of this conjugation, i.e., non-root stress, various vocalic extensions, etc. Furthermore, in section 2.3, we discussed the behavior of a number of overt verbalizing suffixes and we presented evidence that they are the exponents of a verbalizing *v* head in verb formations obligatorily following the first-conjugation inflectional pattern. By combining these two facts, we conclude that these verbalizing suffixes are in complementary distribution with the empty vocalic element and they compete for the same morphosyntactic position. In other words, both the verbalizing suffixes and the empty vocalic slot are exponents of the verbalizing head *v*. The empty vocalic slot $-\square_v$, which may remain empty or materialize with vocoids, often affecting the overall accentual makeup of the verb form,¹² is the exponent of the *v* head, when the construction involves a second-conjugation verb. Certain roots, however, select for some overt verbalizing suffix and obligatorily follow the first-conjugation inflectional pattern (e.g., *kravýázo* ‘I cry, bawl,’ *anaséno* ‘I breathe,’ *freskáro* ‘I refresh, brush up,’ *kokinízo* ‘I make something/become red,’ *veveóno* ‘I confirm’), whereas a handful of verbs lack (overt) verbalizing morphology. Some of these verbs take the bare agreement suffixes and inflect according to the so-called third conjugation (e.g., *akúo* ‘I listen to, I hear’), whereas others take the agreement suffixes with the tense-specific theme vowel and belong to the first conjugation (e.g., *váfo* ‘I paint’). We claim that these verbs contain a morphophonologically inert non-segmental verbalizer, i.e., the exponent of *v* is a null formative $-\emptyset$.¹³ All exponents of *v* and their environments are given in (21):

¹² See Spyropoulos et al. (2015) for a detailed exemplification of the various manifestations of the empty vocalic slot $-\square_v$ and their associated accentual effects. For instance, in second-conjugation perfective verb forms, the empty vocalic slot $-\square_v$ materializes as /i/, which is stressed due to the pre-stressing nature of verbal inflections (Revithiadou 1999), e.g., /aʎap-i-s-’o/ → *aʎapíso* ‘love- $\square_v$ -PFV-NONPAST.1SG’. The same holds for the non-active imperfective forms, with the following twist: due to hiatus, the high vowel becomes a glide and eventually a consonant due to various phonological rules that are independently in effect, causing stress to surface on the inflection, e.g., /aʎap-i-éme/ → *aʎap-j-éme* [aʎapçéme] ‘love- $\square_v$ -IMPFV.NONACT.NONPAST.1SG.’

¹³ An anonymous reviewer asks what the difference between the $-\square_v$ and the $-\emptyset$ is and whether by positing these two exponents a degree of emptiness is established. We claim that these two exponents are

- (21) a. $v \Leftrightarrow -\square_V$ / [second conjugation] ____
 b. $v \Leftrightarrow -(i)az$ / $\{\sqrt{KRAV\gamma}, \dots\}$ ____
 $-en$ / $\{\sqrt{ANAS}, \dots\}$ ____
 $-ar$ / $\{\sqrt{FRESK}, \dots\}$ ____
 $-iz$ / $\{\sqrt{KOKIN}, \dots\}$ ____
 $-on$ / $\{\sqrt{VEVE}, \dots\}$ ____
 c. $v \Leftrightarrow -\emptyset$ / $\{\sqrt{VAF}, \sqrt{AKU}, \dots\}$

At this point it is worth scrutinizing the kind of conditions underlying the insertion of particular forms; put in Distributed Morphology terms (Halle and Marantz 1993 et seq.; see also Harley and Noyer 2003; Embick and Noyer 2007), we will look at what factors condition the Vocabulary Insertion of the overt verbalizers vs. the abstract vocalic element $-\square_V$ vs. nothing at all. Recall that, descriptively, the distribution of verbalizers seems to coincide with the conjugational pattern of the language, although the null verbalizer $-\emptyset$ appears in both first- and third-conjugation verbs:

- (22) First conjugation: overt verbalizers (*-ar*, *-ev*, *-iz*, etc.) and the null verbalizer $-\emptyset$
 Second conjugation: the abstract vocalic element $-\square_V$
 Third conjugation: the null verbalizer $-\emptyset$

However, the fact that the null verbalizer $-\emptyset$ appears in both first- and third-conjugation verbs and that the exact choice of the overt verbalizer is lexically determined can lead us to the conclusion that we need not resort to some kind of conjugational feature specification of the structure that conditions the insertion of the relevant exponent. On the contrary, it can be argued that there is direct lexical conditioning, i.e., the environment in which a certain exponent is inserted is lexically listed. This means that the inflectional patterns of the conjugations are only epiphenomena and that verbs are not listed in conjugational classes in the lexicon, but rather as selecting a given exponent of the *v* head.

This leads us to the following issue, namely, which of the above Vocabulary Items is the *elsewhere* one.¹⁴ The most possible candidate would be the non-segmental, morphophonologically inert null verbalizer $-\emptyset$, since it appears in verbs of both the first and the third conjugation. However, as we mentioned in section 2.2, it is restricted to a closed class of roots, giving verbs of high frequency that are all part of the ancient (“learned”) stock of the language. The abstract vocalic element $-\square_V$, which derives the second-conjugation inflectional pattern, is also restricted in

different in the sense that only the $-\emptyset$ is an empty formative, i.e., a formative with no phonological content. On the contrary, $-\square_V$ has phonological content; it is a non-featurally specified vowel, an empty vocalic slot. This content is specified by its morphophonological environment, resulting in various manifestations. (We thank an anonymous reviewer for pointing out this issue to us. See also Spyropoulos et al. 2015.)

¹⁴ We thank an anonymous reviewer for pointing out this issue to us.

second-conjugation verbs and is rarely used in coining new verbs.¹⁵ Given that the choice of the overt verbalizer is not conditioned by agentivity, transitivity, or inner aspect/Aktionsart, but it is also lexically determined, we conclude that all exponents of *v* are inserted in specific environments.

Among the Vocabulary Items realizing *v*, *-ar* seems to enjoy a kind of default status, in the sense that it is the most productive in coining new verbs. However, revisiting the examples of recently coined verbs in (5), we observe that although there appears to exist a preference to form newly coined verbs (from both native and borrowed stock) using *-ar*, at the same time, this is hardly more than a strong tendency. Thus, next to *gugl-ár-o* ('I google'), we find *gugl-íz-o*; next to *xak-ár-o* ('I hack') there is also *xak-év-o*. In addition, both *-(i)az* and *-on* can be also used to coin new verbs.

Putting these facts together, we realize that there exist no general rules regulating Vocabulary Insertion. In other words, Vocabulary Insertion in the *v* slot does not follow rules of the sort familiar from, for example, English plurals (where there exists an interaction between the morphological/phonological environment and the identity of the stem/root, plus an elsewhere form). We can therefore put forward the following generalization for Greek:

- (23) Vocabulary Insertion in the *v* slot is "lexically" conditioned: it wholly depends on the identity of the root, noun, adjective, or adverb to be verbalized.

This means that Vocabulary Insertion in *v* is non-rule based and that Greek speakers in fact "learn" which exponent of *v* "verbalizes" which root. Indeed, what seems to determine the assignment of a certain verbalizer to a particular root, noun or adjective, is a range of extra-grammatical factors and surface patterns. The exact status of these factors is an issue open to further research.

2.5 Further observations on the exponence of verbalizers in Greek

In section 2.3 we reviewed evidence that shows that verbalizing morphology does not correlate in a one-to-one fashion with properties of Voice, i.e., agentivity and transitivity; it does not even correlate with inner aspect/Aktionsart and argument structure alternations, no matter how these are syntactically encoded. However, there are more things to say on certain subregularities regarding the morphological exponence of *v* in Greek. Such subregularities involve a tendency for particular

¹⁵ The second-conjugation pattern is still productive in coining exocentric compound verbs that mostly, but not exclusively, involve a special bound second constituent, e.g., *piro-dot-ó* 'I ignite,' *posotiko-pi-ó* 'I quantify,' *oplo-for-ó* 'I carry a gun,' etc. See Anastasiadi-Simeonidi (1986), Holton et al. (2012), and Ralli (2013).

verbalizing forms to correlate with transitivity in morphological competition environments.¹⁶ Let us review them.

Firstly, voice itself never seems to affect the choice of the verbalizing exponent in Greek. On the one hand, this is to be expected, given that in Greek there is non-active morphology, which expresses (i) passive constructions (the entailment, notoriously, does not work the other way round), where an Agent is implicit; (ii) some middle constructions, where an Agent is absent; and (iii) again, notoriously, some transitives, such as *epekserýázome* ‘I process,’ *ekmetalévome* ‘I exploit,’ *aperyázome* ‘I conspire in order to,’ *pandrévome* ‘I get married to.’

On the other hand, the complete dissociation between the verbalizing formatives, which are exponents of *v*, and the exponents of Voice is surprising in syntactic analyses that propose the conflation of *v* and Voice into a single syntactic head.

Turning to transitivity alternations, also by hypothesis encoded on Voice, there seem to exist some additional subregularities.

- (24) a. *anev-én-o* vs. *anev-áz-o* (cf. (11d))
 ‘I climb/go up’ ‘I lift’
 b. *b-én-o* vs. *b-áz-o*
 ‘I enter’ ‘I put in/insert’

In (24) above, the choice of the verbalizing suffix */-az/* seems to correlate with the expression of an agentive transitive structure, whereas the intransitive structure is expressed by means of the suffix */-en/*. A similar situation occurs in the following examples of psych verbs:

- (25) a. *fov-á-me* vs. *fov-íz-o*
 ‘I fear’ ‘I scare’
 b. *θim-á-me* vs. *θim-íz-o*
 ‘I remember’ ‘I remind’

In these examples the exponent $-\square_v$ of the second conjugation, which is materialized as */a/*, expresses a structure with an experiencer, which can be either transitive or intransitive. However, an agentive transitive construction with the same root is expressed by means of the verbalizing suffix */-iz/*.

Such examples do not undermine our conclusion that the choice of the exponent of *v* is clearly lexically determined and that it is not conditioned by the syntactic structure, because the suffixes that seem to be opted to express an agentive transitive construction can be used to express any other type of construction with other roots

¹⁶ There also seems to exist a subregularity regarding inner aspect/Aktionsart: second-conjugation verbs, i.e., those whose verbalizing affix is the abstract vocalic element $-\square_v$, are mostly atelic (thanks to Elena Anagnostopoulou (p.c.) for suggesting this to us). In the face of examples like *piroðot-ó* ‘I ignite’ or *xtip-ó* ‘I hit,’ such a generalization cannot stand without further refinements.

(recall the distribution of /-az/ and /-iz/ presented in section 2.3). It is evident that such subregularities arise in cases of morphological competition, which is lexically conditioned. That is, a root may participate in different structures resulting in different types of verb formations. Most of the roots choose a certain exponent to manifest their verbness, and in these cases the exact same exponent appears in verb formations encoding different types of structure. However, some roots—significantly few in number—select for a different exponent of *v* for different constructions. It can be argued that in such cases the choice of a particular exponent does not in fact correlate with the manifestation of a given structure (e.g., /-iz/ for agentive transitive in verbs formations such as *fov-íz-o* ‘I scare’ and *θim-íz-o* ‘I remind’) but with the actual meaning of the verb stem itself. Consider the case of *θim-á-me* vs. *θim-íz-o* in (25b). The root is $\sqrt{\Theta IM-}$ and the derived verbs have meanings related to memory. However, when the same root combines with the verbalizing suffix /-on/, the resulting verb formation *θim-ón-o* ‘I get angry’ has meanings related to anger.

We may therefore conclude that the choice of the verbalizing morphology may affect the lexical meaning of the root. In fact, there are many cases in which the verbalizing suffix not only affects but also defines the meaning of the verb form in combination with the root. Thus, the verb formation *zaxar-ón-o*, in which the root $\sqrt{ZAXAR-}$ (<*záxari*_F ‘sugar’) combines with the verbalizing suffix /-on/, has the idiosyncratic meaning ‘I covet/canoodle.’ Similarly, in the verb formation *nom-íz-o* ‘I think/believe,’ the verbalizing suffix /-iz/ combines with the root $\sqrt{NOM-}$ which can be found in word formations that mean anything but ‘thinking’ or ‘believing’ (e.g., *nómos* ‘law,’ *nomós* ‘county,’ *nómizma* ‘currency, coin,’ *nomá(ða)s* ‘nomad,’ *nomí* ‘pasture, possession’).

The following set of examples nicely illustrates how different verbalizing suffixes define the lexical meaning of the verb, although the roots involved are either homophonous or identical (see Panagiotidis 2014, 2015):

- (26) a. *kur-év-o* ‘I give a haircut, sheer’
 kur-áz-o ‘I tire/be tiresome’
 kur-ár-o ‘I treat as a patient’
 b. *mir-ón-o* ‘I anoint’
 mir-íz-o ‘I smell’
 c. *fort-ón-o* ‘I load/burden’
 fort-íz-o ‘I charge (e.g., a battery)’

In the verb formations with the root $\sqrt{KUR-}$ the derived verbs have completely unrelated idiosyncratic lexical meanings. Such examples show that the verbalizing suffixes may enter into certain degrees of lexicalization and fossilization. This is clearly evident in situations in which these suffixes combine with roots that have no other use in the language:

- (27) a. *ory-ón-o* ‘I plough’
 b. *skil-év-o* ‘I despoil’
 c. *kaliy-ón-o* ‘I shoe (a horse or a mule)’
 d. *kutup-ón-o* ‘I shag’

In (27) above the structures involve roots with an obscure etymology in Standard Modern Greek. Thus, the root $\sqrt{\text{KALIY-}}$ in *kaliy-ón-o* comes from the Latin *calliga* meaning ‘shoe,’ but there is no other word in Modern Greek using this root. Similarly, the root $\sqrt{\text{ORY-}}$ in *ory-ón-o* comes from an Ancient Greek nominal stem *org-*, which was derived from the root $\sqrt{\text{ERG-}}$ ‘work’ and is completely obsolete in Modern Greek, whereas the root $\sqrt{\text{SKIL-}}$ comes from the Ancient Greek noun *skyla* ‘spoil,’ again obsolete in Modern Greek. Finally, the segment *kutup-* in *kutup-ón-o* simply does not give any other word in Greek and has no meaning. That verbalizing suffixes may combine with segments with no real meaning to derive verbs with certain lexical meanings is evident from sound mimic verbs such as *njaur-íz-o* ‘I meow/whine,’ *yavy-íz-o* ‘I bark,’ *gar-íz-o* ‘I bray/yell,’ *bubun-íz-o* ‘I rumble’ and so on. Interestingly, the last verb may acquire idiosyncratic meanings such as ‘I hit’ or ‘I screw,’ whereas the segment *bubun-* also appears in the noun formation *bubún-as* ‘stupid, idiot.’

We therefore conclude that verbalizing morphology in Greek exhibits certain degrees of idiosyncraticity and lexicalization in the sense that it may not only affect but also define the meaning of the verb formation. Thus, any subregularity attested, which seems to be related to transitivity/agentivity, may be considered to arise by this exact property and only in environments of morphological competition that are lexically resolved. Ultimately, such subregularities are very few and are lexically conditioned in a way that we cannot draw any direct correlation between a certain exponent and a given structure.¹⁷

2.6 Conclusions and further insights

There are three significant insights we can gain into the nature of *v* by looking at its systematic morphological realization in Greek. The first and more important insight we gain is that indeed *v* and Voice must be kept as separate syntactic heads: Greek verbalizing morphology exclusively realizes *v*, a very low categorizing element, to the exclusion of Voice, which typically receives independent morphological realization.

¹⁷ A reviewer points out that Anagnostopoulou and Samioti (2014) correlate the presence of overt verbalizers with the type of root involved in verbal formation, claiming that event roots do not take overt verbalizers. Even if we concede that roots have themselves descriptive content and that they can be marked as eventive (but see discussion in this section and Panagiotidis 2014, 2015 for empirical evidence against such claim), *xor-év-o* dance-VRB-1SG (‘I dance,’ cf. *xor_M-os* ‘dance’) is one of the many counterexamples to such a generalization.

At the same time, realization of *v* is orthogonal to the functions of Voice, including causation and/or transitivity.

The second concerns the discussion on the different entries for the *v* (verbalizer) category. Hence, although Greek overwhelmingly expresses *v* overtly, it provides no direct morphophonological evidence for the existence for different flavors of *v* (Folli and Harley 2005, 2007, 2013), since there is no evidence for a morphological distinction among different flavors of *v*. Despite the many forms with which the *v* head can be realized in Greek, none is associated with the CAUSE, DO, or BECOME kind of *v*. On the contrary, the choice of the exponent that realizes *v* is purely morphological and lexically conditioned.

Thirdly, the categorizing head *v* associates with roots to yield a verbal stem and a lexical meaning for it. These roots may either be underspecified or not used without a *v* head expressed by verbalizing affixes. This fact can lead to valuable insights, if framed within a theory of roots as grammatical formatives and not as underspecified Saussurean signs. More specifically, if roots are devoid of any content themselves, then one can argue that roots are “individuated purely abstractly, as independent indices on the $\sqrt{}$ node in the syntactic computation that serves as the linkage between a particular set of spell-out instructions and a particular set of interpretive instructions” (Harley 2014: 225). In other words, the underspecification of uncategorized and underspecified roots makes sense if roots acquire content only when categorized (Panagiotidis 2011, 2015; see Alexiadou and Lohndal (this volume) for a somewhat different approach). Greek makes this morphologically visible, as the categorizing head, the verbalizer, is overtly expressed.

Acknowledgments

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3

Agreement between arguments? Not really

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3.1 Introduction

Agreement is traditionally understood as a relationship between an argument and a predicate. However, in some Northeast Caucasian (NEC) languages, pronominal arguments seem to agree with other arguments. This pattern appears in the Archi example in (1), where the verb and the dative pronoun alike agree in noun class with the absolutive determiner phrase (DP):¹

- (1) To-r ʔ:onnol d-ez e<r>χni.
 [that-IL.SG woman.IL.SG.ABS] IL.SG-1SG.DAT <IL.SG>forget.PFV
 ‘I forgot that woman.’

This pattern of apparent argument-argument agreement challenges existing theories of agreement. The goal of this chapter is to demonstrate that the theory is safe. We present and analyze argument-argument agreement in Archi and demonstrate that it can be reduced to commonplace argument-predicate agreement.

Our account of the Archi agreement pattern relies on two analytical components. The first pertains to the presence of several functional layers within the verb phrase (vP), some of which are headed by phonologically null functional elements. All verbal heads participate in agreement and can have their features successively checked by immediately adjacent v heads. This conception of a layered verb phrase offers novel

¹ In presenting language data, we follow the Leipzig Glossing Rules. Additional abbreviations include: ATTR—attributive, CL—(noun) class, CONT—contessive, EL—elative, EMPH—emphatic, ESS—essive, EVID—evidential, EXCL—exclusive, FIN—finalis, HPL—human plural, MSD—masdar, NHPL—non-human plural, SUP—superessive. In examples below, text titles refer to the texts collected/glossed by Marina Chumakina during her fieldwork from 2004 to 2012.

support for the proposal that separate functional heads are responsible for internal-argument licensing and for the introduction of an external argument. The second component of the analysis pertains to the contrast between strong and weak pronouns, with weak pronouns registering what appears to be argument-argument agreement.

The chapter is organized as follows: In section 3.2, we present an overview of Archi, highlighting the grammatical properties relevant to our discussion. Section 3.3 presents the challenging data at the core of this chapter. Section 3.4 provides an account of Archi clause structure, and section 3.5 builds upon that structure to present our analysis of the unusual argument-argument agreement. We determine that Archi has two types of agreeing pronouns: weak pronouns and complex pronouns, which include an agreeing emphatic particle. Section 3.6 concludes.

3.2 Archi basics

Archi is a Lezgian language of the Nakh-Daghestanian family spoken by about 1,200 people in a single village in the highlands of Daghestan.

3.2.1 Word classes and declension

Archi has the following lexical classes: nouns, pronouns, adjectives, verbs, adverbs, postpositions, numerals, and (discourse) particles (Kibrik 1977a). Personal pronouns, which will be discussed in section 3.3, show a contrast between first and second person with an additional inclusive/exclusive distinction; third person is expressed by a demonstrative (Kibrik 1977a: 124, 126–7). Archi demonstratives are presented in Table 3.1. Unlike agreement on verbs, agreement on demonstratives and attributives does not distinguish noun class/gender in the plural.

Archi has an articulated system of cases, illustrated in Table 3.2. We distinguish between non-spatial (abstract) and spatial cases (for Archi, see Kibrik 1977a: 58–61; for a more general discussion, see Comrie and Polinsky 1998), and we will only be

TABLE 3.1. Archi demonstratives

ISG	IISG	IIISG	IVSG	PL	
ju-w	ja-r	ja-b	ja-t	j-eb	this, close to Speaker
jamu	jamu-r	jamu-m	jamu-t	jem-im	this, close to Hearer
to-w	to-r	to-b	to-t	t-eb	that, away from Speaker
gud-u	god-or	god-ob	god-ot	gid-ib	that, lower than Speaker
ɤud-u	ɤod-or	ɤod-ob	ɤod-ot	ɤid-ib	that, higher than Speaker

TABLE 3.2. Archi non-spatial cases

	SG	PL
Absolutive	ba ^ʰ k' 'ram'	ba ^ʰ k'-ur
Ergative	be ^ʰ k'iri	ba ^ʰ k'-ur-čaj
Genitive	be ^ʰ k'iri-n	ba ^ʰ k'-ur-če-n
Dative	be ^ʰ k'iri-s	ba ^ʰ k'-ur-če-s
Causalis	be ^ʰ k'iri-š:i	ba ^ʰ k'-ur-če-š:i
Comitative	be ^ʰ k'iri-ɬ:u	ba ^ʰ k'-ur-če-ɬ:u
Comparative	be ^ʰ k'iri-χur	ba ^ʰ k'-ur-če-χur
Partitive	be ^ʰ k'iri-q ^ʰ iš	ba ^ʰ k'-ur-če-q ^ʰ iš
Similative	be ^ʰ k'iri-q ^ʰ di	ba ^ʰ k'-ur-če-q ^ʰ di
Substitutive	be ^ʰ k'iri-kɬ'ena	ba ^ʰ k'-ur-če-kɬ'ena

concerned with non-spatial cases. Absolutive, ergative, genitive, and dative comprise the “core” (argument) cases (see Kibrik 1977a,b), a label we will use throughout our discussion. In all case forms, except the absolutive, endings attach to the oblique stem, which formally coincides with the ergative (Kibrik and Kodzasov 1990).

3.2.2 Agreement

Archi has four noun classes (genders). All DPs have a noun-class feature:

(2) Noun-class Specification Principle

All Archi DPs, whether lexical or pronominal, must be specified for the [CL] feature.

Denotations of male and female humans are in class I and class II, respectively; all other nouns belong to classes III and IV. Nouns do not have any obvious phonological predictors of class membership, and the principles of noun class assignment in this language are not well understood. In the discussion below, we assume class assignments as given.

- (3) I dozja 'grandfather,' PL dozja-t:u
- II doba 'grandmother,' PL doba-t:u
- III no^ʰš 'horse,' PL no^ʰš-or
- IV nokɬ' 'house,' PL nokɬ'-dor

There are two numbers, singular and plural. The four-way distinction in noun classes in the singular is neutralized to a two-way opposition in the plural: human (I and II)

TABLE 3.3. Archi noun-class agreement exponents (as marked on verbs)

	SG	PL
I	w- / <w> ^a	b- /
II	d- / <d>	
III	b- / 	Ø / < Ø >
IV	Ø / < Ø >	

^a This exponent can be realized as a labialization of the following consonant, as in example (4a).

vs. non-human (III and IV). If a group includes denotations from classes I/II and classes III/IV, plural agreement is always in the human class. Consider the following examples:

- (4) a. doba-t:u ba-q^ɕa.
 grandmother.II-PL.ABS HPL-come.PFV
 ‘Grandmothers came.’
- b. no^ɕš-or q^ɕa.
 horse.III-PL.ABS nHPL.come.PFV
 ‘Horses came.’
- c. doba-t:u-wu no^ɕš-o:r-u ba-q^ɕa/*q^ɕa.
 grandmother.II-PL.ABS-and horse.III-PL.ABS-and HPL-come.PFV/nHPL.come.PFV
 ‘Grandmothers and horses came.’

Noun-class agreement is registered on verbs and adjectives. Verbal agreement can be encoded via prefixes or infixes (Table 3.3). Morphophonemic factors can prevent some verbs from carrying class agreement markers (the discussion of this phenomenon is beyond the scope of this chapter, but see Chumakina and Corbett 2015).

The examples below illustrate noun-class agreement on verbs and adjectives.

- (5) a. Be:χu-t:u dozja q^{wɕ}a.
 be.tall-ATTR.I.SG grandfather.I.SG.ABS I.SG.come.PFV
 ‘A tall grandfather came.’
- b. Be:χu-t:u-r doba da-q^ɕa.²
 be.tall-ATTR-II.SG grandmother.II.SG.ABS II.SG-come.PFV
 ‘A tall grandmother came.’

² When agreement is realized by a prefix on a consonant-initial verb, an epenthetic vowel is added. We follow the orthographic rule suggested in Kibrik et al. (1977) and Kibrik (1977a,b) where the pretonic vowel is spelled the same as the stressed vowel.

- c. Be:χu-t:u-b no^ʃ ba-q^ʃa.
 be.tall-ATTR-III.SG horse.III.SG.ABS III.SG-come.PFV
 ‘A tall horse came.’
- d. Be:χu-t:u-t nok^ʃ ak:u.
 be.tall-ATTR-IV.SG house.IV.SG.ABS [IV.SG]see.PFV
 ‘(I) saw a tall house.’

Only absolutive arguments can determine agreement, as shown in (6b) and (7b); ergative and dative subjects can never be agreement controllers.

- (6) a. To-r-mi no^ʃ darc^ʃlirši e**ʃ**t^ʃni.
 that-II.SG-SG.ERG horse.III.SG.ABS post.LOC <III.SG>.tie.PFV
 ‘She tied the horse to the post.’ (based on Kibrik 1977a: 195)
- b. *To-r-mi no^ʃ darc^ʃlirši e**ʃ**t^ʃni.
 that-II.SG-SG.ERG horse.III.SG.ABS post.LOC <II.SG>.tie.PFV
 ‘(She tied the horse to the post.)’
- (7) a. To-w-mi-s Ajša d-ak:u.
 that-I.SG-OBL.SG-DAT Aisha.II.SG.ABS II.SG-see.PFV
 ‘He has seen Aisha (female).’
- b. *To-w-mi-s Ajša w-ak:u.
 that-I.SG-OBL.SG-DAT Aisha.II.SG.ABS I.SG-see.PFV
 ‘(He has seen Aisha.)’

In what follows, we will only indicate the noun class of the absolutive argument in the glosses.

3.2.3 Basic clause types

Archi is a head-final, morphologically ergative language: subjects of intransitive verbs pattern with objects of transitive verbs and appear in the absolutive, while subjects of transitive verbs appear in the ergative.

- (8) Buwa da-q^ʃa.
 mother.II.SG.ABS II.SG-come.PFV
 ‘Mother came.’
- (9) Dija-mu buwa χir a**ʃ**u.
 father.I-ERG mother.II.SG.ABS behind <II.SG>make.PFV
 ‘Father brought mother along.’

Verbs of psychological/cognitive state take dative subjects (10); we use the term “affective” to describe this construction below (see Comrie and van den Berg 2006 for the distribution of the affective construction in NEC languages).

- (10) Laha-s buwa d-ak:u.
 child.SG.OBL-DAT mother.II.SG.ABS II.SG-see.PFV
 ‘The child saw mother.’

Root clauses have relatively free word order, while embedded clauses have rigid verb-final order.

- (11) a. Zari, buwo:, q^warbikɬ^ʔ-mul kunne.
 1SG.ERG mother.VOC sweet.IV-PL.ABS [NH.PL]eat.PFV
 ‘Mother, I ate the sweets.’
 b. Kɬo-qi zari ja-t:-u.
 [IV.SG]give-FUT 1SG.ERG this-IV.SG-and
 ‘I will give her that too...’
- (12) a. [Turali-ši jat:i-ši χat:i-t:ib] χ:ams b-ak:u-li
 Tura.IN-ALL up-ALL <HPL>go.FUT-ATTR.PL bear.III.SG.ABS III.SG-see.PFV-EVID
 jij-me-s.
 they-PL.OBL-DAT
 ‘When they were going uphill to Tura, they saw a bear.’
 b. *[χat:i-t:ib turali-ši jat:i-ši] χ:ams b-ak:u-li
 <HPL>go.FUT-ATTR.PL Tura.IN-ALL up-ALL bear.III.SG.ABS III.SG-see.PFV-EVID
 jij-me-s.
 they-PL.OBL-DAT
 (‘When they were going uphill to Tura, they saw a bear.’)

The embedded clause in (12a) is headed by the participial form *χat:i-t:ib* ‘going’ in clause-final position. No other order is allowed for this clause. In comparison, the dative subject *jijmes* ‘they.DAT’ freely appears as the final element in the main clause.

Archi distinguishes between the external-possessor genitive and the adnominal genitive; here we will only discuss the former. External-possessor genitives appear in existential clauses with the possessor in the genitive and possessum in the absolutive, as in (13). In this structure, the genitive DP is a separate constituent of the root clause, and it is not part of the subcategorization frame of the unaccusative verb ‘to be, to exist.’ Cross-linguistically, the external possessor can appear in a variety of forms, including the genitive.

- (13) Dija-n noʃ b-i.
 Father.I.SG.OBL-GEN horse.III.SG.ABS III.SG-be.PRS
 ‘Father has a horse.’

The Archi external-possessor genitive can appear either at the left or right periphery of a root clause. If both the possessum and possessor appear preverbally, the

possessor must precede the possessum, which explains the ungrammaticality of (14c):

- (14) a. Uš-mi-n os ɬ:onnol eɾɾdi.
 brother.I-SG.OBL-GEN one woman.II.SG.ABS <II.SG>be.PST
 ‘Brother had a wife.’
 b. Os ɬ:onnol eɾɾdi uš-mi-n.
 one woman.II.SG.ABS <II.SG>be.PST brother.I-SG.OBL-GEN
 ‘Brother had a wife.’
 c. *Os ɬ:onnol uš-mi-n eɾɾdi.
 one woman.II.SG.ABS brother.I-SG.OBL-GEN <II.SG>be.PST
 (‘Brother had a wife.’)

We assume that the external possessor is base-generated as an argument of vP, as in (15a), and then moves to a higher projection, as shown in (15b). Two possible accounts for this movement have been offered. It may be theta-role-related (Lee-Schoenfeld 2006; Rodrigues 2010; Landau 2010) or case-related (Deal 2013). It is also possible that the external possessor dislocates for information-structural reasons. We assume here that the Archi genitive case is an inherent case in spec,vP and leave the motivation for its movement to future research.

- (15) a. [_{VP} DP_{GEN} [_{VP} DP_{ABS} be] v]
 b. [_{XP} DP_{GEN} [_{VP} DP_{GEN} [_{VP} DP_{ABS} be] v] x]

Evidence for the base-generation of the external-possessor genitive in vP comes from its presence in untensed clauses such as *masdar* (verbal nominalization) clauses.³ In (16), the predicate of the bracketed embedded clause is the *masdar* of the existential verb *i* ‘be.’⁴

- (16) [Dija-n duχriq⁶ no⁶š b-i-kul] *pro* sini.
 father.SG.OBL-GEN village.SG.OBL.IN horse.III.SG.ABS III.SG-be-MSD know.PRS
 ‘I know that Father has a horse in the village.’

As previously mentioned, it is standardly assumed that the external-possessor genitive moves to a higher projection in the clause.

³ *Masdar* is a term for non-finite forms (verbal nouns) frequently used in the literature on languages of the Caucasus; we adopt its use in this chapter to reflect the existing literature on Archi. We will return to the details of *masdar* constructions in section 3.4.1. For the moment, we simply note that external-possessor genitives are possible in *masdars*, in the absence of tense.

⁴ The copular verb ‘be’ shows homophony between the untensed form and the present tense form: *i*.

3.3 Agreement between DPs?

In addition to argument-verb agreement, Archi noun-class-agreement exponents can appear on non-verbal elements (see Corbett 2013; Bond and Chumakina 2015 for an overview). As with the standard argument-verb agreement, an absolutive argument always determines this non-verbal agreement. In this section, we concentrate on agreement between the absolutive DP and a subset of first person pronouns in the dative, ergative, and genitive.

First person pronouns in the dative, regardless of number, demonstrate agreement with the absolutive DP. In (17a), the dative of the first person singular pronoun agrees in noun class with the DP ‘that woman’; (17b,c) show a similar agreement pattern in the plural with exclusive and inclusive ‘we,’ respectively:

- (17) a. To-r ɬ:onnol d-ez eɾχni.
 [that-II.SG woman.II.SG.ABS] II.SG-1SG.DAT <II.SG>forget.PFV
 ‘I forgot that woman.’
- b. To-r ɬ:onnol d-el eɾχni.
 [that-II.SG woman.II.SG.ABS] II.SG-1PL.EXCL.DAT <II.SG>forget.PFV
 ‘We (EXCLUSIVE) forgot that woman.’
- c. To-r ɬ:onnol d-elaɾu eɾχni.
 [that-II.SG woman.II.SG.ABS] II.SG-1PL.INCL.DAT<II.SG> <II.SG>forget.PFV
 ‘We (INCLUSIVE) forgot that woman.’

With ergative first person pronouns, agreement with the absolutive is only present on the plural form of the pronoun. Thus, in (18), the ergative form of ‘we’ shows class agreement with the DP ‘TV,’ but in (19) the singular ergative pronoun does not display agreement:

- (18) Nenaɒu b-is tilivizor mu aɒu.
 1PL.INCL.ERG<III.SG> III.SG-1SG.GEN TV.III.SG.ABS be.good <III.SG>do.PFV
 ‘We fixed my TV.’ (Lit. ‘...made good’)
- (19) Zari b-is tilivizor mu aɒu.
 1SG.ERG III.SG-1SG.GEN TV.III.SG.ABS be.good <III.SG>do.PFV
 ‘I fixed my TV.’

First person genitive pronouns in the external-possessor position also agree with the absolutive:

- (20) B-is duxriqʰ χʰon b-i.
 III.SG-1SG.GEN village.IN.ESS cow.III.SG.ABS III.SG-be
 ‘I have a cow in the village.’

- (21) Cimint hinc baran e**b**·di-t'u **b-olo**.
 cement.III.SG.ABS now like <III.SG>be.PST-NEG III.SG-1PL.EXCL.GEN
 'We did not have cement as (we do) now...'

There can be more than one agreeing pronoun per clause:

- (22) Nena**b**·u ja-b tilivizor **b-ez** mu
 1PL.INCL.ERG<III.SG> this-III.SG TV.III.SG.ABS III.SG-1SG.DAT be.good
 a**b**·u.
 <III.SG>do.PFV
 'We fixed this TV set for me.'

Pronouns can appear in all cases, but agreement with the clause-mate absolutive argument is only registered on pronouns in the core cases: ergative, dative, and external-possessor genitive. Second person pronouns never display agreement. Table 3.4 presents non-spatial case forms of first and second person pronouns; the agreeing forms are shown in boldface.

We postpone the discussion of morphological differences within pronouns until section 3.5. For the purposes of the current discussion, we will note two syntactic constraints that determine the distribution of Archi agreeing pronouns. First, an agreeing pronoun cannot be a subconstituent of a larger constituent. Consider (23), where the ergative agrees with the coordinated phrase 'a beautiful girl and my brother' in class 1PL but cannot agree with either 'girl' or 'brother' individually.

- (23) Nena**b**·u/ *nena-w/ *nena**r**·u mu-t:u-r
 <HPL>1PL.INCL/1PL.INCL-1.SG/<II.SG>1PL.INCL be.beautiful-ATTR-II.SG
 lo-wu w-is ušdu-wu χir a**b**·u.
 child.II.SG.ABS-and 1.SG-1SG.GEN brother.I.SG.ABS-and behind <HPL>make.PFV
 'We (INCLUSIVE) brought a beautiful girl and my brother.'

Secondly, pronominal XPs agree with the absolutive argument only. As examples (24) through (26) illustrate, genitive, dative, and ergative arguments cannot control agreement on pronouns.

- (24) a. **B-is** duχriq^c χ^con b-i.
 III.SG-1SG.GEN village.IN.ESS cow.III.ABS III.SG-be
 'I have a cow in the village.' (female speaking)
 b. ***D-is** duχriq^c χ^con b-i.
 II.SG-1SG.GEN village.IN.ESS cow.III.ABS III.SG-be
 ('I have a cow in the village.')
 (25) a. **D-ez** Ajša d-ak:u.
 II.SG-1.SG.DAT Aisha.II.SG.ABS II.SG-see.PFV
 'I have seen Aisha (female).' (male speaking)

- b. ***W-ez** Ajša d-ak:u.
 I.SG-1.SG.DAT Aisha.II.SG.ABS II.SG-see.PFV
 ('I have seen Aisha.')

- (26) a. **Nena**hanžugur ūmmar b-a(ɾ)ča-r?
 <III.SG>1PL.INCL.ERG how life.III.ABS.SG III.SG-<IPFV>carry.out-IPFV
 'How are we to spend our life?' (based on T3:4)

- b. ***Nen**hanžugur ūmmar b-a(ɾ)ča-r?
 <1PL>1PL.INCL.ERG how life.III.ABS.SG III.SG-<IPFV>carry.out-IPFV
 ('How are we to spend our life?')

TABLE 3.4. Archi first and second person pronouns^b

	SG		PL		
	First person	Second person	First person		Second person
			EXCL	INCL	
Abslutive	zon	un	nen	nen-t'u	ž ^w en
Ergative	zari			nena-w nena-ɾu nena-bu nen-t'u	
Genitive	w-is d-is b-is Ø-is	wit	ulu d-olo b-olo Ø-olo	la-wu la-ɾu la-bu la-t'u	wiš
Dative	w-ez d-ez b-ez Ø-ez	was	w-el d-el b-el Ø-el	w-ela-w d-ela-ɾu b-ela-bu Ø-el-t'u	wež
Causalis	za-š:i	wa-š:i	la-š:i		ž ^w a-š:i
Comitative	za-ɬ:u	wa-ɬ:u	la-ɬ:u		ž ^w a-ɬ:u
Comparative	za-χur	wa-χur	la-χur		ž ^w a-χur
Partitive	za-q ^c iš	wa-q ^c iš	la-q ^c iš		ž ^w a-q ^c iš
Similative	za-q ^c di	wa-q ^c di	la-q ^c di		ž ^w a-q ^c di
Substitutive	za-kɬ'ena	wa-kɬ'ena	la-kɬ'ena		ž ^w a-kɬ'ena

^b Agreement is shown only with absolutive singular goals; four variants in the same cell illustrate four possible agreement forms with I-IV singular.

In sum, first person dative, ergative, and external-genitive pronouns agree with their clause-mate absolutive argument. This agreement is obligatory, does not depend on the tense of the verb, and appears in both matrix and embedded clauses.

(27) *Argument agreement in Archi*

First person pronouns in non-absolutive core cases agree with the absolutive argument.⁵

To develop an analysis of this pattern, we must first produce a general account of case and agreement licensing in Archi. We construct this account in section 3.4 below.

3.4 Case licensing and agreement in Archi

3.4.1 *Masdars*

Masdars have the following nominal properties: (i) they can appear in any argument position, (ii) they inflect for case, (iii) they can be pluralized, and (iv) they can be complements of postpositions (Kibrik 1977a: 311–13).

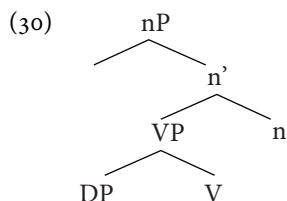
Archi distinguishes two types of *masdars*. The first type is formed on the basis of a bare verbal root. Case-marking in this type is similar to what is observed in nominalizations in more familiar languages, with the core argument expressed in the genitive. If the root corresponds to a transitive verb, only one genitive argument is allowed at a time. Consider the following illustrative examples (in these examples, (a) shows a tensed form, the other forms are *masdars* in the absolutive singular):

- (28) a. Pat'i dogi-li-t:i-š d-ek:u.
 Pati.II.SG.ABS donkey.III-SG.OBL-SUP-EL II-fall.PFV
 'Pati fell off a donkey.'
- b. Pat'i-n dogi-li-t:i-š d-ek-mul
 Pati-GEN donkey.III-SG.OBL-SUP-EL II.SG-fall-MSD
 'Pati's falling off a donkey.'
- (29) a. Rasul-li tilivizor be-šde.
 Rasul-ERG TV.III.SG.ABS III.SG-buy.PFV
 'Rasul bought a TV.'
- b. Rasul-li-n (tilivizor) b-uš-mul
 Rasul-SG.OBL-GEN TV.III.SG.ABS III.SG-buy-MSD
 'Rasul's purchase'
- c. tilivizol-li-n b-uš-mul
 TV-SG.OBL-GEN III.SG-buy-MSD
 'the buying/purchase of a/the TV'

⁵ The forms of 1SG ergative and 1 PL.EXCL ergative pronouns are an exception to this generalization.

- d. *Rasul-li-n tilivizol-li-n b-uš-mul
 Rasul-SG.OBL-GEN TV-SG.OBL-GEN III.SG-buy-MSD
 ('Rasul's buying of a TV')

The *masdars* presented above cannot combine with adverbials and can only be modified by adjectives, thus resembling the well-known English OF-*ing* nominalizations (cf. Harley 2009). We hypothesize that their general structure is as shown in (30); the nominalizing functional head licenses the genitive case:



The second *masdar* type is formed from a root and can include aspectual affixes; it is essentially a clausal nominalization (Kibrik 1977a: 110–12). These *masdars* lack temporal specification and cannot host IP-level adverbs. However, their arguments bear the same case as the corresponding arguments of a finite clause. In particular, the sole argument of an intransitive *masdar* (regardless of unaccusativity) appears in the absolutive case:

- (31) [Pat'i dogi-li-t:i-š d-ek-mul] bo-qi.
 Pati.II.SG.ABS donkey.III.SG.OBL-SUP-EL II.SG-fall-MSD say-FUT
 'I will tell (the story about) how Pati fell off a donkey.'

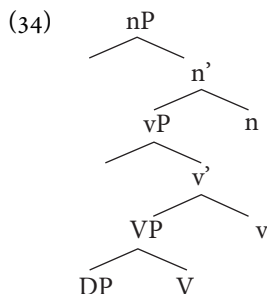
Masdars of agentive transitive verbs have an external argument in the ergative case and an internal argument in the absolutive case:

- (32) [Rasul-li tilivizor b-uš-mul] b-ez sini.
 Rasul.I-SG.ERG TV.III.SG.ABS III.SG-buy-MSD.IV.SG.ABS III.SG-1SG.DAT know
 'I know that Rasul bought a TV set.'

Masdars of affective verbs have a dative experiencer argument and an absolutive internal argument:

- (33) [Rasul-li-s ʔ:onnol d-uχ-mul] bo-qi.
 Rasul.I-SG.OBL-DAT wife.II.SG.ABS II.SG-find-MSD say-FUT
 'I will tell you how Rasul found/met (his) wife.'

The data in (31) through (33) indicate that all argument cases are available in non-finite contexts, i.e., all are licensed inside vP, rather than TP. We analyze these *masdars* as vP-nominalizations with the following structure:



Concomitantly, *masdars* show the same agreement pattern with their absolutive argument as finite predicates do. This property suggests that agreement between verbs and absolutive DPs occurs inside vP rather than TP, which, in turn, implies that the v head is responsible for both case licensing and agreement in Archi.

Agreeing pronouns of the type described in section 3.3 are also found in *masdars*, as shown by (35) and (36).⁶

- (35) nenau s:ud b-alleju b-a-mul
 1 PL.INCL.ERG<III.SG> judgment.III.SG.ABS III.SG-for.free<III.SG> III.SG-do-MSD
 ‘(a story of) how we judged for free’

- (36) d-ez ajša d-it:a<u>u d-ak^w-mul
 II.SG-1SG.DAT Aisha.II.SG.ABS II.SG-early<II.SG> II.SG-see-MSD
 ‘(a story) of how I saw Aisha early in the morning’

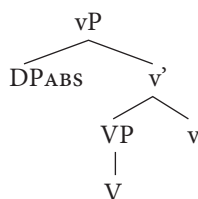
3.4.2 Clause structure

All intransitive verbs in Archi take absolutive subjects. Within intransitives, at least three diagnostics may help distinguish between unergative and unaccusative verbs. First, intransitive verbs are divided into stative and dynamic verbs (see Kibrik et al. 1977: 100 ff.), and this distinction roughly corresponds to the distinction between unaccusatives and unergatives. The two subclasses of verbs combine with different nominalizing suffixes (Kibrik 1977a: 94–5). Secondly, agent nominals in *-či*, a suffix corresponding roughly to the English *-er*, can only be formed from unergatives and transitive verbs (Kibrik et al. 1977: 93). Finally, event nominalizations differ depending on whether they are built from unergatives or unaccusatives (Kibrik 1977b: 180).

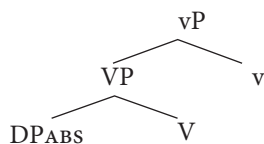
We assume that both unergative and unaccusative verbs have a vP dominating VP, as in (37a,b). The vP of unaccusative verbs lacks an available specifier position for merging the external argument.

⁶ Example (35) also includes an agreeing adverb, *AGR-allej<AGR>u*. The analysis of adverbial agreement is beyond the scope of this chapter; see Polinsky (2014) for a syntactic account of such agreement.

(37) a. unergative



b. unaccusative



In transitive clauses, the subject appears in the ergative and the object appears in the absolutive. Archi ergative subjects are merged higher than absolutive objects. Support for this generalization comes from control and binding facts.

First, an ergative can serve as the subject of an embedded control clause, as shown in (38), where the object of the matrix clause is part of the control chain:⁷

- (38) ʔAli-mu_i Rasul_k u◁w◁k'◁u [PRO_k žun◁t'◁u_i
 Ali.I-SG.ERG Rasul.I.SG.ABS ◁I.SG>force.PFV REFL.GEN◁IV.SG>
 ħurmat-q'imat a-s].
 respect.IV.SG.ABS [IV.SG]do-FIN⁸
 'Ali_i made Rasul_k [PRO_k respect him_i].'
 NOT: 'Ali made Rasul be respected...'

Secondly, ergatives asymmetrically c-command absolutes:

- (39) a. Pat'i-mu inža◁r◁u čučebo.
 Pati.II-SG.ERG REFL.ABS◁II.SG> wash.PFV
 'Pati washed herself.'
 b. *žē◁r◁u Pat'i čučebo.
 REFL◁II.SG>.ERG Pati.II.SG.ABS wash.PFV
 ('Pati washed herself.')

These diagnostics argue for the structure presented in (40). We propose that the ergative subject merges in the specifier of the transitive vP, which is generated above the first vP layer. Here we treat this head as v, rather than Kratzer's (1996) Voice; however, the analysis proposed below is equally compatible with either approach.

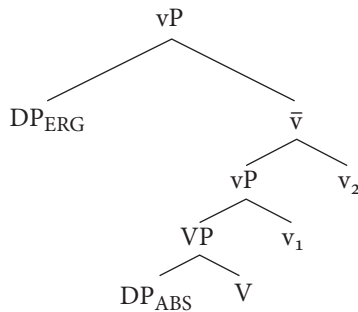
We treat the ergative as a structural case, licensed in the specifier of the transitive functional head. Evidence in support of the structural status of the Archi ergative

⁷ The control clause includes a reflexive pronoun. Reflexive pronouns have a complex structure; they consist of a pronominal morpheme and the emphatic particle *ejt'u*. For instance, in (39), the third person reflexive pronoun *inža◁r◁u* is composed of the oblique form of the third person pronoun *inž* plus the emphatic particle *-ejt'u* (Kibrik 1977a: 127–8). The emphatic particle agrees with its clause-mate absolutive argument, not with the antecedent of the reflexive pronoun; we discuss this particle in detail in section 3.5, below. For the purposes of this chapter, nothing hinges on the internal structure of reflexives, and we do not show their morphological decomposition below.

⁸ Kibrik (1977a: 63, 69, 201 ff.) uses the term "finalis" for infinitival forms.

includes at least the following: (i) the ergative and the absolutive can equally undergo conversion to the adnominal genitive in event nominalizations such as the “smaller” *masdars* discussed in section 3.4.1 and nominalizations that are not clearly derived from verbs; (ii) the ergative is not preserved under causativization or raising.

(40) Ergative subject and absolutive object

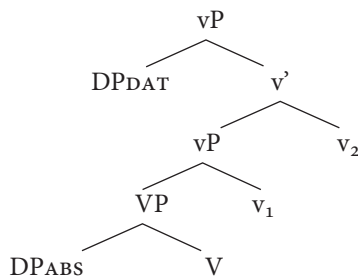


In the affective construction, with the experiencer appearing in the dative and the stimulus in the absolutive, the thematic role of the dative argument is well-defined, confirming the status of that case as inherent. Dative experiencers pattern with ergative subjects in asymmetrically c-commanding absolutives, as shown in (41).

- (41) a. Laha-s inžaw w-ak:u.
 child.I.SG.OBL-DAT REFL.ABS.I.SG I.SG-see.PFV
 ‘A/The boy saw himself.’
 b. *Žus:aw lo w-ak:u.
 REFL.DAT.I.SG child.I.SG.ABS I.SG-see.PFV
 (‘A/The boy saw himself.’)

The binding data indicate that the dative argument is generated higher than the absolutive object, as schematized in (42). Thus, we locate the dative/oblique subject-like argument in the specifier of the highest vP in the layered verb phrase. The main difference between this structure and the structure of the ergative clause concerns the inherent vs. structural status of argument in question.

(42) Dative subject and absolutive object

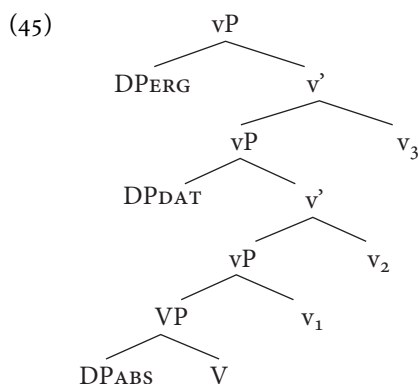


The dative case encodes not only subjects of affective clauses, as in (41), but also indirect objects. Such indirect-object datives are bound by the ergative, but cannot bind it:

- (43) a. *ʕali-mu žusau tilivizor be-šde.*
 Ali.I-SG.ERG REFL.DAT<III.SG> TV.III.SG.ABS III.SG-buy.PFV
 ‘Ali bought a TV set for himself.’
 b. **Žu<w>u ʕali-s tilivizor be-šde.*
 REFL.ERG<I.SG> Ali.I-SG.DAT TV.III.SG.ABS III.SG-buy.PFV
 (‘Ali bought a TV set for himself.’)

Dative (indirect) objects, but not dative subjects, can co-occur with ergatives, binding the absolutive object but not vice versa, as shown in (44). This asymmetry indicates that the dative object is generated above the absolutive object, presumably in the specifier of the lower *v* head, as shown in (45).⁹

- (44) a. *Rasul-li Fatimka-s surat-li-t inža<r>u*
 Rasul.I-SG.ERG Fatimka.II.SG.OBL-DAT picture.IV-SG.OBL-SUP REFL.ABS<II.SG>
d-ak:u-s a<r>u.
 II.SG-see-FIN <II.SG>do.PFV
 ‘Rasul showed Fatimka_i herself_i in the picture.’
 b. **Rasul-li Fatimka surat-li-t žes:a<r>u*
 Rasul.I-SG.ERG Fatimka.II.SG.ABS picture.IV-SG.OBL-SUP REFL.DAT<II.SG>
d-ak:u-s a<r>u.
 II.SG-see-FIN <II.SG>do.PFV
 (‘Rasul showed Fatimka_i herself_i in the picture.’)



⁹ We have not observed examples of co-occurrence between the dative experiencer subject and the dative object, but, in principle, nothing rules such co-occurrence out.

3.4.3 Modal verbs

Another piece of evidence for vP-internal case licensing in Archi comes from modal verbs. As is common cross-linguistically (Wurmbrand 1999, 2001; Davies and Dubinsky 2004; among others), the Archi modals ‘can’ and ‘must’ appear as restructuring verbs that take vP-sized complements.¹⁰ We assume that Archi modal verbs are v heads, since they bear class marking on a par with lexical and auxiliary verbs, and they embed under auxiliary verbs, as shown in (46).

- (46) Q^we-s ku<w>šu-li i<w>t:it’u zon.
 1.SG.go-FIN <1.SG>must.PFV-CVB <1.SG>AUX.PFV.NEG 1SG.ABS
 ‘I did not have to go.’

These structures exhibit the same distribution of argument cases and agreement as *masdars* (and finite structures).

- (47) [Nes:en zon o<w>χuk^we-s] ko<w>ša-r.
 now 1.ABS <1.SG>sleep-FIN <1.SG>must-IPFV
 ‘I must sleep now.’
- (48) [Tow-mu jeb ačas-s] k^wašu-qi.
 he-ERG they.ABS <HPL>kill-FIN <HPL>must.PFV-FUT
 ‘He will have to kill them.’

In (47) and (48), the verb ‘must’ displays agreement, controlled by the absolutive-marked arguments ‘I’ and ‘they,’ respectively. On the standard assumption that agreement is clause-bound, (47) and (48) indicate that the complement of the Archi verb ‘must’ is smaller than CP. However, these facts are equally compatible with a TP- or vP-sized complement. In the rest of this section, we provide further syntactic evidence that complements of the raising verbs under discussion are in fact vPs.

Recall that Archi word order is relatively free in matrix clauses but rigid in embedded clauses. In particular, cross-clausal scrambling is impossible. However, arguments of infinitival phrases can undergo displacement when used with a higher modal verb, as shown in (49). In (49a), the agent and theme of the infinitive ‘put on’ are contiguous, but in (49b), the agent is dislocated to the right. This suggests that modals and their complements do not form separate clausal domains.

- (49) a. [_{VP} Zari baχəža akɬa-s] b-eker.
 1SG.ERG ring.III.ABS.SG <III.SG>put.on-FIN III.SG-be.able
 ‘I can put on a ring.’

¹⁰ Modal verbs lack theta-assigning properties and are usually found in restructuring or raising contexts (Wurmbrand 1999, 2001); this is the approach we adopt here.

- b. [_{VP} Baḡəʒa a.b>kɬa-s] b-eker zari.
 ring.III.ABS.SG <III.SG>put.on-FIN III.SG-be.able 1SG.ERG
 ‘I can put on a ring.’ (Kibrik 2003: 565)

Another indication of the monoclausal status of Archi modal constructions comes from negation. Archi does not allow multiple negation within a single clause.

- (50) a. W-ez Maq’sud w-ak:u-li i<w>di-t’u.
 I.SG-1SG.DAT Maqsud I.SG-see.PFV-CVB <I.SG>be.PST-NEG
 ‘I haven’t seen Maqsud.’
 b. *W-ez Maq’sud w-ak:u-li-t’u i<w>di-t’u.
 I.SG-1SG.DAT Maqsud I.SG-see.PFV-CVB-NEG <I.SG>be.PST-NEG
 (‘I haven’t seen Maqsud.’)

Examples (51a,b) present biclausal structures featuring a converbal and a nominalized clause, respectively; in both structures, negation is possible within each clausal domain:

- (51) a. [ʃali-mu χ:ams a.b>ču-t’u-mat] laq’i<w>t:i-t’u.
 Ali.I-SG.ERG bear.III.SG.ABS <III.SG>kill.PFV-NEG-CVB <I.SG>finish.PFV-NEG
 ‘Ali could not avoid killing a bear.’ (Lit: could not do so that he did not kill a bear)
 b. [ans b-erq’u-t’u-kul] Ø-ez sin-ši Ø-et:t’u.
 bull.III.ABS.SG III.SG-go-NEG-NMLZ IV-I.DAT know-CVB IV-become.PFV.NEG
 ‘I did not know the bull was not coming.’

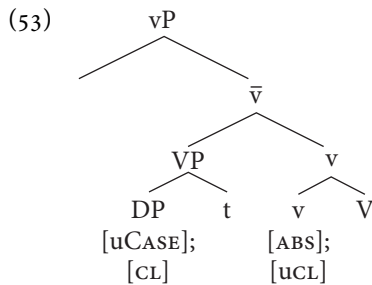
Meanwhile, in constructions with the modal verbs ‘can’ and ‘must,’ only one negation is possible, indicating that the complements of these modal verbs must be vP rather than TP/CP:

- (52) a. ʃali-mu χ:ams a.b>ča-s e.b>t:i-t’u.
 Ali.I-SG.ERG bear.III.SG.ABS <III.SG>kill-FIN <III.SG>be.able-NEG
 ‘Ali could not kill a bear.’
 b. *ʃali-mu χ:ams a.b>ča-t’u-s e.b>t:i.
 Ali.I-SG.ERG bear.III.SG.ABS <III.SG>kill-NEG-FIN <III.SG>be.able.PFV
 (‘Ali could not kill a bear.’)
 c. *ʃali-mu χ:ams a.b>ča-t’u-s e.b>t:i-t’u.
 Ali.I-SG.ERG bear.III.SG.ABS <III.SG>kill-NEG-FIN <III.SG>be.able.PFV-NEG
 (‘Ali could not kill a bear.’)

We conclude that complements of modal verbs are vPs and that the resulting constructions instantiate restructuring. The vPs embedded under restructuring modals still manifest the same case and agreement as their finite counterparts.

3.4.4 Putting it all together

Based on the data from *masdars* and modal verbs, we can establish that all Archi case licensing and agreement occurs inside vP. The absolutive is licensed by the lowest v, which carries both a case feature and an unvalued class feature, as shown in below. In this and subsequent derivations, we assume that Archi has V-to-v head movement. Evidence for this movement comes from the order of roots and agreement markers on lexical verbs. Archi lexical verbs, which correspond to V in the syntactic structure, are always inflected with agreement markers that constitute the lexical realization of [CL] features on v; these markers can be either prefixal or infixal, but never suffixal. Thus, we observe the sequences Agr-Root with a prefix and <Agr.Infix>-Root with an infix, but not *Root-Agr (see also Table 3.3 above).¹¹ The licit orders correspond to v-V and <v>-V; the order *V-v is excluded. One of the ways to derive these morpheme orders in a head-final (V-v) language is to assume that V undergoes head movement to v, yielding a complex head v-V, as represented in the structure in (53):¹²

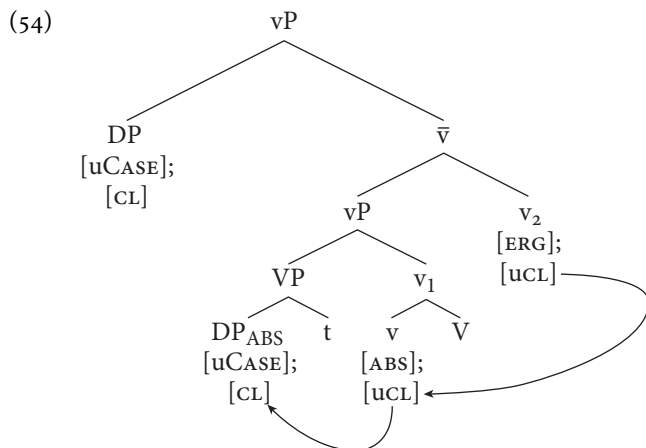


If the verb is unergative, then the sole argument merges in the specifier of vP. At this point in the derivation, only the v head can value [uCASE] on DP, since no other potential case-feature-valuing heads have yet been merged. Thus, the unergative argument receives absolutive case from v, capturing the uniform case assignment on intransitives found in Archi.

We have already characterized the ergative as a structural case and the dative as an inherent case. Ergative and dative subjects are licensed as external arguments of the next functional head. The derivation for transitive verbs is shown schematically in (54):

¹¹ We assume that infixes are underlying prefixes that undergo insertion into the verb in the phonological component after Vocabulary Insertion.

¹² Alternatively, we can assume a post-syntactic operation of a morphological merger (Marantz 1988; Bobaljik 1995; Harizanov 2014). A detailed investigation of Archi verbal morphology goes beyond the scope of this chapter, and we leave the choice between head movement and m-merger for future research.



All *v* heads contain the [uCL] feature; no verb can appear without agreement. Class features are valued by the closest absolutive argument. In principle, agreement with the ergative may be available (and such agreement is found in some ergative languages). However, in Archi, the absolutive is the only visible bearer of agreement features among DPs, meaning higher agreeing heads (including *v* heads without overt phonological realization) bypass the ergative DP and probe lower for agreement.

In principle, two possible operations are available to derive such agreement: multiple probing (several probing heads value their features on the same goal) or successive valuation (cyclic Agree); however, researchers have offered independently motivated considerations against multiple probing (see especially Režac 2003; Baker and Willie 2010). The alternative, successive valuation, permits only the [uCL] feature of the lowest *v* to be valued by the absolutive DP. Other [uCL] features must be valued by the closest *v* head that also has a valued class feature (cf. Collins 2003, Baker and Willie 2010 for a similar approach).

In (54), [uCL] on *v*₁ is valued by the DP_{ABS}. The [uCL] feature of *v*₂, in turn, is valued by the closest head with valued class features, namely *v*₁. If more *v* heads appear in the structure, they each look to the next closest head to value their class feature. The derivation for the affective construction is similar, except that *v*₂ has the feature [EXP] and licenses an inherent dative. Finally, a *vP* can also contain an indirect-object dative licensed by a *vP* (see (45) above); the licensing *v* head is also expected to agree with the adjacent *v* head in the manner shown in (54).

The main properties of case licensing and agreement in Archi introduced in this section are summarized in (55):

(55) *Clausal design of Archi*

- a. Archi verb phrases can include several *vP* layers. Each *v* head has [uCL] features, which can be valued either by a DP_{ABS} or by the closest *v* head with valued [CL] features.

- b. All case licensing occurs in vP:
 - i. absolutive case (on unaccusative and unergative arguments) is always licensed by v_1 ;
 - ii. ergative case (on external arguments) is licensed by v_2 ;
 - iii. dative (on external arguments) is licensed by v_2 when it contains the [EXPERIENCER] feature.

3.5 Accounting for the agreeing pronouns

In this section, we demonstrate that the apparent agreement between first person pronouns in core cases and absolutive DP is merely a surface effect, which can be explained by a principled copying of class (gender) features on these pronouns. Agreeing pronouns, however, are not uniform: one type of analysis is warranted for first person singular and plural exclusive pronouns, whereas first person inclusive pronouns, which have more structure, require a different analysis.

3.5.1 Strong vs. weak pronouns: morphological make-up

We will set the agreeing inclusive pronouns aside for a moment and consider the remaining forms, shown below. A closer look at Archi pronouns reveals that they are morphologically complex, consisting of a pronominal root (shaded) and a case affix (Table 3.5).¹³

In the second person paradigm, the form *un* arguably contains the initial *w*, which is reconstructed for Proto-Lezgif (**won*, Nikolayev and Starostin 1994: 129). This segment is overtly realized in all the other case forms (see *wa-* in Table 3.5). Assuming that *un* is derived from the underlying *won*, we have a uniform paradigm in second singular. We can also hypothesize that the vowel (*o* in the singular, *e* in the plural) and the ending *n* may have a particular interpretive value, but in order to determine that with more certainty, one needs comparative work on several Lezgif languages, and we will not pursue this question here.

In the second person plural, *wiš* and *wež* are two forms that stand out because they do not have the segment $\check{z}^wV$, which is clearly identifiable elsewhere. *Wež* may be a metathesis of $\check{z}^we$ (Alekseev 1985: 171). We will revisit *wiš* momentarily. For now, we can hypothesize that Archi has the following pronominal roots (see also Moskal 2013, section 6.2, for similar suggestions regarding a subset of pronouns):

¹³ The forms of the ergative and absolutive are syncretic except first person singular; such syncretism is quite common in languages of the family. Therefore it is the special form *za-ri* for first singular ergative that warrants an explanation; the ending *ri* is a generalized oblique stem marker.

TABLE 3.5. Archi first and second person pronouns (without inclusive forms)

	SG		PL	
	First person	Second person	First person excl	Second person
Absolutive	zon	un	nen	ž ^w en
Ergative	za-ri	un	nen	ž ^w en
Genitive	AGR-is	wit	AGR-olo	wiš
Dative	AGR-ez	was	AGR-el	wež
Causalis	za-š:i	wa-š:i	la-š:i	ž ^w a-š:i
Comitative	za-ł:u	wa-ł:u	la-ł:u	ž ^w a-ł:u
Comparative	za-χur	wa-χur	la-χur	ž ^w a-χur
Partitive	za-q ^c iš	wa-q ^c iš	la-q ^c iš	ž ^w a-q ^c iš
Similative	za-q ^c di	wa-q ^c di	la-q ^c di	ž ^w a-q ^c di
Substitutive	za-kł'ena	wa-kł'ena	la-kł'ena	ž ^w a-kł'ena

- (56) a. za- 1SG
 b. wa- 2SG
 c. la-/na- 1PL
 d. ž^we- 2PL

The agreeing forms stand out in that they do not have the same pronominal root as the non-agreeing pronouns. Assuming that *-s/-z* are case endings, we can identify the roots of agreeing pronouns as *-i/-e-*; we are not sure what the role of *lo* in some forms is. But crucially for the discussion here, these forms have less phonological heft than the non-agreeing ones. Furthermore, the agreeing forms do not include stops. Kibrik et al. (1977: 325–6) independently observe that only affixes lack stops in Archi. Thus, pronouns with the V(C)(V) structure appear analogous to affixes, both in terms of their size and composition.

Based on these observations, we suggest that Archi agreeing first person singular and plural exclusive pronouns are weak, phonologically deficient, forms. They contrast with the robust CV-stems available for the formation of strong pronouns.

- (57) Archi weak pronouns
 a. /i/, /e/: 1SG
 b. /(V)l(V)/: 1PL

Finally, the second person plural form *wiš* may also be phonologically deficient, but with the frozen class I prefix *w*, which makes it similar to the CV-based strong pronouns.

We would like to underscore that a detailed phonological and morphological analysis of Archi pronouns is still outstanding. For example, it may be the case that what we identify as weak pronominal exponents in (57) turn out to be thematic affixes, and at least a subset of weak pronouns may be null in Archi. What matters the most for our discussion is that there is a systematic contrast between agreeing and non-agreeing pronouns in terms of their phonological shape. Having established the formal contrast, we now turn to the difference in distributional properties of these pronouns.

3.5.2 Strong vs weak pronouns: distribution

Our hypothesis is that Archi non-agreeing pronouns are strong and the agreeing ones are weak. The two pronoun types are known to have a number of different distributional properties (cf. Cardinaletti and Starke 1994, 1999; Laenzlinger 1998; Grohmann 2000, a.o.). Unfortunately, discussion of this contrast in the literature predominantly involves third person pronouns, whereas the Archi contrast occurs in the first person; this discrepancy rules out some standard diagnostics, for example, the indexing of human referents (Cardinaletti and Starke 1994, 1999). However, some diagnostics are still applicable. In particular, weak pronouns are known to disallow focus modification (Cardinaletti and Starke 1994, 1999) and to be impossible as fragment answers, as the following French and Italian examples demonstrate:

- (58) a. C'est toi/*tu qui sautes le plus haut. *French*
 It is 2SG.STRONG/2SG.WEAK jump.2SG.PRS DET most high
 'It is you who jumps the highest.'
- b. Solo lui/*egli ha dichiarato la propria *Italian*
 only 3SG.M.STRONG/3SG.M.WEAK has declared the own
 disponibilità.
 availability
 'Only he has declared his availability.'

Archi agreeing pronouns cannot co-occur with the focus marker *-ejt'u*. The constraint on this co-occurrence is observed equally for the phonologically weak pronouns whose shape we discussed in section 3.5.1, and for more complex first person plural inclusive pronouns.¹⁴ Non-agreeing pronouns easily combine with the focus marker.

- (59) a. *Buwa-mu b-ez-iju χ'ošon au.
 Mother-ERG III-1SG.DAT-III.SG dress.III.ABS.SG make<III.SG>PFV
 ('Mother made the dress for ME.')

¹⁴ This constraint can be circumvented by putting the respective pronoun in a reflexive form under emphasis, similar to the English *She made the dress for MYSELF*.

- b. *Buwa-mu b-elau-ijbu χ^ooʃon a**ʔ**u.
 Mother-ERG III-1PL.INCL-III.FOC dress.III.ABS.SG make<III.SG>PFV
 ('Mother made the dress for US.')

- (60) Buwa-mu was-ijbu χ^ooʃon a**ʔ**u.
 Mother-ERG 2SG.DAT-III.FOC dress.III.ABS.SG make<III.SG>PFV
 'Mother made the dress for YOU.'

Next, weak pronouns are impossible as fragment answers, as the following French example demonstrates:

- (61) Qui a raconté son secret?– Moi/*Je.
 who has told self's secret 1SG.STRONG/1SG.WEAK
 'Who told his/her own secret?—I did.'



Turning now to fragment answers, non-agreeing pronouns—i.e., the “strong” pronouns—can appear in fragments in an appropriate case form without any additional verbal material. For example,

- (62) A: Buwa-mu ɬ:a-s χ^ooʃon a**ʔ**u?
 mother.II-ERG.SG who.SG.OBL-DAT dress.III.ABS.SG make<III.SG>PFV
 'Who did Mother make a dress for?'
 B: Wa-s.
 2SG-DAT
 'For you.'

Meanwhile, agreeing pronouns must appear in their agreeing form:¹⁵

- (63) A: Buwa-mu ɬ:a-s χ^ooʃon a**ʔ**u?
 mother.II-ERG.SG who.SG.OBL-DAT dress.III.ABS.SG make<III.SG>PFV
 'Who did Mother make a dress for?'
 B: B-ez/*ez.
 III-1SG.DAT/1SG.DAT
 'For me.'

These distributional properties suggest that agreeing pronouns in Archi belong to the class of weak pronouns.

Weak pronouns have been argued to be deficient in structure, lacking some features present in strong pronouns (Laenzlinger 1998; Grohmann 2000). In the case of Archi, we identify this missing structural feature as *class specification*. Thus:

- (64) Strong pronouns: [CL], [PERSON], [NUMBER]
 Weak pronouns: [PERSON], [NUMBER]

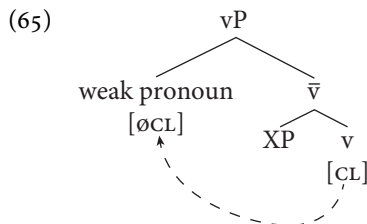
¹⁵ The ungrammatical reply in (63-B) is acceptable if the absolutive in the baseline sentence is in class IV (or plural class nIPL), in which case the agreement exponent is null.

Unlike the more familiar languages with the strong-weak pronoun contrast, Archi only has that contrast in the first person. Second person pronouns are uniformly strong. Third person is invariably expressed by demonstratives, and all demonstratives contain an overt realization of *class features* in their morphological structure.

To summarize, we have argued that Archi has a strong-weak pronoun contrast in first person pronouns, and that only weak pronouns can carry an overt noun class marker copying the class feature of the absolutive DP. Now that we have established evidence for the strong-weak contrast in Archi pronouns, we will examine two types of weak pronouns in more detail. Section 3.5.3 will address weak monomorphemic pronouns, i.e., pronouns that are weak both phonologically and syntactically. Section 3.5.4 will focus on complex pronouns whose surface form does not immediately suggest that they may be weak.

3.5.3 Weak monomorphemic pronouns

Although weak pronouns are unspecified for the [CL] feature, they behave identically to strong pronouns and lexical DPs with respect to case licensing, i.e., they are merged in the regular DP position and assigned case in the same positions as all other DPs. Weak pronouns get their case feature valued by *v*: when a pronoun is serving as the external argument of an agentive transitive verb, it receives [ERG] from *v*₂; when it appears in the affective construction, it receives [DAT] case from *v*₂. Finally, since all DPs must have the [CL] feature (per principle (2) above), the weak pronoun receives a copy of this feature from the closest *v* head, as schematically shown in (65). We represent such feature copying by a dotted line.



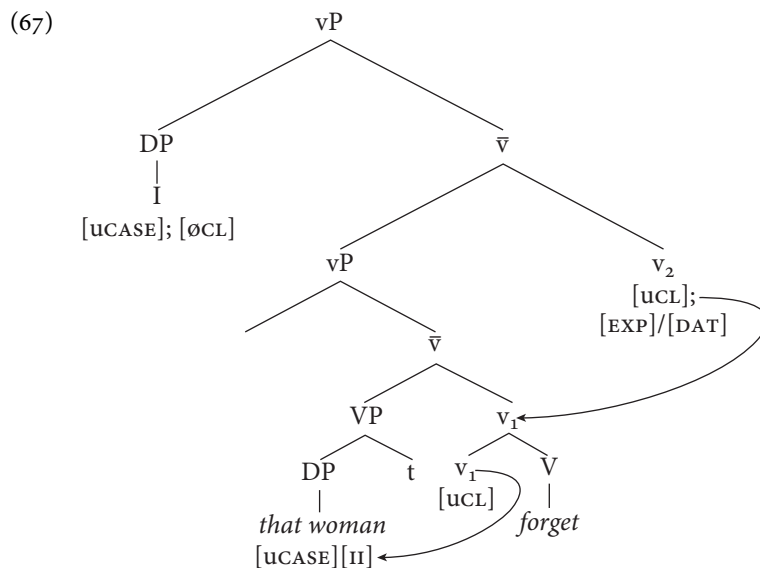
The structure in (65) crucially relies on our analysis of agreement in Archi, where all *v* heads have a [uCL] feature; this feature can be valued by a DP_{ABS} (=XP in (65)) or another *v* head with valued [CL] features. Even phonologically null functional heads contain a [CL] feature and may copy that feature onto a weak pronoun.

The following example shows agreement marked on the dative argument:

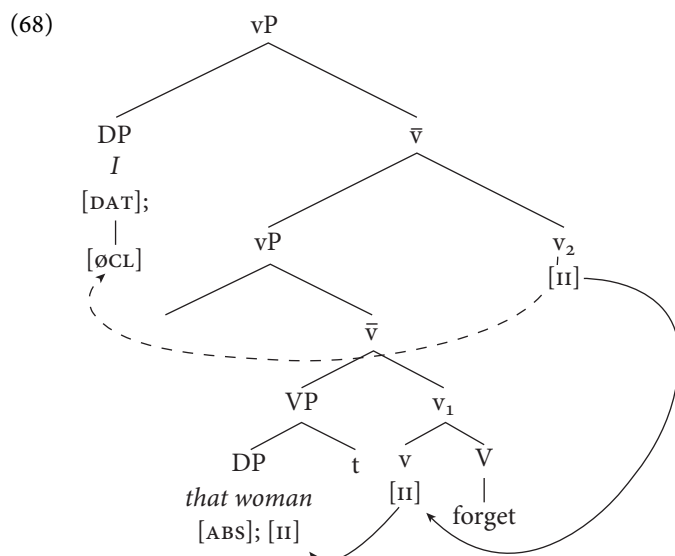
- (66) To-r ɬ:onnol d-ez e(ɾ)χni.
 that-IL.SG woman.IL.SG.ABS IL.SG-1SG.DAT <IL.SG>forget.PFV
 ‘I forgot that woman.’

In the affective verb ‘to forget,’ the lower *v* head (*v*₁) carries [uCL] and [ABS] features, while *v*₂ is specified for [uCL] and [DAT]/[EXP]. The internal argument gets its features

valued by v_1 and receives [ABS] case, while the external argument receives [DAT] from v_2 . The absolutive DP determines agreement; thus, the unvalued class feature in v_1 receives its value from DP_{ABS} ‘that woman,’ and v_2 receives its value from v_1 in turn. This is shown below, with English glosses offered for the sake of exposition:



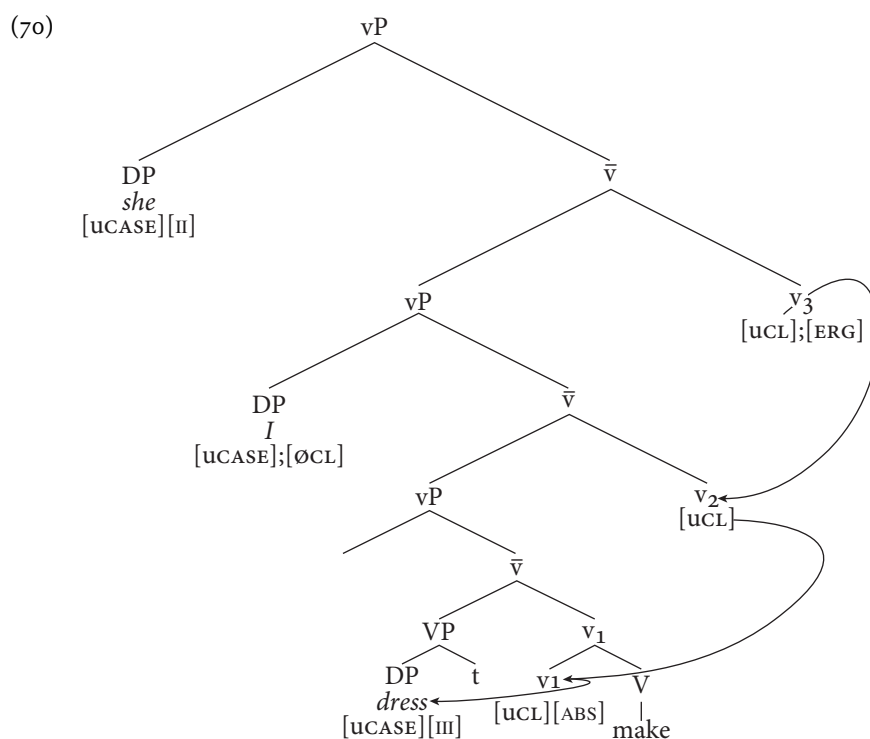
The external argument ‘I-DAT’ is a weak pronoun, unspecified for the [CL] feature and therefore violating the requirement on [CL] feature specification formulated in (2). To avoid this violation, the offending dative DP borrows a copy of the [CL] feature from the closest functional head, v_2 :

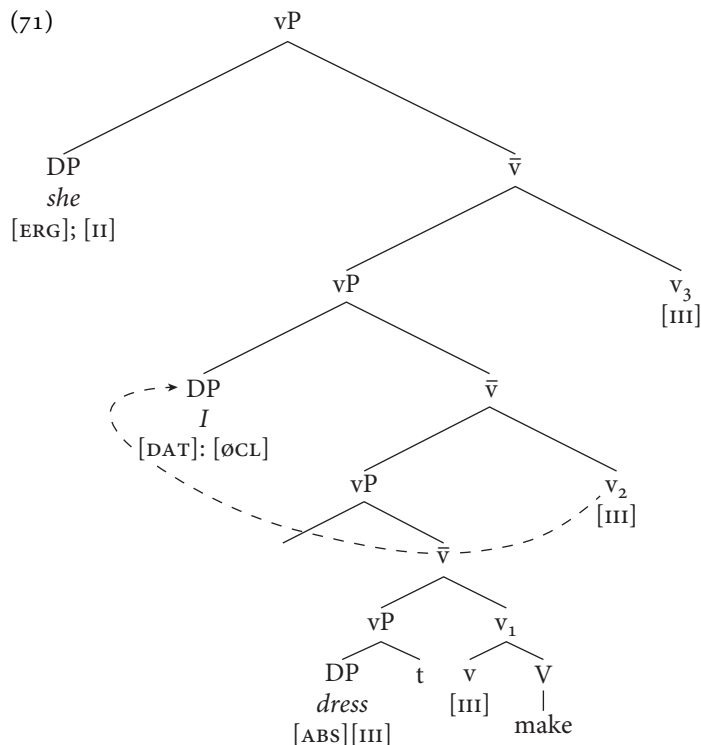


When weak pronouns are merged in lower positions, [CL] features are copied in the same manner. Consider the following sentence:

- (69) To-r-mi b-ez χ^oošon au.
 that-III.SG-ERG III.SG-1SG.DAT dress.III.SG.ABS make<III.SG>PFV
 ‘She made me a dress.’

In (69), the weak pronoun bears the lexical dative case and “agrees” with the absolutive argument in [CL]. The derivation for this sentence proceeds in a similar way to (67) and (68). The internal argument χ^oošon ‘dress’ has its features valued by v₁ and receives [ABS]. Since the verb in (69) is agentive, v₂ comes with the [ERG] feature. The external argument receives its structural case from the higher v. The weak pronoun ‘me’ receives dative case, which we treat as a morphological realization of the beneficiary theta role (Woolford 2006). However, the dative DP in (69) does not have [CL] specification; it must therefore copy the [CL] feature from the closest v, which in turn copies [CL] from v₁. The structure in (70) shows the successive valuation of agreement on verbal heads, and the structure in (71) shows the copying of class features on the weak pronoun from the functional head v₂.





Our proposal and the structure in (65) make several predictions. Since agreement and feature copying occur inside vP, we predict that only pronouns carrying cases licensed directly inside vP can have agreement markers; pronouns licensed outside the vP will not have class features. The cases licensed inside vP include ergative, dative, and the external-possession genitive (shown in boldface in Table 3.6).

Our proposal predicts that *only* weak pronouns in these cases will have agreement exponents. Unfortunately, the only case licensed above vP without any apparent

TABLE 3.6. Archi case-licensing loci

Licensed in vP	Licensed above vP	Licensed in PP	Licensed in DP/NP
Absolutive Ergative Dative External-possession genitive	Causalis (cf. Rizzi 1990: 46–51)	Comitative Comparative Simulative Substitutive Spatial forms	Internal-possession (adnominal) genitive Partitive

P head (causalis) is ~~only~~ used adverbially, and thus is never observed with pronouns. This form therefore cannot be used to test our agreement predictions. As for cases licensed inside PP, our prediction is confirmed: pronouns bearing inherent cases licensed by a P head (comitative, comparative, simulative, substitutive, and a vast array of spatial cases) cannot bear an agreement exponent.

Similarly, the genitive of internal possession and the partitive, both licensed inside a DP, do not agree with their clause-mate absolutive.¹⁶ Given that DPs constitute a separate domain, DP-internal pronouns are not expected to be able to receive class features from v.

Altogether, the sample derivations above allow us to account for the following agreeing weak pronouns: first person singular dative, first person singular genitive, first person plural dative, and first person plural genitive. However, the proposal presented in this section cannot extend to first person inclusive pronouns, which are clearly not weak.¹⁷ In section 3.5.4, we propose an analysis for these pronouns that reflects their complex structure.

3.5.4 Agreeing complex pronouns

First person plural inclusive pronouns, when they appear in the core cases licensed inside vP, also exhibit agreement exponents. Unlike the set of pronouns discussed section 3.5.3, these pronouns have a complex morphological structure. The first morpheme is identical to the first person plural exclusive, in the appropriate case; the second is the emphatic exponent *-ejt'u* (Kibrik 1977a: 125, 126, 326). Thus:

(72) First person plural inclusive = first person plural exclusive+ the marker *-ejt'u*

The first component of this structure is not phonologically uniform across the case paradigm: aside from the weak dative form, *ela*, all other case forms of the first person pronouns are strong:

- (73) a. Weak (dative, /ela/) + the marker *-ejt'u*
 b. Strong (all other forms) + the marker *-ejt'u*

The emphatic marker *ejt'u* indicates agreement when used in any context, not just with pronouns. It has two allomorphs (Kibrik 1977a: 127):¹⁸

¹⁶ Adnominal genitives demonstrate feature concord with the noun they modify, e.g., *w-is uš* 'my brother' (*w-* is a class I marker); this feature copying from the head noun inside the DP is irrelevant for the discussion here.

¹⁷ Since inclusive pronouns are observed only in the plural we will refer to them simply as inclusive; their plural characterization is presupposed.

¹⁸ Given this allomorphy, it may be reasonable to analyze *-ejt'u* morphologically as a suffix; Kibrik refers to it as a particle. For our purposes, the actual morphological status of *-ejt'u* is irrelevant, and we will be referring to it as a marker.

- (74) a. a<CL>u/C____
 b. ej<CL>u/ V____¹⁹

In what follows, we first discuss properties of *ejt'u* and then provide a detailed analysis of the pronouns under discussion.

3.5.4.1 Emphatic *-ejt'u* The marker *-ejt'u*,²⁰ widely used outside the pronominal system, has the meaning 'very,' 'only,' or 'even'; for example,

- (75) To-w bošor to-t s:aʼat-lit:-ej<w>u
 this-I.SG man.I.SG.ABS that-IV.SG hour-LOC-<I.SG>EMPH
 mač'a-ma w-ak:o:-t'u-ši e<w>t:i.
 be.dark-CVB.LOC.ESS I.SG-see.NEG.FUT-NEG-CVB <I.SG>become.PFV
 'That man became invisible AT THAT VERY MOMENT.' (Kibrik 1977a: 326)

This suggests that *-ejt'u* bears the [FOCUS] feature. Further evidence for the association between *-ejt'u* and [FOCUS] derives from its combination with indeterminate pronouns. A number of languages derive polarity items by adding a focus marker to pronouns, indeterminate expressions, and the word 'one' (Haspelmath 1997; Shimoyama 2008). In Archi, *-ejt'u* is used to derive polarity items from pronouns and the numeral 'one,' supporting our analysis of this item as a focus marker:

- (76) Zari os:-ej<t'>u-t:t-u-t os adam aču-t'u.
 1.SG.ERG one-EMPH<IV.SG>-ATTR-IV.SG one man.IV.SG.ABS [IV.SG]kill.PFV-NEG
 'I did not kill a single person.' (Kibrik 1977a: 327)

-Ejt'u is also used to derive reflexive pronouns. Although this function alone would not constitute unequivocal evidence for its focus-marker status, use of focus markers in the derivation of reflexives is certainly very common (see König and Siemund 2000 and König 2001 for a cross-linguistic overview of intensifiers in reflexive formation).

At the same time, the *-ejt'u* cannot combine with IP-level (high) adverbs, as in (77):

- (77) *Talaḥliš-ij<r>u/ij<t'>u [χʰel exdi-t'aw]
 fortunately-<II.SG>EMPH/<IV.SG>EMPH rain.IV.SG.ABS [IV.SG.]to.rain.PFV-CVB.NEG
 da-qʰa.
 II.SG-come.PFV
 ('FORTUNATELY, I (woman speaking) came back before it rained.')

¹⁹ In addition to the phonologically conditioned cases of allomorphy exemplified in (74), the marker *-ejt'u* has several lexically specified allomorphs. For example, the ergative singular form of the pronoun *inž-aw* 'he himself' is irregular, instead of the expected **inž-ejwu* expected on the basis of (74) (Kibrik 1977a: 127).

²⁰ This marker has two forms, *ejt'u* and *ijt'u*, depending on when the examples were obtained. In the 1970s, the marker was pronounced [ejt'u], which is reflected in Kibrik's spelling; 30 years later, a vowel-shift led to the modern pronunciation [ijt'u], reflected in more recent fieldwork examples.

Furthermore, *-ejt'u* cannot combine with finite verbs:

- (78) *Lo ari-li-t:i-š u<w>kten zari
 child.I.SG.ABS work.IV-SG.OBL-SUP-EL <I.SG>come.before 1SG.ERG
 kummul aw-ij<t>u.
 food.IV.SG.ABS [IV.SG].make.PFV-EMPH<IV.SG>
 ('BEFORE (my) son returned from work, I had made food.')

Given these facts, we suggest that the emphatic marker *-ejt'u* is licensed inside vP; this low licensing prevents it from interacting with IP-level adverbs and finite forms, which involve projections higher than vP.

Wherever *-ejt'u* appears, it is always marked for agreement. The example below illustrates its co-occurrence with a noun in an argument case (79), a noun in a spatial case (80), a nominalized verb (81), a pronoun (82), and an adverb (83).

- (79) Gubčit:i-ju kɬ'an b-ez.
 basket.III.SG.ABS-EMPH<III.SG> want III.SG-1SG.DAT
 'I want only a basket.' (Implication: I do not want anything else)
- (80) Ja-t nokɬ' iškol-li-s ɣarak-ij<t>u i.
 this-IV.SG house.IV.SG.ABS school.IV-SG.OBL-DAT behind-EMPH<IV.SG> IV.SG.be.PRS
 'This house is right behind the school.'
- (81) Lo eʃmmu d-ak:u-t:i-ij<r>u buwa
 child.II.SG.ABS cry.PFV II.SG-see.PFV-CVB-EMPH<II.SG> mother.II.SG.ABS
 da-qʃa.
 II.SG-come.PFV
 'As soon as the mother saw that the girl cried, she came.' (Lit.: at the seeing...)
- (82) Buwa-kul-dija-kul zari-j<t>u
 mother.II-NMLZ.IV.SG.ABS-father.IV-NMLZ.IV.SG.ABS 1SG.ERG-<IV.SG>EMPH
 uw-qi.
 [IV.SG.]do.PFV-FUT
 'It is me who will have to become their parent.'
 (Lit.: 'only I will do motherhood and fatherhood') (T3: 18)
- (83) Arša horo:k-eju iškul dabɬu.
 Archi.INESS long.ago-<III.SG>EMPH school.III.SG.ABS open.PFV
 'A school opened in Archi a very long time ago.' (Kibrik 1977a: 326)

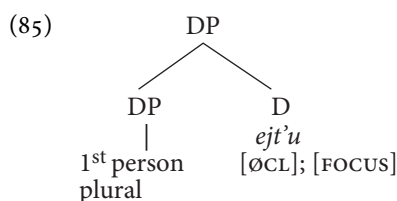
Regardless of its attachment site, the agreement on *-ejt'u* is always determined by the absolutive DP. In (80), *-ejt'u* attaches to a noun in a spatial form and agrees with the object argument *jat nokɬ'* 'this house'; in (81), this marker modifies the converb *d-ak u-t-ij<r>u* and agrees with the absolutive DP *lo* 'child'; in (82), *-ejt'u*

attaches to the first person pronoun *zari*. The core properties of *-ejt'u* can be summarized as follows:

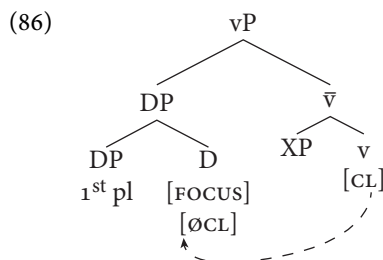
(84) Distribution and agreement properties of *-ejt'u*

The focus marker *-ejt'u* attaches to vP-internal material and agrees with the clause-mate absolutive DP.

3.5.4.2 Complex structure of first person inclusive pronouns Let us return to the agreeing inclusive pronouns. We propose that this construction is a complex DP, headed by the focus marker *-ejt'u*, which takes a first person plural pronoun (=DP) as its complement.



Similar to the weak pronouns, the D head *-ejt'u* is unspecified for [CL], violating the principle that all nominal forms in Archi must be specified for class. To avoid such a violation, *-ejt'u* resorts to copying the [CL] feature from the closest v:

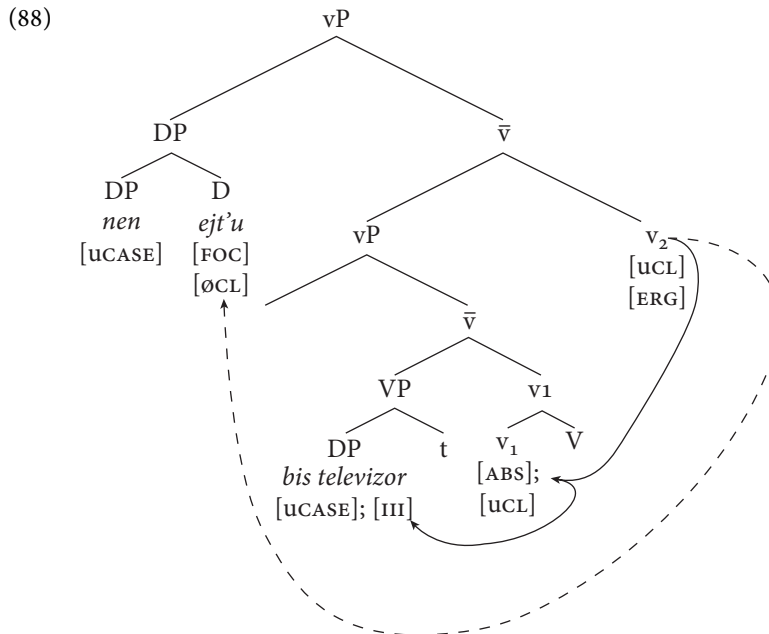


We can now illustrate the proposed analysis for the example below:

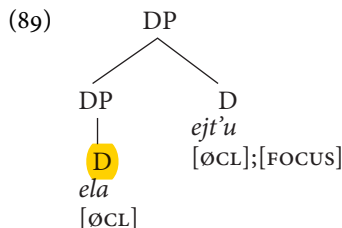
- (87) **Nen-a**·b**·u** b-is tilivizor mu a**·b**·u.
 1PL.INCL.ERG-⟨III.SG⟩.EMPH III.SG-1.SG.GEN TV.III.SG.ABS be.good ⟨III.SG⟩do.PFV
 ‘We fixed my TV.’

In (87), the ergative form of the first person inclusive pronoun bears an agreement exponent, controlled by the DP_{ABS} *tilivizor* ‘TV’ (following our proposal that DP gets its case valued by v_1). As agreement is always controlled by an absolutive-marked argument, DP_{ABS} values [uCL] on v_1 , which in turn values [uCL] on v_2 . The pronoun ‘1.INCL.ERG’ now has a D head, unspecified for [CL] in violation of (2).

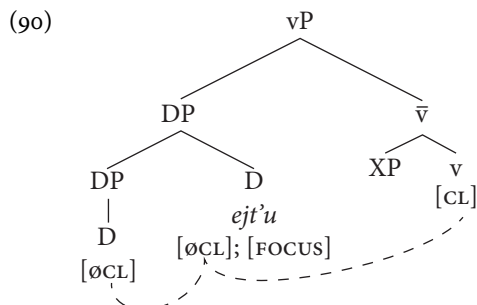
To repair this violation, D_[FOCUS] copies the [CL] feature from the closest v, v₂, as shown below.



Recall that not all first person inclusive pronouns are identical in phonological structure: the core morpheme of the dative first person inclusive pronoun is weak, while all others are strong. And unlike other agreeing pronouns, the dative form of the first person inclusive has two agreement exponents (CL-*ela*-CL-*ejt'u*). The agreement properties of this pronoun follow directly from its structure, with neither D head specified for [CL]. The structure of the dative first person inclusive pronoun is shown below.



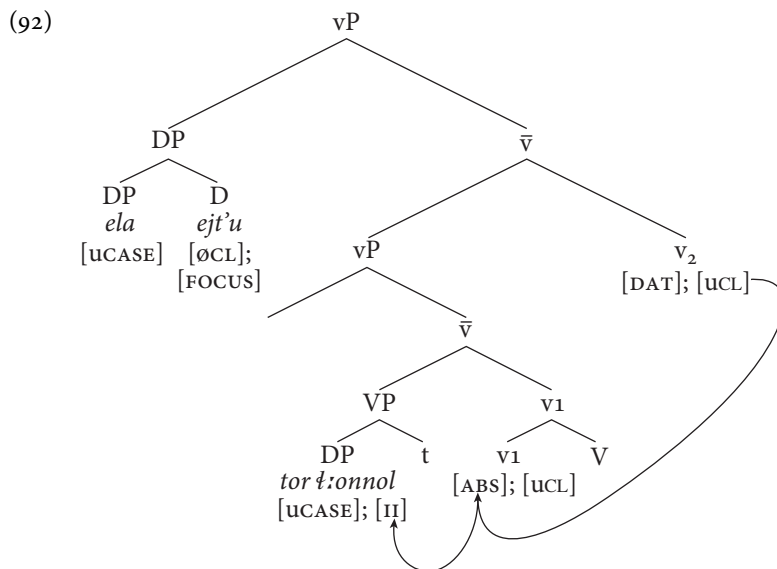
Since there are two D heads with unspecified [CL] features, two copying processes occur: D_[FOCUS] copies the class feature from the closest v head, and then the second D, *ela*, copies that class feature from D_[FOCUS]:



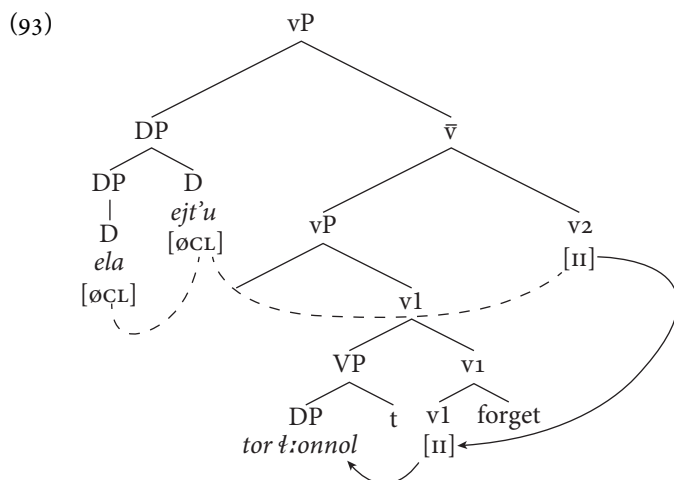
Let us now apply this structure to the derivation of the following sentence:

- (91) To-r ʃ:onnol d-elaʀu eʀχni.
 that-IL.SG woman.IL.SG.ABS IL.SG-1PL.INCL.DAT<IL.SG> <IL.SG>forget.PFV
 ‘We (inclusive) forgot that woman.’

The dative form of the first person pronoun *delaru* in (91) agrees with the absolutive argument *tor ʃ:onnol* ‘that woman.’ The internal argument ‘that woman’ gets its case checked by v_1 . The complex DP *delaru* gets its dative case checked by v_2 . The internal argument values [uCL] on v_1 , while v_1 values the class feature on v_2 :



Delaru is a complex pronoun consisting of a first person exclusive pronoun and *-ejt'u*, with both components unspecified for [CL]: the pronoun *ela* is weak and thus lacks [CL] specification, while *-ejt'u* is independently unspecified for [CL] for reasons outlined above. Again, D_[FOCUS] receives the [CL] feature of the closest v head, v_2 , while *ela* receives a copy of that class feature from D_[FOCUS]:



Our account of the complex structure of first person inclusive pronouns predicts that these pronouns will be able to bear agreement affixes only when their case is licensed inside vP. This prediction bears out: only first person inclusive pronouns in the genitive, dative, and ergative can appear with agreement exponents.

Finally, let us briefly consider why Archi inclusive pronouns, rather than their exclusive counterparts, are marked with agreement exponents. Cross-linguistically, exclusive pronouns are likely to be more complex than inclusive pronouns (Cysouw 2003), but the reverse pattern of complexity is also possible and attested; examples include the spoken French *nous—nous autres*, Ilocano *ta—tayo* (Cysouw 2003: 157), and data from Waiwai (Cysouw 2003: 152), Quechua (Weber 1989: 37, 54–5), and Limbu (Harbour 2013).

Archi is the only NEC language that shows complex inclusive pronouns,²¹ and we believe there is a diachronic explanation for this state of affairs. Historically, Proto-Lezgian distinguished between inclusive and exclusive pronouns with two independent forms, **dla^c-n* vs. **dža-n*, respectively (Alekseev 1985: 70–1). Archi lost this Proto-Lezgian distinction and then developed a new way of distinguishing the two meanings by using first person inclusive reflexive pronouns as non-reflexive first person plural inclusive pronouns. These pronouns have retained their complex structure but have lost their reflexive meaning.

3.6 Conclusions

In this chapter, we presented novel data from Archi illustrating a typologically unusual phenomenon of apparent agreement between first person pronouns and

²¹ Other NEC languages distinguish first person plural inclusive and exclusive pronouns, but they use two completely different roots (for actual forms, see Kibrik and Kodzasov 1990: 221–2).

absolutive-marked arguments. Apart from their typological significance, these facts challenge current approaches to agreement, which hold that Agree relations can be established only between heads and phrases. We demonstrated that the apparent agreement between a first person pronoun and an absolutive DP can be reduced to a more conventional type of agreement, namely, agreement between the absolutive DP and a series of *v* heads, some of them morphologically null.

In building our case for portraying Archi agreement as rather unoriginal, we had to examine the nature of its first person pronouns. The agreeing pronouns in Archi do not form a coherent class. In particular, first person singular and first person plural exclusive pronouns are simplex weak pronouns, whereas first person inclusive pronouns are complex lexemes composed of first person exclusive pronouns modified by the focus marker *-ejt'u*.

We proposed that weak pronouns lack [CL] feature specification ([$\emptyset$ CL]), and must therefore copy a class feature from the closest *v* to avoid violating the constraint that all DPs must be specified for [CL]. Furthermore, we argued that in the complex structure of first person inclusive pronouns (which can be decomposed into a first person exclusive pronoun and the focus marker *-ejt'u*), the second component, the focus marker, is a D head that receives its class feature via copying from the closest *v* head.

From an empirical standpoint, we have used independently motivated properties of language design, such as distinctions between strong and weak pronouns, to probe deeper into an apparently unusual agreement pattern. On a general level, our analysis demonstrates that quite often, subtle facts must be brought to bear when investigating the syntax of the world's languages. Sometimes, surface-oriented observations suggest “exotic” or unfamiliar mechanisms that a closer, theoretically informed investigation shows to be not so exotic after all.

Acknowledgments

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4

On the division of labor between roots and functional structure

ARTEMIS ALEXIADOU AND TERJE LOHNDAL

4.1 Introduction

Frameworks such as Distributed Morphology assume that the lexicon consists of roots and morphosyntactic features and that these roots are categorized by functional elements (Marantz 1997; Embick and Marantz 2008; Embick 2010).¹ An example is provided in (1) where the root is either categorized as a verb (1a) or as a noun (1b).

- (1) a. [_v v √ROOT] b. [_n n √ROOT]

The leading idea is that word formation is syntactic and that there are atomic, non-decomposable elements that are called roots. Importantly, in this theory, roots are category neutral. They enter the syntactic derivation without a category and are only categorized by combining with category-defining functional heads/labels.

In this chapter, we will discuss whether roots have independent meaning of their own. That is, do roots have substantial meaning independently of their syntactic configuration? This will lead us to consider whether or not roots are similar across languages, and our conclusion, following Arad (2003), will be negative. Instead, building on Arad (2003) and Anagnostopoulou and Samioti (2014), we will propose a typology of languages based on the division of labor between little *v* and roots. In brief, some languages have highly general roots that can appear with a range of

¹ This assumption is also shared by exoskeletal approaches in general, that is, approaches capitalizing on the importance of structure as opposed to the properties of lexical items (Áfarli 2007; Ramchand 2008, this volume; Lohndal 2014; Alexiadou et al. 2015). Roots are also adopted in Borer (2005a,b, 2013), although Borer explicitly rejects the assumption that roots are categorized. See also Pesetsky (1995).

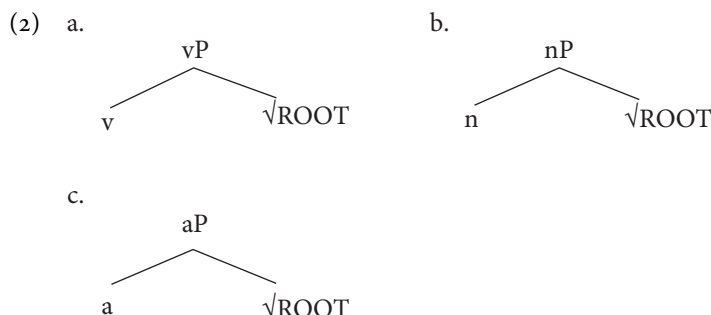
different meanings, whereas other languages have roots with severely restricted meanings.

The chapter is structured as follows. Section 4.2 is a background section that discusses roots and categorizers more generally. Section 4.3 discusses roots in Hebrew and English, two languages that are quite different in terms of how much information each root encodes. Data from the history of English are reviewed in section 4.4, demonstrating that English used to make more use of overt verbalizing morphology in previous stages. Section 4.5 is an extensive discussion of roots in Greek, arguing that Greek is somewhere in between English and Hebrew. Our proposed typology is introduced in section 4.6, and we present two different ways of capturing the typology. Concluding remarks are made in section 4.7.

4.2 Background: roots and categorizers

Since Chomsky (1957), the interplay between syntax and morphology has been at the forefront of formal approaches to language. It has generated a lot of work and different hypotheses about the relationship between the two components (see e.g., Carstairs-McCarthy's 1992 overview, the contributions to Spencer and Zwicky 1998, Hippilsey and Stump 2014, and the discussion in Baker 1985, Ackema and Neeleman 2004, Borer 2005a,b, 2013, Di Sciullo 2005, Embick 2010, Julien 2002, and Caha 2009). There are many reasons why the syntax-morphology interface is an important issue in linguistic theory. Firstly, there is the fundamental issue of whether syntactic operations are defined over "words" or over smaller units (morphemes, morphs, roots, etc.). Secondly, and related to the first question, to what extent do functional syntactic structures encode morphological units? Importantly, exploring these two related issues will yield crucial insights into the architecture of the grammar, as can be seen from the widely different answers that have been provided in the literature (Aronoff 1976; Anderson 1992; Lieber 1992; Halle and Marantz 1993; Wunderlich 1996). Thirdly, there is the question of possible differences between various kinds of morphological operations regarding whether they take place in the lexicon or in the syntax (e.g., famously derivational vs. inflectional morphology, as in Chomsky 1970; Anderson 1982; Marantz 1997; Borer 2005a, b, 2013).

Distributed Morphology (DM) argues in favor of what has become known as the Single Engine Hypothesis (Halle and Marantz 1993; Marantz 1997), which holds that all computation, be it small or big, is syntactic. Thus word formation is syntactic; operations within a lexicon are not permitted. On this view, the lexicon is assumed to consist of roots and functional heads such as categorizers. A root does not carry a category; it receives a category by being embedded in a structure that contains a categorizer. The three standard lexical categories are thus analyzed as in (2).



A given root can in theory appear in all environments, though in practice this does not happen all that often. Theorists thus often postulate constraints on roots in order to capture some of the restrictions that they appear to observe (see Harley 2014 for a review).

Languages differ in terms of whether the categorizer has an overt exponent. In English, this morphology is often not present. The following examples illustrate this for a few noun-verb pairs, though this is very common (Borer 2013 and references therein).

- (3) a. a file—to file
 b. a shop—to shop
 c. a fish—to fish
 d. a run—to run

However, the morphology can also be overt, as in the following examples.

- (4) a. employ—employment
 b. advertise—advertisement
- (5) a. character—characterize
 b. alphabet—alphabetize

Other languages are different. In Hebrew, word-creating morphology is mostly overt and can easily be distinguished from the root.² Roots in Hebrew mostly consist of segmental consonants, such as √CCC. These roots do not have a fixed meaning, as we will see in section 4.3. Pattern morphology is required in order to make the roots pronounceable. Considering verbs, there are seven possible patterns, and they are illustrated in (6) (Arad 2003: 742; see also Berman 1978; Doron 1999).

- (6) Root: Pattern (Binyan) Verb:
- | | | | |
|-----|----------|---------|---------------|
| √md | 1 CaCaC | ʔamad | ‘be standing’ |
| √md | 2 niCCaC | neʔemad | ‘stand up’ |

² What follows about Hebrew is based on Arad (2003).

qpl	3 CiCCeC	<i>qipel</i>	‘fold’—transitive
qpl	4 CuCCaC	<i>qupal</i>	‘passive of 3’
md	5 hiCCiC	<i>heʕemid</i>	‘make stand up’
ʕmd	6 huCCaC	<i>huʕamad</i>	‘passive of 5’
qpl	7 hitCaCCeC	<i>hitqapel</i>	‘fold’—intransitive

As these examples illustrate, the categorizers in Hebrew are crucially overt.

A core question concerns the content of a root. Are roots simply proxies that can appear in a given syntactic configuration or do they actually contribute some semantic content on their own? If they contribute meaning, can roots be catalogued into different baskets depending on their meaning?

In an influential paper, Harley (2005) suggests precisely this latter alternative. Her proposal is that roots can be divided into three categories: Things, Events, and States. We will briefly consider each of these three categories.³

Roots that denote Things are roots such as $\sqrt{\text{FOAL}}$ and $\sqrt{\text{DROOL}}$ (Harley 2005: 47). These roots are underlying direct objects, incorporating into the transitive verb and measuring out the event of the root:

- (7) a. The mare foaled #for two hours/in two hours.
 b. The mare bore a foal #for two hours/in two hours.
- (8) a. The baby drooled for two hours/#in two hours.
 b. The baby made drool for two hours/#in two hours.

A root such as $\sqrt{\text{FOAL}}$ yields a bounded telic predicate, measured out by the root. Roots such as $\sqrt{\text{DROOL}}$ on the other hand yield an unbounded atelic predicate.

Roots denoting Things behave differently from roots that denote Events, such as $\sqrt{\text{HOP}}$ and $\sqrt{\text{DANCE}}$ (Harley 2005: 49–50), called activities and semelfactives by Harley respectively.

- (9) Sue hopped #for five minutes/#in five minutes.
- (10) Sue danced for five minutes/#in five minutes.

Harley argues that the crucial difference between Things and Events is that bounded Event Roots do not result in an accomplishment interpretation of the νP that they occur in. Rather, these roots name an event that occurs at a point in time, which makes them point-like as opposed to bounded Things that take up a certain amount of space or evolves in time (see also Pustejovsky 1991; Jackendoff 1991).

Lastly, Stative roots are roots like $\sqrt{\text{FLAT}}$ and $\sqrt{\text{ROUGH}}$, exemplified in (11) and (12) (Harley 2005: 55), which have a semantic structure that can be characterized as ‘CAUSE+STATE.’

³ See also Levinson (2007, 2010) on the ontology of roots, and Acquaviva (2009).

(11) Jill flattened the metal (#of bumps).

(12) Jill roughened the surface (#of scratches).

These change of state predicates are not happy to take a complement, but there are other predicates that allow them, as illustrated in (13) and (14) (Harley 2005: 54).

(13) Jill cleared the table (of dishes).

(14) Jill emptied the box (of marbles).

Change of states are different from Things and Events since for the latter two it is largely the root itself that determines the Aktionsart properties. For change of state predicates, the verb's Aktionsart is largely determined by the extent to which some state is true of a given verb's Theme.

Another proposal can be found in Alexiadou et al. (2006), and Harley and Noyer (2000), building on Levin and Rappaport Hovav (1995), where they argue that roots fall into the following four classes:

- (15) a. $\sqrt{\text{agentive}}$ (*murder, assassinate*)
- b. $\sqrt{\text{internally caused}}$ (*blossom, wilt*)
- c. $\sqrt{\text{externally caused}}$ (*destroy, kill*)
- d. $\sqrt{\text{cause unspecified}}$ (*break, open*)

From a different perspective, Rappaport Hovav and Levin (2010) argue that roots belong to two ontological classes, namely manner and result, which influence among other things the range of argument alternations verbs built on the basis of each root can appear in. We will not discuss the arguments in favor of this decomposition of root meaning, but suffice it to point out that there are various suggestions in the literature emphasizing that roots have substantial meaning independent of their configuration.⁴

The next question to be addressed is whether or not all languages behave like English; that is, whether there is variation among languages in terms of how much meaning a given root does or does not have. In the remainder of this chapter, we will address this question, proposing a typology of languages illustrated mainly by comparing English, Greek, and Hebrew. We will start with a general discussion of Hebrew and English.

4.3 Hebrew and English

Arad (2003, 2005) was the first to highlight the differences between languages when it comes to roots. She makes the claim that there is a distinction between two types of

⁴ There is also other work denying that roots have an ontological classification, viz. Borer (2005a,b, 2013), Acquaviva (2014), and Acedo-Matellán and Mateu (2014).

languages: a Hebrew-type, where a single root may form multiple nouns and verbs, and an English-type, where each root is normally assigned one interpretation in a nominal or verbal environment (Arad 2003: 740). Arad claims that Hebrew instantiates a phenomenon labeled “multiple contextualized meaning,” which involves a root acquiring multiple meanings depending on its environment. Considering the verbal system, about 15 percent of the Hebrew roots display multiple contextualized meanings. About 27 percent of the roots do not alternate (Arad and Shlonsky 2003). In the following examples taken from Arad (2003: 743–4), roots displaying multiple meanings are illustrated.

- (16) $\sqrt{\text{šmn}}$
- | | | |
|-----------------|----------------|-------------------|
| a. CeCeC (n) | <i>semen</i> | ‘oil, grease’ |
| b. CaCCeCet (n) | <i>šamenet</i> | ‘cream’ |
| c. CuCaC (n) | <i>šuman</i> | ‘fat’ |
| d. CaCeC (adj.) | <i>šamen</i> | ‘fat’ |
| e. hiCCiC (v) | <i>hišmin</i> | ‘grow fat/fatten’ |
| f. CiCCeC (n) | <i>šimen</i> | ‘grease’ |
- (17) $\sqrt{\text{bxn}}$
- | | | |
|----------------|----------------|-----------------|
| a. CaCaC (v) | <i>baxan</i> | ‘test, examine’ |
| b. hiCCiC (v) | <i>hivxin</i> | ‘discern’ |
| c. miCCaC (n) | <i>mivxan</i> | ‘an exam’ |
| d. CoCaC (n) | <i>boxan</i> | ‘a quiz’ |
| e. maCCeCa (n) | <i>mavxena</i> | ‘a test-tube’ |
| f. aCCaCa (n) | <i>avxana</i> | ‘a diagnosis’ |
- (18) $\sqrt{\text{xšb}}$
- | | | |
|------------------|-----------------|-------------------------|
| a. CaCaC (v) | <i>xašav</i> | ‘think’ |
| b. CiCCeC (v) | <i>xišev</i> | ‘calculate’ |
| c. hiCCiC (v) | <i>hexšiv</i> | ‘consider’ |
| d. hitCaCCeC (v) | <i>hitxašev</i> | ‘be considerate’ |
| e. maCCeC (n) | <i>maxšev</i> | ‘a computer/calculator’ |
| f. maCCaCa (n) | <i>maxšava</i> | ‘a thought’ |
| g. CCiCut (n) | <i>xašivut</i> | ‘importance’ |
| h. CiCCon (n) | <i>xešbon</i> | ‘arithmetic/bill’ |
| i. taCCiC (n) | <i>taxšiv</i> | ‘calculus’ |
- (19) $\sqrt{\text{qlt}}$
- | | | |
|---------------|---------------|-------------------|
| a. CaCaC (v) | <i>qalat</i> | ‘absorb, receive’ |
| b. hiCCiC (v) | <i>hiqlit</i> | ‘record’ |
| c. miCCac (n) | <i>miqlat</i> | ‘a shelter’ |
| d. maCCeC (n) | <i>maqlet</i> | ‘a receiver’ |
| e. taCCiC (n) | <i>taqlit</i> | ‘a record’ |

- f. CaCCeCet (n) *qaletet* ‘a cassette’
 g. CeCeC (n) *qelet* ‘input’

Arad emphasizes that despite the apparent differences within each group, they all share the core root. The phonological core is evident whereas the semantic core is underspecified. She argues that it is possible to extract a highly general meaning for most of the above groups. These are provided in (20).

- (20) a. $\sqrt{\text{smn}}$ ‘material’
 b. $\sqrt{\text{xšb}}$ ‘mental activity’
 c. $\sqrt{\text{qlt}}$ ‘absorption, taking in’

Despite this general meaning that can be attributed to the root, the individual meanings of the words are rather different. Which meaning is assigned to which word is, as expected, arbitrary: there is nothing that forces a specific root in a given environment to receive the interpretation it does.

English is different from Hebrew. In this language, roots seem to have some substantial meaning that is rather independent of the syntactic configuration in which they occur (Harley 2005; Alexiadou et al. 2006; and Levin and Rappaport Hovav 2008).⁵ One simple illustration of that is the contrast between (21) and (22).

- (21) a. $\sqrt{\text{CREAM}}$
 b. $\sqrt{\text{FAT}}$
 (22) a. CaCCeCet (n) *šamenet* ‘cream’
 b. CuCaC (n) *šuman* ‘fat’

English employs two morphologically unrelated roots whereas Hebrew utilizes the same root $\sqrt{\text{smn}}$. Put differently: children acquiring English need to acquire two roots; children acquiring Hebrew need to acquire two different interpretations associated with the same root (Arad 2003: 743).

However, roots in English appear in different guises, and there are roots that can appear in different syntactic contexts. Consider the root $\sqrt{\text{RUN}}$. This root can encode a wide range of meanings, illustrated in (23).⁶

- (23) a. *run* (n) ‘a turn/try,’ as in *Take another run at it*
 b. *run* (n) ‘a path for animals to use,’ as in *dog run*
 c. *run* (n) as in *He has the run of the whole house*
 d. *runaway* (n) ‘someone who escaped’
 e. *the runs* (n) ‘diarrhea’

⁵ Latinate bound roots such as $\sqrt{\text{FER}}$, $\sqrt{\text{CEIVE}}$ are exceptional, cf. Arad (2003: 743).

⁶ We are grateful to an anonymous reviewer for highlighting this issue.

- f. *rundown* (n) ‘synopsis of information,’ as in *Give me the rundown on Smith*
- g. *running* (v) ‘working,’ as in *My refrigerator is not running*
- h. *run* (v) ‘try to get elected,’ as in *I’ll run for president/sentator*
- i. *run* (v) ‘control, lead,’ as in *She runs the psychology lab*
- j. *overrun* (v) ‘dominate, take over’
- k. *run into/across* (v) ‘encounter’
- l. *run me into the store* (v) as in *drive me to the store*
- m. *run (along)* (v) ‘leave,’ as in *I have to run*
- n. *run down* (v) ‘strike with a car’
- o. *run out* ‘come to have no more,’ as in *I ran out of milk*
- p. *run up* ‘make something bigger,’ as in *run up the bill*
- q. *runny*, as in *a runny nose*

These examples could be taken to show that the manner root $\sqrt{\text{RUN}}$ has some underspecification, which is fixed by its local context, be it a preposition, a complement, or a prefix; crucially assuming that it is the same root $\sqrt{\text{RUN}}$ in all the instances in (23). However, many of these instances are arguably idiomatic/fixed expressions, which means that they are not examples of productive uses of $\sqrt{\text{RUN}}$. Rather, the root is stored as part of a larger expression and acquires its meaning based on that expression. If so, then the examples in (23) do not demonstrate that roots in English are very flexible, contrary to Hebrew.

There is a range of other imaginable meanings that the root $\sqrt{\text{RUN}}$ cannot encode. The examples in (24) show some of the meanings that the root cannot encode all by itself.

- (24) $\sqrt{\text{RUN}}$
- a. *to run very fast (v)
 - b. *a walk (n)
 - c. *a runny nose (a)
 - d. *a run happening in intervals

Although a lot of English roots can appear both as nouns and verbs, they usually have pretty similar meanings as either nouns or verbs. Furthermore, unlike Hebrew, English does not have a rich functional vocabulary that is responsible for fixing the interpretation of roots. Arad takes the functional morphology to be crucial, and even for someone insisting that data such as (23) demonstrate an incredible flexibility of English roots, this flexibility is not determined or fixed by functional morphology.

To summarize, we have two languages on each side of the scale: Hebrew with little root independent meaning and several functional morphemes, and English with root independent meaning and few functional morphemes. One question that we have

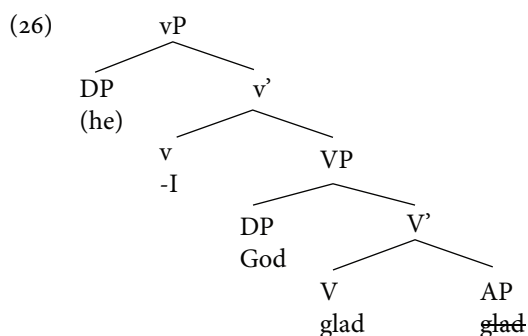
not yet answered is whether we are dealing with a binary opposition or a scale along which languages can be placed? We turn to that question in section 4.4.

4.4 Causativization in English

In this section, we will consider data from the history of English that will demonstrate that English used to be different in terms of functional vocabulary that contribute to fixing the meaning of a given root.

Van Gelderen (2011) documents a series of verbal valency changes in the history of the English language. She notes that there is a causativizing affix *-j* in early Germanic, which becomes *-i* in Old English. Lass (1994: 166) argues that by Old English, only a small group of verbs shows the presence of this *-i* causativizer. Thus it does not appear to be very productive. The example in (25) is analyzed as in (26) in van Gelderen (2011: 124).

- (25) Ac utan glad-i-an georne God ælmihtigne.
 but let.us glad-CAUS-INF eagerly God almighty
 ‘But let us make God the almighty glad eagerly.’ (Wulfstan Homilies)



In the Middle English period, a new causativizer is introduced, namely *-en*. This causativizer is very productive. Examples are provided in (27) from van Gelderen (2011: 125).

- (27) awaken, blacken, brighten, broaden, cheapen, coarsen, dampen, darken, deafen, deepen, fasten, fatten, flatten, freshen, frighten, gladden, harden, hasten, hearten, heighten, lengthen, lessen, lighten, loosen, madden, moisten, neaten, quicken, quieten, redden, ripen, roughen, sadden, sharpen, shorten, sicken, slacken, smarten, soften, stiffen, straighten, strengthen, sweeten, tauten, tighten, toughen, waken, weaken, whiten, widen, worsen.

Van Gelderen also points out that there are three other causative suffixes: *-ize*, *-(i)fy*, *-ate* (e.g., *advertize*, *beautify*, *abdicate*). These are not fully productive and were

borrowed from Greek and Latin. She argues that in Modern English, *-en* and zero derivations derive a causative from an unaccusative. She analyzes *-en* as an instance (a ‘flavor,’ cf. Folli and Harley 2005, 2007; Embick 2009) of little *v*, though with a clear causative semantics (Harley 2009).

We argue that this causative semantics is not encoded in the head *per se*, but rather emerges as a property of the entire syntactic configuration (Hale and Keyser 1993; Higginbotham 2000; Marantz 2006; Ramchand 2008, this volume; Schäfer 2012c). The other “causative” suffixes are pure verbalizers, realizing little *v*. The main argument for the differentiation among the suffixes is that the non *-en* suffixes are not productive and do not provide real causative semantics.

The history of causativization in English demonstrates that little *v* can be morphologically realized even in English, and that English at earlier stages looked a bit more like Hebrew since it had more visible morphological realizations of syntactic heads. The major change, according to van Gelderen (2011: 138), is related to “a discontinuation of marking causatives and transitives morphologically.” This increased morphological opacity can be viewed as a key ingredient in understanding the development of English and also the difference between English and Hebrew, cf. section 4.3.

4.5 Roots in Greek

In this section, we will look at a language that seems to be placed somewhere in the middle between English and Hebrew, namely Greek. Before we can turn to the main point, which is that Greek has a set of underspecified roots that makes it look more like Hebrew, some background on the relevant data is in order.

In Greek, there are two participles that attach to verbs: *-tos* and *-menos*. Consider the following examples from Alexiadou and Anagnostopoulou (2008).

- | | | | | | |
|------|----|---------|-----------------|---------------|------------------|
| (28) | a. | vraz-o | vras-men-os | vras-t-os | ‘boiled’ |
| | b. | psin-o | psi-men-os | psi-t-os | ‘grilled’ |
| | c. | zograf- | zografis-men-os | zografis-t-os | ‘painted’ |
| | d. | anig-o | anig-men-os | anix-t-os | ‘opened,’ ‘open’ |

These two participles function on a par with adjectives, which is to say that they appear in attributive and predicative positions. The following examples illustrate this.

- | | | | | |
|------|----|---------------------|----------------------|-----------|
| (29) | a. | to | anix-t-o | parathiro |
| | | the-neut.sg.nom | open-t-NEUT.SG.NOM | window |
| | | ‘the open window’ | | |
| | b. | to | anig-men-o | parathiro |
| | | the-neut.sg.nom | open-men-NEUT.SG.NOM | window |
| | | ‘the opened window’ | | |

- (30) a. to parathiro ine anih-*t-o*
 the window is open-*t-NEUT.SG.NOM*
 ‘the window is open’
 b. to parathiro ine anig-*men-o*
 the window is open-*men-NEUT.SG.NOM*
 ‘the window is opened’

Anagnostopoulou (2003) and Alexiadou and Anagnostopoulou (2008) argue that *-tos* participles lack event implications, whereas *-menos* participles are different: these denote states resulting from prior events. In the example in (31), (31a) means that the potatoes are fried as a result of a frying event, whereas (31b) means that the potatoes had been cooked in a particular way (“characteristic state” interpretation) (Anagnostopoulou and Samioti 2014: 88).

- (31) a. I patates ine tiganis-*men-es*
 The potatoes are fry-*men-FEM.PL.NOM*
 ‘The potatoes are fried’
 b. I patates ine tigani-*t-es*
 The potatoes are fry-*t-FEM.PL.NOM*
 ‘The potatoes are fried’

Anagnostopoulou and Samioti furthermore show that this difference in event implication is related to a number of syntactic differences. *-menos* participles can be modified by manner adverbs (32a), can license *by*-phrases and instrument PPs (33a), while *-tos* adjectives cannot (32b), (33b).

- (32) a. Afto to vivlio ine kala gra-*men-o*
 This the book is well written
 ‘This book is well-written’
 b. *Afto to kimeno ine kala grap-*t-o*
 This the text is well written
 (33) a. O tixos ine xtis-*men-os* me mistri/ apo ton ergati
 The wall is built with trowel/by the worker
 ‘The wall is built with a trowel/by the worker’
 b. *O tixos ine xtis-*t-os* me mistri/apo ton ergati
 The wall is built with trowel/by the worker

See Anagnostopoulou and Samioti (2014) for a more complete discussion of further syntactic differences.

In terms of the syntactic analysis, Alexiadou and Anagnostopoulou (2008) suggest that *-tos* participles attach to the root below the category-defining head. *-menos* (target state) participles are different: these denote states resulting from prior events.

They attach above the category-defining head *v*, which is taken to be the eventivizing head. This can be illustrated in (34) and (35).

- (34)
- ```

 ASP
 / \
 ASP √ANIG
 -t-

```
- (35)
- ```

      ASP
     /  \
    ASP  vP
    men /  \
        v  √ANIG
  
```

Thus, the attachment of the two participles is different, yielding different interpretations. There is also a third type of participle in Greek: *-menos* resultant state participles that include both implication of an event and agentivity.⁷ For this type, the participle attaches to Voice.

Now we will return to looking at how the above data serve as a background to understanding the relevance of Greek for the typology of root categorization that we are seeking to develop in this chapter. Anagnostopoulou and Samioti (2014: 81) identify the Marantz/Arad Hypothesis (Marantz 2001a, 2007; Arad 2003, 2005) (36) as a condition on the emergence of idiosyncratic meanings.

(36) *The Marantz/Arad Hypothesis*

Roots are assigned an interpretation in the context of the first category assigning head/phase head merged with them, which is then fixed throughout the derivation.

In the present context, this means that *-menos* participles are expected to have a predictable meaning whereas *-tos* participles will be highly idiosyncratic (cf. Anagnostopoulou 2003; Alexiadou and Anagnostopoulou 2008).

Anagnostopoulou and Samioti (2014) show that this picture is simplified in the sense that *-tos* participles often behave as if they were attached outside the category-defining head. This is relevant because their analysis shows dissociation among roots: some roots have substantial meaning; others have a meaning that depends on the syntactic environment.

Greek has suffixes that serve to verbalize a root (Giannakidou and Merchant 1999; Alexiadou 2001, 2009; Ralli 2001; Panagiotidis et al. this volume).

- (37) *-iz, -on, -en/an, -ev, -az, -a* (Alexiadou 2001, 2009)

⁷ See Parsons (1990: 234–5), Kratzer (2000), and Anagnostopoulou (2003) on the difference between target state participles and resultant state participles.

- (38) a. aspr-iz-o, kathar-iz-o b. pag-on-o ler-on-o
 whiten cleaned freeze dirty
 c. diplat-en-o, arost-en-o d. sten-ev-o berd-ev-o
 widen, become sick tighten confuse
 e. diav-az-o, mir-az-o f. pul-a-o xal-a-o
 read split, share sell destroy
 (Anagnostopoulou and Samioti 2014: 96)

The *-menos* participle can attach outside of the verbalizing suffix.

- (39) a. aspr-iz-menos kathar-iz-menos
 whitened cleaned
 b. pag-o-menos ler-o-menos
 frozen dirtied
 c. diplat-i-menos arost-i-menos
 widened sickened

Typically, root verbalizers cannot occur together with *-tos* participles (Alexiadou and Anagnostopoulou 2008), which Alexiadou and Anagnostopoulou (2008) take to mean that *-tos* attaches to the root without the presence of a verbalizing head.

- (40) a. *aspr-is-tos *kathar-is-tos
 whitened cleaned
 b. *pag-o-tos *ler-o-tos
 frozen dirtied
 c. *diplat-i-tos *arost-i-tos
 widened sickened

However, Anagnostopoulou and Samioti (2014: 97) show that there is a range of cases where *-tos* participles can occur.

- (41) a. axn-is-tos 'steaming hot' axn-iz-o 'steam'
 b. koudoun-is-tos 'ringing' koudoun-iz-o 'ring (a bell)'
 c. vathoul-o-tos 'hollow' vathoul-on-o 'hollow out'

Importantly, these *-tos* participles do not have event implications (they denote characteristic states), and they do not license manner modification, agent PPs, or instruments (Anagnostopoulou and Samioti 2014: 97).

- (42) a. *To fagito ine kala/prosektika magir-ef-t-o
 The food is well/carefully cooked
 b. *To fagito ine magir-ef-t-o apo tin Maria
 The food is cooked by the Mary

- c. *Ta fita ine fit-ef-t-a me diaforetika ergalia
 The plants are planted with different instruments

Anagnostopoulou and Samioti (2014) take these facts to show that little *v*, which typically introduces event interpretations (e.g., Marantz 2001a, 2007; Embick 2004a; Alexiadou et al. 2006; Harley 2012) has to be dissociated from verbalizers that are realized morphologically. See also Alexiadou (2009) for result nominals in Greek. We endorse this position.

Anagnostopoulou and Samioti (2014) show that roots fall into different ontological categories, impacting their syntactic realization. They follow Harley (2005) in assuming that the basic ontological types are as listed in (43).

- (43) a. Events b. Things c. States

They provide a set of generalizations (pp. 99–104):

- (44) a. *-tos* directly attaches to roots which can be characterized as $\text{Root}_{\text{event}}$.
 b. *-tos* does not combine with $\text{Root}_{\text{thing}}$. It combines with $\text{Root}_{\text{thing}}$ + verbalizer.
 c. *-tos* does not combine with $\text{Root}_{\text{state}}$ + verbalizer because an adjective blocks the *-tos* form.⁸
 d. verbalizers turn undefined roots into an event and then *-tos* attaches to the $\text{Root}_{\text{undefined}}$ + verbalizer. (cf. Arad 2003, 2005)

Let us consider the last generalization more carefully.⁹ The roots to which *-tos* attaches are roots with no clear meaning, hence the name: $\text{Root}_{\text{undefined}}$. There are two ways in which the meaning is undefined: (i) it is impossible to assign an exact meaning to the root, and (ii) no corresponding noun or verb of the form $\text{Root}_{\text{undefined}}$ + inflection exists. Anagnostopoulou and Samioti distinguish between two subclasses.

The first class consists of undefined roots which represent movements, sounds, or shapes, and they are often formed by reduplication. They require a verbalizer in order to become verbs, and then they become adjectives, as in (45), or nouns (Anagnostopoulou and Samioti 2014: 102).

- (45) a. **kakar-is-tos** ‘cackling’
 b. **tsitsir-is-tos** ‘sizzling/frizzling’
 c. **trekl-is-tos** ‘staggering’
 d. **tourtour-is-tos** ‘shivering/shuddering’

⁸ A relevant example is the following: *aspr-os/i/o* ‘white’ and *aspr-iz-o* ‘whiten.’ It is possible to say *aspr-iz-men-os*, but not *aspr-is-tos* (cf. (40a)). See also Alexiadou and Anagnostopoulou (2008).

⁹ See Anagnostopoulou and Samioti for elaborate discussion of the other generalizations.

- | | | |
|----|-----------------------|-------------|
| e. | gourl -o-tos | ‘goggling’ |
| f. | koxl -as-tos | ‘bubbling’ |
| g. | xarxal -ef-tos | ‘rummaging’ |
| h. | paspat -ef-tos | ‘fiddling’ |

The second class is made up of roots “which seem completely and totally undefined before a verbalizer attaches to them,” making them eventive (Anagnostopoulou and Samioti 2014: 102).

- (46)
- | | | |
|----|--------------------|-------------------|
| a. | kt -is-tos | ‘built’ |
| b. | sk -is-tos | ‘slit’ |
| c. | str -o-tos | ‘smooth, regular’ |
| d. | lig -is-tos | ‘bent’ |
| e. | sik -o-tos | ‘raised’ |

These roots are like Hebrew roots in that they cannot occur without the functional morphology. They also fall together with words based on Proto-Indo-European roots where the prefixes are drawn from the Ancient Greek prepositional inventory. These prefixes fix the meaning of these unspecified roots.¹⁰ See Alexiadou and Anagnostopoulou (2011, 2013) for further discussion.

Anagnostopoulou and Samioti conclude that Greek is what Arad (2003) calls an English-type language. However, we are inclined to draw a somewhat different conclusion: Greek seems to be somewhere in between Hebrew and English. There are more contexts in Greek in which unspecified roots have their meanings productively determined by prefixes than in English. Again this is an important point about the role of functional morphology in differentiating languages when it comes to determining meaning.

4.6 Roots across languages: a typology

We argue that it is possible to devise a typology of roots and functional morphemes where languages are sorted on a scale. Based on the case studies reported in this chapter, we can devise the typology in (47).

- (47) *A scale from ‘empty’ roots to ‘contentful’ roots*
 Hebrew > Greek > Old English > English

In Hebrew, functional morphemes and especially verbalizers are crucial in determining the interpretation of a root. In contemporary English, this is not the case, and the

¹⁰ Anagnostopoulou and Samioti also raise the question of why categorizers serve as contexts for meaning assignment to unspecified roots. They argue that roots *have* to be classified in terms of Harley’s (2005) basic ontology. If not, as in the Greek examples just discussed, a categorizer is needed in order to classify the roots. Whatever meaning the root then acquires, it remains throughout the derivation.

interpretation of the root is to a greater extent determined by the meaning of the root itself: the functional morphemes play a minor, if any, role in determining the meaning of English roots. Roots in Hebrew are “empty” in the sense that they have highly general and underspecified meanings, whereas although some roots in English are underspecified, their meanings are to a greater extent determined by the semantic content of the root itself.

It is important that the typology is scalar. We do not think that it is possible to neatly define the typology into discrete steps or categories in which all languages can be sorted. For that reason, the typology does not tell the researcher how to position languages with respect to each other on the scale. In order to do that, more quantitative measures of the number of underspecified roots vs. the number of specified roots would have to be developed, which could easily result in rather arbitrary distinctions. Rather, we are dealing with gradient transitions between languages. A language like Hebrew seems to mark one end of the scale, whereas English seems to mark the other. There may also be yet more “extreme” languages that we have not come across. As it stands, such languages would just move the end-points of the scale and therefore not threaten our proposal.

An alternative and quite different perspective is the following three-way typology of root meanings.¹¹

- (48) root > stem > word
 Hebrew Greek English

This typology is more restricted in that it predicts three classes of languages: (i) languages where the root is rather contentless and the word serves as the basic unit, (ii) languages where the root strongly influences the meaning of a word, (iii) languages in between, where the stem is the basic unit of meaning. Here we take a stem to be the node directly dominating the categorizing head and the root, so a stem is the minimal unit comprising a root and its categorizer. The typology in (48) has the advantage of connecting meaning and morphology, although it also predicts three discrete classes of languages.

We have put forth two different alternative analyses: languages can either be placed on a continuous scale in terms of how much semantics is encoded in the root, or all languages can be divided into one of three discrete classes according to whether the basic unit is a root, a stem, or a word. Larger typological investigations would be required in order to choose between these two alternatives.

Anagnostopoulou and Samioti (2014) provide a series of examples that suggest that in Greek categorizing affixes take stems as their input. In their discussion of examples such as (49), they point out (p. 99) that,

¹¹ We are grateful to Elena Anagnostopoulou (p.c.) for this idea.

“First, the absence of *-n-* in the verbal adjectives as in [(49a)] could be viewed as evidence that *-tos* directly attaches to the root and not to the verb, if it can be ensured that the reason for the absence of *-n-* is not morpho-phonological. Second, in [(49c, e, g)] *-tos* attaches to the perfective stem (marked by stem allomorphy in [49c, e] and by the presence of *-s-* in [49g]), a fact that could, in principle, receive either a semantic or a phonological explanation”.

- | | | | | | |
|------|----|-------------------|----------|-------------------|-----------|
| (49) | a. | ftiax -n-o | ‘make’ | ftiax -tos | ‘made’ |
| | b. | lin -o | ‘loosen’ | li -tos | ‘loose’ |
| | c. | per -n-o | ‘take’ | par -tos | ‘taken’ |
| | d. | klev -o | ‘steal’ | klef -tos | ‘stolen’ |
| | e. | din -o | ‘give’ | do -tos | ‘given’ |
| | f. | plek -o | ‘knit’ | plek -tos | ‘knitten’ |
| | g. | klin -o | ‘close’ | klis -tos | ‘closed’ |

Our proposal suggests that little *v* plays different roles in different languages: in Hebrew it is crucial for determining the interpretation of roots and thereby words, whereas in English it categorizes roots and also determines aspects of meaning (see e.g., Marantz 2013a and the discussion in section 4.5). In English, and partly in Greek, it is Voice that is the most important head for determining (idiomatic) interpretation (see Anagnostopoulou and Samioti 2013, 2014 and references therein for much discussion). Therefore, we argue that little *v* is always a verbalizer in all languages, though it can also take on additional roles, such as in Hebrew where it is strongly linked to determining the interpretation of roots by way of functional morphology.

We mentioned in section 4.2 that there is evidence from the literature that *v* can be of two types even in languages such as English and Greek, and discussed the distinction between a *v* head in the context of causative semantics, and pure verbalizers. Clearly, this departs from the view of *v* as being the head introducing the external argument, in for example, Chomsky (1995), Embick (2004a), Collins (2005), Folli and Harley (2008), Harley (2013), and Merchant (2013). External arguments are introduced by Voice, cf. Kratzer (1996), Alexiadou et al. (2006). See also Harley (this volume), Schäfer (this volume), and Sundaresan and McFadden (this volume) for discussion.

One remaining question is whether we need to encode semantics on little *v* heads. Ramchand (2008, this volume) and Schäfer (2012c), among others, have shown that the grammar does not make reference to annotated *v* heads, or flavors of *v*. In line with their proposals, we maintain that all *v* heads are verbalizers. The semantics of the constructions result from the combination of *v* heads and different types of roots (unlike, e.g., Pytkäinen 2008; see also Harley this volume for discussion). In particular, the combination of *v* with a particular type of root (result) or a small clause gives rise to causative semantics. For instance, as we saw in section 4.4, most *-en* verbs in English are built on the basis of roots that bring about a state/result.

4.7 Conclusions

In this chapter, we have discussed the question of what the division of labor is between the root and the functional morphemes categorizing the root across a small set of languages. We argue that it is possible to devise a typology of roots and functional morphemes where languages are sorted on a scale. Given the languages we have looked at here, the scale ranges from Hebrew on the one hand to English on the other hand. In Hebrew, functional morphemes and especially verbalizers are crucial in determining the interpretation of a given root and thus a given word. In contemporary English, this is not the case; the interpretation of the root and thereby the word is to a greater extent determined by the meaning of the root itself. Greek is argued to fall in between English and Hebrew on the scale.

For English, Greek, and Hebrew, the root is a crucial building block. Languages are partitioned on a scale depending on exactly what the semantic properties of the roots are. The fact that roots play this important role offers indirect support in favor of the existence of roots, since if they did not exist, it would be much harder to understand the ways in which the three languages discussed differ.

We have also argued that little *v* works differently in English, Greek, and Hebrew. In Greek, it introduces functional morphology that plays a crucial role when it comes to determining the meaning of a root in the context of a word. In English, it is a verbalizer, although it may also be linked to fixing the domain for allosemy (Marantz 2013a). Given that little *v* plays these roles, it cannot introduce an external argument; a separate functional projection above little *v* is needed to do that, viz. Voice.

Acknowledgments

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Part II

Voice

5

Voice, manners, and results in adjectival passives

ELENA ANAGNOSTOPOULOU

5.1 Introduction

In this chapter, I argue that there are two functional heads in the VP domain: a little *v* head introducing an event variable (Marantz 2001b, 2007) and Voice introducing the external argument (Kratzer 1996; see Alexiadou et al. 2006, 2015 and Schäfer 2008a for detailed argumentation and references; cf. Ramchand 2008 for a decomposition of verbs into the layers Initiator–Process–Result). This puts me in agreement with several authors in this volume who argue that *v* and Voice are distinct: see for example Schäfer, this volume, for a typology of Voice based on reflexively marked anticausatives and medio-passives; Harley, this volume, for cross-linguistic evidence that *v* and Voice either project together or separately; Wurmbrand and Shimamura, this volume, for restructuring-based evidence that *v* and Voice are distinct; and Panagiotidis et al., this volume, for morphological evidence for a *v* head in Greek that is different from Voice.

- (1) [VoiceP [vP [Stative P]]]

Evidence for (1) is drawn from adjectival passives that split into several types, which can be described in terms of this architecture. I explore the interaction between Voice, *v*, and manner vs. result interpretations of verbal meaning in resultant state and target state adjectival passives (RSAP/TSAP).

The chapter is set out as follows: In sections 5.2 and 5.3, I summarize the main arguments for postulating a *v* head and a Voice head in adjectival passives (see Alexiadou et al. 2015: ch.5 for detailed argumentation). In a nutshell, the two verbal layers in (1) are required to account for two types of distinctions: (i) The distinction between participles without event implications vs. participles with event implications

(Kratzer 1994; Anagnostopoulou 2003; Embick 2004a). The former lack *v*, while the latter contain *v* (section 5.2.1). (ii) The distinction between RSAP with event implications vs. TSAP with event implications (see Kratzer 2000 for the resultant vs. target state distinction, and Anagnostopoulou 2003 for the generalization that Voice cannot be included in target state participles). The former may contain Voice, the latter may not (see the discussion in sections 5.2.2. and 5.3).¹

In section 5.4, I focus on the absence of Voice in TSAP. I provide more evidence for the absence of Voice from two empirical domains: (i) constraints on verb classes that are allowed and disallowed to form TSAP (section 5.4.1); (ii) a phenomenon of coercion of manner, instrument-based denominal verbs into result verbs in TSAP (section 5.4.2). Specifically, the presence of Voice forces a manner reading of instrument denominal verbs, which, in the absence of Voice, can be construed as expressing results in TSAP. This leads to a structural representation of target state participles necessarily including a result component and excluding a Voice component, as discussed in section 5.4.3. A potential reason why Voice cannot be present in TSAP is that they express outputs of scalar changes (Baglini 2012; Gehrke 2014; section 5.4.4). Voice introduces agentivity and manner; properties rendering a change too complex to qualify as scalar (Rappaport Hovav 2014). Finally, in section 5.5, I discuss the fact that this coercion phenomenon challenges the “manner vs. result complementarity hypothesis” argued for in Rappaport Hovav and Levin (2010), and Levin and Rappaport Hovav (2014) because the instrument is still entailed in adjectival passives with coercion, even though the verb has a result interpretation. I compare two ways in which this coercion phenomenon can be derived, in syntactic terms, in two different models of representing manners and results: Embick’s (2004a) direct-merge of a root with *v* vs. Merge of a root as a complement of *v*. This model is problematic, and a proposal is advanced in Embick (2009), according to which, result roots do not always merge as complements of little *v*, but can also be modifiers to a little *v* selecting for a proxy state complement—a difference depending on whether the verb is de-adjectival or not.

¹ As discussed in Alexiadou et al. (2015), in apparent cases where Voice-related material is present in target state participles, it is external to the stativizing head yielding the adjectival participle from a *v*P projection, and is interpreted as the holder of the target state (similarly to what Meltzer-Asscher 2011 proposes for Hebrew). These are cases like the following in English (and Greek and Hebrew):

- (i) a. The stadium is still surrounded by the police
- b. The dog is still tied with a leash/is still tightly tied.

Notice that referents introduced by the *by*-phrases and instruments must be present in the state, and the manner modifier describes a manner that still holds. This is not the case in the examples discussed later in the text (e.g., (5), (6)). Due to space limitations, I will not enter into a discussion of such cases here. The reader is referred to Alexiadou et al. (2015) for a detailed discussion.

5.2 The architecture of adjectival passives: evidence for *v* and Voice

5.2.1 Evidence for *v*

At least since Kratzer (1994, 2000) and Dubinsky and Simago (1996), it has been established that adjectival/stative passives do not constitute a uniform category. One important distinction has to do with event implications. Adjectival passives either denote states resulting from prior events (called “phrasal” in Kratzer 1994 and “resultative” in Embick 2004a) or they lack event implications (called “lexical” in Kratzer 1994 and “stative” in Embick 2004a). See Kratzer (1994), (2000) for German, Anagnostopoulou (2003) for Greek, Embick (2004a) for English, Meltzer-Asscher (2011) for Hebrew, and the literature building on them. In English, participles with and without event implications sometimes show differences in form. The former are always morphologically identical to the corresponding perfect and (verbal) passive participles, while this does not always hold for the latter (Table 5.1).

For the root OPEN, ‘opened’ has event implications and ‘open’ does not. With CLOSE, the same form ‘closed’ is ambiguous.

In Greek, participles always have a different form, depending on whether they have event implications or not (Anagnostopoulou 2003). The suffix *-menos* is found in participles with event implications and *-tos* is found in participles without.

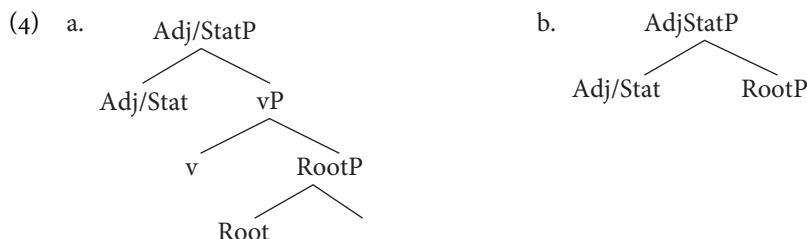
- (2) anig-men-os anix-t-os ‘opened’/‘open’
 open-*men*-MASC.SG.NOM open-*t*-MASC.SG.NOM
- (3) klis-men-os klis-t-os ‘closed’/‘closed’
 close-*men*-MASC.SG.NOM close-*t*-MASC.SG.NOM

Several diagnostics have been argued to differentiate participles with event implications from participles without, for example, modification by manner adverbials

TABLE 5.1. Different allomorphy patterns in English (Embick’s 2004a, (11))

Root	Stative	Resultative	Passive
BLESS	bless-èd	bless-ed	bless-ed
AGE	ag- èd	ag-ed	ag-ed
ROT	rott-en	rott-ed	rott-ed
SINK	sunk-en	sunk-Ø	sunk-Ø
SHAVE	(clean)-shaven	shav-ed	shav-ed
OPEN	open-Ø	open-ed	open-ed
EMPTY	empty-Ø	empti-ed	empti-ed
DRY	dry-Ø	dri-ed	dri-ed

(in phrasal/resultative participles (Kratzer 1994)), licensing after verbs of creation (of lexical/stative participles (Embick 2004a)), availability of repetitive readings (in Greek *-menos* participles showing incorporation of the adverb *ksana* ‘again’ to the adjectival participle; cf. von Stechow 1998). These differences can be explained if the Adj(ectivizer)/Stativizer embeds vP in adjectival passives with event implications and RootP in participles without (Embick 2004a; Alexiadou and Anagnostopoulou 2008), as in (4a) and (4b):



Assuming that, for example, manner modification and availability of repetitive readings crucially depend on the presence of a little *v* head introducing an event variable, they are expected to be possible in a structure like (4a) but not in a structure like (4b).

5.2.2 The question of Voice in adjectival passives

Based on the observation that Greek *-menos* adjectival passives freely allow by-phrases, instruments, and agent-oriented adverbs (see (5)–(7); note that Greek verbal passives are synthetic and hence there is no ambiguity of verbal vs. adjectival passives in Greek, unlike English), Anagnostopoulou (2003) argued that Greek adjectival passives formed with *-menos* may contain Voice. The same was suggested by Paslowska and von Stechow (2003) for Russian. Since the availability of by-phrases, instruments, and manner-oriented adverbials is much more limited in English and German (see below for further discussion), Anagnostopoulou and Paslowska, and von Stechow proposed that there is a Voice Parameter in adjectival passives: Greek and Russian adjectival passives may contain Voice, while German and English adjectival passives may not.

Recent findings, however, have led to a revision of the Voice Parameter. Contrary to Kratzer (1994, 1996) who argued² that adjectival passives in English and German

² Kratzer's (1994, 1996) original argument was based on the observation that adjectival passives do not show a disjoint reference effect, unlike verbal passives (Baker et al. 1989). Assuming that the disjoint reference effect is due to an implicit argument introduced by Voice, the absence of this effect in adjectival passives points to the absence of Voice. It will lead me too far afield to address this argument here. See Spathas et al. (2015) and Alexiadou et al. (2015) for extensive discussion of this argument, and an analysis of the absence of disjoint reference effects in the presence of Voice in English, German, and Greek adjectival passives.

lack Voice, McIntyre (2013) and Bruening (2014) have recently argued that English adjectival passives *do* present evidence for Voice. Alexiadou, Gehrke, and Schäfer (2014) provide evidence for the same conclusion for German. Taking these findings into account, Alexiadou et al. (2015: ch. 5) present an in-depth investigation of Voice in Greek, English, and German adjectival passives (they also take into account Hebrew, Russian, and Swedish) and argue for a revision of the Voice Parameter. According to this new analysis, there still is a fundamental distinction between Greek/Russian and English/German, however, this distinction does not relate to the presence vs. absence of Voice, but rather to the nature of the underlying event: whether it can be an instantiated event with spatio-temporal manifestation or an event kind (Gehrke 2011, 2014). More specifically, Alexiadou et al. (2015: ch. 5) identify two types of languages. Firstly, in Greek (Anagnostopoulou 2003), Russian (Paslowska and von Stechow 2003; Maria Polinsky p.c.), and Swedish (Larsson 2009), Voice-related modifiers may occur freely in adjectival passives, just as in verbal passives:

Agent PPs

- (5) Ta keftedakia ine tiganis-mena apo tin Maria.
 The meatballs are fried by the Mary
 ‘The meatballs are fried by Mary.’

Instrument PPs

- (6) Ta malia tis basilisas ine xtenismena me xrisi xtena.
 The hair the queen-GEN are combed with golden comb
 ‘The hair of the queen is combed with a golden comb.’

Agent-oriented, manner adverbs

- (7) To thisavrofilakio itan prosektika anigmeno. /skopima paraviasmeno.
 The safe was cautiously opened /deliberately violated
 ‘The safe was cautiously opened/deliberately opened.’

Secondly, in English, German, and Hebrew, Voice-related modifiers are subject to restrictions. McIntyre (2013) identifies two conditions on agents in English: (i) The referent must be “responsible for continuing the state expressed by the participle”:

- (8) a. The road remained blocked by the police/supported by pylons.
 b. Edeltraut seemed flattered by the report/??the journalist.
 (ii) By-phrases are possible if the external argument’s “sortal specifications are crucial for the nature of the state”:
 (9) a. %The text seems written by a genius/foreigner/ghostwriter.
 b. *The text seems written by John. He wouldn’t have gone home without finishing it.

McIntyre (2015) proposes to subsume the two conditions under the State Relevance Hypothesis in (10):

(10) *State Relevance Hypothesis*

Event-related modifiers and by-phrases are unacceptable in adjectival passives unless they contribute to the description of the state expressed by the participle or of the theme during the interval *i* during which this state holds. They are most acceptable if they provide information that can be inferred solely by inspection of the theme during interval *i*.

Similar conditions have long been identified in the literature on German. For example, Rapp (1996) points out that by-phrases are licensed only when they continue to characterize the resultant state (see also Litvinov and Nadjalkov 1988; Maienborn 2007):

- (11) a. Die Zeichnung ist von einem Kind angefertigt.
 The painting is by a child made
 'The painting is made by a child.'
- b. Die Unterlagen sind vom Chef korrigiert.
 The documents are by the director corrected
 'The documents are corrected by the director.'
- c. *Die Tür war von ihm geöffnet.
 The door was by him opened
- d. *Die Mutter war von ihrer Tochter besucht.
 The mother was by her daughter visited

Instrument PPs in English and German are subject to the same conditions as by-phrases (reported examples are subject to McIntyre's (2015) State Relevance Hypothesis, and mostly subject to what McIntyre 2013 calls "sortal specifications crucial for the nature of the state"), as shown by the examples in (12) (Bruening 2014, internet examples) and (13) (Litvinov and Nadjalkov 1988: ch. 5, via Rapp 1996; Maienborn 2007), respectively:

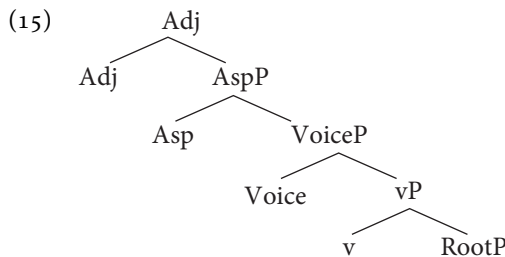
- (12) a. ...the round edge looks beaten with a hammer or sledge
 b. ...the stone looks cut with some kind of machine
 c. ...interior still looks carved with a dull spatula
- (13) a. Der Brief war mit roter Tinte geschrieben.
 The letter was with red ink written
 'The letter was written with red ink.'
- b. *Ihre Haare sind mit einem goldenen Kamm gekämmt.
 Her hair is with a golden comb combed

The same observation holds for manner adverbials, as shown in (14) for German:

- (14) a. Ihre Haare sind schlampig gekämmt.
 Her hair are sloppily combed
 ‘Her hair is sloppily combed.’
 b. *Der Safe war vorsichtig/vorsätzlich geöffnet.
 The safe was cautiously/on purpose opened
 ‘The safe was cautiously opened/opened on purpose.’

See Meltzer-Asscher (2011) on comparable restrictions in Hebrew.

In order to account for the observed difference between the two types of languages, Alexiadou et al. (2015: ch. 5) propose the structure in (15) for adjectival passives with Voice in Greek-type languages:

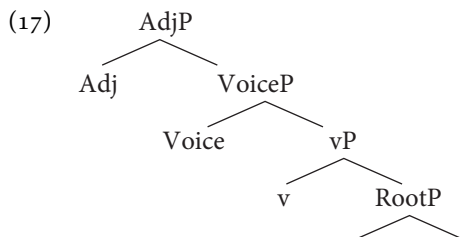


The aspectual head in (15) has the semantics of Kratzer’s (2000) Perfect operator in (16), leading to the interpretation that the run time of the verbal event took place before the time denoted by the stativized VoiceP (Kratzer 2000).

- (16) *Stem + object*: λe [prove (the theorem) (e)]
Stativizer: $\lambda P \lambda t \exists e$ [$P(e)$ and $\tau(e) \leq t$]
Output after applying the Stativizer to stem+object: $\lambda t \exists e$ [prove (the theorem) (e) and $\tau(e) \leq t$]

In this analysis, Greek and Russian adjectival passives with Voice grammatically encode the Perfect of Result (see Iatridou et al. 2001 for discussion of the different readings of the Perfect and references).

German and English adjectival passives lack the Asp layer hosting the Perf operator. VoiceP is directly embedded under Adj:



Under the assumption that verbal predicates express eventuality types that are instantiated only when verbal structure is directly embedded under Tense/Aspect (Gehrke 2014; Alexiadou, Gehrke, and Schäfer 2014), the absence of the Perf operator in (17) has as a result that the underlying event is not an instantiated event. Therefore, Voice-modifiers modifying an instantiated underlying event are disallowed.³

Evidence for an analysis along these lines comes from independent differences between German and Greek relating to temporal and spatial modification. In German, temporal modification of the underlying event, as shown in (18), is impossible; in Greek, such modification is perfect, as shown in (19).⁴ Note that in the data in (18), from McIntyre (2015: his example (10)), temporal modification is not acceptable despite being relevant to the state the theme is in, in the relevant context:

- (18) a. Das Klavier ist offenbar (*/?? vor kurzem) gestimmt und klingt viel besser.
 ‘The piano is obviously recently tuned and sounds much better.’
 b. Ich würde den Tee nicht trinken. */?? Er ist vor einer Woche aufgebraucht.
 I wouldn’t drink the tea. It is made a week ago.
- (19) a. To piano ine profanos profata kurdismeno ke ichi poli kalitera.
 ‘The piano is obviously recently tuned and sounds much better.’
 b. Den tha epina afto to tsai. Ine ftiagmeno prin apo mia vdomada.
 Not FUT drank-I this the tea. Is made before from one week
 ‘I wouldn’t drink this tea. It is made a week ago.’

³ An anonymous reviewer is skeptical that the difference between Greek and English/German should be expressed in terms of an aspectual operator because semantically both types of participles express the Perfect of Result. According to the reviewer, the difference might lie in the presence vs. absence of Tense. The reviewer might be right, but here I am just summarizing Alexiadou et al. (2015). The source of the difference between the two types of languages is not particularly relevant for the points made here.

⁴ Gehrke’s original example is reproduced in (ia) (vs. (ib); from von Stechow 1998), and, as shown in (ii), such examples are perfect in Greek:

- (i) a. *Der Computer ist vor 3 Tagen/am Mittwochrepariert.
 The computer is before 3 days/ on Wednesday repaired
 b. Der Computer ist seit 3 Tagen repariert.
 The computer is since 3 days repaired
- (ii) a. To computer ?ine/itan episkevsmeno prin apo tris meres.
 The computer is/was repaired before from three days
 ‘The computer is/was repaired three days ago’
 b. To spiti ine xtismeno to 1963
 The house is built in 1963

But, as pointed out by the anonymous reviewer, the example in (ia) does not constitute valid evidence that German participles do not instantiate event variables since they are straightforwardly explained by the State Relevance Hypothesis.

Moreover, note that the adverb *recently* can only modify the resultant state and not the underlying event in German (Gehrke 2011, 2014):

- (20) Die Tür war kürzlich geöffnet.
 The door was recently opened
 ‘The door was in the opened state recently, but probably is no longer.’
 NOT: The door is in the opened state, the opening took place recently.

The reverse effect is found in Greek in the present, as shown in (21), while ambiguity in the interpretation of *recently* arises in the past:

- (21) I porta ine prosfata anig-meni.
 The door is recently opened
 ‘The door is recently opened.’
 ‘The door is in the opened state, the opening took place recently.’
 NOT: The door was in the opened state recently, but probably is no longer.

Finally, spatial modification of the underlying event is impossible in German (22) while it is possible in Greek (23):⁵

- (22) ???Das Kind war im Badezimmer gekämmt.
 The child was in the bathroom combed
- (23) a. To forema ine sideromeno sto katharistirio.
 The dress is ironed in the dry-cleaners
 b. To vivlio ine grameno stin Ellada ke stin Germania.
 The book is written in Greece and in Germany

These differences point to the conclusion that the underlying event is an instantiated event that can be accessed by modification in Greek, unlike German. Alexiadou et al. (2015) suggest that it is this difference that must be held responsible for the much more productive Voice modification in Greek—a language where by-phrases, instruments, and adverbs do not have to have properties related to or detectable from the resultant state.

⁵ An anonymous reviewer points out that the German example (22) cannot show anything about the unavailability of spatial modification in German, as it is independently ruled out by the State Relevance Hypothesis. You cannot tell by looking at the child whether her hair was combed in the bathroom or in some other room, so the example is irrelevant. Perhaps a better example, then, might be the Greek counterpart (23a), which is also ungrammatical in German (Marcel Pitteroff, p.c.), since you can more easily tell from a dress if it was ironed in a professional place or not:

(i) *Das Kleid ist in der Reinigung gebügelt.
 The dress is in the dry-cleaners ironed

5.3 Target state participles: structural evidence that they lack Voice

Anagnostopoulou (2003) pointed out that, in order to understand the distribution of Voice in participles, it is necessary to take into account Kratzer's (2000) second distinction relevant for adjectival passives: the distinction between *target state* and *resultant state*⁶ adjectival passives. Building on Parsons (1990), Kratzer points out that the former describe states that are transitory and, in principle, reversible; therefore, they are compatible with 'still.' The latter describe irreversible states, thus being incompatible with 'still.' Anagnostopoulou (2003) observed that by-phrases, instrument PPs, and agent-oriented adverbials are outright ungrammatical in the presence of the Greek counterpart of 'still.' This is shown in (24):

- (24) a. *Ta lastixa ine akoma fuskomena apo tin Maria.
 The tires are still inflated by the Mary
 'The tires are still inflated by Mary.'
- b. *Ta lastixa ine akoma fuskomena me tin tromba.
 The tires are still inflated with the pump
 'The tires are still inflated with the pump.'
- c. *Ta lastixa ine akoma fuskomena prosektika.
 The tires are still inflated carefully
 'The tires are still carefully inflated.'

Note that the verb *fuskono* 'inflate' is allowed to form a TSAP in the absence of such modifiers, as shown in (25a), and it is also allowed to combine with Voice-related modifiers in the absence of 'still,' as shown in (25b). What is excluded, is the combination of the two types of modifiers, as in (24).

- (25) a. Ta lastixa ine akoma fuskomena.
 The tires are still inflated
- b. Ta lastixa ine fuskomena apo tin Maria/me tin tromba/prosektika.
 The tires are inflated by Mary/with the pump/carefully

It is more difficult to detect the Voice restriction on target state adjectival participles in languages like German and English, where Voice-related modifiers are much more restrictive to begin with, but see Alexiadou et al. (2015: ch. 5) for structural evidence that the Voice restriction also holds in German. In languages like Greek, the Voice restriction on TSAP is extremely clear. Larsson (2009) observes the phenomenon in Swedish, a Greek-type language as far as the Voice Parameter is concerned. I will take

⁶ The term "resultant state" should not be confused with Embick's (2004a) "resultative participles," which subsume target state adjectival passives with event implications and resultant state adjectival passives. This confusion is occasionally found in the literature.

the Voice restriction to reflect a universal property of TSAP, which derives from their semantics. Only resultant state participles are allowed to embed Voice (and see fn. 2 for discussion of some apparent counterexamples to this generalization). In the next sections, I provide and discuss more evidence for the claim that target state participles are not allowed to embed Voice.

5.4 Restrictions on target states: agents, manners, Result, and Voice

5.4.1 Agentivity restrictions

Restrictions on verb classes in Greek provide evidence that TSAP systematically lack Voice as part of what is stativized. Firstly, TSAP are not possible with agentive verbs, while there is no such restriction with RSAP. In (26) and (27), the predicative constructions formed with verbs of killing and of creation are well formed as RSAP but ill-formed as TSAP, as evidenced by the fact that ‘still’ is incompatible with them:

(26) *Verbs of killing (murder and poison verbs, torture verbs)*

Aftos o anthropos ine (*akomi) dolofonimenos/straggalimenos.
 This the man is (*still) murdered/strangled/poisoned
 dhilitiriasmenos/pirovolimenos/mexeromenos.
 poisoned/shot/knived

(27) *Verbs of creation*

- a. To vivlio mu ine (*akomi) grameno.
 The book my is (*still) written
- b. O kiklos ine (*akomi) sxediasmenos.
 The circle is (*still) drawn

These restrictions can be explained if agentive verbs necessarily include/combine with Voice (Alexiadou et al. 2006, 2015), and TSAP are not allowed to have Voice. Secondly, a similar restriction can be observed with manner verbs, such as ‘slap,’ implicating an agent:

- (28) a. ?Ta magula tis ine kokina epidi ine xastukismena. Resultant state
 The cheeks her are red because are-3pl slapped
 ‘Her cheeks are red because they are slapped.’
- b. *Ta magula tis ine akomi xastukismena, gi’afto ponai. Target state
 The cheeks her are still slapped, for this hurts-3sg
 ‘*Her cheeks are still slapped, that’s why she hurts.’

Once again, we can account for the ungrammaticality of (28b) on the basis of the hypothesis that ‘slap’ needs to combine with Voice, and TSAP are not allowed to embed Voice.

5.4.2 Manner-result coercion

More evidence for the absence of Voice in target states comes from the phenomenon of manner-result coercion found in adjectival passives based on denominal verbs overtly encoding an instrument, for example, with participles based on verbs belonging to Levin's (1993) *wipe*-class. In my native Greek, these tolerate 'still' rather easily, but crucially only under coercion, which leads to a different interpretation of the verb in the adjectival passive. In the presence of 'still,' the adjectival passives in (29) are understood to mean 'clean' or 'wet,' 'un-wrinkled,' and 'tidy.' Wittek (2002) calls these "weak endstates":

Wipe verbs incorporating an instrument

- (29) a. To patoma ine akomi sfugarismeno. *Coercion into a result-reading*

The floor is still sponge- PRT.SG.NEUT

'The floor is still swabbed (i.e., *clean* or *wet*).'

- b. To pukamiso ine (akomi) sideromeno.

The shirt is (still) iron- PRT.SG.NEUT

'The shirt is still ironed (i.e., *unwrinkled*).'

- c. Ta mustaki tu ine (akomi) psalidismeno.

The mustache his is (still) scissors- PRT.SG.NEUT

'His mustache is still trimmed (i.e., *tidy*).'

Greek native speakers I have consulted differ in how liberal they are with this type of coercion. For some, this reading is possible, for others it is not. Ida Larsson has informed me (personal communication) that the same type of effect is found in Swedish. At present, it is not clear to me whether all languages with TSAP allow for this type of coercion or not, and whether there is always idiolectal variation concerning the acceptability of this construction, as seems to be the case in Greek. In the presence of 'still,' denying the cleanness/tidiness of the target state leads to a contradiction, as shown in (30). This suggests that the result interpretation indicated in the translations of (29) above is entailed and not merely implicated by the adjectival passives in question:

Target state: coerced to result (evidenced by contradictions):

- (30) a. #To patoma ine akomi sfugarismeno ki omos ine vromiko.

The floor is still sponge- PRT.SG.NEUT and however is dirty

'The floor is still swabbed but nevertheless dirty.'

- b. #To pukamiso ine akomi sideromeno ki omos ine tsalakomeno.

The shirt is (still) iron- PRT.SG.NEUT and however is wrinkled

'The shirt is still ironed but nevertheless wrinkled.'

Note that there is no contradiction in the absence of 'still,' though participles might differ in how strongly they implicate a result, for instance, I find (31a) more natural than (31b):

- (31) a. To patoma ine sfugarismeno ki omos ine vromiko.
 The floor is sponge- PRT.SG.NEUT and however is dirty
 ‘The floor is swabbed but nevertheless dirty.’
 b. ?To pukamiso ine sideromeno ki omos ine tsalakomeno.
 The shirt is iron- PRT.SG.NEUT and however is wrinkled
 ‘The shirt is still ironed but nevertheless wrinkled.’

Crucially, adding the agent-oriented adverb *epagelmatika* ‘professionally,’ which is licensed by Voice,⁷ forces the manner/instrument interpretation of the participles making the presence of ‘still’ outright ungrammatical. Since they contain Voice, these adjectival passives are only licensed as denoting resultant states.

Coercion impossible when Voice is present

- (32) a. To patoma ine (*akomi) sfugarismeno epagelmatika.
 The floor is (still) sponge- PRT.SG.NEUT professionally
 ‘*The floor is still professionally swabbed.’
 b. To pukamiso ine (*akomi) sideromeno epagelmatika.
 The shirt is (still) iron- PRT.SG.NEUT professionally
 ‘*The shirt is still professionally ironed.’

With the instrument reading, the cleanness/unwrinkled-ness etc. of the result can be denied, a fact that demonstrates that the result is not entailed in the manner interpretation of the verb in the adjectival passive:

Voice → *manner and no coercion (no result, no contradictions when the result is denied)*:

- (33) a. To patoma ine sfugarismeno epagelmatika ki omos ine vromiko.
 The floor is sponge- PRT.SG.NEUT professionally and however is dirty
 ‘The floor is professionally swabbed but still dirty.’

⁷ According to an anonymous reviewer, the facts in (32) constitute a much better argument for the absence of Voice in target state participles than the arguments presented so far because the fact that modification by ‘still’ is impossible in contexts like (26)–(27) (**He is still murdered/*The book is still written*) is due to trivial world knowledge that being dead is a permanent state and that a book cannot be unwritten. I think, though, that there is a difference between, for example, e.g., a sentence like *John is still dead*, which could be uttered in a world where dead people live again (a world with vampires or zombies) and *John is still murdered*, which could not be uttered in such a context. The reviewer also points out that the reason why examples like *the shirt is still ironed* can only be uttered if one can construct a weak endstate interpretation of *ironed* tells us nothing about whether Voice is present or not. I agree with the reviewer on this and I did not provide these examples in order to argue that a Voice must be absent in target states, but rather in order to show that a Result must be present in the presence of ‘still,’ even though these verbs normally lack a result layer. The argument that Voice must be absent from target state participles while Result must be present in them then comes from the observations that (i) ‘professionally’ is incompatible with ‘still’ and (ii) the result is entailed with ‘still’ while with ‘professionally’ is not.

- b. To pukamiso ine sideromeno epagelmatika ki omos ine tsalakomeno.

The shirt is iron- PRT.SG.NEUT professionally and however is wrinkled

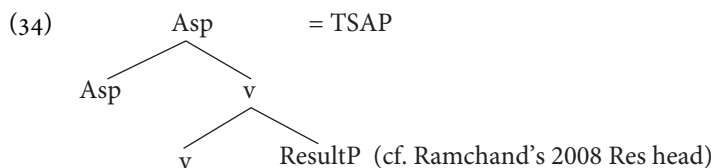
‘The shirt is professionally ironed but still wrinkled.’

Note that, pragmatically, a professionally swabbed floor/a professionally ironed shirt is expected to be clean/pressed. And yet, the result can be denied, as is always the case with manner verbs (see Rappaport Hovav and Levin 1998, 2010; Levin and Rappaport Hovav 2014; Beavers and Koontz-Garboden 2012; Alexiadou and Anagnostopoulou 2013, 2014 on manner verbs vs. result verbs and their diagnostics).

In summary, the coercion facts discussed in this section provide more evidence for the incompatibility of TSAP with Voice. In the absence of Voice, manner verbs encoding instruments can be coerced into result verbs, in which case a target state adjectival passive is licit, as evidenced by the presence of ‘still.’ When Voice is present, however, adjectival passives based on instrument verbs can no longer describe target states. Voice enforces the manner/instrument interpretation of the verb, in which case there is no result entailed. See Anagnostopoulou (2015) for a much more detailed discussion of the coercion facts with *wipe* verbs discussed here, in comparison to two other classes of instrument verbs, namely *tape* and *braid* verbs (Levin 1993), and the issue of results, manners, and Voice in target and resultstate adjectival passives.

5.4.3 Target states exclude Voice and require ResultP

The facts discussed in the previous sections provide further evidence that Voice is illicit in target state participles and that target state participles can only be formed with result construals of manner verbs. In our analysis of TSAP, then, we need to exclude Voice and to include a result component under the Stativizer:



RSAP are not subject to these restrictions. Voice can be present, i.e., structures (15) and (17) above are appropriate only for RSAP. In addition, a result component doesn't have to be present in RSAP, as evidenced by the data in (32) and (33). The requirement for a ResultP in (34) makes a prediction concerning the verb classes that will be most appropriate to form TSAP. These will be verbs that have a ResultP projection: a prototypical such case is change of state verbs.

It is perhaps relevant to mention, at this point, that Kratzer (2000) explicitly argues against a syntactic decomposition of verbs yielding TSAP and in favor of the proposal that the event and the state argument must be built into the semantics of the root.

Kratzer's argument against decomposition is based on examples like (35) and (36) (Kratzer's (10) and (11)), and goes as follows: Suppose we assume that, at some level of syntactic representation, accomplishment verbs are decomposed into an eventive and a stative component, so that the durative PPs in (35) modify the stative component exclusively. Then we run into the following problem. On the one hand, there are compositional causatives like *leeren* 'empty' (in (34b))⁸ (or *trocken* 'dry') that do not allow durative PPs to access the states (e.g., 'empty,' 'dry'). On the other hand, there are many causative verbs formed with non-compositional prefixes, like *auf-pumpen* in (35b), which have accessible target states, even though they contain prefixes lacking a denotation in isolation:

- (35) a. Die Mutter hat die Geisslein für ein paar Stunden versteckt.
 the mother has the little.goats for a few hours hidden
 Implies: the little goats were hidden for a few hours.
- b. Wir werden das Boot für ein paar Stunden aufpumpen.
 we will the boat for a few hours up.pump
 Implies: the boat will remain inflated for a few hours.
- (36) a. *Du kannst die Gäste für eine Stunde begrüßen.
 you can the guests for an hour greet
 'You can greet the guests for an hour.'
- b. *Wir werden den Briefkasten für drei Tage leeren.
 we will the mailbox for three days empty
 'We will empty the mailbox for three days.'

In agreement with Embick (2009), I argue that it is nevertheless possible and desirable to maintain an analysis in terms of decomposition.

To begin with, note that, as pointed out by an anonymous reviewer, Kratzer's arguments against syntactic decomposition are problematic both as far as particle verbs are concerned and as far as de-adjectival verbs are concerned.

As far as particle verbs are concerned, see for example McIntyre (2002) for a discussion of the meaningfulness of particles, and for replies to alleged arguments that they are meaningless. Specifically for *aufgepumpt* the fact that the particle contributes a result state is strongly supported by the observation that the same particle appears with exactly the same meaning with several other verbs, for example *aufblasen/aufpusten* 'blow up' (e.g., balloon), *aufschwellen* 'swell up.' Similarly, the

⁸ For many speakers of German, 'leeren' may form a target state participle, especially when applied to an object like 'swimming pool,' i.e., the German version of 'we will empty the swimming pool for three days' is ok. Other de-adjectival verbs, though, such as *trocknen* 'dry' cannot easily license target states. I am not replacing Kratzer's original example here, since I am referring to her argument, as was originally presented.

assumption that the prefix *ver-* in *versteckt* ‘hidden’ is meaningless is contradicted by the fact that *ver-* expresses the result state ‘out of view’ in several other verbs, such as *verbauen* ‘hide something by building things in front of it’ (see Stiebels 1996).

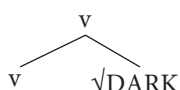
Concerning de-adjectival verbs, Kratzer’s argument against decomposing *leeren* ‘empty’ into cause and result components is seriously weakened by the observation that there are constructions that express decomposition overtly and still disallow *immer noch*:

- (37) Der Briefkasten ist (*immer noch) leer gemacht.
 The letterbox is still empty made

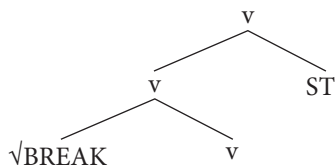
Adopting syntactic decomposition, Embick (2009) proposes two structures for change of state verbs depending on whether they are based on roots expressing states (e.g., *dark-darken*) and roots expressing events (e.g., *break-broken*), where ST stands for state:

- (38) $\sqrt{\text{DARK}}$ -type: Predicate of states
 $\sqrt{\text{BREAK}}$ -type: Predicate of events; must co-occur with ST
 (vs. $\sqrt{\text{POUND}}$ -type: Predicate of events; can’t co-occur with ST)

- (39) a. $\sqrt{\text{DARK}}$ -type: complement of v

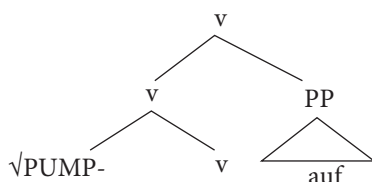


- b. $\sqrt{\text{BREAK}}$ -type: modifier of v selecting for a ‘Proxy ST’

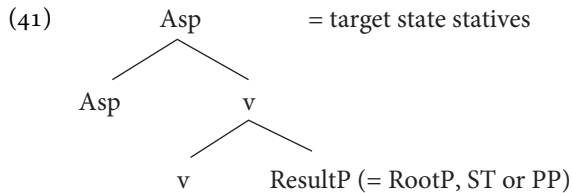


In (39b), ST is an “empty” state defined by the modifier of v, $\sqrt{\text{BREAK}}$; Embick calls it a “Proxy ST.” Its meaning is filled by the content of $\sqrt{\text{BREAK}}$ expressing a “state caused by a breaking event.” By contrast, an “adjectival” root of the $\sqrt{\text{DARK}}$ type fills the ST position selected by v. To these, the following structure must be added for verbs with non-compositional prefixes like *auf-pumpen* (Alexiadou and Anagnostopoulou 2013, 2014):

- (40)



In (40) there is local determination of the meaning of ‘auf’ in the context of $\sqrt{\text{PUMP}}$ (Arad 2003; Marantz 2013a; Anagnostopoulou and Samioti 2013, 2014). ‘Auf’ is assigned an interpretation in context and it structurally contributes a target state, even if it lacks a denotation in isolation. In TSAP, the structures in (39) and (40) are embedded under the Adjectivizer/Stativizer:



According to Embick (2009), there is the following generalization to be made concerning the change of state verbs that yield acceptable target states vs. those that do not: verbs like *break* in (39b) and verbs like *auf-pumpen* in (40) have acceptable target states while de-adjectival verbs like *darken* in (39a) do not. Embick treats this restriction as a “competition for use” effect: the question is under which conditions one would choose to say ‘The sky is still darkened’ as opposed to ‘The sky is still dark.’ This competition does not arise with participles based on non-de-adjectival verbs like *broken* and *pumped up* and, therefore, they are well-formed.

5.4.4 Why is Voice excluded from TSAP?

We have seen so far possible sub-structures for ResultP, but we have yet not addressed the question of why Voice must be excluded from TSAP. A potential answer to this question comes from the proposal that TSAP represent outcomes of scalar changes. See Baglini (2012) and Gehrke (2014) for two semantic proposals treating adjectival passives as expressing the result of a scalar change. Note that Baglini and Gehrke claim that all adjectival participles represent outcomes of scalar changes and they argue against the resultant vs. target state classification of participles. I crucially differ from them in my limiting this claim to target state participles, which sharply differ from resultant state participles as far as Voice is concerned. Verbs classified as ‘result verbs,’ among them change of state verbs, encode the scale in their lexical meaning: *darken* describes changes in illumination, *cool* describes changes in temperature, *lengthen* describes changes in length, *deepen* describes changes in depth. And we can understand more restrictions on target state participles if we look at the subclasses of scalar change expressed by change of state verbs. Consider the subclasses in (42) from Rappaport Hovav (2014):

(42)	<u>Scale type</u>	2 valued	Multi-point	Multi-point	Multi-point
			upper bound	lower bound	open
	Adjectival	dead	flat	wet	long
	property base				

De-adjectival verb	die	flatten	wet	lengthen
De-verbal property base	cracked	thawed	all -ed participles	stretched
Verb	crack	thaw	all verbs	stretch

Example (42) includes the following distinctions:

1. Verbs expressing scales associated with multi-valued attributes vs. verbs that lexicalize a two-point scale (Beavers 2008).
2. Multi-valued scalar verbs are further divided into three subclasses:
 - a. Open scale verbs associated with predicates like *long*, *wide*, or *stretch*, *shrivel* with no maximal value.
 - b. Upper bound close scale verbs with a maximal degree based on predicates such as *flat*, *empty*, *clear*, *dry*, *straight*, *freeze*, *thaw*.
 - c. Close scales with a lower bound that represents a non-zero degree of the measured property, for example, *wet*, *impure*.

It seems that only certain subtypes of scalar verbs yield states that can be conceptualized as transitory and reversible. From my preliminary survey of Greek, it seems that class 2c verbs (verbs expressing close scales with a lower bound) are optimal inputs for target state participle formation; class 2a verbs (open scale verbs with no maximal values) are impossible inputs; class 1 and 2b verbs are sometimes licit and sometimes excluded, depending on various factors, among them also Embick's (2009) "competition for use" effect mentioned above (i.e., *dry* blocking *dried*, *empty* blocking *emptied*).

Coming back to the question of Voice, following Rappaport Hovav (2014), I assume that a defining property of verbs lexicalizing scalar changes is their simplicity: they express change along only one dimension. The presence of Voice is thus excluded from target state participles because it leads to a complex interaction between the agent, the instrument (if present,) and the theme, cumulatively rendering the change too complex to qualify as scalar.

5.5 Representing manners, results, and the manner-result complementarity hypothesis

The Greek coercion facts presented in the preceding section in a certain sense confirm the *Manner-result Complementarity Hypothesis* advanced by Rappaport Hovav and Levin (2010), and Levin and Rappaport Hovav (2014). According to Rappaport Hovav and Levin (1998, 2010), Levin (2006), Levin and Rappaport Hovav (2014) and the literature building on them, verbs are either classified as expressing manners or results, and this affects their behavior with regard to object alternations.

In general, object alternations are found with manner but not result verbs (manner and result, respectively, are entailed by the verbs in all contexts Rappaport Hovav and Levin 1998; Levin 2006), for example, result verbs allow no unspecified objects while manner verbs do:

- (43) a. *Kelly broke/dimmed/filled/covered/obtained/inserted.
 b. Shelly swept/scratched/hit/carved/sewed/knit.

Levin and Rappaport Hovav further argue for the hypothesis in (44) deriving from the constraint in (45):

- (44) *Manner-result complementarity*
 Manner and result meaning components are in complementary distribution: a verb lexicalizes only one.⁹
- (45) *The lexicalization constraint*
 A root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier. (Rappaport Hovav and Levin 2010)

The two templates relevant here are provided in (46):

- (46) a. means/manner → [x ACT <MANNER>]
 (e.g., jog, run, creak, whistle)
- b. result (i.e., externally caused) state →
 [[x ACT] CAUSE [BECOME [y <RES-STATE>]]]
 (e.g., break, dry, melt, open, split)

According to (45) and (46), a root can either be a modifier of ACT or a complement of BECOME. This derives the Manner-result Complementarity Hypothesis. Rappaport Hovav and Levin argue that verbs like *cut* and *climb*, which look as if they qualify as manner and result verbs simultaneously, actually behave as either ‘manner’ or ‘result,’ i.e., the relevant roots are either associated with template (46a) or (46b), depending on the use. They are never manner and result simultaneously, i.e., the following is impossible:

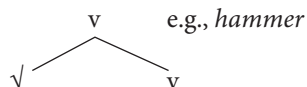
- (47) *[[x ACT<CUT/CLIMB>] CAUSE[BECOME[y <CUT/CLIMB >]]]

Similarly, result verbs of detachment like ‘clean’ can be used intransitively (*I cleaned the whole day*), a fact suggesting, among other diagnostic criteria, that they also have manner uses (see the discussion in Levin and Rappaport Hovav 2014; Alexiadou and Anagnostopoulou 2013, 2014). In Distributed Morphology (DM), the Manner-result Complementarity Hypothesis can be seen as a side-effect of the way in which roots are merged with the categorizing head v. Manner roots are standardly assumed to be

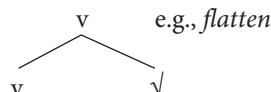
⁹ This idea is debated. See below, especially Beavers and Koontz-Garboden (2012).

merged as modifiers of *v*, whereas result roots are merged as complements of these heads (Embick 2004; Harley 2005a; Rimell 2012):

(48) a. modifiers of *v*, *direct Merge*

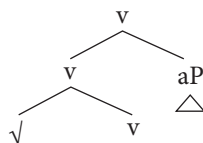


b. complements of *v*



Embick (2004a) suggests that, direct Merge has semantic consequences. It specifies the means component of the complex predicate. Implicitly, the type of merge is sensitive to the manner vs. result/state classification of roots. Manner roots merge as modifiers of *v*, state roots merge as complements of *v*. The structure in (48a) can feed secondary resultative predication. In that case the element that appears in the complement of *v* cannot be a bare root (49).

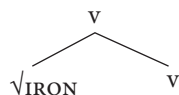
(49) e.g., *hammer flat*



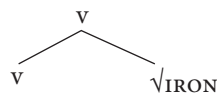
Embick argues that *v*'s complement cannot be a bare Root when *v* has a Root merged with it, as in (49), because the Root in the complement position would be *uncategorized*. That is, in (49) the complement of *v* is an *aP*.

The coercion facts discussed in section 5.4 provide support for the Manner-result Complementarity Hypothesis because instrument verbs are either interpreted as manner verbs (in the context of Voice), in which case they are illicit as TSAP, or they are coerced to result verbs becoming licit as TSAP. Thus, adjectival passives in a language like Greek potentially constitute a new diagnostic environment distinguishing manner vs. result verbs or manner vs. result senses of verbs: only the latter are licit in TSAP. Translating the insights of Rappaport Hovav and Levin in standard DM terms, we would say that verbs like *sponge/swab* and *iron* (see the data in (29)–(33) of section 5.4.2 above) have the option of merging their root either as in (50a) (the canonical case) or as in (50b). The coercion of manner into result can thus be described as direct-Merge vs. complement-Merge.

(50) a. modifiers of *v*, *direct Merge*



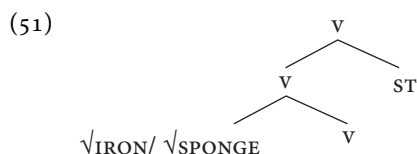
b. complements of *v*



There is an alternative way of expressing the coercion facts if we follow Embick (2009) discussed in section 5.4.3. Recall his classification of roots, repeated here:

- (38) $\sqrt{\text{DARK}}$ -type: Predicate of states
 $\sqrt{\text{BREAK}}$ -type: Predicate of events; must co-occur with ST
 (vs. $\sqrt{\text{POUND}}$ -type: Predicate of events; can't co-occur with ST)

In this system, only adjectival/stative roots are allowed to occur as complements of v. Verbal/eventive verbs lexicalizing the result, like *break*, have a more complex structure: the root merges as a modifier of v but obligatorily selects for a proxy ST. Manner roots are distinguished by break-type result roots in not selecting for ST. To explain coercion in this system, we must assume that manner roots of the $\sqrt{\text{POUND/IRON}}$ -type are allowed to co-occur with ST, i.e., they can form a 'break-type' structure:



What the coercion facts show is that the manner interpretation of a root like $\sqrt{\text{IRON}}$ in participles depends on the syntactic context. In the presence of Voice, the root is obligatorily interpreted as a manner root, which means that the ST part must be missing:



In the absence of Voice, the root can be interpreted as a result root and ST must be present.

I conclude that there are two alternative ways of structurally representing the coercion facts in target state participles, depending on whether we take all result roots to be merged as complements of v or only stative/adjectival ones. Embick (2009) argues that (39b) is the correct representation for 'break' because it allows resultatives, i.e., examples like *the door broke open* are well-formed.

Let us now look at the predictions made by the two different systems of structurally representing manners, results, and coercion with respect to the Manner-result Complementarity Hypothesis. The absence of ST in (52) correctly predicts that the result is not entailed in the manner construal of 'sponge' and 'iron.' Recall the data illustrating this, repeated here:

Voice → *manner and no coercion (no result, no contradictions when the result is denied)*:

- (33) a. To patoma ine sfuggarismeno epaggelmatika ki omos ine vromiko
 The floor is sponge- PRT.SG.NEUT professionally and however is dirty
 'The floor is professionally swabbed but still dirty.'

- b. To pukamiso ine sideromeno epaggelmatika ki omos ine tsalakomeno
 The shirt is iron- PRT.SG.NEUT professionally and however is wrinkled
 ‘The shirt is professionally ironed but still wrinkled.’

The same result is obtained in the Embick (2004a) system, which also represents manner verbs along the lines of (52). There is, however, a difference in predictions between representing the result reading as in (50b), i.e., as a complement, and representing it as in (51) where the root still is a modifier selecting for a proxy ST. (50b) predicts that the manner in which the result was brought about is not specified in the result use of a manner/instrument verb like *iron* and *sponge*. On the other hand, if *v* is understood as a process head (in the sense of Ramchand 2008), then (51) predicts that the manner of the process is still entailed in the result reading, i.e., that there will be no manner-result complementarity when a manner verb is coerced into a result verb in a target state participle. The latter is, in fact, correct. In the coerced target state participles (repeating (30) above), the manner/instrument cannot be denied, as shown by the data in (53):

Target state: manner coerced to result (evidenced by contradictions):

- (30) a. #To patoma ine akomi sfuggarismeno ki omos ine vromiko
 The floor is still sponge- PRT.SG.NEUT and however is dirty
 ‘The floor is still swabbed but still dirty.’
 b. #To pukamiso ine akomi sideromeno ki omos ine tsalakomeno
 The shirt is (still) iron- PRT.SG.NEUT and however is wrinkled
 ‘The shirt is still ironed but still wrinkled.’

Manner coerced to result and yet manner retained (evidenced by contradictions):

- (53) a. #To patoma ine akomi sfuggarismeno alla den xrisimopiisa pani/
 sfugaristra/nero
 The floor is still sponge- PRT.SG.NEUT but I did not use a cloth/a mop/water
 ‘The floor is still swabbed but I did not use a sponge.’
 b. #To pukamiso ine akomi sideromeno alla den xrisimopiisa sidero
 The shirt is (still) iron- PRT.SG.NEUT but I did not use an iron
 ‘The shirt is still ironed but I did not use an iron.’

I conclude that the Manner-result Complementarity Hypothesis is only partially correct: manner precludes result entailments, but not the other way around. This can be expressed in terms of structures (51) vs. (52) but not in terms of (50a) vs. (50b). See Anagnostopoulou (2015) for a detailed discussion.

Before closing this section two remarks are in order: First, Heidi Harley points out (in personal communication) that the observation about ‘still’ enforcing a target state reading of participles of instrumentals in combination with the observation that verbs of creation do not allow the target state reading makes a prediction that *carve/*

sculpt verbs (which in English have a creation frame and an affected object frame) will lose the creation reading when their participle is modified by ‘still.’ This seems to be correct:

- (54) a. John molded a head from/in clay
 b. John molded clay into a head
- (55) a. The molded head
 b. The molded clay
- (56) a. *The still molded head
 b. The still molded clay

Secondly, observe that the type of coercion found in Greek that leads to a weakening of the Manner-result Complementarity Hypothesis is based specifically on instrument verbs. It is interesting to note that Beavers and Koontz-Garboden’s (2012) argument against the Manner-result Complementarity Hypothesis is based on “manner of killing” verbs like *crucify*, *electrocute*, *guillotine*, *knife*, *poison*, *garrote*, many of which are also instrument verbs.¹⁰

5.6 Summary

I first presented a summary of the main arguments supporting the presence of *v* and Voice in adjectival passives. The head *v* is needed to account for the distinction between adjectival participles with event implications and adjectival participles without, while the head Voice is present in RSAP and it is absent from TSAP. I then presented new evidence for the claim that TSAP lack Voice, based on the observation that they are disallowed with agentive verbs like verbs of creation, verbs of killing, and manner verbs. I also discussed a particular type of coercion based on denominal instrument verbs in target state participles and argued that, in the absence of Voice, denominal instrument verbs qualify as result verbs when they form

¹⁰ A way one could derive the lack of manner-result complementarity in coerced target state participles specifically with instruments, even in a system where coercion is represented as in (50b) (i.e., in terms of Embick’s 2004a direct-merge vs. Merge as complement hypothesis), would be to allow for *v* heads to merge with categorized roots and to assume that instrument verbs simultaneously encoding manners and results in target state participles showing coercion are based on structures like (50b), except that the complements of *v* are actual nouns, rather than roots. Assuming, with Kiparsky (1982) and Arad (2003, 2005), that there are classes of instrument verbs that are based on roots acquiring a nominal interpretation by merging with the functional head *n* prior to merging with *v* (hence denoting actions requiring actual instruments), the lack of manner-result complementarity could be derived. But see Harley and Haugen (2007) and McIntyre (2014) for arguments that Kiparsky’s test is spurious. Moreover, as also discussed in Anagnostopoulou (2015), many instrument verbs licensed in target state participles do not actually entail the specific instrument expressed by the root they are based on, but a set of instruments. For example, as shown in (53a), the instrument can be a cloth, a mop, or water, and not specifically a sponge. Even by Kiparsky’s criteria, then, this Greek verb cannot be assumed to be based on a categorized root.

TSAP. The presence of Voice, however, forces such verbs to be construed as manner verbs, which, in turn, causes them to build RSAP. On the basis of these observations, I concluded that target state adjectival participles must contain a ResultP layer and are not allowed to embed a VoiceP level because they denote output of scalar changes that are derived by v-Result combinations and are incompatible with Voice and manner. I discussed two alternative ways of describing the manner-result coercion effect in TSAP, based on Embick (2004a) or on Embick (2009). I pointed out that Embick's (2009) system correctly leads us to expect that denominal instrument verbs coerced as result verbs will still retain their manner/instrument component, leading to a relaxation of the Manner-result Complementarity Hypothesis.

Acknowledgments

I would like to thank one anonymous reviewer for valuable feedback and detailed comments, the participants in the "Little v" workshop in Leiden (October 25–26, 2013), especially Heidi Harley, for questions, discussions, and comments, and Artemis Alexiadou and Florian Schäfer for cooperation on the question of Voice in adjectival passives. Writing this chapter was made possible by an Alexander von Humboldt Friedrich Wilhelm Bessel Research Award, which is gratefully acknowledged.

6

Romance and Greek medio-passives and the typology of Voice

FLORIAN SCHÄFER

6.1 Introduction

Almost all Romance languages have an SE-reflexive clitic (in the terminology of Reinhart and Reuland 1993) which is involved in so-called *Voice syncretisms*; it is not only used canonically to form reflexive verbs as in (1), but also to form reflexively marked anticausatives as in (2), and reflexively marked medio-passives as in (3).¹ Below, I use the terms *SE-reflexive verb*, *SE-anticausative* and *SE-passive* as shorthand for these constructions and I exemplify them with French examples (on SE-marked generic middles, see fn. 9). Furthermore, all Romance languages have a canonical, periphrastic passive as in (4), which is formed with an auxiliary and a verbal participle.

- (1) Jean s' est lavé. (SE-reflexive verb)
 Jean SE is washed
 'John washed.'
- (2) Le verre s' est cassé. (SE-anticausative)
 the glass SE is broken
 'The glass broke.'
- (3) Trois maisons se sont louées (*par des touristes) hier. (SE-passive)
 three houses SE are rented by some tourists yesterday
 'Three houses were rented (by some tourists) yesterday.'

¹ The following abbreviations are used: NACT—non-active (morphology), SE—SE-reflexive pronoun.

- (4) Trois maisons ont été louées (par des touristes) hier. (canonical passive)
 three houses have been rented by some tourists yesterday
 ‘Three houses were rented (by some tourists) yesterday.’

In this chapter I lay out a theory of the morphosyntax of passives that seeks to account for two facts. Firstly, it derives that a language can have two morphosyntactically different passives, which, nevertheless, basically express the same meaning and involve an implicit argument (as diagnosed by the licensing of agentive adverbials or control into purpose clauses). Secondly, it provides an explanation for the observation that only canonical passives license *by*-phrases (cf. (4)) while Romance SE-passives reject them (cf. (3)).² Furthermore, and as a point of comparison, it captures how Greek medio-passives license *by*-phrases even though they are similar to Romance SE-passives in that they are syncretic with (some) anticausative and (some) reflexive verbs (e.g., Alexiadou and Doron 2012; Spathas et al. 2015; Alexiadou et al. 2015).³

The chapter is organized as follows: In section 6.2, I quickly review the syntactic and semantic properties of SE-reflexive verbs and SE-anticausatives, stressing the fact that the use of SE-reflexive morphemes in these constructions is a case of syncretism (same phonological form, but fundamentally different semantic and syntactic function). In section 6.3, I review the theory of SE-anticausatives set out in Schäfer (2008a), Wood (2014, 2015a,b), and Alexiadou et al. (2015) and which analyzes the SE-morpheme in SE-anticausatives as the expletive specifier of an expletive Voice projection. In section 6.4, I propose a typology of Voice heads that allows subsuming SE-passives under the syntax of SE-anticausatives while, at the same time, upholding the standard semantics of passives. This typology also captures the existence of two morphosyntactically distinct passives and lays the ground for an explanation as to

² Some examples of Romance SE-passives with *by*-phrase are reported in the literature, e.g., for Canadian French (Authier and Reed 1996), Italian (Cinque 1988: fn. 11) or Spanish (where most exceptional SE-passives with *by*-phrases can be found in juridical texts (Real Academia Española 2010: 41.6)). However, the speakers of these languages that I consulted all rejected *by*-phrases in SE-passives and always proposed to use a periphrastic passive instead. Even if some speakers of these languages accept some SE-passives with some types of *by*-phrases, there is clearly a categorical difference between canonical passives and SE-passives in Romance languages with respect to the licensing of *by*-phrases. As became clear to me only shortly before this book went to print, Romanian SE-passives seem to be an exception to the generalization on Romance SE-passives in the main text, in that they sometimes are indeed acceptable with *by*-phrases (e.g., Cornilescu and Nicolae 2015). Still, the Romanian speakers I consulted reject many *by*-phrases in SE-passives, in particular definite ones, and they generally prefer the periphrastic passive if they are asked to form a passive with a *by*-phrase. I will have to further investigate the case of Romanian in future work.

³ For reasons of space, I must restrict my discussion to SE-passives in Romance languages. SE-passives license *by*-phrases in the mainland Scandinavian languages and in some (but not all) Slavic languages. In Schäfer (2015), I argue that SE-passives that allow *by*-phrases have basically the same morpho-syntax as Romance SE-passives. However, the SE-morpheme involved is ‘born’ as an argument expletive and can never denote a bound variable (cf. (22)); the availability of *by*-phrases follows then because the SE-morpheme cannot saturate the external argument variable and the *by*-phrase can apply semantically (cf. section 6.4.4).

why SE-passives in Romance reject *by*-phrases while canonical passives license them. The typology also predicts the existence of medio-passives of the type found in Greek, which involve so-called *non-active* (NACT) morphology and license *by*-phrases. Section 6.5 concludes.

6.2 SE-reflexives verbs and SE-anticausatives at the syntax-semantics interface

In this section, I point to some recent literature discussing the semantic and morphosyntactic properties of SE-reflexives and SE-anticausatives. For reasons of space, I can only report the relevant conclusions and I refer the reader to the literature cited for argumentation.

6.2.1 Semantic differences

Despite their identity in morphological shape, the two verb classes in (1) and (2), repeated in (5b) and (6b), differ semantically, in particular in their adicity. Only SE-reflexive verbs are *semantically transitive* predicates with an external and an internal θ -role, which are both assigned to the same entity via binding of the internal argument by the external argument (cf. (5b')). SE-anticausatives are *semantically intransitive* predicates with an internal θ -role only (cf. (6b')). This conclusion follows from tests that show that the transitive counterpart of SE-anticausatives logically entails the SE-anticausative (i.e., (6a) entails (6b)), while the transitive counterpart of a SE-reflexive verb does not entail the SE-reflexive verb ((5a) does not entail (5b)). Therefore, an analysis of SE-anticausatives along the lines of SE-reflexive verbs (i.e., as semantically reflexive predicates) cannot be upheld (Schäfer and Vivanco 2015, 2016; Alexiadou et al. 2015; Horvath and Siloni 2011a,b, 2013; *pace* Chierchia 2004; Koontz-Garboden 2009a; Beavers and Koontz-Garboden 2013a, b). The SE-morpheme works as a (locally) bound variable only in SE-reflexives, but does not play such a semantic role in SE-anticausatives.⁴

- (5) a. Sa mère a lavé Jean. (transitive)
 His mother has washed John
 ‘His mother washed John.’
 b. Jean s’ est lavé. (SE-reflexive)
 Jean SE is washed
 ‘John washed.’
 b'. [[se laver]] = $\lambda x \lambda e$ [wash(e) $\wedge$ AGENT(e , x) $\wedge$ PATIENT(e , x)]

⁴ For tests showing that SE in SE-reflexives should be analyzed as a bound variable and not as a reflexivizer, see Doron and Rappaport Hovav (2007), Spathas (2010), or Sportiche (2014).

- (6) a. Jean a cassé le verre. (transitive/causative)
 John has broken the glass
 ‘John broke the glass.’
 b. Le verre s’ est cassé. (SE-anticausative)
 the glass SE is broken
 ‘The glass broke.’
 b’. $[[\text{se casser}]] = \lambda x \lambda s \lambda e [\text{BECOME}(e, s) \wedge \text{broken}(s) \wedge \text{THEME}(s, x)]$

6.2.2 Syntactic differences

Despite their identity in morphological shape, the two verb classes also differ syntactically. SE-reflexive verbs have the structure in (7): they are *syntactically transitive* with the nominative DP being the external argument (agent) and the SE-reflexive being the internal argument (patient), the latter being semantically bound by the former. Some tests showing this work only in German where a nominative DP can stay in situ (see Schäfer 2008a; Pitteroff and Schäfer 2014), but evidence can also be found within Romance (see Doron and Rappaport Hovav 2007; Sportiche 2014). This evidence suggests that the SE-reflexive in reflexive verbs is a syntactic argument and that SE-reflexive verbs are not unaccusative, even though they select *be* and trigger participle agreement in Romance (*pace* e.g., McGinnis 2004 among many others).⁵

- (7) $[_{TP} T [_{\text{VoiceP}} \text{DP}_{\text{AGENT}} \text{Voice} [_{\text{VP}} v \text{SE}_{\text{PATIENT}}]]]$ (SE-reflexive)

SE-anticausatives, on the other hand, have the syntax in (8): while these verbs are semantically intransitive/inchoative (only a theme role is present), they are syntactically transitive, too, in that the SE-reflexive is first merged in an A-position. In particular, the nominative DP is the internal argument (theme) and the SE-reflexive is merged in the external argument position. This can best be seen in German where the nominative DP can stay in situ and the transitivity of the verbal phrase can be diagnosed reliably, for example by auxiliary selection (*have*) (Steinbach 2002; Schäfer 2008a; Pitteroff and Schäfer 2014; Alexiadou et al. 2015), but evidence can be derived within Romance languages, too, because SE behaves the same with SE-reflexive and SE-anticausative verbs morphosyntactically and there is semantic evidence that SE in the former class of verbs first merges in (or, depending on your theory of clitics, relates to) an A-position (Doron and Rappaport Hovav 2007; Sportiche 2014; *pace*

⁵ *Be*-selection and participle agreement as well as the “intransitive” behavior of SE-reflexive verbs under French causative *faire* (Kayne 1975) must then follow from other properties of these predicates (for the same conclusion, see e.g., Doron and Rappaport Hovav 2007, Marelj and Reuland 2013, or Sportiche 2014), arguably the interaction of (i) an agreement relation between the external argument and the internal argument variable (i.e., SE; see section 6.3.1) with (ii) clitic-movement of this agreeing internal argument.

e.g., Labelle 2008); the null hypothesis is then that it merges in an A-position with anticausatives, too.

(8) [TP T [VoiceP SE_{EXPL} Voice [_{VP} v DP_{THEME}]]] (SE-anticausative)

SE-anticausatives then provide a mismatch in syntactic vs. semantic transitivity. SE is syntactically an external argument, but since SE-anticausatives lack an external θ -role, SE is not a thematic/semantic argument of these verbs. Instead, SE is semantically inert and acts as “argument expletive” in anticausatives, as indicated by the subscript EXPL in (8) and discussed in more detail in section 6.3.⁶

6.3 Active, passive, and expletive Voice

The structure of SE-anticausatives in (8) provokes a number of theoretical questions. Firstly, since the SE-reflexive is merged as the highest DP in Spec,VoiceP, how is it that Principle A of the Binding Theory (Chomsky 1981) is not violated? Secondly, how can a SE-reflexive (i.e., an element that is canonically interpreted as a bound variable) become expletive? Finally, what about Case? In SE-anticausatives, the internal argument is marked with nominative and the SE-reflexive in Spec,VoiceP is marked with accusative (cf. Dobrovie-Sorin 1998 or Schäfer 2008a, 2012a for arguments that SE has Case). This distribution of structural Case is unexpected in nominative-accusative languages and cannot be derived within standard Case theories.

To answer these questions, the morphosyntactic properties of SE and their effects at the interfaces need to be clarified in section 6.3.1. I will mainly concentrate on the first two questions. Concerning Case, I propose a dependent Case algorithm in (11) below, which derives the canonical distribution of structural case in

⁶ The analysis of SE in anticausatives as semantically expletive makes clear predictions about the semantic relation between marked and unmarked anticausatives. As Schäfer 2008a, Martin and Schäfer 2014, and Alexiadou et al. 2015 illustrate in detail, the presence of SE in anticausatives is not related to any *consistent* truth-conditional semantic effects. In particular, these authors argue that (i) there are, within and across languages, no consistent meaning differences between marked and unmarked anticausatives (*pace* e.g., Labelle 1992 for French or Folli 2002 for Italian) and (ii) both marked and unmarked anticausatives do not differ in event complexity from their causative counterparts (see also Pylkkänen 2008). The existence of two morphologically different classes of anticausatives is, therefore, not motivated by different semantics but by considerations of iconicity (“mark the unexpected use”). See Haspelmath (1993 et seq.), Schäfer (2008a), Alexiadou et al. (2015) and references there for a discussion of the observation by Haspelmath and colleagues that verbs forming marked and unmarked anticausatives tend to differ in the ratio of their transitive to their anticausative uses; roughly, the former are more often used as causatives, the latter more often as anticausatives. However, whether an *individual* anticausative verb in an individual language is marked or unmarked is an idiosyncratic, i.e., lexical property that needs to be learned for each verb (see Alexiadou et al. 2015 and Wood 2015b for further discussion). The latter fact is highlighted by (rare) occurrences of SE-marked “internally caused” verbs, i.e., unaccusatives lacking a transitive version, e.g., in Icelandic (Wood 2015b).

nominative-accusative languages as well as the unexpected distribution of structural Case in (8). For reasons of space, however, I refer the reader to Schäfer (2008a, 2012a, b) or Alexiadou et al. (2015) for a detailed discussion of Case in SE-anticausatives (and constructions involving SE more generally).

Before I turn to the morphosyntactic aspects of SE-reflexives, note first that nothing (inherent to the lexical item SE or to the grammatical system in general) can prevent SE from being merged in Spec,VoiceP. Obvious cases are constructions involving exceptional case marking (ECM) as in (9) where SE starts out as the subject of the embedded verb. Of course, SE receives a θ -role (agent of *open*) and finds a local c-commanding antecedent (*Jean*) in the derivation of (9); SE-anticausatives differ in both respects, but they are grammatical nevertheless, i.e., they neither violate the θ -criterion nor Binding Principle A. I will derive the reasons for this in the next two subsections.

- (9) Jean se voit ouvrir la porte.
 John SE sees open the door
 ‘John sees himself open the door.’

6.3.1 Anaphoric binding via AGREE

A number of scholars suggested that (local) anaphoric binding is grounded in a syntactic AGREE-relation between a DP-antecedent and an anaphoric variable (e.g., Fanselow 1991; Burzio 1991, 1998; Reuland 2001, 2011; Chomsky 2006; Schäfer 2008a, 2012a,b; Kratzer 2009; Tucker 2010; Rooryck and Van den Wyngaerd 2011). Following a particular strand of this idea, I assume that an anaphoric variable is totally underspecified for ϕ -features: it is a set of a categorial D-feature and unvalued ϕ -features {D, $u\phi$ } (cf. Burzio 1991, 1998; Kratzer 2009; Tucker 2010). $DPu\phi$ is active and probes the tree *upwards* for a c-commanding antecedent which can value its unvalued features under AGREE as in (10a) (on the option of upward-probing, see e.g., Baker 2008; Bjorkman 2011; Wurmbrand 2013c; Zeijlstra 2013). This AGREE-relation is evaluated at the CI-interface to compute the *semantic* value of the variable as in (10b) (e.g., Reuland 2001, 2011). At the PF-interface, this AGREE-relation is evaluated to compute the *morphological* form of $DPu\phi$ (cf. (10c)) (cf. Schäfer 2008a and, in particular, the Distributed Morphology account in Rooryck and Van den Wyngaerd 2011: chapter 2). Referential pronouns (e.g., the nominative subject antecedents in (10c)) come from the lexicon with valued ϕ -features and, therefore, do not probe

- (10) a. $DP\phi \leftarrow AGREE \leftarrow DPu\phi$ (Syntax)
 b. $\lambda x\lambda e[\text{agent}(e, x) \text{ and } \text{verb}(e) \text{ and } \text{patient}(e, x)]$ (CI-interface)
 c. *je* $\leftarrow me$ / *tu* $\leftarrow te$ / *il* $\leftarrow se$ (PF-interface)

I also follow the idea that Voice heads come with a set of unvalued ϕ -features that get valued by the closest DP under *m-command*.⁷ The valuation of Voice drives the computation of dependent Case (Schäfer 2008a, 2012a,b; Alexiadou et al. 2015) as formulated in the Case algorithm in (11) ((11a,b) will become important for the distribution of Case in SE-anticausatives):

- (11) a. A DP is realized at PF with dependent Case (ACC) if a different DP has valued the accessible phase head (Voice) via AGREE.
 b. A DP that is not realized with dependent Case appears with default Case.
 c. Inherent/lexical Case takes precedence over default and dependent Case.

I turn to the concrete example involving a SE-reflexive verb in (12a), where the arrows in the corresponding tree in (12b) reflect the two AGREE relations. Voice and SE are probes and they are both valued by the external argument DP. SE is interpreted as a variable bound by its c-commanding valuator and it is realized with the ϕ -features of its valuator. Since SE is not involved in the valuation of Voice, it gets dependent Case due to (11a) and the external argument gets default case due to (11b). Finally, I assume, with Legate (2005) and Marantz (2007), that there is a further AGREE relation between T and Voice that transmits the ϕ -features of the nominative DP (i.e., the DP that valued Voice) to T.

- (12) a. Jean se peint.
 John_{NOM} SE_{ACC} paints
 ‘John paints himself.’

⁷ I assume the definition of AGREE in (i) from Müller (2009: 273) which incorporates m-command:

(i) *Agree*

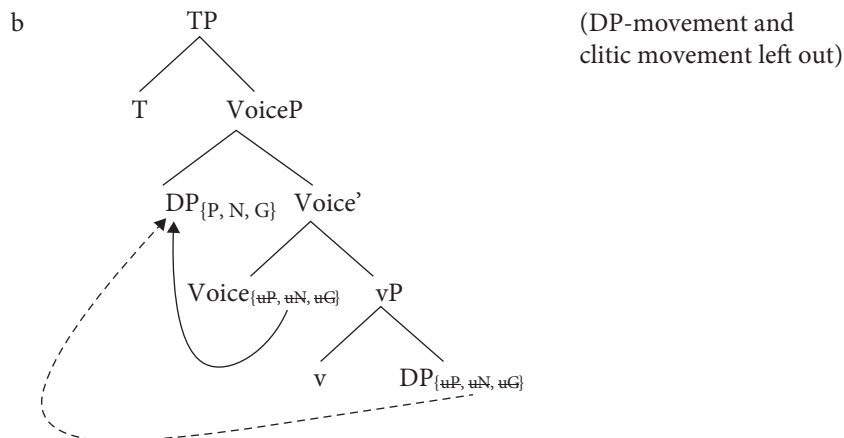
α agrees with β with respect to a feature bundle Γ iff (a), (b), and (c) hold:

a. α bears a probe feature [$*F^*$] in Γ , β bears a matching goal feature [F] in Γ .
 b. α m-commands β .
 c. There is no δ such that (i) and (ii) hold:

(i) δ is closer to α than β .

(ii) δ bears a feature [F] that has not yet participated in Agree...

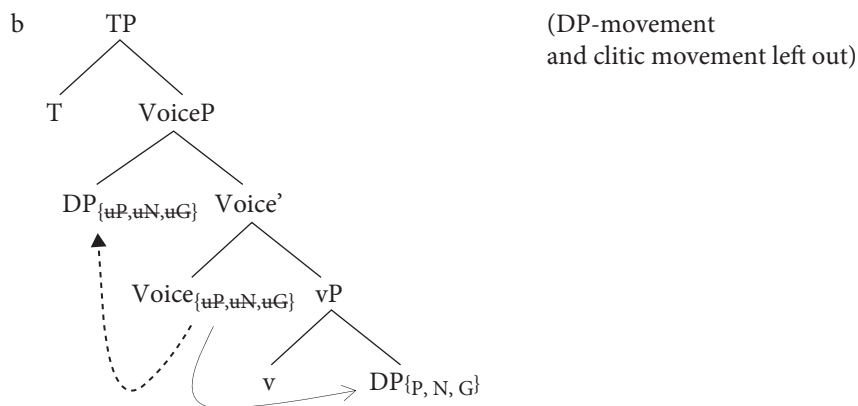
δ is closer to α than β if the path from δ to α is shorter than the path from β to α . The path from X to Y is the set of categories Z such that (a) and (b) hold: (a) Z is reflexively dominated by the minimal XP that dominates both X and Y. (b) Z dominates X or Y.... The length of a path is determined by its cardinality. It follows that the specifier and the complement of a head qualify as equally close to the head; and that the specifier of a head is closer to the head than a category that is further embedded in the complement of the head.



6.3.2 The formal derivation of expletive SE

(13b) shows the derivation for the example sentence in (13a) involving a SE-anticausative.

- (13) a La porte s' ouvre.
 The door SE opens
 'The door opens.'



Voice probes its m-command domain and agrees with $DP_{u\phi}$. However, since both have unvalued features, no valuation takes place (cf. AGREE as 'feature sharing'; Frampton and Gutmann 2000; Pesetsky and Torrego 2007). Voice, therefore, further probes its m-command domain until it agrees with the object DP. This DP values the ϕ -features of Voice, and since Voice is in an agreement relation with $DP_{u\phi}$, it values, in addition, the ϕ -features of $DP_{u\phi}$. Note that all unvalued features are thereby valued and the derivation does not crash. In particular, $DP_{u\phi}$ turns into $DP_{u\phi}$ and

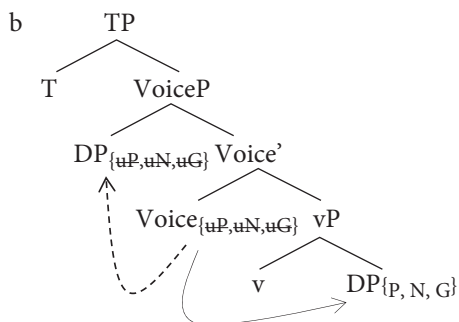
survives the formal derivation, although it does not have a c-commanding DP-antecedent; we face a loophole in the traditional Principle A of the Binding Theory.

Next, the outcome of this derivation has to be interpreted at the interfaces. At PF, $DP_{u\phi}$ will be realized with the ϕ -features of the DP that (indirectly) valued it, i.e., the internal argument DP. Furthermore, the case algorithm in (11a,b) predicts nominative for the internal argument DP and accusative for $DP_{u\phi}$ in Spec, VoiceP. However, since $DP_{u\phi}$ lacks a c-commanding antecedent (it is valued, but not c-commanded by the internal argument DP), it cannot be translated into a (bound) variable at the CI interface. Since $DP_{u\phi}$ lacks any inherent meaning, it therefore remains without any denotation and, in turn, cannot realize a θ -role. It is semantically inert, i.e., expletive.

To conclude, (13b) derives a transitive syntax, where only the internal argument has a semantic denotation while the external argument does not, exactly how I characterized SE-anticausatives in section 6.2.

However, there is still an important aspect missing in the derivation of SE-anticausatives. So far, we derived that an unbound SE can survive the syntactic derivation and remains without θ -role (expletive), but we need some further ingredient in order to avoid a violation of the θ -criterion on the side of Voice. To make this problem explicit, consider the transitive agentive verb ‘peindre’ (to paint). In (14a), this verb is reflexively marked, but it receives only the reflexive interpretation in (14a-A), not an anticausative interpretation along the lines of (14a-B). However, as discussed above, nothing prohibits that this verb enters an anticausative syntax as in the tree in (14b). Syntactically, the derivation in (14b) is well formed, as all unvalued features are valued. Nevertheless, the anticausative reading is not available.

- (14) a Jean se peint. (with expletive SE)
 John SE paints
 A: ‘John paints himself.’
 B: ‘#A painted picture of John emerged.’



The reason is, of course, that ‘painting’ events are conceptualized as necessarily involving an agent. The Voice head combining with such a verb *must* introduce an

agent role, but the unbound SE-reflexive in Spec,VoiceP lacks a denotation and, therefore, cannot realize this agent role. As a consequence, the computation of the semantics of the derivation in (14b) should lead to a violation of the θ -criterion.

To see then what exactly goes wrong with the semantic derivation of (14b), consider the details in (15a–e). (15a) provides the meaning of the vP. The meaning of Voice_{agent} in (15b) combines with the former via event identification (Kratzer 1996). Next, DPu ϕ is merged in Spec,VoiceP. This DP will first agree with Voice and, afterwards, Voice will agree with the internal argument DP. I propose that when DPu ϕ agrees with Voice, it thereby is forced to saturate the open agent slot introduced by Voice; this is indicated in (15d) by replacing the lambda-bound agent variable with the variable y_{SE} . However, since DPu ϕ is not valued by a c-commanding antecedent in (14b), y_{SE} remains unbound. As a consequence, we end up with the agent role not being realized by a DP with denotation.⁸ (15e) is filtered out at the CI-interface as a violation of the θ -criterion.⁹

- (15) a. [[vP]] = λe [paint(e) and theme(e, Jean)]
 b. [[Voice_{agent}]] = $\lambda x \lambda e$ [agent(e, x)]
 c. [[Voice']] = $[\lambda x \lambda e$ [agent(e, x)] [λe [paint(e) and theme(e, Jean)]]
 = $\lambda e \lambda x$ [agent(e, x) and paint(e) and theme(e, Jean)]
 d. [[VoiceP]] = $[\lambda e \lambda x$ [agent(e, x) and paint(e) and theme(e, Jean)]] (y_{SE}) =
 λe [agent(e, y_{SE}) and paint(e) and theme(e, Jean)]
 e. [[TP]] = *(y remains unbound $\rightarrow$ agent role is not correctly assigned)

Since Voice introduces an external argument role, we correctly filter out an anticausative derivation of agentive verbs. Verbs undergoing the causative alternation, however, are special in that they denote events that can be conceptualized either with or without an external argument (Haspelmath 1993; Levin and Rappaport Hovav 1995; Reinhart 2000; a.m.o.; see also Alexiadou and Lohndal this volume). For anticausatives then, the expletive SE in Spec,VoiceP has no adverse effect. But in order to avoid a violation of the θ -criterion on the side of Voice, we must introduce a further type of Voice head, *expletive Voice*.

⁸ Crucially, A-movement of the object DP to a c-commanding position as in (i) cannot derive a semantic antecedent for the anaphor in Spec,VoiceP. Since VoiceP is a phase, movement out of VoiceP has to lead through the outer specifier of VoiceP. But an outer specifier cannot semantically bind an inner specifier, as this is a case of empirically well-motivated *lethal ambiguity* (McGinnis 2004):

(i) [_{TP} T [_{VoiceP} DP_i [_{VoiceP} SE_(*) Voice [_{vP} v t_{DP}]]]] (lethal ambiguity)

Note that according to (i) an unaccusative analysis of semantically reflexive verbs is impossible (unless one adds particular stipulations about Romance SE, as in McGinnis (2004)).

⁹ Schäfer (2008a,b) argues that generic middles of agentive verbs (*This wall SE-paints easily*) involve a derivation as in (14b), but with an expletive Voice head (on expletive Voice, see section 6.3.3). I leave SE-marked generic middles aside in this chapter.

6.3.3 A typology of Voice

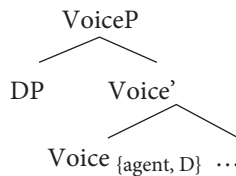
In section 6.2, I argued that SE-reflexive verbs are syntactically and semantically transitive while SE-anticausatives are syntactically transitive but semantically intransitive/inchoative. In order to solve this mismatch, Schäfer (2008a) proposes that syntactic and semantic transitivity are dissociated from each other on the basis of the following feature specification of Voice heads (cf. Embick 2004b; see also Alexiadou et al. 2015; for related discussion see also Sundaresan and McFadden's chapter and Wurmbrand and Shimamura's chapter).

- (16) a. Syntactic transitivity: Voice has a D-feature to be checked by a DP in its specifier.
 b. Thematic transitivity: Voice introduces a θ -role.

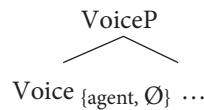
If Voice heads can be formed by selecting a subset of these specifications, (16a,b) predict the universal set of the four Voice heads in (17a–d) (from which individual languages select a subset):

(17)

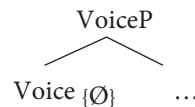
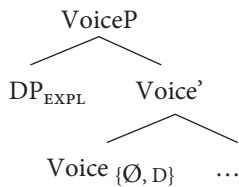
a. thematic active Voice:



b. thematic passive Voice:



c. non-thematic (expletive) active Voice: d. non-thematic (expletive) passive Voice:



Thematic active Voice {agent, D} in (17a) is present in all active verbs (unergatives and transitives, including SE-reflexive verbs). It can come with different θ -roles (agent, causer, holder ...), which are assigned to the DP merged in Spec,VoiceP due to the D-feature (Kratzer 1996; Schäfer 2008a; Wood 2014, 2015a,b; Alexiadou et al. 2015; Wood and Marantz this volume, a.m.o.).

Non-thematic (expletive) active Voice {Ø, D} in (17c) is present in SE-anticausatives (and perhaps in generic middles marked with SE; see fn. 9). This expletive Voice introduces a D-feature to be checked by a DP in its specifier, but it does not assign a θ -role to this DP. Wood (2014, 2015a) proposes that this can best be implemented if expletive Voice denotes the identity function over predicates of events as in (18).

$$(18) \quad [[\text{Voice}_{\text{expletive}}]] = \lambda P_{s,t}.P$$

The syntactic structure of the SE-anticausative in (19a) is given in (19b). The derivation runs as discussed for (13) above. When SE is merged in Spec, VoiceP_{expletive}, SE agrees with Voice and, indirectly, with the nominative theme DP. Since the nominative theme does not c-command SE, it cannot be semantically bound and, consequently, it cannot realize a θ -role. But crucially, Voice_{expletive} does not provide any θ -role.

- (19) a. La porte s' ouvre.
 the door SE opens
 'The door opens.'
 b. [VoiceP SE [Voice' Voice_{expletive} [vP the door open]]]

Schäfer (2008a) proposed that in this case SE is translated at the CI-interface into an expletive; following Wood (2014, 2015a), I assume that expletive SE also denotes the identity function (over predicates of events), as in (20).

$$(20) \quad [[\text{SE}_{\text{expletive}}]] = \lambda P_{s,t}.P$$

The semantic derivation of (19a,b) is given in (21a–c). The meaning of the vP in (21a) combines first with the identity function over events introduced by Voice_{expletive} (21b), and then with the identity function over events introduced by SE_{expletive} (21c). The outcome is an ordinary inchoative change-of-state event undergone by the theme DP.¹⁰

- (21) a. [[vP]] = λe [open(e) and theme(e , the door)]
 b. [[Voice']] = $(\lambda P_{s,t}.P) (\lambda e$ [open(e) and theme(e , the door)]) ((18) + (21a))
 = λe [open(e) and theme(e , the door)]
 c. [[VoiceP]] = $(\lambda P_{s,t}.P) (\lambda e$ [open(e) and theme(e , the door)]) ((20) + (21b))
 = λe [open(e) and theme(e , the door)]

Note that no DP other than SE/DPu ϕ could check the D-feature on Voice_{expletive}: Locative expletives like English *there* are not DPs and cannot check the D-feature of Voice. Pronominal expletives like English 'it' have ϕ -features and will, therefore, be interpreted as referential in Spec, VoiceP. Merged in the specifier of Voice_{expletive}, they will lead to a violation of the θ -criterion because a DP with denotation needs a θ -role.

¹⁰ As discussed in Schäfer (2008a), verbs forming marked anticausatives have the lexical requirement that they must combine with a Voice projection, be it thematic or expletive (see Wood (2015b) for a suggestion on how to formally implement this lexical requirement in a DM framework). Verbs forming unmarked anticausatives (e.g., all English anticausatives or a subset of German or French anticausatives) can, but do not have to, combine with Voice. In the causative use, Voice is present for semantic reasons; in anticausatives, expletive Voice is absent due to economy considerations (i.e., do not merge a semantically empty structure if it is not needed for formal convergence; cf. also section 6.2.2).

Recent work in DM has developed the idea that there is *allosemy* at CI, just as there is allomorphy at PF. Even the meaning of functional material can be determined by its context (Schäfer 2008a; Marantz 2009b; and in particular Wood 2014, 2015a,b, and Myler 2014). The concept of *allosemy* allows us to make more precise what happens with SE at the CI-interface:

- (22) **SE at the CI-interface:** A $DP_{\text{u}\phi}$ is translated into a or b:
- a *variable* (to be bound by a c-commanding antecedent) iff it can saturate a local argument slot
 - b. an *expletive* (i.e., the identity function over predicates of events) iff there is no local argument slot to be saturated (and if it lacks a c-commanding antecedent).¹¹

Thematic passive Voice {agent, $\emptyset$ } in (17b) was assumed in Schäfer (2008a) to be the general passive Voice head (*à la* Kratzer 1996). This head introduces a θ -role for the external argument, but it lacks a D-feature. As a consequence, the external argument must remain implicit, but it can be taken up via a *by*-phrase. However, Alexiadou et al. (2015) argue that this Voice head derives only so-called medio-passives found in Greek (cf. (23)) or Hebrew (cf. also Alexiadou and Doron 2012; Spathas et al. 2015). We will turn to Greek medio-passives (as well as to canonical passives) in more detail in section 6.4.

- (23) O Janis katijori-thike (apo ti Maria). (Greek passive)
 the John accused-NACT by the Mary
 ‘John was accused (by Mary).’

Finally, *non-thematic (expletive) passive Voice* { $\emptyset$, $\emptyset$ } in (17d) is the Voice head for marked anticausatives in Greek, as in (24). This Voice head is expletive, as it does not introduce a θ -role. Exactly as expletive active Voice in (17c), it denotes the identity function in (18). Different from expletive active Voice, (17d) does not project a specifier. (Since Greek lacks SE-reflexives, it could not fill the specifier with an argument expletive.)

- (24) To pani skis-tike (apo mono tu). (Greek marked anticausative)
 The cloth tore-NACT by alone its
 ‘The cloth tore by itself.’

¹¹ Schäfer (2008a) argues that German unintentional dative causers provide a case where a local c-commanding DP-antecedent prohibits the translation of SE (located in Spec of Voice_{expletive}) into an expletive. Such cases/constellations need to be investigated in more detail.

Schäfer (2012a) discusses passives of reflexive verbs as cases where SE saturates a θ -role but lacks a c-commanding DP-antecedent (and is valued by a mechanism of default agreement), and where SE is not translated into an expletive. Such an unbound SE can be interpreted only in the very specific context of inherently and naturally reflexive predicates.

Both thematic passive Voice in (17b) and expletive passive Voice in (17d) are realized with the same NACT morphology in Greek. Following Embick (1998, 2004b), NACT morphology follows from the PF spell-out rule in (25), which states that Voice heads that lack a specifier receive the spell-out ‘NACT’ in Greek:

- (25) Voice → Voice[NACT]/ ____No DP specifier (Greek)

As a side remark, note that despite their morphological identity in Greek, anticausatives can clearly be differentiated semantically from passives because they lack an implicit external argument. This can be diagnosed with the *by*-itself test applied in (26) (for a detailed discussion of this test as diagnosing the presence vs. absence of an implicit external argument, see Alexiadou et al. 2015; Schäfer and Vivanco 2016). The semantic difference between anticausatives and passives arises because the former involve the expletive Voice head in (17d) while the latter involve the thematic Voice head in (17b).

- (26) a. To pani skis-tike (apo mono tu). (marked anticausatives)
 The cloth tore-NACT by alone its
 ‘The cloth tore (by itself).’
 b. O Janis katijori-thike (*apo monos tu). (medio passive)
 the John accused-NACT by alone his
 ‘John was accused (#by himself).’

6.4 Medio-passives, canonical passives, and the typology of Voice

I adopted that the SE-morpheme in SE-anticausatives acts as an expletive external argument located in the specifier of an expletive Voice projection. In this section, I turn to an analysis of SE-passives and, in particular, to an explanation for the observation (repeated below for French) that SE-passives in Romance, in contrast to canonical passives, do not license *by*-phrases.

- (27) Trois maisons se sont louées (*par des touristes) hier. (SE-passive)
 three houses SE are rented by some tourists yesterday
 ‘Three houses were rented (by some tourist) yesterday.’
 (28) Trois maisons ont été louées (par des touristes) hier. (canonical passive)
 three houses have been rented by some tourists yesterday
 ‘Three houses were rented (by some tourists) yesterday.’

Arguably, the morphosyntactic and semantic role of the SE-morpheme in SE-passives is very similar to the one in SE-anticausatives. SE-passives are clearly not semantically reflexive, and their nominative DP is arguably merged as the internal argument, which leaves the external argument position for SE. In contrast

to SE-anticausatives, however, SE-passives involve an implicit external argument, as can be diagnosed by the licensing of agentive adverbials and purpose clauses as in (29).

- (29) L'interview s'est interrompue après cinq minutes délibérément/pour manger
 the meeting SE is stopped after five minutes deliberately for eat
 un morceau.
 a piece.
 'The meeting was stopped after five minutes deliberately/in order to eat
 something.'

Revisiting the typology of Voice heads introduced in (17a–d) above shows that it falls short of capturing passives. It cannot explain the morphological difference between SE-passives in (27) and canonical passives in (28), as there is only one passive Voice head available introducing an implicit external argument. Furthermore, SE-marked medio-passives actually do not fit into this typology: (17c) provides Spec, VoiceP for SE, but it wrongly predicts the absence of an implicit agent; (17b) provides an implicit agent, but no specifier position for SE.

6.4.1 An updated typology of Voice

To capture SE-passives, I propose to update the typology of Voice heads. As before, syntactic transitivity is encoded via a D-feature on Voice (30a). "Thematic transitivity" in (16b) is replaced by "semantic transitivity" in (30b), however. (30b) makes explicit reference to an external argument variable, either one to be saturated later on, or an existentially bound one.

- (30) a. Syntactic transitivity: Voice has a D-feature to be checked by a DP in its specifier.
 b. Semantic transitivity: Voice can introduce a semantic argument either as a *variable to be saturated* later on, or as an *existentially bound variable*.

Since Voice heads can also lack a D-feature or an external argument variable, we predict the universal set of six Voice heads in (31a–f):¹²

- (31) a. Active Voice: $\{\lambda x \lambda e[\text{agent}(e, x)], D\}$ (active)
 b. Medio-passive Voice: $\{\lambda e \exists x[\text{agent}(e, x)], \emptyset\}$ (short Greek passive/
 NACT)
 c. Active expletive Voice: $\{\emptyset, D\}$ (SE-anticausative)
 d. Medio-marked expletive Voice: $\{\emptyset, \emptyset\}$ (Greek anticausative/
 NACT)

¹² "Short passive" means passive without a *by*-phrase.

- e. Transitive medio-passive Voice: $\{\lambda e \exists x [\text{agent}(e, x)], D\}$ (short SE-passives)
- f. Passive input Voice: $\{\lambda x \lambda e [\text{agent}(e, x)], \emptyset\}$ (canonical passives)

The Voice heads in (31a–d) correspond to the four Voice heads in (17a–d) in that they derive without any changes a) active sentences, b) Greek medio-passives (without *by*-phrase), c) SE-anticausatives, and d) Greek-style marked anticausatives. The heads in (31e) and (31f) are new, however.

Trans(itive) medio-passive Voice $\{\lambda e \exists x [\text{agent}(e, x)], D\}$ in (31e) allows capturing SE-marked medio-passives. The external argument variable is existentially bound, but the D-feature forces to project a specifier. An unbound, expletive SE-reflexive is the only DP that can merge there without a violation of the θ -criterion. So while the Voice head in SE-passives differs from the Voice head in SE-anticausatives—in that it is not expletive—the specifier it projects must be expletive, too, as it cannot saturate any argument variable (cf. 22b).

The structure of the short SE-passive in (32a) is then (32b). When SE merges in Spec, Voice_{trans-medio-passive} to check the D-feature, Voice agrees first with SE, but no valuation can take place. Voice further probes its c-command domain and gets valued by the theme DP.¹³ SE gets valued, thereby, indirectly, too. Since the agent variable of Voice is existentially bound, SE cannot saturate it. According to the translation mechanism in (22), SE is translated into an expletive. The semantic derivation corresponding to (32b) is given in (33a–c). First, Voice introducing an existentially bound external argument combines with the vP via event identification (33b), and afterwards the SE-expletive denoting the identity function over events takes this meaning as its input, returning exactly the same meaning (33c).

- (32) a. Trois maisons se sont louées hier.
 three houses SE are rented yesterday
 ‘Three houses were rented yesterday.’
 b. [VoiceP SE Voice_{trans-medio-passive} [_{vP} rent three houses]]

¹³ It is mentioned in the literature (e.g., D’Alessandro 2007) that the theme in Romance SE-passives must be third person. This restriction does not hold for the theme of Romance SE-anticausatives and SE-marked generic middles or the agent of SE reflexive verbs. I am not sure yet whether this is a strong pragmatic effect or a formal grammatical effect. If the latter holds true, I suggest deriving it along the lines of a proposal in Legate (2014) for passives in Acehnese, where elements adjoined to passive Voice restrict the way the implicit argument can be interpreted. If the theme of a Romance SE-passive is first or second person, the SE-reflexive in Spec, VoiceP will be realized as a first or second person pronoun because the latter is formally valued by the former. Perhaps such a pronoun in Spec, VoiceP restricts the interpretation of the implicit argument to be first or second person. This would lead to a Principle B violation along the lines discussed for canonical passives (vs. adjectival passives) in Kratzer (1996).

- (33) a. $[[vP]] = \lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]$
 b. $[[\text{Voice}_{\text{trans-medio-passive}}]] = [\lambda e \exists x [\text{agent}(e, x)] (\lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})])]$
 $= \lambda e \exists x [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$
 c. $[[\text{VoiceP}_{\text{trans-medio-passive}}]] = (\lambda P_{s,t}.P) (\lambda e \exists x [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})])]$
 $= \lambda e \exists x [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$

In order to understand why SE-passives in Romance do not allow a *by*-phrase, I will first discuss how Bruening (2012) treats canonical passives: they make crucial use of a head like the last one in the above typology, i.e., passive input Voice in (31f).¹⁴

6.4.2 Canonical passives

Bruening (2012) proposes that canonical passives, as in (34a), have the structure in (34b) with a passive projection (Pass) on top of a specifier-less VoiceP. *Passive input Voice* $\{\lambda x \lambda e [\text{agent}(e, x)], \emptyset\}$ in (31f) is exactly such a Voice head (though see fn. 15); since it lacks a D-feature, it does not combine with a DP to saturate its open variable slot.

- (34) a. Three houses were rented.
 b. $[_{TP} T [_{\text{PassP}} \text{Pass} [_{\text{VoiceP}} \text{Voice}_{\text{passive-input}} [_{vP} v \text{DP}_{\text{theme}}]]]]$

On top of this specifier-less Voice projection, a Pass head is merged. The semantics of *Pass*, given in (35), impose existential quantification over the open argument slot introduced by the Voice head below it. (35) applied to (31f) derives a standard passive meaning. (36a–c) provides the two semantic steps of combining first vP with passive input Voice, and the result with Pass.

- (35) $[[\text{Pass}]] = \lambda f_{e,st} \lambda e [\exists x. f(x)(e)]$

¹⁴ Some Romance languages have so-called impersonal SE/SI-constructions, which involve default (or, more correctly, impersonal) agreement and trigger accusative case on the internal argument DP. These must be distinguished from SE-passives because the SE/SI-element carries nominative, not accusative case, and can trigger a slightly different interpretation of the external argument (e.g., Dobrovie-Sorin 1998; D'Alessandro 2007 and references there). I suggest that they involve ordinary active Voice with an impersonal pronominal clitic '*se/si*' merged in its specifier, which simply expresses the external argument role (i.e., this clitic is lexically valued with impersonal ϕ -features just as French '*on*'). This impersonal pronominal clitic developed due to a reinterpretation of SE-passives in structures without overt manifestation of case and agreement (cf. Naro 1976; Burzio 1992). To conclude, I assume two different elements '*se/si*' with identical phonological form, one with unvalued ϕ -features and one with valued/impersonal ϕ -features similar to French '*on*'.

- (36) a. $[[vP]] = \lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]$
 b. $[[VoiceP_{\text{passive-input}}]] = (\lambda x \lambda e [\text{agent}(e, x)]) [\lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]]$
 $= \lambda x \lambda e [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$
 c. $[[PassP]] = (\lambda f e, st \lambda e [\exists x. f(x)(e)]) [\lambda x \lambda e [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]]$
 $= \lambda e \exists x [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$

Note that the application of Pass in (35) to passive input Voice in (31f) provides exactly the meaning that is lexically specified in the two medio-passive Voice heads in (31b) and (31e). Consequently, the meaning derived in (36a–c) is identical to the meaning derived in (33a–c). This means that a medio-passive head *bundles together* the functions of the *passive input* Voice head (introducing the agent role) and the *Pass* head (existentially binding the agent role) (cf. the concept of ‘bundling’ in Pytkänen 2008). In the next section, we will consider how Bruening (2012) handles *by*-phrases in canonical passives.

6.4.2.1 *Canonical passives and by-phrases* According to Bruening (2012), the external argument slot in long (canonical) passives such as (37) is not existentially bound, but it is saturated by the DP inside of the *by*-phrase. This view allows replacing the vague terminology of much earlier literature that “the *by*-phrase takes up the implicit argument of passives” with a strictly compositional treatment of *by*-phrases: the complement of *by* is the external argument of the verb semantically, though not syntactically.

(37) Three houses were rented *by the tourists*.

Bruening proposes that *by*-phrases in canonical passives adjoin to the VoiceP projected by (31f), as in (38). The meaning of *by* in (39) allows the DP inside the PP to saturate the open argument slot of (31f). Afterwards, a semantically empty variant of *Pass*, *Pass_{expletive}* in (40), merges, which also denotes the identity function over events. The full semantic derivation of a long canonical passive is given in (41a–e).

- (38) $[_{TP} T [_{PassP} Pass [_{VoiceP_2} [PP \text{ by the tourists}] [_{VoiceP_1} Voice_{\text{passive-input}} [_{vP} \text{rent three houses}]]]]]]$
 (39) $[[\text{by}]] = \lambda x \lambda f_{e, st}. \lambda e. f(e, x)$
 (40) $[[Pass_{\text{expletive}}]] = \lambda P_{s, t}. P$
 (41) a. $[[vP]] = \lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]$
 b. $[[VoiceP_1]] = [\lambda x \lambda e [\text{agent}(e, x)]] [\lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]]$
 $= \lambda x \lambda e [\text{agent}(e, x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$

- c. [[PP]] = $(\lambda x \lambda f_{e, st} . \lambda e . f(e, x))$ (the tourists) = $\lambda f_{e, st} . \lambda e . f(e, \text{the tourists})$
 d. [[VoiceP₂]] = $(\lambda f_{e, st} . \lambda e . f(e, \text{the tourists}))$ [$\lambda e \lambda x$ [agent(e, x) and rent(e) and theme(e, three houses)]]
 = λe [agent(e, the tourists) and rent(e) and theme(e, three houses)]
 e. [[PassP]] = $(\lambda P_{s, t} . P)(\lambda e$ [agent(e, the tourists) and rent(e) and theme(e, three houses)])
 = λe [agent(e, the tourists) and rent(e) and theme(e, three houses)]

Since *Pass* is expletive in (41), the question remains why it has to merge. Bruening (2012) proposes that Voice heads come with a *c*-selecting feature, searching the tree upwards, which can be checked either by a DP in Spec, VoiceP or, in the absence of such a DP, by a *Pass*-head on top of VoiceP (whether *Pass* is semantically active or expletive). For reasons of space, I refer the reader to Bruening (2012) for the technical details. The overall reasoning, however, is similar to what I proposed for SE-passives, where the projection of a (expletive) specifier is enforced by the presence of a *D*-feature on the Voice head.¹⁵

6.4.3 Greek medio-passives with and without *by*-phrase

Greek has only one passive, which is characterized as ‘medio-passive’ in the literature (e.g., Kaufmann 2001; Alexiadou and Doron 2012; Alexiadou et al. 2015; a.o.). An example without *by*-phrase is given in (42a). It involves *medio-passive Voice* ($\{\lambda e \exists x [\text{agent}(e, x)], \emptyset\}$) in (31b), which combines with the meaning of the vP, as in (43b).

- (42) a. O Janis katijori-thike.
 the John accused-NACT
 ‘John was accused.’
 b. [TP T [VoiceP Voice_{medio passive} [vP accuse the John]]]
- (43) a. [[vP]] = λe [accuse(e) and theme(e, John)]
 b. [[VoiceP_{medio-passive}]] = $(\lambda e \exists x [\text{agent}(e, x)])$ [λe [accuse(e) and theme(e, John)]]
 = $\lambda e \exists x [\text{agent}(e, x) \text{ and } \text{accuse}(e) \text{ and } \text{theme}(e, \text{John})]$

¹⁵ This means that canonical passives actually do not involve *passive input Voice* in (31f) but *active Voice* in (31a). In canonical passives, the *D*-feature of (31a) is not checked by a DP merged in its specifier, but by the *Pass* projection merged on top of (31a). The technical details are explicated in Bruening (2012). Note that the Voice head in (31f) is still needed to derive long medio-passives in Greek as discussed in section 6.4.3.

Greek medio-passives license *by*-phrases (44a). These long medio-passives must involve *passive input Voice* $\{\lambda x\lambda e[\text{agent}(e,x)], \emptyset\}$ in (31f) as this is the only Voice head that does not project a specifier and, at the same time, does not existentially bind the external argument slot so that the *by*-phrase adjoined to VoiceP can saturate this slot. (44b) provides the syntax of Greek long medio-passives, and (45a–d) gives the semantic derivation.

- (44) a. O Janis katijori-thike apo ti Maria.
 the John accused-NACT by the Mary
 ‘John was accused by Mary.’
 b. $[_{TP} T [_{\text{VoiceP}_2} [_{PP} \text{by Mary}] [_{\text{VoiceP}_1} \text{Voice}_{\text{passive input}} [_{VP} \text{accuse the John}]]]]$
- (45) a. $[[vP]] = \lambda e [\text{accuse}(e) \text{ and theme}(e, \text{John})]$
 b. $[[\text{VoiceP}_1]] = (\lambda x\lambda e[\text{agent}(e,x)]) [\lambda e [\text{accuse}(e) \text{ and theme}(e, \text{John})]]$
 $= \lambda x\lambda e [\text{agent}(e,x) \text{ and accuse}(e) \text{ and theme}(e, \text{John})]$
 c. $[[PP]] = (\lambda x\lambda f_{e, \text{st}}.\lambda e.f(e,x)) (\text{the Mary}) = \lambda f_{e, \text{st}}.\lambda e.f(e, \text{the Mary})$
 d. $[[\text{VoiceP}_2]] = (\lambda f_{e, \text{st}}.\lambda e.f(e, \text{the Mary})) (\lambda x\lambda e [\text{agent}(e,x) \text{ and accuse}(e) \text{ and theme}(e, \text{John})])$
 $= \lambda e [\text{agent}(e, \text{the Mary}) \text{ and accuse}(e) \text{ and theme}(e, \text{John})]$

Since VoiceP in both short and long medio-passives lacks a specifier, the Greek PF spell-out rule in (25) applies and produces NACT-morphology in both cases.

6.4.4 Romance SE-passives and the absence of *by*-phrases

Recall that the derivation of short SE-passives (46a) in (46b) involves $\text{Voice}_{\text{TRANS-MEDIO-PASSIVE}}$, which existentially binds the agent role and projects a specifier where expletive SE merges. The semantic derivation is repeated in (47a–c).

- (46) a. Trois maisons se sont louées hier. (short SE-passive)
 three houses SE are rented yesterday
 ‘Three houses were rented yesterday.’
 b. $[_{\text{VoiceP}} \text{SE } \text{Voice}_{\text{trans-medio-passive}} [_{VP} \text{rent three houses}]]$
- (47) a. $[[vP]] = \lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]$
 b. $[[\text{Voice}_{\text{trans-medio-passive}}]] = (\lambda e\exists x[\text{agent}(e,x)]) [\lambda e [\text{rent}(e) \text{ and theme}(e, \text{three houses})]]$
 $= \lambda e\exists x [\text{agent}(e,x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$
 c. $[[\text{VoiceP}_{\text{trans-medio-passive}}]] = (\lambda P_{s,t,P}) [\lambda e\exists x[\text{agent}(e,x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]]$
 $= \lambda e\exists x [\text{agent}(e,x) \text{ and rent}(e) \text{ and theme}(e, \text{three houses})]$

We can now answer the question as to why Romance SE-passives prohibit *by*-phrases (cf. (48)).

- (48) Trois maisons se sont louées (*par des touristes) hier.
 three houses SE are rented by some tourists yesterday
 ‘Three houses were rented (by some tourists) yesterday.’

In order to introduce a *by*-phrase, we would need a Voice head that introduces an agent role, but does not existentially bind it, so that the *by*-phrase can saturate it. The typology in (31) provides two such heads, which are repeated in (49):

- (49) a. active Voice: $\{\lambda e \lambda x [\text{agent}(e, x)], D\}$
 f. passive input Voice: $\{\lambda e \lambda x [\text{agent}(e, x)], \emptyset\}$

If we use (49f), SE cannot merge; we derive a canonical passive with *Pass* on top of Voice_{PASSIVE-INPUT}. This is possible, of course, in Romance, both with and without *by*-phrases (cf. section 6.4.2).

If we use Voice_{ACTIVE} in (49a), a DP must merge in Spec,VoiceP. If we merge a referential DP (*Jean*), we derive an ordinary active sentence (e.g., (12a)).

Assume we merge SE instead and afterwards we adjoin a *by*-phrase, as indicated in the structure in (50). When SE is merged in Spec,VoiceP, Voice will agree with SE, but no valuation takes place. Voice probes the theme, which values Voice as well as SE. Since (50) survives the formal syntactic derivation, the problem with *by*-phrases in SE-passives must be semantic in nature.

- (50) [_{TP} T [_{VoiceP}2 [_{PP} by the tourists] [_{VoiceP}1 SE Voice_{active} [_{VP} rent three houses]]]]

The semantic derivation of (50) is given in (51a–e). In (52b), vP and agentive Voice combine via event identification. Next, SE has to be integrated. Crucially, even though SE lacks a c-commanding antecedent, it acts as a semantic argument; due to the CI-translation mechanism in (22), SE is translated into a variable, which, in turn, saturates the agent slot of Voice (51c). However, since SE lacks a c-commanding antecedent in (50), it remains semantically unbound. Consequently, the agent role is not realized by a DP with a denotation. This yields a violation of the θ -criterion (51e).¹⁶ Furthermore, SE in Spec,VoiceP intervenes between Voice and the *by*-phrase adjoined to the VoiceP. The latter, thereby comes too late to saturate

¹⁶ The problem does not appear, of course, if a local antecedent is merged in ECM-style as in (ii). In this structure, a *by*-phrase would still come too late to saturate the agent role.

- (ii) Il se voit louer trois maisons.
 he SE sees rent three apartments
 ‘He sees himself renting three apartments.’

the agent slot. Consequently, the complement DP of *by* cannot be semantically integrated into the verbal event (51e) and violates the θ -criterion, too.¹⁷

- (51) a. [[vP]] = λe [rent(e) and theme(e, three houses)]
 b. [[Voice']] = $(\lambda x \lambda e [\text{agent}(e, x)]) [\lambda e$ [rent(e) and theme(e, three houses)]]
 = $\lambda x \lambda e$ [agent(e, x) and rent(e) and theme(e, three houses)]
 c. [[VoiceP₁]] = $[\lambda x \lambda e$ [agent(e, x) and rent(e) and theme(e, three houses)]] (y_{SE})
 = λe [agent(e, y_{SE}) and rent(e) and theme(e, three houses)]
 d. [[PP]] = $[\lambda x \lambda f_{e, st} . \lambda e . f(e, x)]$ (the tourists) = $\lambda f_{e, st} . \lambda e . f(e, \text{the tourists})$
 e. [[VoiceP₂]] = $[\lambda f_{e, st} . \lambda e . f(e, \text{the tourists})] [\lambda e$ [agent(e, y_{SE}) and rent(e) and theme(e, three houses)]]

To conclude, *by*-phrases are ungrammatical in Romance SE-passives, because the SE-morpheme merged in Spec,VoiceP intervenes between the *by*-phrase and the Voice head, so that the latter cannot saturate the agent role. Furthermore, the SE-reflexive, which saturates the agent role, lacks a semantic antecedent. As a consequence, the structure violates the θ -criterion twice.

6.5 Conclusions

The two characteristics of passives, introducing an external argument variable and existentially binding this variable, can either be distributed over two heads (canonical passives) or be bundled into one head (medio-passive). Medio-passives can be either syntactically intransitive/unaccusative (medio-passives in Greek) or formally transitive (SE-passives in Romance).

SE-reflexive pronouns in Romance start the derivation as {D, up}. They need to agree. If a c-commanding antecedent values them, they are translated into a bound variable. If they are indirectly valued by the DP that they c-command, they survive the syntactic derivation, although they cannot be semantically bound. If they cannot, in addition, saturate a θ -role, they are translated into an argument expletive (expletive in A-position) denoting the identity function over events.

In short SE-passives, Voice comes with an existentially bound agent role and SE merged in the specifier of VoiceP is translated into an expletive. SE-passives in Romance lack *by*-phrases, because SE would saturate the agent role. The *by*-phrase adjoined to VoiceP would remain without θ -role (and SE without a semantic antecedent).

¹⁷ Note that DP inside of the *by*-phrase cannot bind (i.e., agree with) SE in Spec,VoiceP (though it could, in the absence of SE, saturate the argument slot in Voice). It is an empirical fact that SE-reflexives cannot be bound out of PPs. Furthermore, since the DP inside of the *by*-phrase lacks a θ -role, binding would not provide a real semantic antecedent for the reflexive.

Acknowledgments

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7

The articulated v layer: evidence from Tamil

SANDHYA SUNDARESAN AND THOMAS MCFADDEN

7.1 Introduction

This chapter contributes to the ongoing discussion of the proper analysis of the clausal region immediately above the verb, arguing that we need to recognize not just one or two functional heads, but a full layer of structure corresponding to Kratzer's (1996) Voice or Chomsky's (1995) v . This layer should include at least four functional heads arrayed above the root, as in (1):

(1) Pass(ive) > Mid(dle) > Voice > v_{cause} > $\sqrt{\text{ }}$

The primary evidence for this proposal comes from the Dravidian language Tamil, which is extremely informative due to its highly inflecting, agglutinative nature, and its flexibility in combining together distinct elements traditionally subsumed under the heading of 'voice.' Employing standard Mirror Principle reasoning, we can use the rigidly ordered sequences of verbal suffixes that the language supplies to argue for a specific hierarchy of syntactic heads.

7.1.1 Background

A body of work in the late 1980s and early 1990s uncovered evidence for a syntactic position or positions above the location of the main verb in V, but below the representation of tense and agreement in Infl. As the arguments for the position were largely syntactic, and could not easily be correlated with familiar morphological or semantic categories, the identity of this head (and whether there was just one or several) remained controversial and unclear, alternatively being labeled as Pr(ed), μ , or an additional segment of a layered VP structure (see e.g., Larson 1988; Pesetsky 1989; Johnson 1991; Bowers 1993).

In a seminal paper, Kratzer (1996) motivated the existence of such a head on semantic rather than just syntactic grounds. She argued that the special status of external arguments as opposed to internal arguments (established e.g., by Williams 1981; Marantz 1984) could not be sufficiently accounted for if they were simply specifier and complement of a single syntactic object. Rather, a more radical solution was called for, whereby only the traditional internal argument is syntactically an argument of the verb, and the external argument (EA) is introduced by a distinct (functional) head. Kratzer labels this head Voice, associating it with traditional voice phenomena (i.e., passive vs. middle vs. active) and the assignment of structural accusative case, and suggesting that it is responsible for the various syntactic facts discussed by the previous authors.

Subsequent work adopted Kratzer's basic proposal, sometimes preferring the label ν introduced by Chomsky (1995). An array of additional functions were associated with this functional head, including causative and eventive semantics (Pylkkänen 2002), information related to inner aspect or Aktionsart (Ramchand 2008), and the verbalization of category-neutral roots (Marantz 1997). This led to the obvious question of whether a single head could in fact be responsible for so many distinct syntactic and semantic phenomena. Work on causative constructions and alternations in particular (see e.g., Pylkkänen 2002; Alexiadou et al. 2006) uncovered convincing evidence that a single Voice/ ν head as assumed in earlier work would not do, and must be split into two projections. The lower one—usually labelled ν or Caus(e)—is responsible for causative/eventive semantics and for the verbalization of non-verbal structure below. The higher one—usually labelled Voice—is responsible for the introduction of the EA, for agentive semantics and for the traditional “voice” phenomena. The arguments for this move come primarily from how causative/inchoative alternants and various passive types differ in their semantics and in their ability to combine with particular modifiers and PPs. Harley (2013) bolsters this analysis with clear morphosyntactic evidence from Hiaki. In this language, an applicative suffix appears morphologically outside the causative suffix, hence by the Mirror Principle Baker (1985) the applicative is assumed to be above the causative head hierarchically. Yet the argument introduced by the applicative is asymmetrically c-commanded by the EA, so the latter must be introduced by a head higher than the applicative. Since the causativizer is below the applicative, and the head that introduces the EA must be above the applicative, they must be distinct heads. In Harley (this volume), Harley reviews the Hiaki data from Harley (2013), as well as data from Turkish and Korean causatives, to explicitly argue for a pure Caus head that is categorically and morphologically distinct from a verbalizing ν head. Alexiadou and Lohndal (this volume) argue on the basis of differences in how the meanings of roots are determined in English, Greek, and Hebrew that ν must play different roles in different languages and therefore must be distinct from the head that introduces

external arguments (see also Harley this volume; Wood and Marantz this volume; Ramchand this volume). Other recent work (e.g., Collins 2005; Bruening 2012; Alexiadou and Doron 2012; Alexiadou et al. 2015) has uncovered further syntactic, semantic, and comparative evidence that the passive, at least in some languages, involves a dedicated Pass(ive) head above the head that introduces the EA. Schäfer (this volume) argues that in canonical passives, the lower of these two heads introduces an external argument variable, while the upper head existentially binds the variable, but that there is also a second kind of passive (which he calls the medio-passive) in some languages that bundles these two functions into a single head.

7.1.2 *Contribution of this chapter*

This chapter aims to contribute to this evolving discussion by introducing novel data from Tamil, which provides transparent morphological evidence for even further articulation in this layer of the clausal structure (see also Harley this volume; Ramchand this volume for other arguments and discussions to this effect, from the morphosyntactic and syntactico-semantic perspectives, respectively). Tamil is a highly inflected, agglutinative language, in which a typical verbal form involves a series of functional morphemes with a rigid relative ordering. For example, the form *oḷekkæpaṭṭadū* ‘(it) was broken’ breaks down as follows:

- (2) **oḷæ-** ‘break’
-kkæ- transitive
-paṭ- passive
-ṭ- past
-adū 3sg neuter agreement

The possible combinations and orderings of such morphemes will allow us to make clear proposals about the underlying functional sequence, based on standard Mirror Principle argumentation.

We will specifically argue for the existence of four heads, responsible respectively for the syntax and semantics of causativity, transitivity, ‘get’-like middles, and the passive, all of which can—perhaps surprisingly—co-occur. The hierarchy is as in (3):

- (3) Pass(ive) > Mid(dle) > Voice > v_{cause} > $\sqrt{\quad}$

As such, we contend that it is appropriate to talk about an articulated *layer* or *domain* of Voice/ v material rather than just one or even two heads—much along the lines of the articulated C layer/domain proposed within the cartographic framework (Rizzi 1997, etc.). In this sense, our conclusions have much in common with those in Harley (this volume) who ultimately also sketches a cartographic model of verbal projections, with the locus of parametric variation lying solely in the “bundling” or “spanning” of these (sets of) features/projections.

We start our investigation with the innermost, v_{cause} head, in Section 7.2, and work our way outward, moving to the Voice head in Section 7.3 which introduces the EA, and then in Section 7.4 the morpheme *kol*, ending in Section 7.5 with the highest head in the sequence, Pass, which builds the Tamil passive. We see how the entire sequence of morphemes fits together in Section 7.6, which provides the final justification for our contention that the v domain in Tamil involves a single functional sequence containing at least four distinct, rigidly ordered heads. Finally, in section 7.7, we consider, and reject, two possible alternative analyses suggested by a reviewer.

7.2 The v_{cause} head

With most verbs in Tamil, there is no distinct overt realization of causative-eventive semantics or verbalization. However, we do see an overt morpheme playing this role when an adjective is verbalized. (4a) shows that a basic adjective like *segappū* ‘red’ can be used uninflected and without a copula as the main predicate of a clause, with a purely stative meaning. In (4b), we see an inchoative built on this by the addition of the suffix *aag-* (glossed simply as CAUS for ‘light verb’).¹

- (4) a. Maangaa segappū.
 mango red
 ‘The mango is red.’
 b. Maangaa segapp- aag- i- ččū.
 mango red- CAUS.INTR- PST- 3NSG
 ‘The mango became red.’

The *aag-* morpheme verbalizes the structure, which can then, for example, be inflected for tense and subject agreement as in (4b). It also introduces the causative-eventive semantics, yielding a caused change of state, without indicating that this cause necessarily involves an Agent.

We thus seem to have an instance of the v or Caus(e) head argued for by Pyllkkänen (2002), Alexiadou et al. (2006), and Harley (2013). We will call it v_{cause} to make its dual function clear, and assume that it appears directly above the root (understood in the sense of Marantz 1997, and other work within Distributed Morphology).² We will adopt the common assumption that this head is generally

¹ We use the Leipzig Glossing Rules and the associated standard abbreviations, as detailed here: <<https://www.eva.mpg.de/lingua/resources/glossing-rules.php>>. We additionally use the abbreviations ANAPH for anaphor and MID for middle.

² We are not so concerned here with the details of the analysis of roots and the structures they appear in. Nor are we taking any strong position on whether roots can take arguments. For concreteness, we will draw our trees such that internal arguments appear as complements of the root, but we are not committed to this position.

present with caustive change-of-state predications, but just happens to have a null realization with most basic verbs, as in (5):

- (5) Pustagam ki.ɟi- Ø- nɕɟ- adũ.
 book.NOM tear- CAUS- PST- 3NSG
 ‘The book tore.’

We thus have structures like the following:

- (6) a.
 b.

7.3 The Voice head

In this section, we will discuss the rather interesting evidence provided by Tamil for a Voice head introducing the EA. We will start by working through the basic morphosyntactic evidence, which involves a certain amount of morphophonological complexity, and then focus on the distinction between Voice and v_{cause} .

7.3.1 Motivating Voice

Let's compare the basic inchoative sentence from above, repeated in (7a), with its transitive counterpart in (7b):

- (7) a. Sattæ segapp- aag- i- ččũ.
 shirt red- CAUS.INTR- PST- 3NSG
 ‘The shirt became red.’
 b. Seetha sattæ - jæ segapp- aakk- in- aa].
 Seetha shirt- ACC red- CAUS.TR- PST- 3FSG
 ‘Seetha made the shirt red.’

(7b) has an agentive interpretation: not only did the shirt become red, but *Seetha* was responsible for this happening. Morphologically, (7b) is built on the *aag-* morpheme, just like its inchoative variant, and it also inflects for tense and agreement. The crucial overt distinction is that, while the former involves the v_{cause} morpheme *aag-* in its bare form, the latter involves a geminated variant of it: *aakk-*.

Indeed, transitivity alternations in Tamil are quite typically marked by exactly such alternations in the presence of gemination, involving either the final consonant (cluster) of the verb itself or the immediately following suffix. In either position, a simplex consonant in the intransitive is geminated in the transitive, in turn triggering phonologically regular devoicing and (potentially) cluster simplification. Thus the unaccusative form of ‘break’ is *oɖæ-ndʒ* in the past, with a voiced nasal + obstruent cluster as the past marker, as in (8), whereas the transitive form is *oɖæ-čč*, with a voiceless geminate, as in (9):

(8) **Unaccusative:**

Paanæ oɖæ- ndʒ- adũ / *oɖæ - čč- adũ.
 Pot break- INTR.PST- 3NSG/ *break- TR.PST- 3NSG
 ‘The pot broke.’

(9) **Transitive:**

Sri paanæ- jæ oɖæ- čč- aan/ *oɖæ- ndʒ- aan.
 Sri pot- ACC break- TR.PST- 3MSG/ *break- INTR.PST- 3MSG
 ‘Sri broke the pot.’

Further examples showing different variants of the alternation are provided in Table 7.1, either affecting the root itself (above the horizontal line) or affecting a following suffix (below the line).

TABLE 7.1. Unaccusative and transitive forms

	Translation	Unaccusative past	Transitive past
1.	SHRINK	surung-in-	surukk-in-
2.	MELT	urug-in-	urukk-in-
3.	RUN	ooɖ-in-	ooɖ[ɬ-in-
4.	BREAK	oɖæ-ndʒ-	oɖæ-čč-
5.	GROW	vaɭar-nd-	vaɭar-tt-
6.	BURST	vedʒi-ndʒ-	vedʒi-čč-

Where in the complex verbal form the gemination is realized seems to be regulated by the following generalization. When the verb stem (i.e., verbal root + any verbalizing heads, like *v_{cause}*) ends in a geminable consonant, this is geminated and devoiced, with subsequent cluster simplification, as in examples 1–3 in Table 7.1. When the verb ends in a non-geminable segment—either a vowel or a consonant that does not permit gemination—then the immediately following suffix is affected, as in

examples 4–6 in Table 7.1. Given the region of clause structure involved here, this is typically a tense/aspect or infinitival marker.

In order to understand what the syntactic correlate of a morphophonological process might be, we will adopt the general approach of Bye and Svenonius (2012), who argue that patterns which have typically been analyzed in terms of morphological processes (and indeed have been presented as evidence for process-based morphology) can, in fact, be profitably analyzed as piece-based. The pieces involved just happen to have phonologically underspecified forms that trigger phonological operations. For the specifics of the Tamil transitivity alternation, we follow Christdas (1988), who proposes that the transitive variant involves a highly underspecified affix, consisting solely of a consonant slot—call it /C/—with no specification for place or manner of articulation. The missing feature values are then copied autosegmentally from the closest eligible consonant slot, deriving the apparent mobility of the alternation according to the shape of the verb. The result will, in any case, be gemination, which triggers the further phonological rules of devoicing and cluster simplification (see Christdas 1988, for details). Under this approach, the transitivity alternation is thus the result of fully concatenative morphology, not a morphologically triggered “process” of gemination. This is crucial because it means that once we get past the surface phonological complexity, we can take the abstract morphology behind it to transparently reflect syntactic structure. We can argue in particular that /C/ is the phonological realization of a syntactic head.

Based on its syntactic and semantic role in tracking transitivity, this is specifically the head that introduces the EA in its specifier, similar to the Voice head of Kratzer (1996). We will adopt this label for this head though we will see that it differs in a number of respects from Kratzer’s original proposal, for example in not being responsible for passivization. Our Voice head is perhaps also more like Ramchand’s (2008) Init head, and unlike certain interpretations of Kratzer’s Voice, in that the external arguments it introduces are not restricted to Agents, but may also include Causers, as illustrated below:

- (10) a. Pojal čannal- æ oɖæ - čč- adũ.
 storm window- ACC break- TR.PST- 3NSG
 ‘The storm broke the window.’
 b. Raman čannal- æ oɖæ - čč- aan.
 Raman window- ACC break- TR.PST- 3MSG
 ‘Raman broke the window.’

This is in line with the crosslinguistic generalization that the verbs that participate in the transitive-inchoative alternation are those where the EA can be an Agent or the Causer (Alexiadou et al. 2015). At the same time, our Voice head is unlike

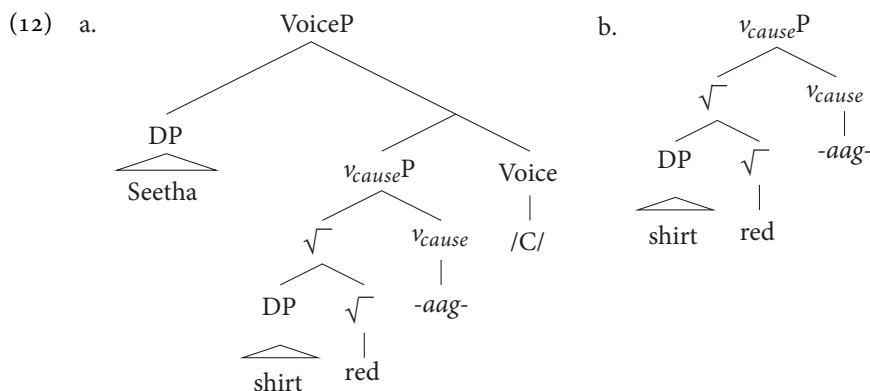
Ramchand's Init head in that we are assuming, at least provisionally, that the intransitive, inchoative structures alternating with transitives lack it, which is why they never show the gemination triggered by /C/. This is more in line with for example, Alexiadou et al.'s (2015) analysis of unmarked anticausatives as lacking Voice.³ In fact, we will see that our notion of Voice is essentially the same as that of Alexiadou et al. (2015).

Regarding its structural position, the verbal sequences in (8) and (9) show us that Voice occurs above the root and below T and Agr. Sentences like that in (11), repeated below, where the v_{cause} morpheme is overt, allow us to be even more precise:

- (11) Seetha sa[tʃæ - jæ perid- aakk- in- aa].
 Seetha shirt- ACC large- CAUS.TR- PST- 3FSG
 'Seetha made the shirt large.'

(11) shows that the gemination occurs on the right of the v_{cause} head, i.e., it applies to v_{cause} rather than the root below it. By straightforward Mirror Principle reasoning, this in turn means that Voice must be merged above v_{cause} .

We thus envision that a sentence like that in (11) would have the structure in (12a). Again, the corresponding inchoative sentence would have the structure in (6a), repeated below as (12b) for comparison:



The unaccusative variant in (12b) is basic, containing less structure and less overt phonological material. The root and following suffix will thus have their ungeminated default forms. In (12a), the presence of the /C/ realizing the Voice head will lead to gemination, either of the root or of the next morpheme that comes above it. In the case of *oqæ* 'break,' which ends in a vowel, it will be the latter.⁴

³ The alternative, of course, would be to assume that Voice is always present, but has no phonological realization when it does not project a specifier.

⁴ The placeless consonant /C/ is apparently not the only exponent of the Voice head. As in most languages, not all verbs that participate in the causative-inchoative alternation use the same kind of

7.3.2 Voice vs. v_{cause}

Our proposal in this section is in line with much recent work on argument structure (see e.g., Pyllkkänen 2002; Alexiadou et al. 2015) which has presented syntactic and semantic evidence that the head introducing causativity is distinct from that introducing the EA. The main motivation for this position is the observation that inchoatives crosslinguistically include the same causative-eventive semantics as their transitive counterparts, despite lacking EAs. As discussed earlier, Harley (2013) has also presented morphosyntactic evidence involving the interaction of applicative and causative material in Hiaki to this effect. The Tamil data presented above constitutes clear morphological evidence of another nature for this view. The sequence showing that the transitivity-encoding gemination follows and is distinct from the overt causative morpheme *-aag-* establishes that they encode two distinct heads.

We have also followed the work just cited in assuming that the v_{cause} head doesn't project a specifier. This means that even a Causer argument such as *pojal* ('storm') in a sentence like (10a) must be externally merged in Spec-VoiceP, just like the Agent Raman in (13b), not in Spec- v_{cause} P.

- (13) a. *Pojal čannal- æ oɖæ - čč- adũ.*
 storm window- ACC break- TR.PST- 3NSG
 'The storm broke the window.'
- b. *Raman čannal- æ oɖæ - čč- aan.*
 Raman window- ACC break- TR.PST- 3MSG
 'Raman broke the window.'

One indication that this is correct is the fact that Agents and Causers in transitive change-of-state structures occur in complementary distribution. This makes sense if the two are competing for a single slot in Spec-VoiceP, but would be somewhat surprising if Voice and v_{cause} each had an argument slot.

Still, it's not obvious why it shouldn't be possible to introduce a DP in the Spec- v_{cause} P in the *absence* of an additional Agent. Assume for the moment a model including thematic raising as in Ramchand (2008), where an argument may move from one thematic position to another and pick up multiple θ -roles (requiring the assumption that one half of the classic θ -Criterion is incorrect). We could then imagine that the Causer argument can be externally merged in the specifier of v_{cause} P and thematically raised from here to Spec-VoiceP, ending up as Agent and Causer simultaneously. Having two distinct DPs simultaneously—one an Agent and the other a Causer—could independently be ruled out by case concerns or the like.

morphological marking (see Alexiadou et al. 2015 and the long history of work cited there). In Tamil, verbs like *tara* 'open,' don't explicitly mark either variant, so Voice must simply be null here. Interestingly, the majority of non-alternating transitive verbs do seem to show a reflex of gemination, as would be expected if they also have Voice spelled out as /C/.

Here again, Tamil provides morphological evidence from gemination against such a possibility. It really seems that the v_{cause} head cannot project a specifier of its own. First, if arguments could be introduced in Spec- v_{cause} P without further thematic raising, sentences of the following type should be possible—contrary to fact:

- (14) *Pojal čannal- æ oɖæ- nɖɟ- aɖũ.
 storm.NOM window- ACC break- INTR.PST- 3NSG
 ‘The storm broke the window.’

Pojal would be externally merged in Spec- v_{cause} P but not raise any further, because there is no higher Voice projection, as indicated by the non-geminated intransitive verb form. We could thus have a transitive clause without the gemination associated with Voice, as long as the EA were restricted to a Causer role. However, (14) is completely ungrammatical, and the only way to save it is by using the geminated form of the verb (as in (13a)). In other words, if you want to have an EA, you need the gemination-triggering Voice head to host it. It cannot be the case that the Causer is externally merged in Spec- v_{cause} P and stays there.

Now, we could imagine that the problem with (14) is not that the Causer is introduced in Spec- v_{cause} P, but that it remains there. That is, we could still analyze the grammatical variant of (14) with gemination in (13a) as involving thematic raising of the Causer from Spec- v_{cause} P to Spec-VoiceP, with this raising being obligatory for some reason. We can show, however, that this alternative is also unviable. If internal Merge to Spec-VoiceP in this manner were possible, we would falsely predict (15) to be grammatical.

- (15) *Raman surukk- in- aan.
 Raman.NOM shrink.TR- PST- 3MSG
 ‘Raman shrank.’ (Literal)
 ‘Raman_i shrank himself_i.’ (Intended)

Under a Ramchand (2008)-style analysis, *Raman* would be merged as the internal argument of ‘shrink’ where it would be assigned the θ -role of Patient, potentially thematically raise to Spec- v_{cause} P where it would receive the θ -role of Causer, and then further thematically raise to Spec-VoiceP where it would be interpreted as the Agent of the shrinking. These movements would yield a reflexive-like interpretation without any overt anaphor or other reflexive-like marking, and the presence of the Voice head would ensure that we get the geminated form *surukk-* of *surug-* (‘shrink’). Again, however, (15) is impossible, and so it seems we must rule out thematic raising to Spec-VoiceP from below.

As such, the correct structure is indeed the one proposed here: v_{cause} doesn’t project a specifier, and both Agents and Causers are externally Merged in Spec-VoiceP. The differences between them may then have to derive from two

different flavors of Voice as suggested by Alexiadou et al. (2015), both of which happen to be possible in structures of this type.

7.4 The middle suffix *ko*

The next morpheme that can occur in the *v* domain of the Tamil verbal sequence is referred to in the Dravidian literature simply as *ko*, based on its form. We will follow this practice initially for convenience, but will ultimately argue that it is a middle marker and adopt the label ‘Mid.’ In this section, we will first discuss its distribution and establish its structural status, and then say something about its semantic function, based on the detailed discussion in Sundaresan (2012).

7.4.1 The morphosyntactic basics of *ko*

Perhaps the most typical environment for *ko* is with reflexives. Indeed, clauses involving co-argument reflexivity usually require *ko* to be suffixed to the verb, as shown in (16):

- (16) Sri_i tann- æ_{i,*j} adi- čč- kko- ŋd- aan/ *adi- čč- aan.
 Sri ANAPH- ACC hit- TR- ko/- PST- 3MSG/ *hit- TR- 3MSG
 ‘Sri_i hit himself_{i,*j}.’

ko is also frequently found suffixed to unaccusatives, as in (17) below:

- (17) Marakki[æ (sumaj- læ) va[ændʒ- kko- ŋd- adü.
 Tree branch.NOM weight-LOC bend.INTR- ko/- PST- 3NSG
 ‘The tree branch bent (under its weight).’

The distribution of *ko* seems initially reminiscent of the (partial) syncretism between reflexive and unaccusative structures observed in Greek, Slavic, Romance, and German (Sportiche 1998; Embick 2004; Schäfer 2008a; Medová 2009; a.o.). Tamil would thus seem to lend additional support to popular analyses according to which reflexives and unaccusatives share a structural subcomponent, and we could take *ko* to be another instantiation of the Voice head (see Lidz 2001 et seq. for such a proposal for *ko* in the related language, Kannada).

However, closer inspection reveals that the distribution of *ko* in Tamil is independent of the valency of the predicate. Firstly, *ko* is actually optional on unaccusatives: thus, (17) may licitly occur without *ko* and would retain its inchoative semantics even in its absence:

- (18) Marakki[æ (sumaj- læ) va[æ- ndʒ- adü.
 Tree branch.NOM weight-LOC bend- PST.INTR- 3NSG
 ‘The tree branch bent (under its weight).’

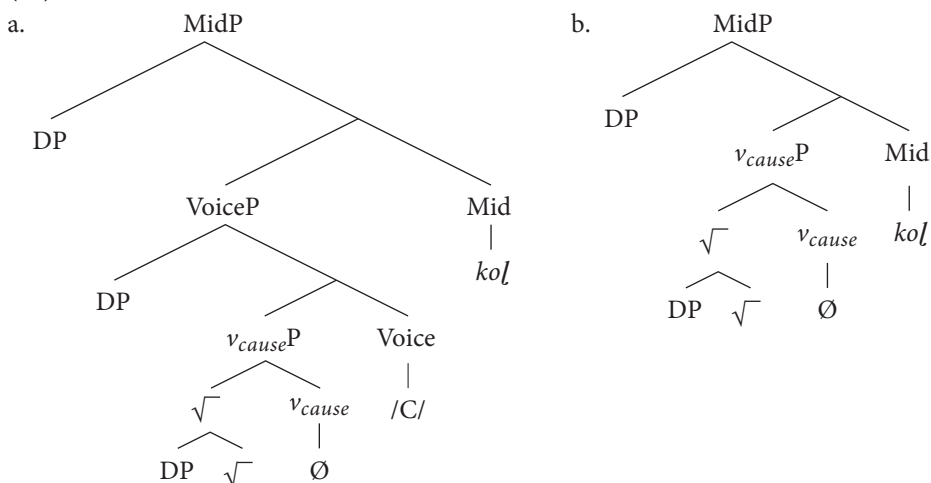
This is very different from the situation in languages like Romance or German, where verbs of the relevant classes can only appear as inchoatives with the reflexive-like marking. Secondly, *koɭ* not only appears on reflexives and unaccusatives but may also be suffixed, again optionally, onto non-reflexive transitives. This is illustrated below in (19), where *koɭ* occurs on the transitive counterpart of (17):

- (19) Sudha marakkiɭæ- jæ vaɭæ- ččü- kko- ɳɳ- aaɭ.
 Sudha.NOM tree branch- ACC bend- TR- *koɭ*- PST- 3FSG
 ‘Sudha bent the tree-branch.’

Finally, there is morphological evidence that *koɭ* spells out a head distinct from Voice, coming again from gemination. *vaɭæ-ɳɳü-kko-* in intransitive (17), contrasts with *vaɭæ-ččü-kko-* in transitive (19). Crucially for us, *koɭ* in these forms appears *after* the aspect morpheme *-ɳɳ/čč-* where the gemination alternation is realized. This discussion shows that, regardless of how *koɭ* is ultimately analyzed, its distribution is independent of the valency of the predicate it attaches to, and independent of the gemination alternation that we have analyzed as realizing Voice.

We thus conclude that *koɭ* spells out an independent head which we’ll call Mid for “middle” a label we’ll motivate below. Syntactically speaking, Mid must be higher than Voice (as per the Mirror Principle) since it linearly succeeds the gemination that realizes Voice. Thus, we can posit the preliminary templatic structure in (20a) for a transitive structure with *koɭ* and that in (20b) for an intransitive *koɭ* structure:

(20)



7.4.2 On the “middle-like” nature of *ko*l

The meaning contribution of *ko*l is best understood by comparing minimal pairs of sentences with and without it, as below:

- (21) a. Mansi paal- æ uutt- in- aa].
 Mansi milk- ACC pour.TR- PST- 3FSG
 ‘Mansi poured the milk.’
 b. Mansi paal- æ uutti- kko- -ŋd aa].
 Mansi milk- ACC pour.TR- *ko*l- PST- 3FSG
 ‘Mansi poured the milk for herself.’ (Reading 1)
 ‘Mansi poured the milk on herself.’ (Reading 2)

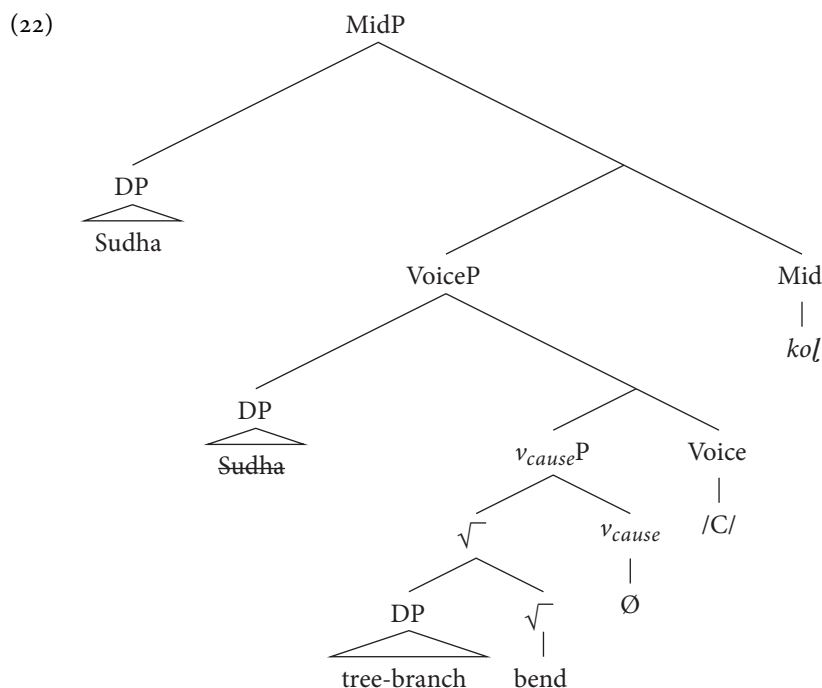
(21a) has the straightforward meaning that Mansi poured milk. The addition of *ko*l to the verb in (21a) adds the sense that Mansi poured the milk *for* herself or, alternatively, that she poured the milk *on* herself (accidentally). That is, *ko*l contributes a reading of affectedness—that the end result of the pouring event affects the Agent Mansi in some way—a meaning that has often been considered a hallmark of certain types of middles (Kemmer 2003). Sundaresan (2012) further argues that the difference between Reading 1 and Reading 2 in (21b) has to do with whether the affectedness is interpreted in a mental or physical sense, yielding self-benefactive or “patient-like” readings, respectively.⁵ In unaccusatives, the addition of *ko*l contributes the same kind of affectedness reading, but this applies not to an EA (which is of course lacking), but to the internal argument. In both types of structure, the addition of *ko*l yields what has been described as a kind of “rebounding” effect (again, common with middles, see Kemmer 2003): the end result of some event comes back to affect one of the arguments of that same event. If the event is transitive, the argument that this rebounding goes back to is the Agent; if the event is inchoative, this is the Patient.

Bolstered by a survey of a range of *ko*l-sentences among several native speakers of Tamil, and an investigation of the distribution of *ko*l across the Levin (1993) verb-classes, Sundaresan (2012) models this intuition in two steps. Firstly, she proposes that the affectedness semantics of *ko*l applies as a θ -role to the argument that is merged in its specifier. Secondly, this argument must be internally, not externally, merged. This, indeed, is what yields the rebounding effect, ensuring that the meaning of *ko*l will affect an individual that is already a participant of the main event. Working within the Ramchand (2008) model of thematic raising, Sundaresan thus

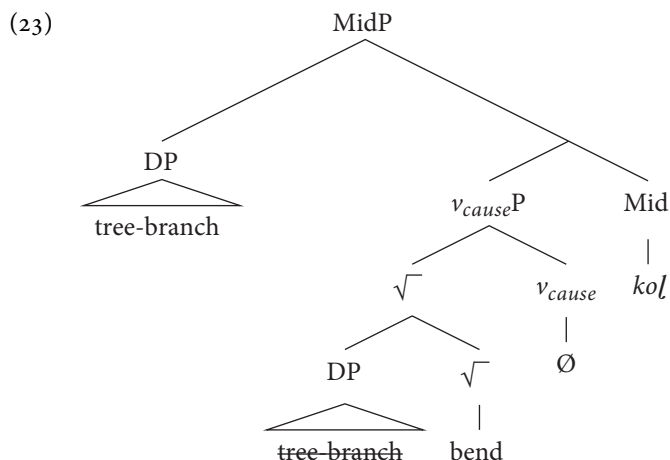
⁵ The meaning of *ko*l itself is underspecified as to this: the context and lexical semantics of the verb condition to what extent the affectedness is understood along the mental vs. physical planes.

proposes that the highest argument of the main event in the scope of the Mid head—i.e., the closest DP—is thematically raised to its specifier. In a transitive like (21b), the highest argument is the externally merged DP *Mansi* in Spec-VoiceP. This DP gets an Agent θ -role from Voice and then receives an additional θ -role—namely, a particular type of affectedness role from Mid (see also Wood and Marantz this volume for discussion of multiple θ -role assignment with respect to “figure reflexives” in Icelandic). The interpretation of (21b) is that the result state of the event of *Mansi* pouring milk comes to affect *Mansi* mentally or physically—and corresponds to the paraphrases given in Readings 1 and 2.⁶ Finally, Sundaresan (2012) also argues that this rebounding effect of *ko*l, yielding an affectedness semantics, subsumes the kind of perspective-holding that anaphoric antecedence in Tamil requires, which is why *ko*l is typically required in structures involving co-argument anaphora.

Given this discussion, we can now flesh out the templatic structure for the transitive as follows:



⁶ As may be deduced from this discussion, *ko*l attaches to the result state of an eventive verb. The aspectual morpheme that always appears immediately below *ko*l is involved in realizing the relevant resultativity. For further discussion of this and other points and for a formal lexical entry for *ko*l, see Sundaresan (2012).



As described above, the EA in Spec-VoiceP internally merges to Spec-MidP in (22), whereas in (23), it is the internal argument that does so. In both cases, it is the minimally closest DP to Mid that undergoes this movement.⁷

7.5 A dedicated passive head

As noted at the outset, a number of recent works have proposed that, at least in some languages, there is a dedicated passive head, distinct from and higher in the structure than the head responsible for introducing the EA (Bruening 2012; Alexiadou and Doron 2012; Alexiadou et al. 2015). What Alexiadou et al. (2015) specifically argue is that there are two different ways to construct a passive, exploited crosslinguistically. The passive in Greek simply involves a particular flavor of Voice head, which is agentive but specifierless, thus cannot introduce an EA. The passive of English and German, on the other hand, involves a dedicated Passive head above a specifierless Voice.

Distinguishing two different structures is motivated by a series of empirical differences in passives in these languages. Briefly, the Greek passive is restricted in terms of what verbs it can apply to, the overt realization of the *by*-phrase EA is heavily restricted, and the passive is also morphologically identical to (one class of) inchoatives. The passives of languages like German and English clearly differ on all these points. Alexiadou et al.'s (2015) analysis captures these differences as follows. Firstly, since the Greek passive is localized in Voice, while the English passive is localized further out in Passive, the former is closer to the root and thus can be

⁷ Incidentally, Tamil *kol* finds parallels in the middles of languages like Ancient Greek (Elena Anagnostopoulou, p.c.). Anagnostopoulou and Sevdali (2015) report that “the presence of middle morphology . . . does not signify a change in the argument structure of the verb, but rather the fact that the subject is affected to a greater extent by the action denoted by the predicate” (p. 13)—which seems to closely parallel our own intuitions about *kol*.

sensitive to properties of the verb. The English passive, on the other hand, will be sensitive to Voice itself—if a verb can build a transitive with an EA in Spec-VoiceP, it can also form a passive. The inclusion of active Voice internal to the passive structure in English also explains why the passive *by*-phrase seems to be sensitive to the thematic properties of the EA of the corresponding active transitive. As for the morphology, both the Greek passive and the relevant class of inchoatives simply involve a specifierless Voice head, which is realized as non-active morphology. The only difference between them is the agentivity of that head, which itself has no morphological effects. The English passive, on the other hand, has an additional Passive head on top of Voice which is not present in inchoatives, and thus can be expected to have a distinct morphological realization.

Let us consider, then, how the Tamil facts fit in against this background. The passive is formed in Tamil by means of an overt suffix *-paɻ-*. Regarding the ability to passivize, there do not seem to be any restrictions like those found in Greek: an initial survey of verbs with meanings like ‘break’, ‘lengthen’, ‘beat’, ‘kick’, and ‘burn’, which resist passivization in Greek, shows that they are all able to passivize in Tamil. There also do not seem to be any parallel restrictions on the θ -role of the Tamil equivalent of *by*-phrases, which is instrumental case marking. Finally, the Tamil passive is clearly distinct morphologically from any class of inchoatives in the language, again having the dedicated marker *paɻ-*. We thus have strong indications that the Tamil passive should be regarded as being of the same type as that in English and German, and distinct from that in Greek.

Even clearer morphological support for the analysis of the Tamil passive in terms of a syntactic head that is distinct from and higher than the head that introduces EAs comes again from the gemination alternation. Consider the passive sentence in (24a):

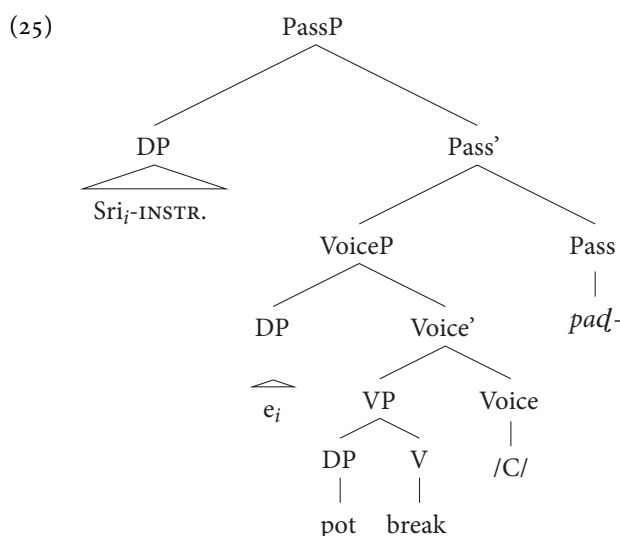
- (24) a. (Sri- aal) paanæ oɻæ- kkæ- paɻ- t- aɖũ.
 (Sri- INSTR.) pot.NOM break- TR.INF- PASS- PST- 3NSG
 ‘The pot was broken (by Sri).’
 b. *(Sri- aal) paanæ oɻæ- jæ- paɻ- t- aɖũ.
 (Sri- INSTR.) pot.NOM break- INTR.INF- PASS- PST- 3NSG

This example is instructive on two points that are relevant for our concerns. Firstly, it shows that the passive suffix has to be added to the specifically transitive alternant of the verb, here *oɻæ-kkæ-*, while the use of the intransitive stem *oɻæ-jæ-*, as in (24b) is ungrammatical.⁸ This lends support to the view (espoused by Embick 2004, and

⁸ Note that the passive additionally involves a suffix (*kkæ-* in (24a)) traditionally labelled ‘infinitive’, between *-paɻ-* and the verbal root. As the closest suffix to the root, it happens to be where the gemination alternation is realized with roots like *oɻæ* that can’t host the /C/ themselves. It seems to make at best a limited syntactic and semantic contribution, and may indeed be inserted for purely morphological reasons. We will thus set it aside for the time being, returning to it briefly towards the end of the chapter.

many others) that passives are more agentive than unaccusatives in a clear sense. The former involve a fundamentally transitive agentive structure, the expression of whose EA is suppressed, while the latter do not have the structure to host an external argument to begin with.

Secondly, (24a) shows that the passive marker appears *outside* the verbal structure to which the gemination alternation applies, being transparently built on top of the transitive structure, not, so to speak, beneath it. This is most elegantly captured by proposing, in line with the Mirror Principle, that there is a head spelled out by the marker *-paɻ-*, call it Pass, which is above Voice in the syntactic structure. This results in further articulation in the *v* domain, as illustrated in (25), for the moment setting aside the Mid head.⁹



The evidence adduced by Collins (2005), Bruening (2012), Alexiadou and Doron (2012), and Alexiadou et al. (2015) for distinguishing a Pass head from the Voice head was primarily syntactic and semantic, much of it theory internal or based on the need to capture comparative distinctions between languages. The available morphological evidence was at best indirect. What we don't find in the languages they considered is a clear and distinct expression for each of the two heads involved, where the lower of the two heads, responsible for introducing EAs, is clearly identifiable in both passive and active transitive sentences. This is precisely what the Tamil data in (24) above do provide. We have a suffix *paɻ-* realizing the Pass

⁹ The correct analysis of where and how the oblique-marked EA is introduced in passives is a matter of debate, which we will discuss below, but will not attempt to resolve. For concreteness we are placing it in Spec-PassP here, coindexed with an empty category in Spec-VoiceP to indicate that it corresponds to the DP introduced in Spec-VoiceP in active transitives.

head, and we have a morpheme /C/ triggering gemination, which we have argued realizes the Voice head that introduces EAs, and appears in both active transitives and passives. The ordering between these morphemes is fixed, showing that the Pass head must occur above the Voice head. These facts make it increasingly difficult to maintain, for languages like Tamil, that a single Voice head is responsible for both the introduction of the EA and passivization.¹⁰

7.6 The full sequence

We have now seen two markers that appear above Voice (middle *kol* and passive *paḍ*–) but we have not yet addressed how they interact with each other. One possibility is that they are two competing instantiations of the same structural position. If so, then they should not be able to co-occur. If, instead, they realize distinct positions, then it should be possible to have both *kol* and *paḍ* in a single verb form. (26a) demonstrates that the latter possibility is the one that obtains:¹¹

- (26) a. Taṇṇi Champa- vaal roppi- kkoḷḷæ- paṭ- t- adū.
 water.NOM Champa- INS fill.TR- MID- PASS- PST- 3NSG
 ‘The water was gotten filled by Champa.’ (Roughly)
- b. *Taṇṇi Champa- vaal roppæ- paṭṭū- kko- ṇḍ- adū.
 water.NOM Champa- INS fill.TR- PASS- MID- PST- 3NSG
 ‘The water was gotten filled by Champa.’ (Intended)

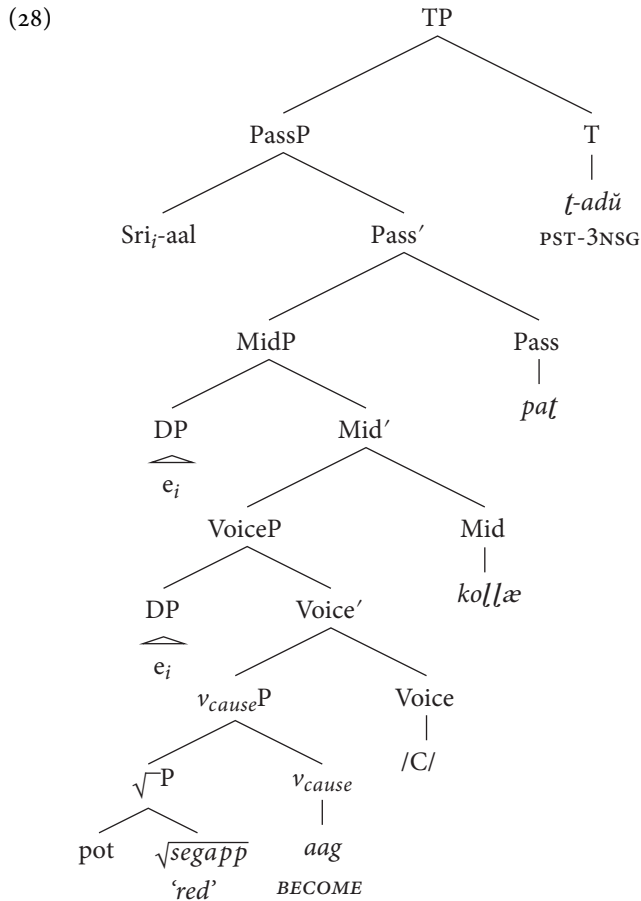
The possibility of (26a) shows clearly that *kol* and *paḍ* must realize distinct heads in the *v* domain. Furthermore, we see that their relative ordering is fixed: *kol* must linearly precede *paḍ*, as in (26a), but never succeed it, as in (26b). Again, according to the Mirror Principle, this indicates that Pass is higher in the syntactic structure than Mid, which in turn is higher than Voice. We can also build such structures with de-adjectival predicates, where we can see the overt realization of the *v_{cause}* head:

- (27) Sri- aal paanæ segapp- aakki- koḷḷæ- paṭ- t- adū.
 Sri- INS pot.NOM red- CAUSE.TR- MID- PASS- PST- 3NSG
 ‘The pot was gotten reddened by Sri.’ (Roughly)

¹⁰ An anonymous reviewer sketches a way to analyze the Tamil facts in terms of a single Voice head, by taking the gemination of the transitivity alternation to result from allomorphy of a lower Cause head. We think that this analysis ultimately fails, but considering it in detail turns out to be quite instructive. We will thus return to it below, after presenting the evidence on the interaction of Pass with Mid, which is crucial.

¹¹ As should be clear from our discussion in section 7.4.2 the type of middle formed by *kol* is not what is sometimes called a “dispositional middle”, along the lines of *This butter spreads nicely*. As such, there is no expectation that *kol* would be incompatible with a *by*-phrase in the passive the way that dispositional middles are, according to Bruening (2012).

We now have a final picture involving the full articulation of the *v* domain, as shown in the tree in (28):



As we have seen, passives in Tamil obligatorily show the geminated transitive form of the verb, which in our terms means that a Voice head must be present in the structure. Furthermore, as in most languages, the Agent is typically missing entirely on the surface in the passive, and when it is expressed, it must have oblique, specifically instrumental, case marking. Under theories where a single Voice head is responsible for both passive marking and the introduction of the EA, this pattern presents no special difficulty. But since we are led to posit two distinct heads, we must assume that there is a dependency between them, some property of the Pass head that places requirements on Voice and its specifier, as mentioned briefly in section 7.5 in connection with Alexiadou et al.'s (2015) analysis of the English passive.

There are a number of proposals available for how to deal with this dependency (see e.g., Collins 2005; Bruening 2012; a.o.). At the moment we do not have clear evidence to decide among these and other alternatives (see also Alexiadou et al. 2015 for relevant—and also inconclusive—discussion), so we will restrict ourselves to a few remarks on what the Tamil data can tell us.

Note first that Tamil raises problems for stating the dependency between Pass and Voice as c-selection, as Bruening (2012) essentially does. C-selection obtains under sisterhood, and while VoiceP is often the complement of Pass, we've seen that the MidP of *koŋ* crucially intervenes when it is present. Nonetheless, the requirement on Voice remains intact, so its implementation must be more indirect, perhaps involving a semantic dependency. An additional fact from Tamil that should ultimately be of some relevance is that, in the passive, just as in the active transitive, it is the Agent (whether covert or instrumental-marked) that is associated thematically with *koŋ*, not the Theme. We indicated this in (28) above by putting a second empty category in Spec-MidP which is co-indexed both with the other empty category in Spec-VoiceP and with the overt Agent in Spec-PassP. One way to deal with this would be to say that the EA is introduced in Spec-VoiceP in the passive just as in the active, then thematically raised to Spec-MidP (when *koŋ* is present), and then further to Spec-PassP. However, there is no reason to think that Pass assigns a θ -role of any kind, in particular since Tamil can form passives of unergatives, as in (29).

- (29) Tuung- æ- paŋ- t- adũ.
 sleep- INF- PASS- PST- 3NSG
 'There was sleeping.' (Roughly)

It thus seems unlikely that the properties of the EA in passives can be derived by having it thematically raise to Spec-PassP. Pass thus really seems to be different from the other heads in the sequence, and perhaps plays a more abstract role in manipulating the association of arguments with the event in its scope, along the lines discussed in Bruening (2012).

However exactly the relationship between Pass and EA is to be modelled, the thematic facts relating to *koŋ* tell us the following. The argument of Voice and that of Mid are somehow identified with each other before the passive applies. This identification may itself involve thematic raising, as we have argued, or "Delayed Gratification" as proposed by, for example, Myler (2014) and Wood (2015a). The passive then applies in a sense to *both* Mid and Voice, ensuring that the shared argument of both is realized as an instrumental or not at all.

7.7 Against two alternative analyses

Now that we have laid out our proposals in full, we can discuss two possible alternatives: one involving fewer functional heads, and the other potential recursion

in the functional sequence. The alternatives lead us to consider interesting issues, but we will argue that the analysis we have pursued is ultimately superior to both.

7.7.1 *Against conflating Voice and Pass*

As noted briefly in section 7.6, an anonymous reviewer suggests an alternative analysis which would do without the Voice/Pass split we are proposing here, and maintain a single Voice head.¹² Abstracting away from the Mid head for the moment, the hierarchy of heads under this alternative would simply be Voice > v_{cause} > $\sqrt{\quad}$. Along the lines of Embick (2004), there would be two Voice heads, an active one which introduces a specifier and is itself silent, and a passive one which lacks a specifier and is pronounced as *paq-*. Unaccusatives would lack the Voice head altogether. The stem alternation associated with transitivity would be realized on v_{cause} as allomorphy triggered by Voice. Specifically, v_{cause} would be spelled out as the underspecified /C/ when Voice is immediately above, and as /Ø/ otherwise.¹³

This alternative gets the basic facts of the transitivity alternation right, as well as its interaction with the passive. Since the passive is realized in the Voice head under this view, and since the transitivity marking in v_{cause} is simply sensitive to the presence of Voice, it correctly models the fact that passives are always based on the ‘transitive’ form of alternating verbs. In this respect, it is on a par with the account we have proposed. There are two apparent advantages to this view. Firstly, it requires us to posit one functional head fewer, i.e., we need only Voice rather than Pass + Voice, thus it is simpler. Secondly, since a single head Voice is responsible for both passivization and the appearance of the Agent, the passive variant of Voice need only influence the realization and case-marking of its own specifier.

As such, this alternative is worth considering. We think that the balance of the facts points against it, and in the direction of our analysis, but it will be highly instructive to see why. The first clear disadvantage that the alternative has is the indirectness it is forced to posit for the marking of the transitivity alternation. The gemination of transitives is triggered by the presence of a Voice head, but it is not realized on the Voice head. Rather, it results from allomorphy in the realization of the distinct v_{cause} head, which happens to be sensitive to Voice. We submit that, all other things being equal, an analysis under which the properties of head X affect the realization of X should be preferred over one where the properties of X affect the realization of a distinct head Y. Thus in the absence of good evidence to the contrary, our analysis is preferable, where the syntactic presence of the Voice head is directly visible in the morphology as the gemination triggered by /C/, which is the spell-out of Voice itself.

¹² We would like to thank the reviewer for bringing the alternative to our attention and laying out the basics of how it would work.

¹³ This essentially follows the analysis proposed by Alexiadou et al. (2015) for the alternations in a restricted set of verbs in Germanic like English *rise/raise* and German *versinken/versenken*.

A second argument comes from the data involving overt causatives formed on non-verbal roots like those in (7), repeated in (30):

- (30) a. Saŋŋæ segapp- aag- i- ččü.
 Shirt red- CAUS.INTR- PST- 3NSG
 ‘The shirt became red.’
 b. Seetha saŋŋæ- jæ segapp- aakk- in- aal.
 Seetha shirt- ACC red- CAUS.TR- PST- 1SG
 ‘Seetha made the shirt red.’

According to the reviewer, “[caus.tr] is one morpheme, not two, and since v_{cause} and Voice are adjacent, we cannot decide which of the two realizes the morphology.” The crucial point of our analysis, however, is that *aakk-* in (30b) actually *does* consist of two morphemes: *aag-* plus the gemination-triggering underspecified /C/. If we have two morphemes, then we need two heads. Again, it is natural to take *aag-* to be the realization of v_{cause} , which leads to the conclusion that /C/ cannot be an allomorph of v_{cause} , but rather must be something else. Taking it to be a direct realization of the higher Voice head, as we have been arguing, is only natural then.¹⁴

Potentially even stronger evidence in favor of our analysis comes once we include the Mid head *kol* in our considerations. It is commonly assumed that “Contextual allomorphy is possible only with elements that are concatenated” (Embick 2010: 16). It is thus a serious problem for the idea that /C/ is an allomorph of v_{cause} triggered in the presence of Voice, that the Mid head intervenes between the two, and is furthermore overtly realized. Under our analysis, this issue does not arise, since the gemination realizes a dedicated Voice head, independent of the Pass head.

In part to avoid this issue, the reviewer suggests a different analysis of *kol*. The starting point is that *kol* is a restructuring verb, and that a clause with *kol* does not constitute a single clausal extended projection or functional sequence, but rather (at least parts of) two: a higher one built on top of *kol*, and a lower one which *kol* takes in its complement. This crucially allows for the possibility of two Voice heads showing up in a single clause, with something like the following configuration: Voice > *kol* > Voice > v_{cause} > $\sqrt{\quad}$. The lower Voice is the one responsible for triggering allomorphy of the lower v_{cause} head, and ultimately the geminated form of the verb below. The higher Voice head is the ‘passive,’ which is spelled out as *paɔ-* and is responsible for the suppression of the EA or its realization as an instrumental. This avoids any problems with the locality of allomorphy, since the relevant lower Voice head will be adjacent to the v_{cause} head.

¹⁴ It is of course possible to insist that *aag-/aakk-* are two allomorphs of a single morpheme, but this would miss the fact that the alternation is one of gemination—the regular morphophonological alternation that applies to other verbs as well.

However, this move leads to the reviewer's alternative being distinctly less attractive. Now that the gemination-triggering Voice is separated from the passive Voice, any potential advantages of simplicity are lost. While it is true that the configuration for the triggering of allomorphy can be kept highly local, the need for a further, less local dependency is introduced. The empirical generalization remains that passives require the transitive form of the verb and the suppression or instrumental realization of the EA, even when *kol* intervenes. In the alternative analysis, this means that the higher passive Voice head has to somehow force the presence of the lower Voice head, and ensure that it has the right properties with respect to its specifier. Note, then, that this is just the situation that our account finds itself in, due to the separation of Pass from Voice: the Pass head has to require a Voice head below it, and has to prevent the Voice head from introducing a normal DP in its specifier. In the discussion of the simple interactions of passive and transitivity above, we mentioned that it was a potential advantage of the reviewer's alternative that such a dependency between Pass and the specifier of Voice was unnecessary. We see now, however, that once the full range of data of is considered, there is no avoiding recognizing a dependency across heads.

In fact, it can be argued that the restructuring alternative not only loses its primary advantage over our analysis, but turns out to be at a disadvantage here. Under our analysis with a single functional sequence, we could state the dependency in terms of the idea that, while certain heads can be left off the top of a functional sequence, truncation from the middle is not allowed (e.g., Wurmbrand 2001). That is, in the sequence Pass > Voice > v_{cause} it's possible to leave off Pass, and it's possible to leave off both Pass and Voice, but it's not possible to leave off just Voice or just v_{cause} .¹⁵ Such an account is unavailable if we have two distinct functional sequences here.

Thus we can reject the specific proposal that there are two Voice heads to deal with the apparent non-locality of passive and transitivity marking when *kol* intervenes. Nonetheless, the reviewer's suggestion raises a series of wider questions concerning whether restructuring is involved in the Tamil structures being considered here, and, relatedly, whether we have recursion of the functional sequence. We turn to a brief discussion of this point in section 7.7.2.

7.7.2 *Against restarting the functional sequence*

As should be clear from the discussion above, it is highly significant whether the introduction of *kol* (or other morphemes at stake here) "restarts" the functional

¹⁵ Of course, something special still needs to be said about the Mid head spelled out as *kol*, which is clearly not subject to this restriction. But this kind of optionality apparently also holds of things like negation and the heads responsible for building perfects and progressives in English. We thus need to distinguish between different kinds of 'optionality' of functional heads in the sequence.

sequence. We have argued that the ν layer consists of a series of distinct functional heads in a rigid hierarchy, Pass > Mid > Voice > ν_{cause} , a claim which can be situated within broadly cartographic notions of clause structure, also including a series of heads for the T and C layers. But, of course, if a sentence has two clauses, we do not expect a Pass head of the lower clause to come above a Mid head of the higher clause, because the two clauses involve distinct functional sequences. It thus becomes crucial, if we are considering the possibility that *koḷ* is a restructuring predicate, whether this means that what comes below it starts a new functional sequence or is simply part of the same one. For these purposes, we must distinguish between different types of restructuring predicate.

For concreteness, we adopt Wurmbrand's (2001) typology and terminology. Wurmbrand makes a major distinction between lexical and functional restructuring predicates. Lexical restructuring predicates (e.g., German *versuchen* 'try') are lexical verbs, which take variously reduced clausal structures in their complements. They would thus in our terms involve a restart of the functional sequence, as they constitute instances of a configuration like a V coming above a ν P or a TP. Functional restructuring predicates, on the other hand, realize functional heads, not lexical heads. Here there is a further distinction. Purely functional restructuring predicates, for example modal verbs, are characterized by not assigning a θ -role, and essentially just amount to functional heads that happen to be realized as separate auxiliaries rather than affixes on the main verb. They thus clearly do not require a restart of the functional sequence, appearing, rather, in the rigid ordering that that sequence predicts. The final category are the semi-functional restructuring predicates, like certain motion, causative, and perception predicates. Wurmbrand argues that these realize functional heads in the ν domain (typically pertaining to voice or aspect), but also assign a θ -role to an argument, hence their intermediate status.

As argued by Sundaresan (2012), Tamil *koḷ* seems to belong in this third category. It looks like a functional head in the ν domain, but it assigns a θ -role. Aside from the thematic issue, *koḷ* doesn't actually display any other properties of being a lexical verb. It appears in a fixed position in the hierarchy of other functional heads in the clause as we have seen, and it is a closed class item, and is unable to appear as an independent verb.¹⁶ The question, then, is whether such semi-functional restructuring predicates in general, and *koḷ* in particular, involve a restart of the functional sequence. In fact, Sundaresan (2012) does suggest that

¹⁶ Historically, *koḷ* is the descendant of an independent verb meaning roughly 'hold' in older stages of the language (Krishnamurti 2003: 463). It is thus quite likely that *koḷ* went through an intermediate stage when it could serve as a lexical restructuring verb, on its way to grammaticalizing as a functional head.

koḷ involves such a restart, but the evidence for this was limited to one observation. Specifically, the same morphophonological ‘past tense’ marker (with a wide array of allomorphs) can appear both above and below *koḷ* in a single clause. However, while the morphosyntax of these markers is notoriously difficult (Amritavalli and Jayaseelan 2005), there is actually good reason to think that they realize distinct functional heads when they occur twice in a single clause. As Sundaresan (2012) shows, the ‘past’ marker below *koḷ* instantiates a stative resultative, and thus should be seen as the realization of an aspect head. The outer ‘past’ marker that comes above *koḷ* behaves more like a true past tense, and thus plausibly occupies T. If this is on the right track, the repeated ‘past’ markers don’t actually constitute evidence for a restart of the functional sequence. Aside from this, we are not aware of any other evidence that would point in that direction. We have no evidence that any other functional elements can be repeated; there is no possibility of multiple clausal negation, and no perceivable syntactic opacity effects.

There is still much left to investigate, in particular the details of the other bits of morphology that often intervene between the heads we have been concerned with here. In addition to the aspectual marking below *koḷ*, this includes the infinitive marking below passive *paḍ-*. If it turns out that this verbal region at least sometimes involves a restart of the functional sequence, we might expect to find evidence for it here, especially if these bits of morphology can be tied to more substantive syntactic or semantic properties. At least preliminarily, this seems less likely for the ‘infinitive’ suffix, which shows up in a number of distinct contexts involving complex verb forms, with no clearly identifiable semantic or syntactic contribution. Thus it remains an open question whether it is the realization of an actual syntactic head, or is inserted for purely morphological reasons. It is important here again to distinguish between the synchronic status of these elements and their likely historical sources. Pending further work on the subject, we thus maintain the position that the structures we have been considering all involve a single functional sequence and thus give us clear evidence on the make-up of the *v* domain.

A less obvious question is how the sequence we have suggested here for the verbal domain is meant to play out crosslinguistically. The most stringent hypothesis would be to claim that the full functional sequence—Pass(ive) > Mid(dle) > Voice > *v*_{cause} > $\sqrt{\quad}$ —is represented as such in every language. A less stringent, and potentially more plausible, hypothesis might be that along the lines suggested in Harley (this volume). In some languages (i.e., those that show overt evidence for it, like Tamil), the full sequence of heads might be attested; others might be “bundling” languages (Pylkkänen 2008), with multiple functions being encoded/spelled out on a single head. The choice between these two alternatives should, ultimately, be an empirical one, and is a matter for future research.

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8

The features of the voice domain: actives, passives, and restructuring

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8.1 Introduction

Restructuring or clause union phenomena provide an interesting testing ground for the composition of the voice domain.¹ Restructuring refers to complex predicate constructions in which two lexical domains display mono-clausal behavior as diagnosed, for instance, by the availability of otherwise clause-bound operations such as clitic climbing or scrambling as in (1).

- (1) a. Marek ją zdecydował się przeczytać (Polish)
 Mark it decided SE read.INF
 ‘Mark decided to read it.’ (Bondaruk 2004: 154, (57a))
- b. Marek tę książkę zdecydował się przeczytać
 Mark this book decided SE to.read
 ‘Mark decided to read this book.’ (ibid.: 155, (57b))

Since restructuring configurations involve a deficient functional domain, the properties of these constructions allow us to single out different components of the voice

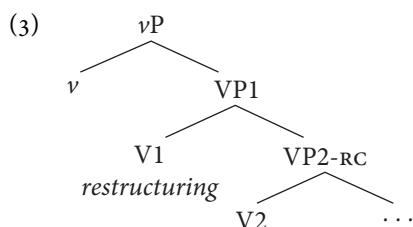
¹ Following many recent works we assume that the traditional *vP* is split into a *VoiceP* and a *vP*. In the remainder of this chapter we use the term voice/voice domain (not capitalized) as a cover term for the domain comprising of these (and possible additional) projections, whereas we use capitalized, italicized *Voice(P)* to refer to the label and features of a specific projection (see the text below).

Abbreviations used in this chapter: ACC(usative), AG(ent), AV (actor voice), DEM(onstrative), EV (epenthetic vowel), F: _ (unvalued feature), F: val (valued feature), F: val (feature valued during the derivation), FUT(ure), GEN(itive), IN(transitive), INCH(oative), INF(itive), LOM (long object movement), LV (locative voice), NOM(inative), NPL (non-plural, number-neutral), OBL(ique), PASS(ive), PAST (tense), PL(ural), POL (iteness marker), PRES(ent tense), PROG(ressive), PV (patient voice), Q(uestion marker), RC (restructuring complement), RL (*realis*), SG (singular), SOD (spell-out domain), TR(ansitive).

domain. Of special interest for the current work is the phenomenon of long object movement (LOM): constructions in which the object of the embedded predicate is promoted to matrix subject due to passive (or a passive-like operation) of the matrix predicate. As shown in Wurmbrand (2014b,c), LOM exists in several (unrelated) languages. A small selection is given in (2).

- (2) a. As casas foram acabadas de construir em 1950 (European Portuguese)
 the houses were finished to build in 1950
 ‘They finished to build the houses in 1950.’ (Cinque 2002: 5, (7a))
- b. Sono-shisutemu-ga tsukai hajime-rare-ta (Japanese)
 the-system-NOM use begin-PASS-PAST
 ‘The system began to be recognized.’ (Fukuda 2007: 175, (32b))
- c. hosa man(y)u-Ø (jaanan-inda) kaTT-al(u) (Kannada)
 new house-NOM (John-by) build-INF
 shurumaaD-alpaTT-itu
 started-PASS-3.SG.N
 Lit: ‘A house was started to be built by John’
 (Agbayani and Shekar 2007: 10, (1b))

LOM poses an interesting challenge for many accounts of restructuring and, as we will show, for the voice domain in general. The dependency between the embedded object and the matrix voice properties are straightforwardly accounted for under a VP-complementation approach to restructuring as in (3) (Wurmbrand 2001). Since the embedded restructuring complement (RC) lacks a functional domain, assuming that accusative Case is assigned by a head of the voice domain, it follows that the embedded object becomes Case-dependent on the matrix functional domain.



A bare VP-structure, in particular an RC structure without an embedded subject, is further motivated by binding properties. While non-restructuring infinitives such as the German extraposition context in (4a) allow embedded anaphors bound by a PRO subject, such anaphors are impossible when the configuration involves LOM (cf. (4b) in German and (4c) in Japanese). The impossibility of embedded anaphors in LOM contexts thus provides evidence for the lack of a PRO subject in such cases.

- (4) a. Es wurde versucht [PRO_i sich_i den Fisch mit Streifen vorzustellen]
 It was tried [PRO_i SELF_i the fish.ACC with stripes to.imagine]
 ‘People tried to imagine what the fish would look like with stripes.’
- b. *weil sich der Fisch mit Streifen vorzustellen versucht wurde
 since SELF the fish.NOM with stripes to.imagine tried was
 ‘since they tried to imagine what the fish would look like with stripes’
- c. Amerika-de-wa kyodaina hanbaagaa-ga (*zibun-no) kodomo-ni
 America-IN-TOPIC huge hamburger-NOM (*SELF-GEN) child-DAT
 atae-tuzuke-rare-tei-ru
 give-continue-PASS-PROG-PAST
 ‘They_i continue to give huge hamburgers to their_i children in the US.’
 (Shimamura and Wurmbrand 2014: 207, (7b))

A bare VP-complementation structure, however, also raises several issues: among others, the question of how the embedded predicate is associated with a subject (interpretation); the only interpretation restructuring infinitives can receive is an obligatory control interpretation. While a bare VP account (specifically a structure lacking a subject and an accusative assigning head) is advantageous in deriving LOM and the binding properties noted above, it appears to be contradicted by several properties that point to the existence of a voice domain in RCS. This chapter addresses this apparent contradiction and provides a solution. We first summarize the phenomena indicating that RCS involve an embedded voice domain. We then propose an account that is based on the assumption that this voice domain is deficient in a way to be made precise. The new account offered maintains the advantages of the original VP-complementation approach, but also derives a range of voice-related properties of restructuring constructions, which were previously unaccounted for.²

Besides restructuring, this chapter contributes to the characterization of the general organization and featural make-up of the voice domain. Using restructuring as a probe into the composition of the voice domain, several properties are revealed, which provide new or additional support for several voice-related assumptions. Firstly, the distribution of restructuring supports a split voice domain (Bowers 2002; Alexiadou et al. 2006; Folli and Harley 2005; Marantz 2007; Pytkänen 2008; Harley 2009, this volume). Secondly, various cross-linguistic morphological differences in the way voice properties are overtly expressed are accounted for via a cyclic

² The account is an extended version of the account provided in Wurmbrand (2013b). The current version provides a more specific voice domain structure, which is in line with the general research on “little v” and covers languages/constructions that had to be set aside in the earlier version of the analysis. However, the general idea of a deficient voice domain in restructuring is the same, and certain additional advantages of this general view (e.g., the anti-reconstruction effect found in restructuring, arguments for an independent restructuring VP) can be found in the earlier version and will not be replicated here.

spell-out approach (including specific spell-out rules for the voice domain of different types of passive), in which vocabulary insertion applies incrementally. Thirdly, our analysis has consequences for the theory of phases: the conclusion we reach is that the phasal projection of the voice domain is the top projection of the entire domain, whichever projection that is, and that the voice domain always constitutes a phase, thus also in passive and when the voice projections are deficient. Lastly, more technically, we propose that the heads of the voice domain come with two sets of features, $v/Voice$ -features and ϕ -features, where the former encode voice differences such as active/passive, as well as specific flavors of the argument or event introducing heads (AGENT, CAUSER), and the latter identify a DP (the DP valuing the ϕ -features) as an argument of the particular voice head.

8.2 Voice properties of restructuring complements

8.2.1 Subject interpretation

As mentioned in the introduction, one question for a bare VP approach to restructuring is the interpretation of the embedded subject: in both active and passive restructuring, the agent of the matrix predicate must control the embedded agent. The examples in (5) from German involve the restructuring properties scrambling and LOM, and in both examples the embedded predicate is interpreted as involving an embedded agent interpretation identical to the matrix agent.

- (5) a. dass den Traktor der Mechaniker zu reparieren versucht hat
 that the.ACC tractor the.NOM mechanic to repair tried has
 ‘that the mechanic tried to repair the tractor’
 b. dass der Traktor zu reparieren versucht wurde
 that the.NOM tractor to repair tried were
 ‘that they tried to repair the tractor’

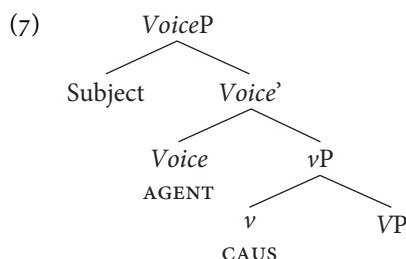
One way to derive the interpretations of (5) is to encode the embedded subject property as part of the meaning of the matrix verb, for instance, via meaning postulates, as in (6).

- (6) a. $\text{try}'(P)(x) \rightarrow \Box_j P(x)$ (Chierchia 1984: 34)
 b. whenever x tries to bring about P , then in all the contextually relevant situations (namely those where what x tries actually succeeds) x does P

Complex meanings such as in (6), however, appear to be rather arbitrary and have the disadvantage that the syntax-semantics mapping becomes less transparent. Our aim is to reduce syntax-semantics mismatches and to provide a syntax that feeds as seamlessly as possible into the interpretive component.

8.2.2 Inchoative/causative alternations

Many recent works have provided diverse evidence for a split voice domain as in (7) (see, among others, Bowers 2002; Folli and Harley 2005; Alexiadou et al. 2006; Marantz 2007; Pyllkkänen 2008; Harley 2009; as well as the chapters of this volume). Following these works, *Voice*, among others, introduces an external argument (typically an AGENT), whereas the little *v*-head encodes causation and functions as a verbalizer.

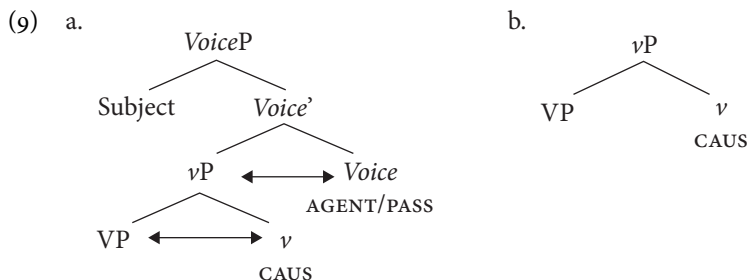


Evidence for the presence of a (layer of the) voice domain in RCS is provided by inchoative-causative alternations. We concentrate on Japanese here.³ As shown in (8), this alternation involves affixes that depend on the class of verb used (Jacobsen 1992; Kageyama 1996; Volpe 2005). One class of verbs marks the inchoative version as in (8a); another class, (8b), marks the causative version; lastly, the third class of verbs, (8c), marks both stems.

(8)	Causative	Inchoative
a.	muk- 'peel'	muk-e- 'peel.off'
b.	ak-e- 'open'	ak- 'open'
c.	sim-e- 'close'	sim-ar- 'close'

A prominent syntactic approach is to locate the source of this alternation in the voice domain (see also Marantz and Wood, this volume). The specific assumption we make here is that the affixes in (8) are all located in *v*. The causative structure is given in (9a), where *vP* merges with an AGENT introducing *Voice* head (see e.g., Alexiadou et al. 2006, who argue following Pyllkkänen 2002 that the causative version involves *VoiceP* in addition to *vP*; see also Schäfer 2008a; Pitteroff and Alexiadou 2012; Pitteroff 2014). For inchoatives, we assume that no AGENT is present, since the configuration lacks *VoiceP* altogether as in (9b).

³ Pitteroff (2014) provides an interesting argument for a richer structure of German RCS based on inchoative/causative stem allomorphy. For space reasons, we cannot discuss this argument here.



Evidence for locating both the inchoative and the causative marker in *v* in Japanese comes from combinatorial considerations (see also Harley, this volume). Crucially, passive morphology occurs on top of causative morphemes, as in (10), which suggests (i) that there are (at least) two heads in the voice domain, and (ii) that *Voice* (the locus of passive) is higher than the head responsible for the causative marking. The structure in (9) thus captures the distribution in (10).

- (10) a. ak-e- b. ak-e-rare-
 open-CAUS- open-CAUS-PASS-
 ‘open (transitive)’ ‘was opened (passive)’

Furthermore, since *v*(P) is in a sisterhood relation with both *Voice* (when present) and the VP, sensitivity to both of these elements is possible. This has the advantage that the dependency of the *v* morpheme on two factors—the type of verb and the presence/absence of *Voice*—can be encoded structurally (see section 8.3.4.3 for insertion rules).

Returning to restructuring, LOM constructions involving alternating verbs are given in (11). As shown, the embedded verbs occur with causative morphology and a bare verb stem is impossible. If, as we propose, inchoative/causative markers are realizations of *v*.CAUS, these examples provide morphological evidence for the presence of an embedded *v*P in RCS. Furthermore, the fact that only causative versions are possible and the inchoative versions are excluded supports a structure in which RCS do not just involve a *v*P but also a *Voice*P.⁴

- (11) a. Zyagaimo-no kawa-ga {muk-i / *muk-e}
 potato-GEN skin-NOM {peel.CAUS-EV / *peel-caus.INCH}
 -wasure-rare-tei-ta
 -forget-PASS-PROG-PAST
 ‘They forgot to peel the potatoes.’

⁴ In the previous version of this chapter, we formulated vocabulary insertion rules for inchoative/causative alternations based on *Voice*, but a reviewer has made us reconsider these rules (see section 8.3.4.3). While our analysis suggests the presence of both *Voice* and *v* in RCS, only the presence of *v*P is supported by direct morphological evidence.

- b. Mado-ga {sim-e / *sim-ar-i} -tuzuke-rare-tei-ta
 window-NOM {close-CAUS / *close-INCH-EV} -continue-PASS-PROG-PAST
 ‘They kept the window closed.’

8.2.3 Voice marking

Although restructuring has traditionally been discussed mostly for European languages, over the last decades the empirical focus has broadened and more and more studies of restructuring in other languages have become available. Of special interest for the current paper are Austronesian languages since overt voice morphology is common in these languages. In many Austronesian languages, the verb of an RC has to occur with obligatory voice marking. An example is given in (12a) from Takibakha Bunun where the embedded verb must occur with AV (see sections 8.3.3 and 8.3.4). Furthermore, in the Austronesian language Chamorro, RCs display subject agreement, which we will propose in section 8.3 is a property of the split voice domain, as is illustrated in (12b,c). Although it is difficult to show whether active constructions involve an RC or a non-deficient full voice domain (see also fn. 17), the passive example in (12c) is informative here. (12c) involves LOM, and agreement with the surface subject (the promoted object) is still possible.⁵ Lastly, agreement in Chamorro is sensitive to mood and the transitivity of the predicate. Crucially, in restructuring contexts, the matrix and embedded events register transitivity separately. In (12b) matrix agreement comes from the intransitive paradigm, whereas embedded agreement uses the transitive paradigm (agreement in Chamorro is very complex; see Chung 1998, 2004 for detailed motivation of these claims).

- (12) a. 'asa'-un i bali' a 'iskán [ma-baliv t_i] (Takibakha Bunun)
 want-PV obl Bali abs fish [AV-buy t_i]
 ‘Bali wants to buy the fish.’ [Shih 2014: 16, (31b)]
- b. Ma'a'ñao i pätgun ha-taitai esti na lepblu (Chamorro)
 NPL.RL.IN.afraid the child 3SG.RL.it-read this LNK book
 ‘The child is afraid to read this book.’ (Chung 2004: 203, (5a))
- c. Kao i famagu'un pära ufan-in-ayuda man-in-arekla
 Q the children FUT 3PL.IR.IN-PASS-help PL.RL.IN-PASS-arrange
 as pali?
 OBL priest
 ‘Is it the children who the priest will help to get ready?’ (ibid.: 215, (23))

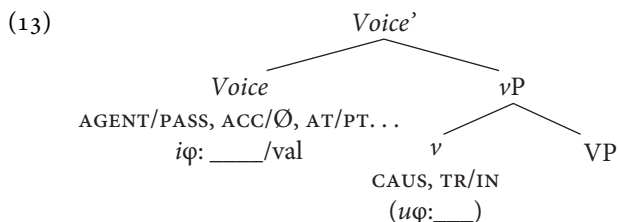
⁵ In many cases given in Chung (2004), embedded agreement is missing in the RC due to independent properties on agreement in Chamorro (see section 8.3.3).

If voice marking and transitivity (as well as Chamorro-type agreement, see section 8.3.3) are properties of the voice domain, these cases provide evidence for an existing voice domain in RCS. We return to some intricate cross-linguistic differences in the distribution of voice marking in restructuring after presenting our proposal of the composition of the voice domain.

8.3 The features of the voice domain

8.3.1 Active and passive

In a split voice domain such as (7), *Voice* introduces an AGENT argument (following Kratzer’s 1996 definition of *Agent** ($\lambda x \lambda s [\text{Agent}(x)(s)]$) or encodes PASSIVE. In conjunction with an AGENT feature, *Voice* assigns accusative Case. We also assume that Austronesian voice marking associated with trigger arguments is a property of *Voice*, however, as is commonly assumed, it has to be distinguished from active/passive *Voice* in European languages. As proposed in Wurmbrand (2013b), this difference does not require different projections, but can be implemented via different types of features. The head *v* functions as a verbalizer, marks transitivity (TR/IN), and encodes meanings such as CAUS or BECOME (possibly others; Folli and Harley 2005, but see Marantz and Wood, this volume). In this paper, we simply note these features under the respective head of the voice domain, as in (13).⁶ In addition to voice features, we propose that *Voice* also has interpretable ϕ -features, which can be inserted unvalued (F: ____) or valued (see below). In contrast, *v* typically does not have ϕ -features, unless certain agreement properties are observed to which we return in section 8.3.3.⁷



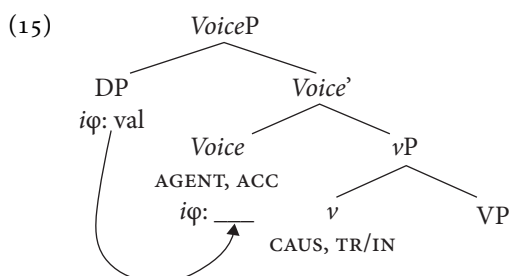
We adopt a valuation-based feature-sharing approach to Agree (Pesetsky and Torrego 2007), however formulated as the downward (Reverse Agree) mechanism in (14) (see also Schäfer, this volume; see Wurmbrand 2014a for other Reverse Agree approaches).

⁶ As is shown in more detail in section 8.3.3 (see in particular (30)), (in)transitivity references both *Voice* (whether or not there is an AGENT) and the VP (whether or not there is an object). We thus assume that TR/IN (like CAUS) is a property of $\nu(P)$, which is in a local dependency with both *Voice* and VP.

⁷ We thank Marcel Pitteroff for comments regarding ϕ -features on v .

- (14) A feature F : $__$ on α is valued by a feature F : val on β , iff (Wurmbrand 2014a)
- β c-commands α AND
 - α is *accessible* to β . [*accessible*: not spelled-out]
 - α does not value {a feature of β }/{a feature F of β }.

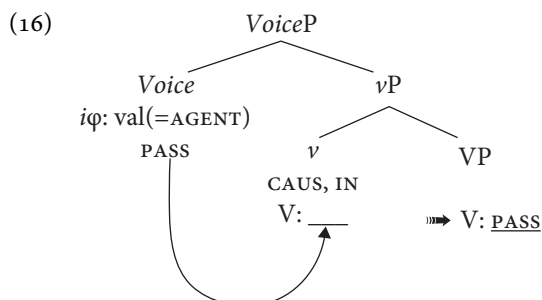
To illustrate our system, consider the derivation for active constructions in (15). Since *Voice* is inserted with an *AGENT* feature, it also carries an *ACC* feature that can Case-license an object. Depending on the type of VP, *v* is inserted either with or without a *CAUS* feature—change-of-state predicates typically combine with a *CAUS* *v*, whereas non-change-of-state predicates do not involve a *CAUS* feature in *v* (however, *v* still functions as a verbalizer and can involve a transitivity feature). *Voice* is inserted with unvalued *iφ*-features, and as a consequence, a DP must be merged to value these features. We propose that valuation of interpretable *φ*-features and feature sharing between a DP and *Voice*.*AGENT* corresponds to traditional theta-assignment, in that the DP in Spec,*Voice*P is interpreted as the *AGENT* of the *v*P. Since *φ*-feature valuation on *Voice* corresponds to an argument-of relation, two different DPs must be merged in (non-reflexive) transitive constructions to derive the different theta-relations carried by the subject and object.



The basic passive derivation is given in (16). *Voice* is inserted with a *PASS* feature and, following Legate (2010b, 2012), with lexically valued *iφ*-features corresponding to the implicit *AGENT* (see sections 8.3.3 and 8.3.4.2 for evidence). Since *Voice* is inserted fully valued, no (non-oblique) subject is merged. Only *Voice*.*AGENT* has the potential to assign *ACC*, thus objects cannot be Case-marked within the voice domain, but become Case-dependent on the T-domain.⁸ Lastly, we propose that morphological selection is derived via (uninterpretable) V-features, which get valued under Agree with a higher voice or inflectional head, thereby feeding the selected value into PF. For instance, if *v*/*V* is valued by T with the feature *i*T:*PAST*, *V*:*PAST* spells out as past tense on the verb (see Wurmbrand 2012, 2014a for a detailed account of morphological selection). In passive contexts, (16), the V-feature on *v*/*V* is valued

⁸ In what follows, we notate the lexically inserted *φ*-features in passive as *iφ*: *val*_{AG}. Note that this is just a shortcut for the semantic relation between *PASS* and the *iφ*-features, yielding the implicit *AGENT* interpretation, and does not mean that there is an actual *AGENT* present syntactically.

V:PASS by *Voice*, which, in English, spells out as participial morphology on V (features valued during the derivation are underlined). More specific PF realization rules are provided in the sections 8.3.3–8.3.5.⁹



Passive falls, broadly, into two classes: morphological and periphrastic passive (see also Schäfer, this volume). Norwegian is a language that allows both types of passive, as illustrated in (17).

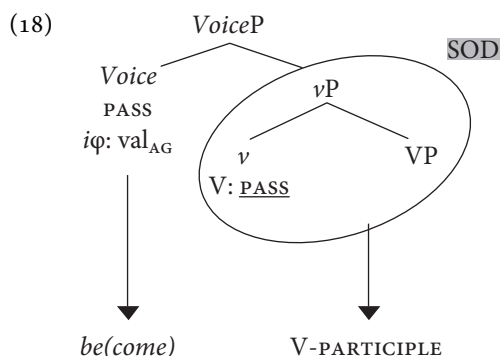
- (17) a. Ballen blir sparket (av elevene) (Norwegian)
 the.ball be(come).PRES kick.PART (by the.pupils)
 ‘The ball is kicked (by the pupils).’ (T. Lohndal, p.c.)
- b. Ballen sparkes (av elevene)
 the.ball kick.PASS (by the.pupils)
 ‘The ball is kicked (by the pupils).’

Before laying out our analysis of the two types of passive, a few words about syntactic domains and spell-out are necessary. We follow the assumption that the voice domain is a phase, but that in a split voice structure it is not vP, but *VoiceP* (the top projection of the voice domain) that constitutes a phase. During transfer of a phase, the complement of the phase-head is spelled out (it constitutes a spell-out domain [sOD]), and interpretable and uninterpretable features are sent to the logical form (LF) and phonetic form (PF) interfaces, respectively. If a feature in a sOD has not received a value, the interfaces cannot handle it, and the derivation is cancelled.

We propose that the core difference between morphological and periphrastic passives is whether the v-head incorporates into *Voice* or not. The derivation for periphrastic passive is given in (18). After *Voice* is merged and Agrees with v, the vP is spelled out as a participle (we ignore here possible movement of V-to-v; if there is no movement, the participial morphology lowers onto V at PF). The specific spell-out rules we propose are in (19). The rules are ordered, and higher (more specific)

⁹ In active contexts, the V-value is determined by an aspectual, modal, or temporal head above *Voice*. There are certain intricacies for deriving active contexts without auxiliaries in our account. Generally, if v is not valued within the *VoiceP*, we would assume that v-incorporation takes place.

rules apply before lower rules. Crucially, the rules are insertion rules that apply only within SODs. Since in (18), at the time *vP* is spelled out, *v* is not in the same domain as *Voice* (*Voice* is the phase-head and as such only spelled out when the higher phase is complete), rule (19a) cannot apply but rule (19a') must be used (-PARTICIPLE stands for whatever the participle affix is in a language, e.g., -en/ed in English). When the next phase is completed, *Voice* is spelled out, and since in this SOD, *Voice* is not in the context of *v* (*vP* has already been spelled out in the first cycle), rule (19b) cannot apply and instead the *Voice* head is spelled out separately as the passive auxiliary, as stated in (19b').¹⁰

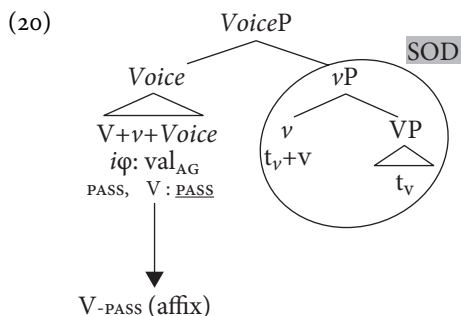


- (19) a. $v.PASS \rightarrow \emptyset$ / ____ *Voice.PASS*
 a'. $v.pass \rightarrow$ -participle
 b. $Voice.PASS \rightarrow$ -PASS / ____ $v.PASS$
 b'. $Voice.PASS \rightarrow be(come)$

In contrast to periphrastic passive, we propose that morphological passive involves incorporation of *V* into *Voice* (via *v*), as shown in (20). When *v* combines with *VP* it still verbalizes the root (and possibly is marked for transitivity), but incorporation essentially has the effect that it “holds off” spelling out *V* and *v*. Technically, incorporation removes *v* and *V* from the *vP* SOD as follows: when the *VoiceP* phase is complete, there are two copies of *V* and *V+v*, and as part of the copy choice mechanism at transfer, the lower copies of these heads are deleted (in the diagram, we simply indicate deleted copies as traces). The *vP* is thus spelled out without *v* and *V*. *V+v+Voice* are spelled out only when the next phase is completed. In the higher phase, *v* ends up in the same SOD as *Voice*, and since both have passive features, rule (19a) applies, which preempts the application of the rule in (19a'). The *V+v* head is hence realized as the bare verb stem. Similarly, since *Voice* is now in

¹⁰ An alternative to the SOD approach here is to derive periphrastic/morphological passive via morphological locality, as in Bobaljik (2012), where it is argued that the trigger for a morphophonological rule (including vocabulary insertion) must be inside the same complex head (see also Thornton 2015).

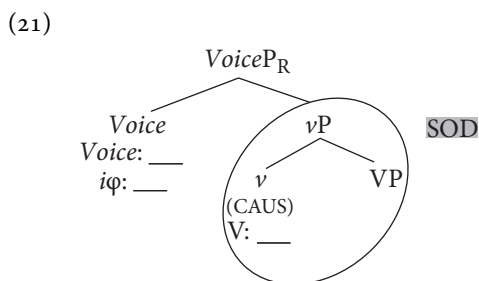
the same SOD as *v*, the rule in (19b) applies and *Voice* is realized as a passive affix rather than a passive auxiliary.



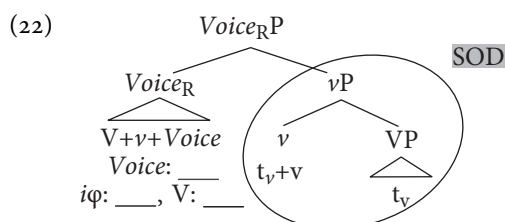
How is it determined whether a language employs option (18a) or option (18b), or, as in Norwegian, either option? Since the nature of affix vs. independent auxiliary is a lexical property, we propose that the trigger of incorporation comes with the *PASS* feature itself. In morphological passive languages, the *PASS* feature in *Voice* comes with an *EPP* property that triggers movement of *v*(+V). We refrain from further deriving this property, but just state it as an assumption here. In a language like Norwegian, the *EPP* feature would be optional, or in other words, there would be two lexical items *PASS*. Importantly, incorporation is not necessarily an inherent property of *Voice*, nor of a general property of a language; rather, it can be a lexical property of the passive feature itself. We will show that this approach has advantages when it comes to incorporation in restructuring.

8.3.2 Restructuring

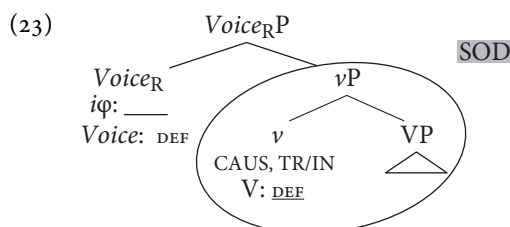
The main claim of this chapter (following Wurmbrand 2013a) is that voice restructuring is encoded as the existence (languages allowing LOM) vs. absence (languages prohibiting LOM) of a special *Voice* head, *Voice_R*, which is inserted unvalued as in (21). The lack of a *Voice* value—*AGENT* or *PASS*—prohibits merging a subject and *ACC* Case. Thus, the lack of *PRO* and the lack of Case for the embedded object—the two core properties of LOM—follow. However, something else needs to be said about the structure in (21). If the *vP* is sent to spell-out as in (21), the unvalued *V*-feature would cause a problem. We propose that there are two strategies for valuing the *V*-feature, which will correctly derive the two types of voice restructuring languages attested.



The first strategy, (22), involves V-to-v-to-Voice incorporation, which removes the verb and the v-head from the lowest SOD. The unvalued features of v hence do not reach spell-out in the first cycle, but get a chance to be valued by heads in the next phase. We will show that this strategy yields voice matching between the matrix and embedded predicates, which is attested in several languages (see section 8.3.3). Although further investigation of properties other than passive and restructuring is necessary, we hypothesize that in voice matching languages, the trigger for incorporation is tied to the *Voice* head itself, and not just to a feature of *Voice* (such as passive). Thus incorporation occurs whenever *Voice* is present, independently of the value of *Voice*.



The second strategy is to insert a default/dummy value in the *Voice* head as in (23).¹¹ This value is then transmitted to v via Agree, and at spell-out, the appropriate (language-specific) default form is realized as the v value on the verb.¹² Note that our account in (23) predicts—correctly, as we will show in section 8.3.4—that RCS in default voice languages can still occur with v values such as *CAUS*, since only restructuring *Voice* is deficient, but v is not.



¹¹ The analysis of default voice languages has been changed from the previous version of this chapter due to the valuable input from a reviewer, Jonathan Bobaljik, Marcel Pitteroff, who all urged us to reconsider certain earlier assumptions and offered helpful alternatives that lead to the current analysis.

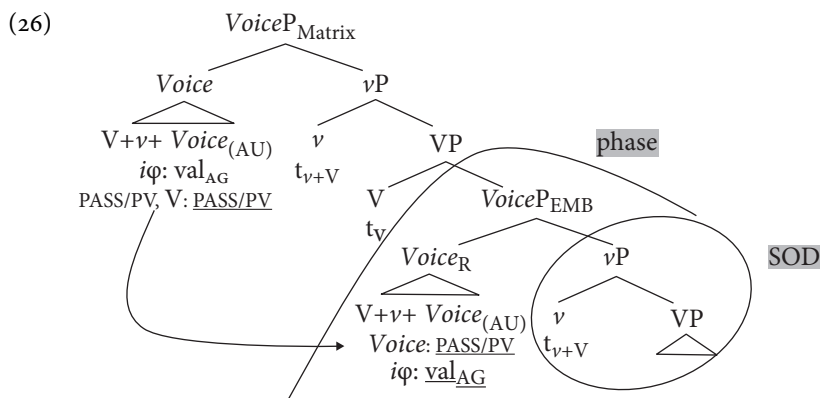
¹² It is tempting to use the concept of Schäfer's (2008a) expletive *Voice* (see also Pitteroff 2014; Schäfer, this volume) as the value of *Voice_R* head in default voice languages. As pointed out by a reviewer, this may be difficult, however, since there are languages like Greek that arguably have expletive *Voice* but no restructuring *Voice*. We leave a full typology of *Voice* values for the future.

8.3.3 Voice matching: Chamorro and Isbukun Bunun

Voice matching is illustrated in (24) for Chamorro and Isbukun Bunun. The examples in (25) from Chamorro show that all mismatching options—cases where the matrix and embedded voice differ—are excluded.

- (24) a. Pära tafaⁿ-ma-chägi ma-na'fanätuk ni lalahi siha (Chamorro)
 FUT 1PL.IR.IN.^[PASS]try NPL.RL.IN.^[PASS]hide OBL men PL
 'The men will try to hide all of us.' (Chung 2004: 204, (6a))
- b. Iliskinun-ku bunbun-a tu baliv-un (Isbukun Bunun)
 want.^[PV]1SG.ACC banana-that.^[NOM]TU buy-^[PV] (Wu 2013: 40)
 'I wanted to buy the bananas.'
- (25) a. *Tinituhun ha-lalatdi si Dolores i famagu'un (Chamorro)
 NPL.RL.IN.^[PASS]began 3SG.RL.TR-scold Dolores the children
 'Dolores began to scold the children.' (Chung 2004: 219, (32a))
- b. *Tinituhun kumati i pätgun
 NPL.RL.IN.^[PASS]began NPL.RL.IN.cry the child
 'The child began to cry.' (ibid. (32b))
- c. *Ha-hähassu si Carmen binisita i biha
 3SG.RL.TR-think.PROG Carmen NPL.RL.IN.^[PASS]visit the old.lady
 'Carmen is thinking of visiting the old lady.' [ibid.: 222, (37a)]
- d. *Kao ha-ayuda man-sinedda' i famagu'un ni chi'lu-hu?
 Q 3SG.RL.TR-help PL.RL.IN.^[PASS]find the children OBL sibling-1SG
 'Did my brother help find the children?' (ibid.: 222, (37b))

The structure for (24) is given in (26). To distinguish Austronesian voice marking from active/passive voice in European languages, we use the diacritic *Voice*_{AU}, which indicates that this is possibly a different type of feature (see Wurmbrand 2013b). For the current approach, it is not necessary to commit to a specific account of Austronesian voice marking, the only important assumption is that (at least part of) the trigger marking is a property of the *Voice* domain. As shown, *Voice* is spelled out together with the corresponding v (+V) heads, which is made possible by (V-to-)v-to-*Voice* incorporation. Although the matrix and embedded *Voice* complexes are part of different SODs, they match since the embedded *Voice*P is headed by *Voice*_R which is inserted unvalued and therefore must establish a feature dependency with matrix *Voice*, resulting in feature sharing.



A crucial aspect of our account is that the ϕ -features of embedded *Voice_R* are valued by the ϕ -features of the matrix subject or matrix *Voice* (PASS/PV). In matrix PV constructions, like in passive, the ϕ -features of *Voice* are inserted valued, with the values corresponding to the implicit AGENT. An AGENT can then only be realized as an oblique argument as in (24a). Since Agree involves feature-sharing, the semantic ϕ -values of matrix *Voice* and embedded *Voice_R* are shared (recall that the ϕ -features on *Voice* are interpretable), which we propose corresponds to co-reference, thereby deriving the obligatory control relation.¹³

There are several morphological properties of Chamorro restructuring which provide further support for our general approach. Firstly, as discussed in Legate (2010a, 2014), Chamorro offers evidence for the claim that the features of the implicit AGENT are present on *Voice*. Chamorro has two passive morphemes: the prefix *ma-* and the infix *-in-* (plus some phonologically triggered variants of these morphemes). The choice between these two affixes depends on the features of the (implicit) AGENT, and crucially not the surface subject. The prefix *ma-* is used when the understood AGENT is plural (cf. (24a)), whereas the infix *-in-* is used when the AGENT is singular as in (27a) (see Chung 1998, 2004; we have changed the glosses to reflect these properties). In particular in (27b), only the implicit/oblique AGENT *the students* is plural whereas the surface subject *the teacher* is singular, but the passive morpheme must be the affix specified for plural, i.e., for the features of the implicit/oblique AGENT. The structure in (26) straightforwardly derives the AGENT conditioned allomorphy of the passive morpheme, since *Voice* is specified for the features of the AGENT, which are thus visible when vocabulary insertion of PASS takes place.

- (27) a. Hagu pära un-tinituhun in-ännä ni nana-n Joaquin
 you FUT 2SG.IR.IN-PASS.AG.SG.begin PASS.AG.SG-beat OBL mother-LNK Joaquin
 'Joaquin's mother is going to begin to punish you.' (Chung 2004: 219, (31b))

¹³ Technically, this can be achieved if agreement features are linked to a semantic index.

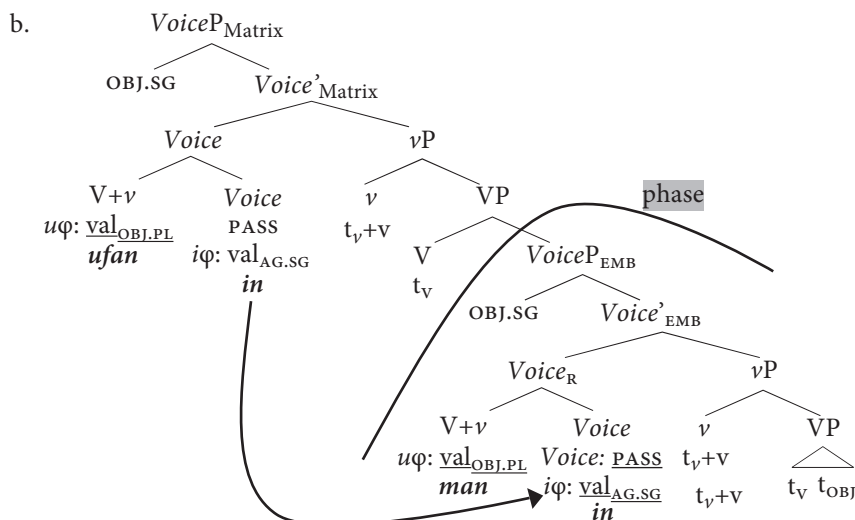
- b. Ma-hähassu ni istudianti ma-bisita i ma'estra
 [PASS.AG.PL]-think.PROG OBL students [PASS.AG.PL]-visit the teacher
 'The students are thinking of visiting the teacher.' (ibid.: 228, (44a))

Furthermore, as mentioned in section 8.2.3, Chamorro RCS also involve subject agreement in LOM contexts as in (12c), repeated in (28a) with the structure in (28b). Since *Voice*Ps are phases in our account,¹⁴ and since ACC is only present when *Voice* contains an AGENT feature, neither *Voice*P in (28b) includes a structural Case assigner, and objects must occur at least at the edge of the matrix *Voice*P (or higher) to escape spell-out with an unvalued Case feature. Chamorro agreement provides evidence for this derivation, and hence indirectly also for the phasal status of passive *Voice*Ps. We propose, as shown in (28b), that in Chamorro, exceptionally, both heads of the voice domain—*Voice* and *v*—have ϕ -features. While the ϕ -features of *Voice* are interpretable and linked to theta-assignment, the ϕ -features of *v* are purely morphological, i.e., uninterpretable in our approach. As a result, only the latter can be valued by an underlying object moving through the edge of the embedded *Voice*P, which we suggest is how subject agreement arises in Chamorro.¹⁵ As shown in (28b), the object undergoes cyclic movement through all phase edges (driven by its need of Case), and at the point when it occurs in the embedded Spec,*Voice*P, it values the ϕ -features of *v* (which has undergone incorporation into *Voice*_R). Valuation of the ϕ -features of *Voice* by the object is not excluded at this point, but such a derivation would lead to theta-violation since sharing of the interpretable ϕ -features leads to the object being (also) interpreted as the AGENT, which we assume is filtered out at the LF interface. Lastly, the order *v-Voice-V* in (28a) is established by post-syntactic reordering (see e.g., Arregi and Nevins 2012; *v* and *Voice* are both prefixes and hence procliticize onto the root). Alternatively, it may be the case that in Chamorro, only *v*-incorporation takes place, stranding the verb.

- (28) a. Kao i famagu'un pära ufan-in-ayuda man-in-arekla
 Q the children FUT [3PL.IR.IN]-PASS-help [PL.RL.IN]-PASS-arrange
 as pali?
 OBL priest
 'Is it the children who the priest will help to get ready?'
 (Chung 2004 :215, (23))

¹⁴ This applies to active and passive *Voice*Ps (see Legate 2003; Sauerland 2003; Alexiadou et al. 2014; Wurmbrand and Haddad to appear).

¹⁵ Locating agreement in the voice domain is also proposed in Béjar and Rezac (2009). At this point, since agreement is not typically found in RCS (Chamorro seems exceptional), we treat it as a special case and assume that *v*-features are not usually present on *v*. However, as noted by a reviewer, many interesting issues arise, which we reserve for the future.

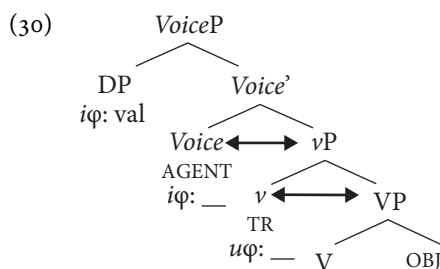


The “double” agreement effect we find in (28) thus provides evidence for independent sets of ϕ -features on *Voice* and *v*. There are two further properties that support the analysis of subject agreement as ϕ -valuation of *v* rather than *Voice* in Chamorro. Firstly, as mentioned in section 8.2.3, Chamorro subject agreement is conditioned by mood and transitivity.¹⁶ In restructuring contexts, the matrix and embedded events register transitivity separately. In (29a) (repeated from (12b)), matrix agreement comes from the intransitive paradigm, whereas embedded agreement uses the transitive paradigm. The opposite is the case in (29b): the verb *begin* is transitive in Chamorro (S. Chung, p.c.; when *begin* occurs with an eventive NP as in (29c), a reflexive configuration is used), hence matrix agreement chooses the transitive form, whereas the embedded verb is intransitive and agreement is chosen from the intransitive paradigm.

- (29) a. Ma'a'ñao i pätgun ha-taita esti na lepblu (Chamorro)
 NPL.RL.IN.afraid the child 3SG.RL.TR-read this LNK book
 ‘The child is afraid to read this book.’ (Chung 2004: 203; (5a))
- b. Ma-tutuhun man-mahalang i famalao'an as Dolores
 3PL.RL.TR-begin PL.RL.IN-lonely the women OBL Dolores
 ‘The women began to feel lonely for Dolores.’ (ibid.: 204; (5d))
- c. Ha-tutuhun gui' i ichan
 3SG.RL.TR-begin itself the rain
 ‘The rain began.’ (S. Chung, p.c.)

¹⁶ As discussed in Chung (2004), agreement in RCS always uses the *realis* paradigm, independently of the interpretation. Since RL does not correspond to semantic mood, we assume that no Mood(P) is present in RCS, and that RL-agreement is the default.

Since transitivity is a relation between *Voice* and the argument structure of the VP, we assume that, similar to the causative/inchoative alternation, transitivity is a property of *v* as in (30) (this is in line with approaches such as Collins 1997 and Bowers 2002, which propose an explicit TrP). If subject agreement is the realization of ϕ -features on *v* in (30), as we suggest, it follows that subject agreement is conditioned by (in)transitivity since *v* contains both: features corresponding to (in)transitivity and the subject's ϕ -features.



Secondly, in RCS with LOM, subject agreement is often non-overt. In part, this is due to a conspiracy of various agreement-related properties in Chamorro (for instance, in *realis* forms, singular agreement can be unpronounced; see also Chung 1998). However, for cases such as (27a), repeated in modified form in (31), S. Chung (p.c.) points out that the verb *ma-na'fan-ätuk* is more complex in that it involves a causative and agreement attached to the causative. While the order of affixes in (31) is not immediately accounted for by a structure involving incorporation as in (28b), the items involved express exactly the features we have proposed: a *Voice* head referencing the implicit AGENT and a *v.CAUS* agreeing with the surface subject (the underlying object). This finer grained structure hence supports our general make-up of the voice domain, even if the order of affixes requires some additional fine-tuning.

- (31) Pära tafan-ma-chägi ma-na'-fan-ätuk ni lalahi siha
 FUT 1PL.IR.IN-PASS.AG.PL -try PASS.AG.PL-CAUS-PL.OBJECT-hide OBL men PL
 Lit. 'We will be tried to be caused to be hidden by the men.'
 'The men will try to hide us.' (S. Chung, p.c.)

8.3.4 Default voice languages

In contrast to voice matching languages, default voice languages display voice properties in RCS that differ from the voice of the matrix predicate. We discuss four types of default voice languages.

8.3.4.1 Mayrinax Atayal and Takibakha Bunun The first group of languages includes Mayrinax Atayal and Takibakha Bunun, which display the typical Austro-nesian voice marking. Crucially, in RCS, the embedded predicate must be marked with

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AV as in (32a–c), and embedded PV is prohibited, no matter what the voice of the matrix predicate is (cf. (32d,e)).¹⁷

- (32) a. 'asa'-un i bali' a 'iskán [ma-baliv t_i] (Takibakha Bunun)
 want-PV obl Bali ABS fish [AV-buy t_i]
 'Bali wants to buy the fish.' (Shih 2014: 16, (31b))
- b. naqaru.un i t.um.uting ni yumin ku bawwak (Mayrinax Atayal)
 finish.PV LNK beat.AV beat GEN Yumin NOMPig
 'Yumin finished beating/killing the pigs.' (Chen 2010: 5)
- c. m.naqrú i t.um.uting cu bawwak i yumin (ibid.: 7)
 AV.finish LNK beat.AV beat ACC pig NOM Yumin
 'Yumin is finishing beating/killing pigs.'
- d. *naqaru.un i tuting.un ni yumin ku bawwak (ibid.: 11)
 finish.PV LNK beat.PV GEN Yumin NOM pig
- e. *m.naqrú i tuting.un i yumin cu bawwak (ibid.: 11)
 AV.finish LNK beat.PV NOM Yumin ACC pig

An important observation made in Chen (2010) is that the embedded AV in RCS cannot be treated as a true AV form, but constitutes a default voice. We replicate one of Chen's arguments here. In Mayrinax Atayal, like in many other Austronesian languages, A'-extraction of the object is only possible when the verb occurs in the PV. The blocking effect of AV is illustrated in (33a,b) for extraction in simple clauses, and (33c) for extraction from an embedded (non-restructuring) clause. Importantly, in RCS, AV is possible (in fact necessary) in the embedded predicate as shown in (33d). The fact that AV does not block object extraction in restructuring contexts, but does so in simple clauses and non-restructuring contexts, thus provides evidence for AV not being a true voice.

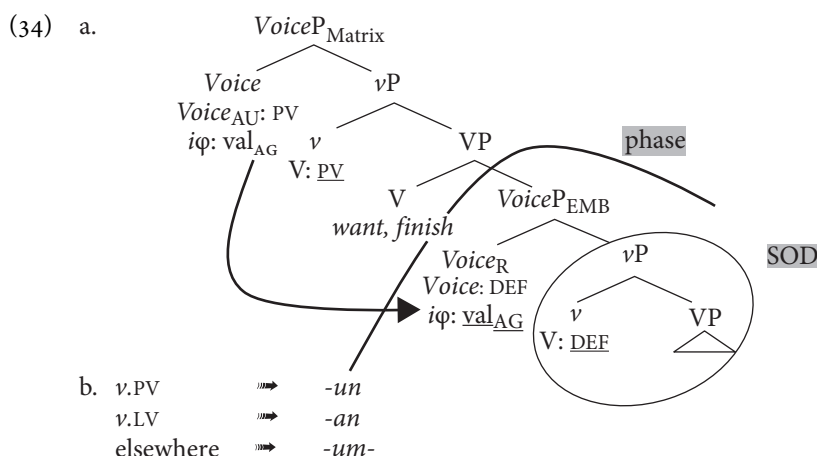
- (33) a. nanuan ku tuting.un ni yumin (Mayrinax Atayal)
 what NOM beat.PV GEN Yumin
 'What is Yumin beating/killing?' (Chen 2010: 8)
- b. *nanuan ku t.um.uting i yumin
 what NOM beat.AV beat NOM Yumin

¹⁷ Shih (2014) argues that there are two types of restructuring constructions in Takibakha Bunun: constructions involving a reduced voice domain, and constructions involving a full voice domain. Since the latter block clitic climbing, these constructions may not involve any restructuring beyond the omission of the tense and C-domains. Wurmbrand (2014b,c) argues for a distinction between *voice restructuring* (the embedded complement involves a deficient voice domain) and *size restructuring* (the embedded complement involves a full voice domain but no TP and/or no CP). Since only the former is relevant for the current paper, we omit a discussion of size restructuring here and only consider the constructions analyzed as voice restructuring (i.e., what Shih 2014 refers to as matrix non-AV constructions).

- c. *nanuan ku siwal.an ni tali i t.um.uting i yumin
 [what] NOM allow.LV GEN Tali COMP beat.[AV].beat NOM Yumin
 ‘What did Tali allow Yumin to beat/kill?’
- d. nanuan ku naqaru.un i t.um.uting ni yumin
 [what] NOM finish.PV LNK beat.[AV].beat GEN Yumin
 ‘What did Yumin finish beating/killing?’

A similar argument can be made based on the distribution of clitics. In Mayrinax Atayal, there are no ACC clitics. In simple clauses, object clitics are hence only possible when they are NOM, which in turn requires that the verb occurs in PV. Crucially, in RCS with clitics, the lower verb must still occur in the AV form, showing again that this voice is not a true AV but rather a default voice.

Having established that the embedded AV in cases such as (32a,b) is default voice, let us now turn to the structure of these constructions. As shown in (34a), *Voice_{AU}* is a feature of *Voice* and its value is transferred to v/V via the unvalued V:___ feature on v/V. Morphologically *Voice_{AU}* is spelled out on the verb, but syntactically, it is in *Voice*, and thus any movement triggered by *Voice_{AU}* targets Spec,*VoiceP*. The insertion rules for Mayrinax Atayal are given in (34b). The rules are defined such that the elsewhere case corresponds to the AV form, and hence this form is used in restructuring contexts, where *Voice_{AU}* has no specific value. Finally, the lack of a *Voice* value prohibits merging an embedded AGENT (cf. the OBL/GEN in (32a,b), and the sharing of *ip* values on matrix and embedded *Voice* is again the source for the semantic control relation.



8.3.4.2 *Acehnese* The same analysis is provided for Acehnese, which provides further pieces of support for our approach. As shown in (35), Acehnese verbs occur with a prefix marking politeness and person features of the agent argument. Legate (2012, 2014) argues that the prefix is a realization of *Voice*, which we propose has ϕ -features valued by the AGENT.

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- (35) a. Aneuk miet nyan meu-tingkue lé kamoe (Acehnese)
 child small DEM 1.EXCL-carry by 1.EXCL
 ‘The child is carried by us.’ (Legate 2012: 497, (3a))
- b. Aneuk miet nyan neu-tingkue lé droeneuh
 child small DEM 2.POL-carry by 2.POL
 ‘The child is carried by you.’ (ibid. (3b))
- c. Aneuk miet nyan geu-tingkue lé gopnyan
 child small DEM 3.POL-carry by 3.POL
 ‘The child is carried by him/her.’ (ibid. (3c))

Legate (2014) also provides arguments for a split voice domain. While unergatives and non-change-of-state predicates do not realize any *v* morphology (such as CAUS), (certain) transitive change-of-state predicates occur with the causative morpheme *peu-* (*pu-* before bilabials), as in (36b). Importantly, these verbs still occur with AGENT-marking *Voice* morphology, thus supporting a split *Voice-v* domain.

- (36) a. Pingan dang beukah (Acehnese)
 plate PROG break
 ‘The plate is breaking.’ (Legate 2014: 112, (205a))
- b. Aneut miet i-peu-beukah pingan
 child small 3.FAN-CAUS-break plate
 ‘The child broke the plate.’ (ibid.: 113, (205b))

Returning to restructuring, Legate’s crucial observation is that no *Voice* marking is possible on the embedded verb (neither the agent prefix nor AV/PV marking), however, a causative can appear in a LOM restructuring configuration, as shown in (37).

- (37) a. Batée ji-cuba (*ji-)pajôh lé aneuk miet nyan (Acehnese)
 rock 3.FAM-try (*3.FAM-)eat by child small DEM
 ‘The child tried to eat the rock.’
 (Legate 2012: 501, (14b); Legate 2014: 18, (24b))
- b. Peurahô nyan geu-cuba peu-ngop lé ureueng agam nyan
 boat DEM 3.POL-try CAUS-sink by person male DEM
 ‘The man tried to sink the boat.’ (Legate 2014: 218, (220))

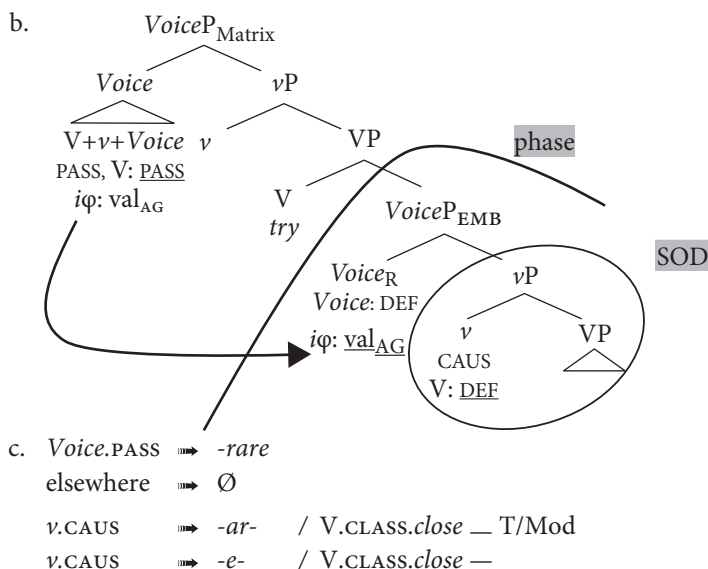
Our analysis for (37) is given in (38). Since Acehnese follows the default voice strategy, *Voice_R* is merged with a dummy/default value. This default value precludes valuation of the *Voice_R* head by matrix *Voice*, and the rules in (38b) derive the elsewhere spell-out of *Voice_R* (which is zero). The embedded *v*-head, on the other hand, realizes whatever features there are in *v*, in this specific case the CAUS feature. And as before, valuation of the *ip*-features of *Voice_R* derives the semantic control relation.

- (38) a.
- b. *Voice.PASS* $\Rightarrow$ POL [set of rules for different POL/FAM-φ combinations]
 elsewhere $\Rightarrow$ $\emptyset$
- c. *v.CAUS* $\Rightarrow$ *peu/pu*
 elsewhere $\Rightarrow$ $\emptyset$

8.3.4.3 *Japanese* A very similar analysis applies to Japanese LOM such as (11b), repeated as (39a). The structure is given in (39b) (with a head-initial word order for easier comparison of the structures). As in the other languages, the default value of *Voice_R* precludes merging an AGENT in the RC. The *iφ*-features of *Voice_R* are valued by matrix *Voice*, yielding the semantic sharing of the implicit AGENT. The relevant vocabulary insertion rules are given in (39c). Since *Voice_R* occurs with a default/dummy *Voice* value, the insertion of the passive affix is blocked. The rules for *v.CAUS* follow a reviewer suggestion in that the inchoative form is given as the more specific rule and the causative form as the elsewhere case for each verb class (we only give the rules for one class here). The causative form is therefore used in all cases except when *v* is in the direct context of T/Mod, which is only the case when *Voice* is not present, for example in inchoative contexts such as (9b).¹⁸

- (39) a. Mado-ga {sim-e / *sim-ar-i} -tuzuke-rare-tei-ta
 window-NOM {close-CAUS / *close-INCH-EV} -continue-PASS-PROG-PAST
 ‘They kept the window closed.’

¹⁸ Technically, the correct default form would also be derived in (39b) without the presence of an embedded *VoiceP*. Since RCS lack tense but merge directly with the matrix verb, neither *Voice* nor *v* is ever in the local context of T. We maintain the *VoiceP* structure to derive the control relation.



Japanese restructuring illustrates another important aspect of our analysis. As shown in (39), Japanese involves morphological passive, which, in our analysis entails $v(+V)$ incorporation. We have suggested that incorporation is triggered by an EPP-like feature tied to either the *Voice* head or the *PASS* value/feature. This assumption correctly predicts that in restructuring contexts, morphological passive languages can involve either voice matching or default voice. In voice matching languages, the trigger for incorporation is tied to the *Voice* head, hence both passive and restructuring involve incorporation; whereas, in default voice languages like Japanese, the trigger is only tied to the *PASS* feature (but not the *Voice* head itself).

8.3.4.4 Infinitive default languages The last type of default voice language is illustrated in (40). As shown for European Portuguese and Kannada, the embedded verb occurs in the (active) infinitive. This is also the case in German, Italian, and Spanish (see Wurmbrand 2014c).¹⁹

- (40) a. As casas foram acabadas de construir em 1950 (European Portuguese)
 the houses were finished to build in 1950
 ‘They finished to build the houses in 1950’ (Cinque 2002: 5, (7a))
- b. hosa man(y)u-∅ (jaanan-inda) kaTT-al(u) shurumaaD-alpaTT-itu
 new house-NOM (John-by) build-INF started-PASS-3.SG.N
 (Kannada)
- Lit: ‘A house was started to be built by John’
 (Agbayani and Shekar 2007: 10, (1b))

¹⁹ As pointed out by Marcel Pitteroff, verbalizations with *-ify* (which are possible in RCS) may provide evidence for a v -head in German RCS, if *-ify* is located in v .

The structure of the RC is as in (38)/(39). The difference lies in the morphological realization rules, which involve an infinitive as the default/elsewhere case in these languages. Note that Kannada, like Japanese, is a morphological passive language but a default voice restructuring language, which shows again that incorporation is not necessarily a property of *Voice* in general.

8.3.5 Norwegian and the double passive dilemma

In section 8.3.1, we began our journey through the voice domain by noting that Norwegian allows both morphological and periphrastic passive. Interestingly, Norwegian also allows LOM in restructuring contexts, and, as illustrated in (41), allows both voice matching and default voice constructions (Lødrup 2014 notes that speakers may have a preference for voice matching, but both constructions are attested). Since Norwegian is, in our sense, an optional incorporation language, this is exactly what we expect: when it comes to restructuring *Voice*, both strategies are available. If the default voice strategy is chosen as in (41a), the structure is exactly like the structure proposed for Japanese in (39b). If the voice matching strategy is chosen as in (41b), the structure is like the that proposed for Chamorro and Isbukun Bunun in (26).

- (41) a. Slike ting forsøkes ofte å gjøre (Norwegian)
 such things try.PRES.PASS often to do.INF
 ‘One often tries to do such things.’ (Lødrup 2014: 371, (13))
- b. Slike ting forsøkes ofte å gjøres
 such things try.PRES.PASS often to do.INF.PASS
 ‘One often tries to do such things.’ (ibid.: 371, (13))

Since Norwegian has both morphological and periphrastic passive, it allows us to see what happens when the two types of passive are combined in voice matching restructuring constructions. As shown in (42), although all four possible combinations are attested by corpus data, the frequency shows a very strong trend: the by far most frequent option is to use morphological passive in the embedded predicate (i.e., (42a,b)). Using embedded periphrastic passive is highly marked, possibly impossible.

- (42) a. morphological passive + morphological passive: 73 # of examples in corpus
 b. periphrastic passive + morphological passive: 19
 c. morphological passive + periphrastic passive: 9
 d. periphrastic passive + periphrastic passive: 1 (Lødrup 2014: 376)

The preference for embedded morphological passive follows from our account. To derive voice matching, incorporation must take place (otherwise the derivation either crashes or default voice must be used). On the other hand, to derive periphrastic passive, we have proposed that no incorporation takes place, which has the effect that *Voice* is spelled out in a different SOD from v+V, reflecting the morphological independence between the voice auxiliary (*Voice*) and the verb (v+V). Thus voice matching and periphrastic passive are predicted to be in complementary distribution.

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At this point, the question is essentially whether double passives involving a periphrastic embedded passive should be considered to be possible or impossible. If the latter, nothing further needs to be said. On the other hand, if the ten occurrences in (42c,d) reflect that these constructions are in principle possible, however marked, the question arising is how they are derived. Following a reviewer suggestion, a way to account for such cases, including their marked status, would be to assume that incorporation takes place in the RC, leading to voice matching. However, for some speakers, we also assume that a marked post-syntactic fission rule applies, which again separates the *Voice* head from *v* + *V*. This would allow *Voice* to be spelled out as an independent auxiliary while at the same time matching with the matrix *Voice*. Such rule is arguably marked and thus captures the dispreference noted in Lødrup (2014) for such constructions.

A similar issue may arise for English, which is typically analyzed as not allowing voice restructuring since LOM of the form **The car was tried to repair* is entirely impossible. However, double passives are found (J. Merchant, p.c.). Like in Norwegian, the empirical situation is peculiarly unclear: while English double passives are fairly frequent in corpora (see (43) for some examples), native speakers are rather uneasy and undecided about the grammaticality of these examples. Lødrup (2014: 370) notes a similar uneasiness for Norwegian: “Voice agreeing long passives can have an air of informal or even substandard language, and they are sometimes frowned upon by informants. However, examples abound in web texts, and they can be found in typical written genres, even in documents from the government.” For English, on the other hand, some speakers have described these examples as “overdone formal speech,” and the same impression has been reported to us for Brazilian Portuguese (R. Lacerda, p.c.).²⁰

- (43) a. And how much fuel is proposed to be produced?
 (June 2, 2008, NPR; J. Merchant, p.c.)
 b. That’s how our politics has been taught to be played.
 (speech April 17, 2008 by Obama; J. Merchant, p.c.)
 c. Snapshots will be tried to be updated on reboot/shutdown
 (Fog Heen 2010)
 d. Chapter 2 will be begun to be written sometime this weekend...
 (<https://www.facebook.com/pages/Heroes-Jason-Storme-books/359571210721163>)

²⁰ See also George and Kornfilt (1977), Kornfilt (1996) for double passive in Turkish and Wurmbrand (2014c) for further languages allowing double passives. In Japanese, double passive is marginally possible with aspectual matrix verbs as in (i), but impossible with lexical restructuring verbs such as *wasure* ‘forget’ in (ii). We currently do not have any further insights why different restructuring verbs behave differently regarding double passive.

- (i) ?1950-nen-goro hambaagaa-ga nihon-de tabe-rare-hajime-rare-ta
 1950-year-about hamburger-NOM Japan-in eat-PASS-begin-PASS-PAST
 ‘They began to eat hamburgers around 1950 in Japan.’
 (ii) *Kono ronbun-ga yom-are-wasure-rare-ra
 this paper-NOM read-PASS-forget-PASS-PAST
 Intended. ‘They forgot to read this paper.’

- e. The budget for next year will be begun to be prepared next month by the finance committee.
(Schrotenboer 2000)
- f. and Jerusalem will be begun to be rebuilt (via Google books)
- g. another House of the Lord will be begun to be erected (via Google books)

Although the exact status of double passive constructions cannot be determined at this point, the cross-linguistic difficulty can be taken to indicate that this option should be considered as marked, at best. We therefore leave the empirical issue open, but only note that, in our system, double (periphrastic) passives are not expected, except via a (brute-force) fission rule.

8.4 Conclusion

This chapter has offered a feature system for the voice domain, as well as morphological spell-out rules for passive and restructuring in a range of languages. Several narrow and broad conclusions regarding the organization and architecture of the voice domain have been reached. Among others, we have shown that a split voice domain is supported (directly or indirectly) by the morphological (combination of affixes), semantic (agent interpretation), and syntactic (agreement and domain effects) properties of passive and restructuring. Furthermore, cross-linguistic morphological differences in the realization of voice properties have been attributed to a cyclic spell-out approach in which vocabulary insertion applies incrementally. We have further argued that the morphological properties including agreement are straightforwardly accounted for in an approach where the phasal projection of the voice domain is the top projection of the entire voice domain, whichever projection that is, and where the voice domain always constitutes a phase, even in passive contexts. Lastly, the chapter has offered a detailed account of several properties of voice restructuring, such as the distribution of voice marking, agreement, and the inchoative-causative alternation, including cross-linguistic variation found in these properties. The main conclusion reached was that restructuring clearly involves a voice domain, but that this domain is deficiently equipped with feature values, which requires establishing a dependency with the matrix voice domain. The account has been couched in a valuation-based Reverse Agree framework and a uniform feature system has been proposed, which derives the attested properties and variation.

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Part III

Event and Argument Structure

9

Omnipresent little *v* in Pazar Laz

BALKIZ ÖZTÜRK AND ESER ERGUVANLI TAYLAN

9.1 Introduction

Since Perlmutter (1978), two classes of intransitive verbs have been recognized, namely, unergatives and unaccusatives. The motivation for such a classification mainly resides on the kind of semantic role the subject bears in each class. Intransitives that typically take agentive subjects are classified as unergatives and include predicates that denote volitional acts (e.g., *walk, play, work, smile, cry*). Intransitives with theme/patient subjects, on the other hand, are classified as unaccusatives (e.g., *dry, fall, bend, wilt, break*). Crosslinguistically, several differences have been observed between the two types of intransitives.

Typically, unergatives can appear in impersonal passives, while this is not always possible for unaccusatives, as illustrated by the following Dutch examples given in (1) and (2b) respectively:

- (1) Er wordt hier door de jonge lui veel gedanst.
 it is here by the young people much danced
 ‘It is *danced* here a lot by the young people.’ (Perlmutter 1978: 168)
- (2) a. De lijken zijn al gerot/ontbonden.
 The corpses are already rotted/decomposed
 ‘The corpses have already *rotted /decomposed*.’
 b. *Door de lijken werd al gerot/ontbonden
 by the corpse is already rotted/decomposed.
 (Perlmutter 1978: 169)

Furthermore, the unergative–unaccusative distinction is reflected in auxiliary selection in some languages. As shown in (3), unergative verbs select the auxiliary *hebben* ‘have,’ while unaccusatives take *zijn* ‘be’ in Dutch:

only with transitives and unergatives, but also with unaccusatives. While unergatives have overt initiators in Spec, vP, unaccusatives always involve an implicit, but syntactically active initiator in PL. Thus, PL always projects an external argument position in syntax and hence lacks the true unaccusative pattern (e.g., anticausatives) found in languages like English, where no initiator is available syntactically. We will further illustrate that all unergatives, in parallel to transitives and unaccusatives, involve a syntactically active object position, thus, PL lacks true unergatives as well.

We will argue that this pattern correlates with the voice system in the language. While PL lacks the voice phenomena associated with passives, middles, and anticausatives, it exhibits a three-way voice system involving initiator (Actor) Voice, undergoer (Object) Voice and Active Impersonal Voice, which all yield transitive constructions retaining both the subject and the object positions in syntax.

We will also argue that the voice system is in line with PL being a very conservative example of Initiation-language (I-language) *à la* Ritter and Rosen (2000), who present a typology of languages, depending on whether the language defines an event based on its initial bound (I-language) or its terminal bound (Delimitation languages). As a very conservative I-language, PL has to retain the initiator in all types of eventive predicates, and cannot suppress it to yield true unaccusative patterns.

The chapter is organized as follows: In section 9.2, we will introduce the verbal classification system in PL and discuss the role of thematic suffixes which are at the core of this classification. In section 9.3, we will take a look at the syntax of single argument verbs which are classified as unergatives or unaccusatives in other languages and argue that such verbs have a transitive syntax. We will identify the different types of voice phenomena associated with such predicates yielding the surface single argument patterns, despite their underlying transitive syntax. In section 9.4, we will discuss the correlation between the voice system in PL and its nature as an I-language. Finally, in section 9.5, we will present our concluding remarks.

9.2 PL verb classes

Before presenting the arguments for the transitive syntax of eventive verbs in PL, we will first take a look at verb classes which are differentiated morphologically through the use of thematic suffixes (TS) and discuss how they map onto syntax.

9.2.1 Thematic suffixes in PL

There are four different TSs in PL: *-am*, *-um*, *-e(r)*, and *-u(r)*, which highlight different aspects of event structure.

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- (8) Amedi-k toyç'i zd-am-s.²
 Ahmet-ERG rope.NOM pull-TS-PRES.3PS
 'Ahmet is pulling/pulls the rope.'
- (9) Ahmedi-k oxori tzopx-um-s.
 Ahmet-ERG house.NOM build-TS-PRES.3PS
 'Ahmet is building/builds a/the house/houses.'
- (10) Mjora c-ul-u-n.
 sun.nom PV-go.down-TS-PRES.3PS
 'The sun is setting/sets.'
- (11) T'op'i i-kt-e-n.
 ball.nom VAL-turn-TS-PRES.3PS
 'The ball is rolling/rolls.'

In the absence of a past tense marker, TSs render the eventuality temporally present and aspectually imperfective, encompassing both the habitual and the progressive as seen in (8)–(11).³ The past tense also denotes perfective aspect as in (12a); the presence of a TS in combination with past tense denotes imperfective aspect in the past, as seen in (12b):

- (12) a. Amedi-k oxori tzopx-u.
 Ahmet-ERG house.NOM build-PAST.3PS
 'Ahmet built the house.'
- b. Ahmedi-k oxori tzopx-um-t'-u.
 Ahmet-erg house.nom build-ts-cop-past.3ps
 'Ahmet was building the house.'

² Examples in PL are given as they are written in the language. The PL writing system is based on Turkish orthography. The letters whose phonetic values need specification are:

(i) Letter	phonetic symbol
c	[dʒ]
ğ	[ɣ]
x	[x]
ç	[tʃ]
ş	[ʃ]

Note that PL has ejectives represented with an apostrophe, e.g., [k'].

The abbreviations used are: APPL=applicative, ACC=accusative, CAUS=causative, COP=copula, DAT=dative, ERG=ergative, EXIST=existential, EVID=evidential, GEN=genitive, IMPF=imperfective, NACT=non-active, NOM=nominative, NOMIN=nominalizer, POSS=possessive, PRES=present, PS=person, PV=preverbal marker, REFL=reflexive, SBJ=subject, TS=thematic suffix, VAL=valency marker.

³ The verb also accommodates adverbial spatial orientation and applicatives in different pre-verbal slots (cf. Demirok 2011). Anderson (1963), Kutscher *et al.* (1995), Kojima, G. and İ. Avcı Bucak'lışı (2003), Lacroix (2009) and Öztürk and Pöchtrager (2011) are some of the major works on the different dialects of PL.

The particular form of the TS a verb selects goes hand in hand with its argument structure, thematic roles, and lexical aspect.⁴ Since TSs are only available in the imperfective, but not in the perfective aspect, the differentiating features for the PL verb classes are more easily observable in the imperfective. In the following, we will discuss the morphosyntactic properties associated with each TS as well as the semantic restrictions predicates exhibit in terms of TS selection.

9.2.1.1 *-am* and *-um* The TS *-am* appears on verbs that are typically classified as unergatives in other languages, and also on transitive verbs with unaffected objects, where the subject bears the macro role of initiator, carrying the ergative case. Note that ergative case in PL is not dependent on tense or aspect, but is required when the subject bears an initiator/causer role, thus it is thematically oriented.⁵ Verbs that surface as unergatives in PL cover unbounded atelic activities, such as agentive verbs as in (13a), as well as verbs of emission as in (13b):⁶

- (13) a. Bere-k i-bgar-**am**-s
 child-ERG VAL-CRY-TS-PRES.3PS
 ‘The child is crying/cries.’
 b. Ntsa-k gurgul-**am**-s
 sky-erg clap-TS-PRES.3PS
 ‘Thunder claps/is clapping.’

Transitives with unaffected objects which take *-am* require ergative initiator subjects and their object bears the macro role undergoer and appears as nominative, which is zero-marked. Such transitives are typically activities or accomplishments, as shown in (14a) and (14b), respectively:

- (14) a. Amedi-k t’abaxi çx-**am**-s.
 Ahmet-ERG plate.NOM wash-TS-PRES.3PS
 ‘Ahmet is washing/washes the plate.’
 b. Amedi-k diška mo-ğ-**am**-s.
 Ahmet-ERG wood.NOM PV-bring-TS-PRES.3PS
 ‘Ahmet is bringing/brings wood.’

⁴ Note that Georgian, a close relative of PL, also marks different verb classes via TSs, such as *-eb*, *-i*, and *-av*. Lomashvili (2010: 75) argues that there is no principled reason as to why a verb selects a particular TS and that these are simply used for morphological well-formedness in Georgian.

⁵ Case morphology in PL is thematically oriented; all initiators/causers require ergative case *-k*, undergoers are nominative and zero-marked, and experiencers/benefactives/recipients take dative case *-s*. Thus, the split ergative pattern PL exhibits differs from the one in tense-based systems like Kurmanji or the one in aspect-based systems like Georgian.

⁶ Note that even though we will argue that all single argument verbs are transitives and there are no unergatives or unaccusatives in PL, for ease of reference we use the term *unergative* for verbs that appear with a single ergative initiator argument, and the term *unaccusative* for verbs whose single argument is a nominative undergoer.

The TS *-um* is selected by verbs with affected objects. Note that in PL, the notion of affectedness is associated with a visible change in the shape or constituency of the undergoer object. Therefore, transitives like *bring*, *open/close (the door)*, etc. are categorized as events with unaffected objects and take *-am*. Transitives with affected objects, such as *cut*, *fold*, *break*, *fry*, on the other hand, select the TS marker *-um* as in (15). Thus, a verb like *wash*, depending on the nature of its undergoer object, i.e., whether it changes its shape or not, is expressed through two different lexical verbs: one associated with *-am* (14a) and the other with *-um* (15a). Similar to the verbs that select *-am*, verbs taking *-um* also have ergative initiator subjects and nominative undergoer objects. Again, this group of verbs denotes activities or accomplishments.

- (15) a. Ahmedi-k şee-pe nax-**um**-s.
 Ahmet-ERG laundry-PL.NOM wash-TS-PRES.3PS
 ‘Ahmet is washing laundry.’
- b. Bere-k ham tzari ş-**um**-s.
 child-ERG this water.NOM drink-TS-PRES.3PS
 ‘The child is drinking this water.’

In addition to having ergative subjects and nominative undergoers, another property of verbs taking *-am* or *-um* is that the agreement for third person singular is always *-s*.⁷

9.2.1.2 *-u(r)* The third TS *-u(r)* is used with single argument verbs where the sole DP argument is a nominative undergoer, hence the structure surfaces with an unaccusative pattern. Such verbs express an eventuality where the undergoer has gone through some change of state. Achievements, degree achievements and verbs of directed motion fall into this group:

- (16) a. Xava mts’up-**u**-n
 weather.NOM get.dark-TS-PRES.3PS
 ‘It is getting dark.’
- b. Bere ey-ul-**u**-n
 child.NOM PV-climb-TS-PRES.3PS
 ‘The child is climbing up.’
- c. Balon-epe t’vats-**u**-n
 balloon-PL.NOM pop-TS-PRES.3PS
 ‘The balloons are popping.’

⁷ Note that we are only referring to third person because first and second persons in the present are zero-marked in PL:

- (ii) Present set agreement suffixes:
 1p and 2pØ
 3ps -n/-s
 3ppl -nan/-an

Note that the third person agreement marker for verbs with a nominative subject selecting the TS *-u(r)* is *-n*, as opposed to *-s*, which is used with verbs that take ergative subjects and the TSs *-am* or *-um*.

9.2.1.3 *-e(r)* The fourth TS *-e(r)*, which always appears with the valency marker *i-*, forms intransitive impersonal structures yielding an unaccusative pattern, similar to the ones with the TS *-u(r)*, as the sole overt DP argument is a nominative undergoer in both classes of verbs. This construction predominantly implies an agentive/animate initiator, yet can be used to meet the readings such as passive/middle/anti-causatives available in languages like English, as PL does not differentiate such voice phenomena. Any verb selecting one of the TSs *-am*, *-um* or *-u(r)* may form a structure with *-e(r)* as long as there is a conceptual agent that brings about the change:

- (17) a. Bere-k t'abaxi çx-**am**-s. b. T'abaxi i-çx-**e**-n.
 child-ERG plate.NOM wash-TS-PRES.3PS plate.nom VAL-wash-TS-PRES.3PS
 'The child is washing/washes the plate.' 'The plate is being washed.'
- (18) a. Ali-k cami tax-**um**-s. b. Cami i-tax-**e**-n.
 Ali-ERG glass.NOM break-TS-PRES.3PS glass.NOM VAL-break-TS-PRES.3PS
 'Ali is breaking the glass.' 'The glass breaks/is being broken.'
- (19) a. Ora çod-**u**-n. b. Ora i-çod-**e**-n.
 Time run.out-TS-PRES.3PS time VAL-run.out-TS-PRES.3PS
 'Time is running out.' 'Time is running out.'

Furthermore, the *i-...-e(r)* pattern appearing with agentive unergatives, which take *-am*, as in (20a), express an impersonal passive-like reading, as seen in (20b):

- (20) a. Ali-k i-çalış-**am**-s. b. İ-çalış-in-**e**-n.
 Ali-ERG VAL-work-TS-PRES.3PS VAL-work-IMP-TS-PRES.3PS
 'Ali is working.' 'People are working/One is working.'

Note that the third person agreement marker for verbs with the TS *-e(r)* is *-n* just as for verbs with the TS *-u(r)*, as opposed to *-s* which is used with verbs that take ergative subjects and the TSs *-am* or *-um*.

9.2.2 TSs as the head of EventP

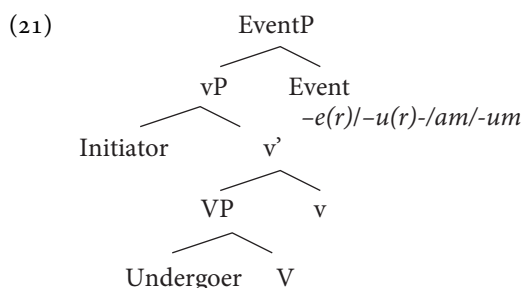
As described in section 9.2.1, TSs reflect information on the lexical aspect and argument structure simultaneously and are associated with different case and agreement patterns as summarized in Table 9.1.⁸

⁸ Table 9.1 presents the verbal classification based on TSs, which have morphological, syntactic, and semantic correlates. Such a system is commonly observed across South-Caucasian languages (cf. Harris 1985).

TABLE 9.1. Morphological, syntactic, and semantic correlates of TSs

TS	Arg. Structure	Macro-roles	Case	valency marker	3ps.agr.	Lexical Aspect
-am/- um	Transitive	Initiator Undergoer	ergative nominative	Ø	-s	activity, accomp
-am	Unergative	Initiator	ergative	i-/Ø	-s	activity
-ur	Unaccusative	Undergoer	nominative	Ø	-n	achievements
-er	Unaccusative	Undergoer	nominative	i-	-n	activity, accomp achievement

As morphological markers simultaneously denoting information regarding (im)perfectivity, argument structure and lexical aspect, the question of what status TSs have in syntax begs for an answer. As very well observed in the literature, progressive aspect closely interacts with the lexical aspect of predicates. Ramchand and Svenonius (2013) and also Ramchand (this volume) show that progressive in English belongs to the eventive domain along with voice and theta role information, unlike the perfective, which belongs to the situation domain along with tense. They propose that progressive aspect, which creates a dynamic eventuality description, heads a projection called V_{Evt} right above the vP introducing the initiator. PL does not have an independent marker for progressive aspect, but uses TSs which subsume the progressive sense as the general marker of imperfectivity. In the same spirit as Ramchand and Svenonius (2013), we also argue that TSs in PL head a projection on top of the vP layer introducing the initiator, which we label as EventP. Dominating the lexical predicate and all the arguments, TSs depict different eventualities, reflecting information regarding both the argument structure and the lexical aspect of the verb as seen in (21).



Going back to the unaccusative–unergative split in PL, the distribution of the TSs indicated in Table 9.1 at first sight suggests that there is a clear divide between unergatives and unaccusatives in PL. While with unergatives the TS *-am* appears in

EventP parallel to transitives with unaffected objects, in the case of unaccusatives it is *-e(r)* and *-u(r)* which appear in EventP. Furthermore, unergatives again behave similarly to transitives in terms of their case and agreement patterns, but differently from unaccusatives, as also crosslinguistically observed. Both in transitives and in single argument verbs the initiator takes ergative case, while the undergoer takes nominative case.

The third person agreement suffix reinforces the seemingly present unergative–unaccusative split, as verbs with ergative subjects take *-s*, while those with nominative subjects select *-n*. What is noteworthy regarding the *-n* marker is that it is very similar to the form of the third person copula in PL, as shown in (22a):⁹

- (22) a. Cami t'ax-eri on. b. Cami i-t'ax-e-n
 glass.NOM break-PART cop.3PS.PRES glass.NOM VAL-break-TS-3PS.PRES
 'The glass is broken.' 'The glass is breaking/gets broken.'

Thus, the use of the copula for unaccusatives in PL is reminiscent of the auxiliary split observed in languages like Italian and Dutch differentiating unaccusatives from unergatives. This can be used as another piece of evidence for the presence of an unaccusative–unergative split in PL. However, we will argue that such a distinction is only apparent, not underlying, and that all single argument verbs have a transitive syntax.

9.3 The syntax of single argument verbs

In the following we will show that all unergatives in PL involve an object position hosting an undergoer and all unaccusative predicates project a *vP* layer in their syntactic architecture hosting the initiator. Thus, both sets of predicates pattern alike with transitives in terms of their syntax and there are no valency reduction operations. We will further argue that this correlates with the three-way voice system of PL, namely initiator voice, undergoer voice, and impersonal voice. While both transitives and unergatives with ergative subjects typically surface in initiator voice, which highlights the initiation of the event, unaccusatives are either in impersonal voice or undergoer voice, which are different ways of backgrounding the initiator.

⁹ In PL, in addition to the present set of agreement suffixes, there is also a past set. Thus, agreement suffixes are associated with temporal information (Öztürk 2010). Note that the past set is invariant across all verb classes unlike the present set.

(iii) Past set:
 1p and 2p -i
 3ps -u
 3ppl -es

9.3.1 *Unergatives*

Unergatives in PL comprise agentive single argument verbs as in (23a) and non-agentive verbs of emission as in (23b). Such predicates always require ergative subjects and take the TS *-am*, which we also find in transitives as illustrated in (24). Recall that the use of ergative case in PL implies the presence of a causer/initiator in the structure. As in transitives, the ergative argument acts as the subject of the clause. Thus, the case and agreement patterns of unergatives are very similar to those of transitives, and in the following we will argue that they are also syntactically highly parallel, as unergatives also have a transitive syntax:

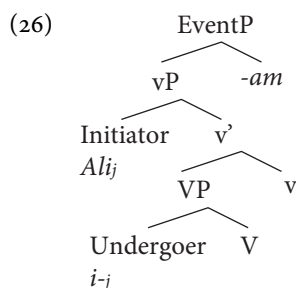
- (23) a. Ali-k i-çalış-am-s. b. Ayna-k farfal-am-s.
 Ali-ERG VAL-work-TS-PRES.3PS mirror-ERG shine-TS-PRES.3PS
 ‘Ali is working.’ ‘The mirror is shining.’
- (24) Amedi-k toyç’i zd-am-s
 Ahmet-ERG rope.NOM pull-TS-PRES.3PS
 ‘Ahmet is pulling/pulls the rope.’

Let us first focus on the transitive nature of agentive unergatives in PL. Such unergatives differ from verbs of emission morphologically, as they obligatorily bear the valency marker *i-*, which occurs immediately preceding the verbal root.¹⁰ The same valency marker *i-* surfaces in reflexive constructions in PL and stands for the suppressed undergoer. As seen in (25b–c), there are two patterns of reflexivization in PL, either with the overt reflexive pronoun *çendi* ‘self’ (25b) or with the valency marker *i-* (25c), which cannot co-occur. The sole argument bears ergative case implying that it is the undergoer that is suppressed rather than the initiator:

- (25) a. Ahmedi-k yali-s ma m-dzir-u.
 Ahmet-ERG mirror-DAT I 1OBJ-see-PAST.3PS
 ‘Ahmet saw me in the mirror.’
- b. Ahmedi-k yali-s çendi dzir-u.
 Ahmet-ERG mirror-DAT self VAL-see-PAST.3PS
 ‘Ahmet saw himself in the mirror.’
- c. Ahmedi-k yali-s (*çendi) i-dzir-u.
 Ahmet-ERG mirror-DAT self REFL-VAL-see-PAST.3PS
 ‘Ahmet saw himself in the mirror.’

¹⁰ The set of valency markers in PL also includes the causative *o-*, and applicatives *a-*, *u-*, and *i-* (Öztürk 2012). Since there is only one morphological slot available on the verbal complex, only one valency marker can surface and the one which is the highest in terms of c-command hierarchy in syntax is chosen (cf. Demirok 2011, 2013).

We take the presence of this valency marker in agentive unergatives to perform a similar function as the one in reflexive constructions, implying that the event is acted upon one's self. For example, (23a) can be taken to mean *Ali is making/causing himself work*, where Ali is the initiator of this internally instigated event. This then would imply that the valency marker *i-* in such constructions is acting like an undergoer co-indexed with the initiator, as depicted in (26).



There is supporting evidence for the status of the valency marker *i-* as a reflexive undergoer from Georgian, a close relative of PL. In Georgian this marker surfaces only when the unergative is used in perfective contexts (Lazzarini Cyrino 2012) as in (27):

- (27) a. Bavshv-i tamash-ob-s balax-ze.
 child-NOM play-TS-3PS grass-on.DAT
 ‘The child plays on the grass.’
 b. Bavshv-ma i-tamash-a balax-ze.
 child-ERG REFL-play-3PS.AOR grass-on.DAT
 ‘The child played on the grass.’ (Lazzarini Cyrino 2012)

Such use of reflexives with agentive unergative verbs is also available in English, but only in telic contexts (28):

- (28) a. *John is walking himself.
 b. John walked himself out.

Therefore, the use of the reflexive marker *i-* in unergative verbs in PL is not unexpected. What is surprising is that its use is not restricted to perfective or telic contexts but is always obligatory with agentive single argument verbs. Thus, we argue that *i-* in all agentive unergative verbs stands for a syntactic undergoer, implying a transitive syntax.

As stated in section 9.1, one property of unergative verbs crosslinguistically observed is that they can take cognate object arguments. However, if *i-* stands for an undergoer filling up the object position then the prediction would be that unergative verbs in PL would not take cognate objects. This prediction is borne out as shown in (29).

- (29) *Ali-k nciri i-ncir-s.
 Ali-ERG sleep.NOM VAL-sleep-PRES.3PS
 ‘Ali sleeps a sleep.’

We claim that since such predicates cannot take cognate objects, *i-* must be saturating the object position of these verbs. Based on this, we assume that unergatives in PL naturally involve a vP layer and are syntactically transitive involving an overt initiator and an undergoer.

Unergative verbs in PL also include verbs of emission, which do not take the valency marker *i-*. Verbs of emission have been argued to have a causal implication, where their sole argument is taken as the causer of the event (Rappaport Hovav and Levin 2000; Potashnik 2012):

- (30) a. The flower smells.
 b. The flower causes the smell.

PL provides further evidence that the sole argument of such verbs are causers as the subject bears ergative case, which is always associated with the semantic role initiator/causer. However, since verbs of emission lack the marker *i-*, there is no overt morphological evidence for the presence of an undergoer.

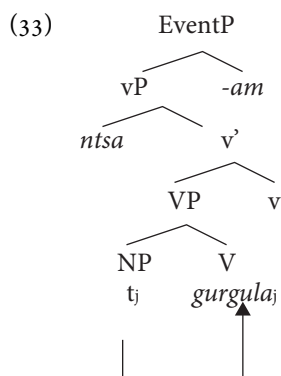
Verbs of emission as in (31a) have nominal counterparts as illustrated in (31b). It is possible to paraphrase (31a) as (31c) with the overt light verb ‘make/do,’ having the nominal form of the verb of emission as the object. However, the nominal form cannot be used as the cognate object of the verb of emission, as in (31d), which is a pattern observed in some languages such as English, as shown in (32). Thus, PL behaves differently from English.

- (31) a. Ntsa-k gurgul-am-s. b. Gurgula ce-xt-u.
 sky-ERG clap-TS-PRES.3PS thunder.NOM PV-fall-PAST.3PS
 ‘The sky is thundering.’ ‘Thunder struck.’
 c. Ntsa-k gurgula ik’-um-s.
 sky-ERG thunder.NOM make-TS-PRES.3PS
 ‘The sky is making thunder claps.’
 d. *Ntsa-k ar didi gurgula gurgul-u.
 sky-ERG a big thunder.NOM clap-PAST.3PS
 ‘The sky thundered a big thunder.’

- (32) a. The alarm clock rings a melodious ring.
 b. The church bell is chiming its noon chime.

This data leads us to the conflation model proposed for unergatives by Hale and Keyser (2002) as shown in (33). Thus, if we assume the conflation model, verbs of emission involve a conflation of the object into a light verb. However, the conflated

object is still visible as an object in syntax and hence saturates the argument structure of the light verb, which blocks the use of the cognate object.

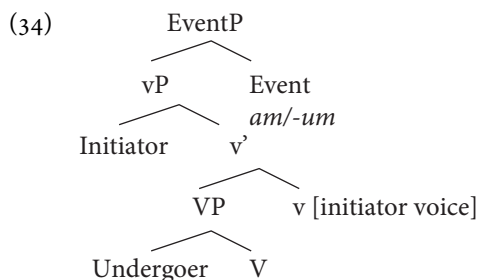


Recall that agentive single argument verbs also do not allow for cognate objects in PL. The same pattern holds for verbs of emission as well. We conclude that the lack of cognate objects stems from the fact that at the syntactic level the object position is already full either with the reflexive *i-*, as in the case of agentive verbs, or with the trace of the conflated object, as in the case of verbs of emission. Note that it would not be expected for verbs of emission to have the reflexive *i-* as the causer and the undergoer are not co-indexed as in reflexives and agentive single argument verbs.

In short, the evidence presented in this section argues for the lack of true unergative verbs in PL that do not have an object position and illustrates that both types of unergative verbs in PL have a transitive syntax. Thus, there is no syntactic difference between unergatives and transitives.¹¹ Both unergatives and transitives involve an overt ergative marked initiator and hence are active constructions in terms of voice. However, as it will be clearer in the following discussion of unaccusatives, we do not call this active voice but the initiator voice, where the initiation of the event is highlighted, as opposed to the undergoer voice, which foregrounds the undergoer of the event in the case of unaccusatives. Whenever the EventP embeds a vP specified for initiator voice in the imperfective, depending on the nature of change the undergoer goes through, either the TS *-am* or *-um* is selected.¹²

¹¹ The transitive nature of unergatives also follows from the ergative case pattern. Given that cross-linguistically ergative is considered to be a dependent case, i.e., it surfaces in the presence of an undergoer checking nominative case (Marantz 1991; among others) to be able to have ergative morphology an object position associated with a case feature has to be present.

¹² The representation in (34) does not reflect a VoiceP–vP split, but simply encodes the voice information under the *v* head. As it will become clear in the discussion of unaccusatives, introduction of the external argument and object case checking cannot be dissociated from introduction of the causing subevent in PL and an anticausative pattern is not possible. Therefore, we represent PL as a bundling language in the sense of Pykkänen (2002), encoding the features of VoiceP and vP under the same projection. See Harley (this volume) for a comparison of bundling vs. non-bundling languages.



9.3.2 Unaccusatives

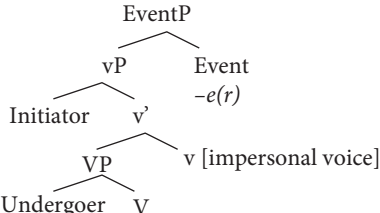
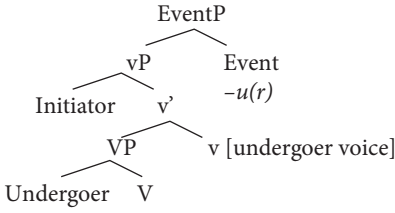
As seen in Table 9.1, there are two unaccusative patterns available in PL. Single argument verbs formed with the TSs *-e(r)* and *-u(r)* surface with a nominative undergoer. Verbs denoting externally caused change of states in PL, such as the one in (35a) are compatible with both *-e(r)* and *-u(r)*, however, with a difference in meaning as shown in (35b–c). If one wants to highlight the natural property or the state of the undergoer (i.e., the metal has the intrinsic property of bending, e.g., copper, or it is in a bent state), then the verb takes *-u(r)* as in (35b). The verb in (35c), on the other hand, being marked with the valency marker *i-* and *-e(r)* necessarily implies the presence of an external factor, i.e., typically a human agent, that brings about the change. This means that a verb with an object that does not have the intrinsic property of bending (e.g., steel) is typically used with *i-...-e(r)*, but not with *-u(r)*.

- (35) a. Ali-k ham metali ndrikh-**um**-s.¹³
 Ali-ERG this metal.NOM bend-TS-PRES.3PS
 ‘Ali is bending this metal.’
 b. Ham metali ndruk^h-**u**-n.
 this metal.NOM bend-TS-PRES.3PS
 ‘The metal is bendable/bending/can bend.’
 c. Ham metali i-ndrikh-**e**-n
 this metal.NOM VAL-bend-TS-PRES.3PS
 ‘This metal is being bent/bending.’

In the following, we will argue that verbs with a seemingly unaccusative pattern that require *-e(r)* and *-u(r)* in the imperfective are also syntactically transitive. Thus, in addition to their undergoer position, they involve a layer in their syntactic architecture, where the initiator is introduced, namely the little vP as shown in (36). We will further argue that the choice of *-e(r)* vs. *-u(r)* correlates with the different voice specifications associated with the v head. Specifically, we will claim that the

¹³ The verb root undergoes internal vowel alternation indexed to the choice of *-um* or *-u(r)*.

constructions formed with *i*....-*e(r)* denote impersonal voice as in (36a), while the ones with -*u(r)* are in undergoer voice as seen in (36b):

- (36) a.  b. 

9.3.2.1 Unaccusatives with *i*....-*e(r)*

As stated in section 9.2.1, unaccusative constructions with nominative undergoers formed with the TS -*e(r)* and the valency marker *i*- are externally caused and predominantly imply the presence of a human agent. Depending on the context, these constructions can be associated with a middle or passive reading and can also be accommodated to meet the anticausative reading. This means that one and the same structure meets the readings for passives, middles, and anti-causatives.

- (37) Cami i-t'ax-e-n.
 glass.NOM VAL-break-TS-PRES.3PS
 'The glass is broken/breaks/breakable.'

Recall that unaccusative verbs that select -*e(r)* always require the valency marker *i*-, which is identical in form to the reflexive marker we have seen in the case of agentive unergatives. We argue that *i*- in externally caused unaccusative predicates such as (37) does not stand for a co-indexed undergoer with the initiator, but it is the morphological reflex of the initiator introduced through a vP layer. This initiator is always present in the syntactic representation of such predicates.

One piece of evidence that such constructions involve an initiator is that they are compatible with purpose clauses, instrumentals and initiator-oriented adverbs as shown in (38). Thus they should have a vP layer to introduce the initiator/causer.

- (38) Cami k'asi-te amolva şeni ç'ak'uç'i-te i-t'ax-e-n
 glass.NOM intention-with enter for hammer-with VAL-break-TS-PRES.3PS
 'The glass is intentionally broken with a hammer to enter.'

The fact that (37) is compatible with agent oriented adverbs, instrumentals, and purpose clauses by itself does not necessarily mean that it cannot be an anticausative, since crosslinguistically it is commonly observed that languages can make use of a single unaccusative structure both for passives and anticausatives. In such languages the type of adjunct used, such as agentive *by*-phrases or *by itself* phrases (Alexiadou et al. 2006), can differentiate between the two readings. In PL, however, such agentive

by-phrases or *by itself* phrases can never occur in (37). The language simply lacks such adjuncts. We argue that this follows from the presence of the valency marker *i-*, which saturates the external argument of the predicate, disallowing the introduction of another initiator into the structure. Similar to the *i-* standing for the undergoer in reflexives, the *i-* in structures like (37) semantically closes the initiator (Chierchia 1995).

The data in (39b) provide further evidence for the syntactically active external argument position these constructions have. The transitive construction with the reflexive undergoer *çendi* in (39a), can take *i-* and *-e(r)* yielding the unaccusative pattern as in (39b), where the sole DP argument is the reflexive *çendi*. This clearly argues for the presence of a syntactically active initiator in the structure, licensing the use of the reflexive. As the reflexive *çendi* in (39b) must be licensed, we take this as an indication that *i-* as the initiator acts as its licensor. Hence, these constructions are not unaccusatives and do not constitute anticausatives, but they are syntactically transitive constructions involving both an initiator and an undergoer position:

- (39) a. Ali-k çendi var msk'v-am-s.
 Ali-ERG self.NOM NEG praise-TS-PRES.3PS
 'Ali does not praise himself.'
- b. Çendi var i-msk'v-e-n.
 self.NOM NEG VAL-praise-TS-PRES.3PS
 'One does not praise himself. (Lit. *Himself/herself is not praised.)'

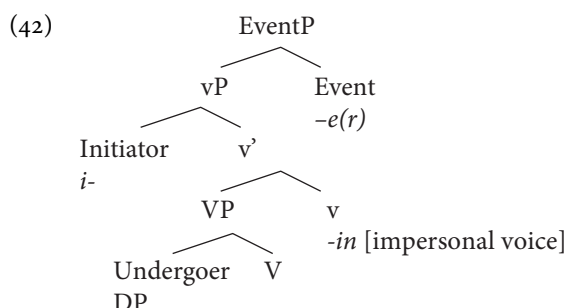
Another interesting piece of evidence for the non-anticausative structure of sentences like (37) can be seen in the translation of such sentences into Turkish by Turkish-Laz bilinguals. Even though Turkish morphologically differentiates between passives and anti-causatives, our informants translated the examples with *i-...-(e)r* verb form into Turkish with passive morphology and systematically rejected the anticausative version. For example, the corresponding Turkish form of the PL sentence in (40) can only be (41b), but not (41a), according to our bilingual informants:

- (40) Ek'na mol-i-dz-e-n.
 door.NOM PV-VAL-close-TS-PRES.3PS
 'The door is being closed (by someone).'
- (41) a. Kapı (kendiliğ-in-den /*biri tarafından)
 door.NOM self-3PS.POSS-ABL / someone by
 kapa-n-iyor. (Anticausative)
 close-NACT-IMPF
 'The door closes by itself/*by someone.'

- b. Kapı (biri tarafından/* kendiliğ-in-den)
 door.NOM someone by/ self-3PS.POSS-ABL
 kapa-t-ıl-ıy-or. (Passive)
 close-CAUS-PASS-IMPF
 ‘The door is being closed by someone/*by itself.’

However, that these constructions can only be translated into Turkish as passives does not necessarily imply that they exhibit valency reduction as passive constructions. Unlike passives, as discussed above, it is not possible to use agentive *by*-phrases in PL.

Based on the above data, we conclude that these constructions are transitive where *i-* syntactically acts as the initiator and the nominative DP as the undergoer. Given the strong tendency to interpret the initiator as an agent, we argue that these constructions denote impersonal voice, which is of the active impersonal type observed in languages like Estonian (cf. Blevins 2003; Vihman 2004; Torn-Leesik 2009). It does not change the valency of the predicate, but simply constrains the overt realization of the initiator as a full DP, yet keeping the structure still transitive.

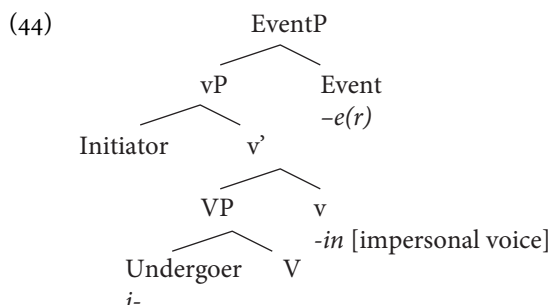


As *i*...-*e(r)* construction denotes impersonal voice, where the initiator is typically interpreted as an agent, it is also compatible with agentive unergatives, but not with verbs of emission that lack an agentive initiator. When they appear with agentive unergatives as in (43a), they yield an impersonal passive-like reading, as given in (43b). Recall that, as discussed above, *i-* in agentive unergative verbs stands for a reflexive undergoer co-indexed with the initiator as shown in (43a):

- (43) a. Ali-k i-çalış-am-s.
 Ali-ERG VAL-work-TS-PRES.3PS
 ‘Ali is working.’
 b. İ-çalış-in-e-n.
 VAL-work-caus-TS-PRES.3PS
 ‘People are working/One is working.’

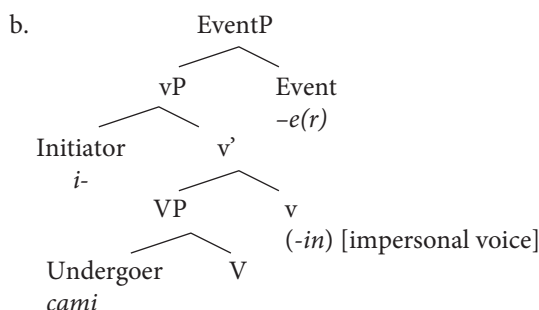
- c. Ali-k Ayşe o-çalış-*(in)-am-s.
 Ali-ERG Ayşe.NOM VAL-work-CAUS-TS-PRES.3PS
 ‘Ali is making Ayşe work.’

One feature of the structure in (43b) is that the suffix *-in*, which is identical to the causative suffix adding a causer argument to agentive verbs as in (43c), is obligatory. Thus, in (43b), while *i-* marks the undergoer, we take *-in* as the spell-out of the impersonal voice head, which hosts the initiator in its Spec, as represented in (44).



Spelling out the impersonal voice is also possible, but not obligatory in the case of unaccusative verbs with nominative undergoers, where *i-* already stands for the initiator. When both *i-* and *-in* surface, the external causation reading is highlighted.¹⁴

- (45) a. Cami i-t'ax-(in)-e-n.
 glass.NOM VAL-break-CAUS-TS-PRES.3PS
 ‘Glass is breakable/can be broken.’



¹⁴ In languages like Turkish, which have passive voice, the same passive morphology used in the formation of passives from transitives is used in the formation of impersonal constructions. However, PL makes use of a causative suffix in the formation of impersonals, which we take as another piece of evidence for the “active” status of the impersonal voice in PL, as opposed to the passive impersonal voice in languages like Turkish.

Thus, we conclude that intransitive verbs with nominative undergoers that select *-e(r)* in the imperfective are not true unaccusatives but are transitives in active impersonal voice. Whenever EventP embeds a vP with impersonal voice, *-e(r)* surfaces in its head position in the imperfective.

9.3.2.2 *Unaccusatives with -u(r)* Recall that unaccusatives compatible with the TS *-u(r)* in the imperfective typically denote an eventuality where the undergoer has gone through some change of state. As the contrast between (35b) and (35c) indicate, when a verb that is compatible both with *-e(r)* and *-u(r)* is used with *-u(r)* the natural property or the state of the undergoer is highlighted. However, not all verbs are simultaneously compatible with *-e(r)* and *-u(r)*. Only verbs denoting achievements, degree achievements, and verbs of directed motion fall into this group. The common property of all these verbs is that they express a scalar change in the sense of Rappaport Hovav (2008) for the undergoer. Rappaport Hovav defines scalar change as “one which involves an ordered set of changes in one particular direction of values of a single attribute and so can be characterized as movement in a particular direction along the scale” (Rappaport Hovav 2008: 17).

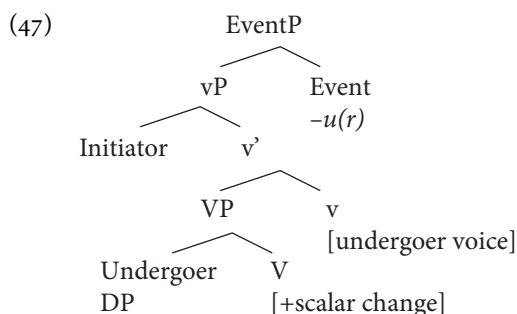
The undergoers of unaccusatives compatible with *-u(r)*, i.e., achievements, degree achievements, and verbs of directed motion, are associated with a scalar change of state or position. Such a condition is not obligatory for verbs compatible with *-e(r)*, which surfaces in active impersonal voice.

Furthermore, just as it was the case in active impersonal voice, it is again possible to detect the implicit initiator with initiator-oriented adverbs, purpose clauses, and instrumentals in the case of undergoer voice, where the verbs take *-u(r)*, even though they do not involve the valency marker *i-* as illustrated in (46):

- (46) a. Ham metal matzindi oyapu şeni ndrukh-u-n.
 this metal.NOM ring.NOM make for bend-TS-PRES.3PS
 ‘*This metal is bending to make a ring.’
- b. Yaği xalva oyapu şeni ndgul-u-n.
 butter.NOM halva.NOM make for melt-TS-PRES.3PS
 ‘*The butter is melting to make halva.’
- c. Noti k’elemi-te Ali-s parti goşinu şeni nç’ar-u-n.
 note.NOM pen-with Ali-DAT party.NOM remind for write-TS-PRES.3PS
 ‘The note is written (in a written state) with a pen to remind about Ali the party.’

The fact that the *-u(r)* form in (46) exhibits the same pattern with the unaccusatives in active impersonal voice in terms of the use of purpose clauses implies that the forms in these constructions also involve a layer where the initiator is introduced in addition to the nominative undergoer. Thus, even in the absence of a valency marker

indicating the presence of an initiator, as was observed in impersonal voice, the unaccusative verbs selecting TS *-u(r)* have a transitive syntax, as shown in (47) below:



Even though these constructions are transitive and do not involve suppression of the initiator, they are, nevertheless, used to foreground the property/state that the undergoer is associated with. We argue that these constructions illustrate an undergoer voice.¹⁵ Note that it is only verbs with affected undergoers that are compatible with this particular type of voice. Undergoer voice leads to the backgrounding of the initiator, which is still syntactically active, yet morphologically unrealized. TS *-u(r)* in the imperfective surfaces in EventP in the imperfective when the *v* head is specified for undergoer voice.

Internally caused change of state verbs, such as *bloom*, *rot*, *decay*, (48a) and also agentive verbs of directed motion (48b) are also compatible with the undergoer voice. The question that arises is whether it is possible to detect a syntactically active initiator position for such predicates.

- (48) a. Ombri purk-u-n.
 plum.tree.NOM bloom-TS-PRES.3PS
 ‘The plum tree blooms/is blooming.’
 b. Hak Ali m-ul-u-n.
 here Ali.NOM PV-come-TS-PRES.3PS
 ‘Ali comes here/is coming here.’

We again argue that such predicates also involve a *vP* layer in their syntax, which introduces a coindexed initiator. The evidence for the presence of such an initiator in structures like (48a) comes from the data in (49). As seen in (49), it is possible to use the internally caused predicate *bloom* in initiator voice, which would then take an

¹⁵ Different versions of undergoer voice are available in Austronesian languages, such as Malay and Indonesian, which are all transitive syntactically and hence do not involve agent suppression, which can be an overt DP, a pronoun, or a verbal clitic depending on the language (Ross 2002; Cole et al. 2008). PL constitutes another pattern, where the agent/initiator cannot be overtly realized in the undergoer voice despite the transitivity of the construction.

ergative subject and the TS *-um*, denoting that the undergoer has a physical change in form. The pattern in (49) with the initiator voice looks very similar to unergatives, with the presence of the ergative case and the third person agreement marker *-s*. The important point here is that (49) still retains the intransitive reading but implies that the undergoer unexpectedly has internal control over the caused change. The fact that such predicates are compatible with the initiator voice indicates that they also involve a syntactically active initiator position:

- (49) Ombri-k purk-**um**-s.
 plum.tree-ERG bloom-TS-PRS.3SG
 ‘The plum tree blooms.’ (e.g., in winter due to some internal control)

Agentive verbs of directed motion as in (48b), on the other hand, can be used with the active impersonal voice and take the valency marker *i-* and the TS *-e(r)*, in the same way agentive unergatives do, as shown in (50). The compatibility with the active impersonal voice indicates that verbs of directed motion in PL also involve a vP layer introducing the initiator just like unergatives.

- (50) a. Ali m-ul-u-n. b. Mo-i-lv-in-e-n.
 Ali.NOM PV-come-TS-PRES.3PS PV-VAL-come-CAUS-TS-PRES.3PS
 ‘Ali is coming.’ ‘People come/One is coming.’

To summarize, both externally and internally caused change of state verbs are compatible with the undergoer voice, as long as there is a scalar change of state. Whenever the EventP embeds a vP specified for the undergoer voice, the TS *-u(r)* is selected for the head of EventP in the imperfective.

9.4 Unergative–unaccusative distinction revisited: PL as an I-language

As seen in the above discussion, PL exhibits a three-way voice system, namely, initiator voice, undergoer voice, and active impersonal voice. None of these voice patterns yields valency reduction. They always form a transitive pattern retaining both the initiator and the undergoer positions available in syntax. Hence, there are no truly single argument verbs in the language and also no voice phenomena yielding monovalent verbs, such as passives, anticausatives, middles.

However, even though there are no true single argument verbs in PL, the language still exhibits patterns analogous to unergative and unaccusative predicates found in languages like English. This is achieved through different voice perspectives. Only verbs that express a scalar change can be used in the undergoer voice, hence, can surface in an unaccusative pattern with a single nominative argument and the third person agreement *-n*. Verbs that are not scalar can never appear in the undergoer voice. They can be used in the initiator voice, which then requires an ergative subject and third person agreement *-s*. Initiator voice in the case of non-scalar agentive single

argument verbs and verbs of emission yields an unergative pattern. Note that both scalar and non-scalar verbs with agentive subjects are compatible with the impersonal voice, which also surfaces in an unaccusative pattern, taking the third person agreement *-n* for the overt single nominative argument. Thus, even all voice types are underlyingly transitive, it is still possible to see an unergative–unaccusative split at the level of case and agreement morphology, as well as in the choice of TS in the imperfective aspect.

The above discussion has shown that in all eventive verbs, both the initiator and the undergoer positions are always syntactically available. Hence, the initiator and the undergoer cannot be dissociated from one another in syntax. In terms of event structure, it is not possible to conceptualize the subevent that the undergoer is associated with independent of the subevent the initiator is associated with in PL. As seen in (51a), the adverb *almost* in English can take scope over either the subevent involving only the undergoer ('The door is almost open') as in (i), or the whole event also including the initiator *John* as in (ii). In PL as given in (51b), on the other hand, the adverb cannot scope over only the subevent involving the undergoer as in (i), but has to take scope over the whole event as in (ii):

- (51) a. John almost opened the door.
 (i) John started opening the door but could not open it completely.
 (ii) John was going to open the door, but he changed his mind and did not do it.
- b. Ali-k t'ora ek'na gontz-u.
 Ali-ERG almost door open-PAST.3PS
 'Ali almost opened the door.'
 (i) *Ali started opening the door but could not open it completely.
 (ii) Ali was going to open the door, but he changed his mind and did not do it.

Even though the initiator and the undergoer cannot be syntactically dissociated, as illustrated by the scope reading of *almost* in (51b), they can be foregrounded or backgrounded via different voice mechanisms. As discussed above, the choice between initiator vs. undergoer voice, correlates with the perspective the event is presented from, i.e., either from the point of view of the initiator or from that of the undergoer.

We argue that such a voice system is in line with PL being an I-language as defined by Ritter and Rosen (2000). In their typological classification, I-languages base event status to the initial bound of the event, while D(elimitation)-languages focus on the terminal bound. Only eventualities that have an initial bound, such as accomplishments and activities, count as eventive in I-languages, while achievements and states are interpreted as non-events. In D-languages, on the other hand, accomplishments and achievements, which are eventualities with terminal bounds, are eventive, while states and activities are non-events.

TABLE 9.2. Properties of D- and I-languages (Ritter and Rosen 2000: 195)

D-languages	I-languages
Accomplishments form a natural class with achievements	Accomplishments form a natural class with activities
Sensitive to semantic and syntactic properties of the the object including - specificity or definiteness - case marking - person	Sensitive to semantic and syntactic properties of the subject including - agentivity - animacy
Accusative case may be restricted to delimiting objects	Make agrammatical distinction between topic and subject
Ergative splits on the basis of perfective aspect/pasttense	Ergative splits on the basis of properties of the subject
Object agreement not specified for person features	Subject and object agreement specified for person features
	Quirky case subjects
	Animacy hierarchies

PL exhibits almost all the I-language properties listed in Table 9.2, and thus comes across as a good example of an I-language.

Firstly, as shown in Table 9.1, PL strictly groups accomplishments and activities together in terms of TS, case and agreement suffixes.

Secondly, PL exhibits ergative splits based on the macro roles of the subject. Only initiators can take ergative case, while undergoer subjects appear as nominative.

Thirdly, PL also exhibits subject and object agreement specified for only person features, morphologically encoded in the preverbal domain.¹⁶

- (52) Ko'çi-k si bere g-u-ncğon-u.
 man-ERG you.DAT child.NOM 2OBJ-APPL-send-PAST.3PS
 'The man sent the child to you.'

¹⁶ PL also has two sets of agreement prefixes as in (iv), which can encode the subject (*v-set*) or the object (*m-set*) based on a person/case hierarchy (see Holisky 1991; Demirok 2013):

(iv) Prefixes:
 Subject markers (*v-set*): Object markers (*m-set*):
 1p v- [p', p] 1p m-
 2p Ø 2p g-

Fourth, experiencer subjects surface with dative morphology and behave as a quirky case subject as extensively discussed in Demirok (2013):

- (53) Bere-s Ali a-cer-u.
 child-DAT Ali.NOM APPL-believe-PAST.3PS
 ‘The child believed Ali.’

Fifthly, PL does not exhibit any differentiated object marking, which can function as a marker of delimitation. As all undergoers surface with nominative case, such a delimitation can only be done through adverbial prefixes on the verb as in (54b):¹⁷

- (54) a. Ali-k past’a şk’om-u. b. Ali-k past’a o-şk’om-u.
 Ali-ERG cake.NOM eat-PAST Ali-ERG cake.NOM PV-eat-PAST
 ‘Ali ate (some) cake.’ ‘Ali ate the cake.’

As such, PL exhibits almost all the properties associated with I-languages by Ritter and Rosen (2000) and constitutes a good example, whose syntax is sensitive to the properties of the initiator. We believe that how an event is defined in a language under Ritter and Rosen’s typology has direct reflections on the voice system. If only the initial bound is used to define an eventuality as eventive, then all eventive predicates should involve a layer introducing the initiator in syntax. Thus, the initiator layer cannot be canceled out if the predicate is to be interpreted as eventive. This then requires the voice system to retain the initiator position with all eventive predicates. What we observe in PL is a three-way voice system, each one involving the projection hosting the initiator. Canceling out the initiator is only possible if the construction is to be interpreted as deverbal, hence non-eventive. The deverbal form can be used with a regular copula as in (55a) and also as the complement of the verb *remain*, as in (55b), indicating that it is truly adjectival in nature, a well-observed test for adjectivalhood since Wasow (1977):

- (55) a. Cami t’ax-eri on.
 glass.NOM break-PART cop.PRES.3PS
 ‘The glass is broken.’
 b. Cami t’ax-eri do-sk’ud-u.
 glass.NOM break-PART PV-remain-PAST.3PS
 ‘The glass remained broken.’

¹⁷ One implication of there being no differential object marking is that an AspectP in between vP and VP will not be active for delimitation in a non-D-language like PL.

9.5 Conclusion

The aim of this study was to argue for the lack of a syntactic split between single argument verbs as unergatives and unaccusatives in PL. We have shown that all such single argument verbs, in fact, have a transitive architecture, involving both an initiator and an undergoer.

In one sense, PL compares to Chol, where what counts as an eventive verb always requires a complement, hence an undergoer, so that only transitives and unaccusatives are categorized as verbs, but not unergatives, which surface as nominal constructions (Coon and Preminger 2013). Verbs in PL, however, not only require an undergoer but also an initiator, assuming a common transitive syntax for all verb types. Even though there is no syntactic difference between unergatives and unaccusatives in PL, at the level of morphology each verb type is associated with different TSs and case and agreement patterns that are correlated with different voice patterns requiring a transitive syntax.

One implication for the obligatory transitive syntax is that the initiator layer has to be present with all eventive verb types, making PL a natural candidate for I-languages that Ritter and Rosen (2000) define. Thus, due to the obligatory presence of an initiator layer in eventive predicates in an I-language like PL, it is not possible to find truly non-active voice patterns. We speculate that such voice patterns will only be available in D-languages, which can define an eventuality as eventive based on the terminal bound. However, the interaction between voice and defining eventhood in a given language requires further investigation, which we leave for future research.

Acknowledgments

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10

The event domain

GILLIAN RAMCHAND

10.1 Introduction

Perhaps the single most important result of generative grammar is the understanding that natural language representations are hierarchically structured. The traditional label V(erb) has, not surprisingly, proved inadequate for describing the full range of morphologies and behaviors of this “part of speech” crosslinguistically, and the complex representations it participates in. The purpose of this chapter is to review some of the motivations and evidence for this more complex understanding of the category “verb” and to try to consolidate and unify the insights from various different domains. Much of the work in this area in the past 20 years has used the label “little v” as the terminological place holder for the verb-specific functional category that hosts additional or decomposed grammatical information required in this domain. However, the choice of label is not crucial here. The questions are more generally cartographic, namely, what are the extra categories and projections that can and/or must appear in the phrase structure of the verb phrase, and in what order?

The focus of this chapter is the phrase structural representation of the lowest, most embedded portion of a natural language sentence—the part that contains intuitively the lexical verb and its arguments. My own starting point will be in some sense semantic, since I think that this part of the natural language representation corresponds to what I will call *the core event building domain*, and that it has both a syntactic and semantic integrity and unity within the sentence. My own work in this domain has been about capturing generalizations with respect to the semantics of participant relations, and tying them together with Aktionsart, or event structure typology. However, we want our theory to be able to capture generalizations in various other empirical areas as well. I divide these concerns into the three broad groups listed in (1) below.

- (1) a. Generalizations about the representations of event structure and (verbal) participant relations in the syntax.

- b. Generalizations about the nature and ordering of morphemes in the verbal extended projection, both free and affixal.
- c. Generalizations about domains—locality effects as diagnosed in the syntax and morphology.

These are all complex areas empirically, and sheer practical necessity has dictated that different research programs have emphasized different aspects of (a)–(c) above. For example, I take the seminal work of Kratzer (1996) to essentially be about capturing (c), while Harley (1995) and subsequent work within Distributed Morphology (DM) to have been particularly influential in the attention they have paid to (b). Ramchand (2008) on the other hand makes (a) most prominent. This is of course simplistic, since most work actually aims to account for all three classes of phenomena in some way; the adoption of the little *v* label across frameworks and research programs is testimony to that ambition and optimism.

The chapter is structured in the following way. Firstly, I provide a brief summary and recap of my own work on (a), discussing the motivations that have led Ramchand (2008) to propose a particular categorial deconstruction of the notion of V(erb) in section (10.2). In section 10.3, I provide a brief summary of the generalizations in domains (b) and (c) that a complete theory should also be able to account for. Finally, I add some new data from the empirical ground of auxiliary constructions in English to demonstrate the difficulty in unifying the solutions across the three domains (section 10.4). The concluding section (10.5) is more theoretical and conceptual. I reassess the cartographic and constructivist enterprise and provide a discussion of how to evaluate the existence and universality of functional heads. I will argue that in order to make progress, we need to ground our functional heads semantically. From this perspective, I will conclude that our empirical evidence points clearly to a separation of the different functions often ascribed to “little *v*.” To a large extent, on the evidence of the workshop that led to this volume, this is now the new consensus. Nearly all of the contributions to this volume recognize the necessity of separating the category defining head (which usually retains the little *v* label) from the external argument introducing head (which is usually called Voice) (Anagnostopoulou this volume, Harley this volume, Wurmbrand and Shimamura this volume, Marantz and Wood this volume). Where the distinction is made explicitly, and not bundled, Voice is clearly argued to be outside *v* in the categorizing sense. In addition, others argue that the causational role of *v* must be separated from Voice (Harley this volume; Wurmbrand and Shimamura this volume; Sundaresan and McFadden this volume). Once again, our evidence seems to be that Voice is outside *v_{cause}*. To anticipate my own position, I will argue that event structure decomposition and participant relational semantics (most similar to what others label *v_{cause}*) must be clearly separated from and hierarchically lower, than the head providing the choice of external argument, but that they are in a clear

“feeding” relationship. To this extent then, I will be supporting the emerging consensus. However, there will be some differences between the categories I will argue for and those assumed in much of the other literature. I return to this point in the concluding section.

10.2 Argument structure and event structure

As Levin and Rappaport Hovav(2005) discuss in their important review monograph on argument structure, it seems clear that what is needed to capture the relevant generalizations is some kind of structured representation, probably making core reference to notions of causation and embedding. (See also Ramchand 2013.)

Quoting from Levin and Rappaport Hovav (2005):

The survey of types of lexical semantic representations in this chapter and the preceding one has also revealed that the semantic notions which figure in argument realization are derived largely from the properties of events which verbs describe.

(Levin and Rappaport Hovav 2005: 75)

...embedding relations among arguments in an event structure are always respected in argument realization, with more embedded arguments receiving less prominent syntactic realizations.

(Levin and Rappaport Hovav 2005: 183)

If we now consider evidence from the classic semantic work on Aktionsart (starting with Aristotle and Vendler 1967 and leading to Taylor 1977; Dowty 1979; Smith 1995; among others), another type of typology emerges. To summarize, there is much linguistic evidence for the four natural classes of event shape as laid out in (2) (taken from Truswell, to appear).

- (2) a. Culminated processes (process + culmination) $\approx$ accomplishments (e.g., *run a mile*)
 b. processes $\approx$ activities (e.g., *run*).
 c. culminations $\approx$ achievements (e.g., *hiccup*) ;
 d. (neither process nor culmination) $\approx$ states (e.g., *exist*)

If one looks at the diagnostics presented in the formal semantic contribution of Taylor (1977), it is clear that activities and states have something in common: they share the subinterval property, which is a mereological notion capturing the property that the predicate applies truthfully to arbitrary subintervals of the asserted interval.¹ The subinterval property pairs states with activities (making them analogous to mass

¹ In the case of states, this is true down to the subinterval size corresponding to a moment, whereas for activities there is a granularity limit because of their dynamicity.

terms and plurals respectively in the nominal domain) and distinguishes them crucially from achievements and accomplishments that fail the subinterval property (and are hence more analogous to singular count terms). However, the above analogy underplays the internal complexity of accomplishments, and underplays too the deep linguistic cut between dynamic activities and states (despite the fact that they have divisivity and cumulativity in common).

The reason that mereologies work so well for individuals, but are less satisfying for eventualities boils down to the fact that individuals can be distinguished and packaged using simple *material* part-whole relations that are rather easy to match up with real world intuitions of subparts. On the other hand, deciding when something counts as a subevent of another event is fraught with paradoxes and technical semantic difficulties and is most often thought to require inertial worlds or some such intensional machinery (Dowty 1979; Landman 1992). The source of this additional complexity is *the notions of intention and causation* that link parts of one event to another.

Another difference between material part-whole relationships and causational/intentional glue is that the latter seems to create discrete and finite internal packaging. In principle, causational or force-dynamical relationships could potentially build extremely complex event chains from these building blocks, to create complex networks of interacting eventualities. However, when it comes to meanings that are lexicalized as single *monoclausal* verbal domains, the situation is interestingly constrained. There is strong linguistic evidence for causational complexity both upstream and downstream of the dynamic core of an event, as expressed within the lexical semantics of individual verbal items, *but only maximally one of each*. The causal complexity also seems to be independent of the durative feature. This is shown in the decomposition in (3), with relevant English exemplars:

(3) Lexical verbs in English across event types

	[+durative]	[–durative]
<i>dynamic event</i>	rise	disappear
<i>caused dynamic event</i>	raise	hit
<i>caused dynamic event with result</i>	destroy	win
<i>dynamic event with result</i>	empty _{intrans}	break _{intrans}

Internal causational complexity is thus rather restricted. It is well known in the literature that, in the building of complex causatives, indirect causes give rise to causational expressions that are more likely to be biclausal and less likely to be “lexical” or mono clausal (Shibatani 1973). With respect to the addition of result, the data also suggest that only one such delimitation per event is possible (Simpson 1983, Tenny 1994 on the unique delimitation condition). Thus, the typology we see can be

created by augmenting the dynamic core event with either a causally upstream or causally downstream state, but no further.

- (4) Dynamic Event: e_{dyn}
 Caused Dynamic Event: $e_{cause} \rightarrow e_{dyn}$
 Dynamic Event with Result: $e_{dyn} \rightarrow e_{result}$
 Caused Dynamic Event with Result: $e_{cause} \rightarrow (e_{dyn} \rightarrow e_{result})$

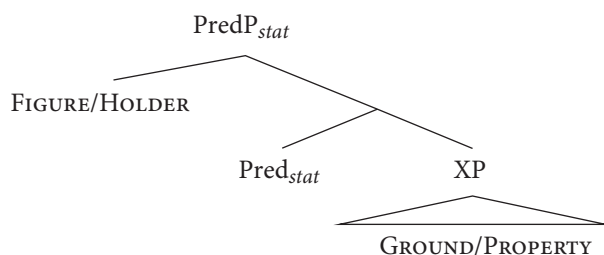
Returning explicitly to the argument structure domain, there are robust generalizations here too, which cut across languages. Crudely, the asymmetry between Theme/Patient on the one hand and Agent/Causer on the other seems to be universal, with the latter being chosen as the “subject” in preference to the former if both arguments are to be expressed. Conversely, Theme/Patients seem to be lower in the structure and more tightly related to the verb hierarchically than Agents are.

Also well known from the literature are generalizations that link up the internal argument with generalized notions of PATH, and the measuring out of the event (starting with Tenny’s (1987) Aspectual Interface Hypothesis and much subsequent work, such as Verkuyl 1972, Krifka 1989, Kratzer 2000, Zwarts 2006 to name a few). Since the lower portions of the event building domain are not my immediate concern here, I will simply refer the interested reader to this rich literature.

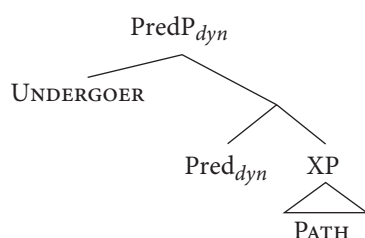
The point I wish to make here is that there is now substantial evidence showing (a) that argument positions related to causation are structurally high and in a privileged feeding relationship to formal subjecthood, and that (b) arguments related to the undergoing of change are lower in the structure and are related to the boundedness of the event. In addition, in both cases, subevents and core event structure arguments seem to have an upper bound of 3. The Aktionsart and the purely thematic generalizations thus converge, a fact that would be a conspiracy if both types of generalization did not actually flow from the same facts about the syntactic representation. This indeed is the major motivation behind the particular phrase structural proposal in Ramchand (2008). In what follows, I illustrate how those representations unify both classes of generalization.

Firstly, we can conceive of verbal material as providing primitive eventuality descriptions. Suppose there are minimally two basic types of these: simple stative property predications over atomic individuals, and dynamic (changing property) predications over atomic individuals, corresponding to states and dynamic events respectively. The two types are schematized in (5) and (6) below. I have labeled the holder of a static property the HOLDER/FIGURE, and the holder of a changing property the UNDERGOER. The syntactic claim is that the structural position of specifier corresponds to the subject of predication with respect to the property described.

(5) Static property predication



(6) Dynamic property predication ($\pm$ continuous)



Dynamic property predication is just a dynamized version of property-holding—if a property can be predicated of an individual, then a *changing* property can also be predicated of an individual. This creates the UNDERGOER relation, and it has the same specifier complement structure that the stative predication above has, with the only difference that the predication head here is dynamic. The complement of a static property description is the GROUND, while the complement of a predicate of change is PATH.

If we then compose dynamic and static property predication to model the augmentations justified by the linguistic typology in (4), then we automatically create an argument structure hierarchy with clear semantic entailments for each predication position.

1. *initP* introduces the causation event and licenses the external argument (“subject” of cause = INITIATOR)
2. *procP* specifies the nature of the change or process and licenses the entity undergoing change or process (“subject” of process = UNDERGOER)
3. *resP* gives the “telos” or “result state” of the event and licenses the entity that comes to hold the result state (“subject” of result = RESULTEE).

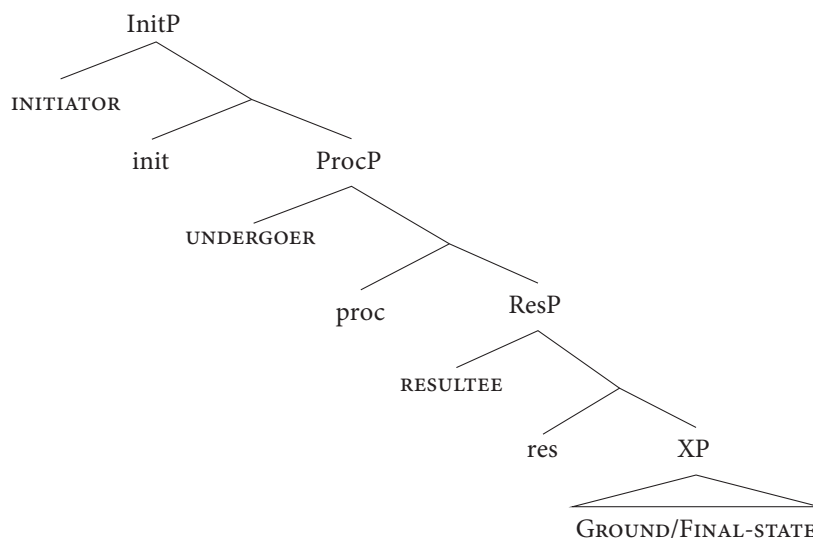
This is not a “template” in a strict sense, just the expression of the full articulation of event structure that can be generated while still expressing the “same” event.²

² As diagnosed by the impossibility of distinct temporal modification, and the unity with respect to the argument domain.

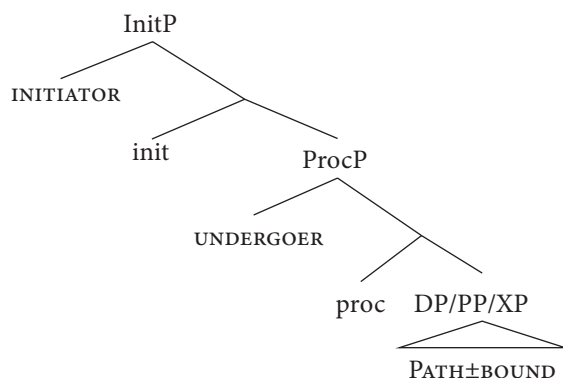
In particular, for a dynamic eventuality, *initP* can be radically absent in this system, as can *resP*.

In (7) and (8), we see examples of the different structures that can be generated. If we add to these two, the corresponding versions where *initP* is absent, this set of structures is pretty much exhaustive.

(7) **Caused-result accomplishments and achievements**



(8) **Activities (PATH –bound) and accomplishments (Path +bound)**



An important aspect of this proposal is the claim that there is a general combinatorial semantics that interprets this syntactic structure in a regular and predictable way. Thus the semantics of event structure and event participants is read directly off the structure, and not directly off information encoded by lexical items. Causal

embedding combined with *property predication* is the minimal semantic combinatoric glue that derives theta role classification and their hierarchical relationships, as well as predicting the natural classes of event types that we find in English. This system unifies Aktionsart and thematic role generalizations, and does so by using a very small number of primitives.

From this point of view, we have very strong motivation for decomposing the verb, even when a language shows no morphological internal complexity because it delivers the kind of structure that can be used to underpin the striking generalizations we find concerning argument structure hierarchies and event structure typologies across languages.

For later purposes, it is useful to highlight here that the outermost projection InitP proposed here is the one that bears closest resemblance to the projection that has been labeled little *v* in the literature. However, there are some important differences. In Ramchand (2008), there is no claim that InitP is obligatory; it does not provide the syntactic category of the verbal projection; it is not the locus for necessary information about Voice; it is not a phase head. InitP is defined here purely semantically/ relationally as a stative property predication that is built upstream of a dynamic predication, and a nominal projection that is merged in its specifier automatically acquires the semantics of INITIATOR. I assume that the structural semantics contributed by the phrase structure unifies with the conceptual semantic content provided by the root, and this fleshes out the meanings of the participant roles for particular verbs in richly detailed ways.³

10.3 Other motivations for functional structure in the verbal domain

10.3.1 *The separability of the external argument*

The outer V of the VP shell introduced by Hale and Keyser (1993) and subsequent work is similar to the initP of Ramchand in that it augments both the event structure and the argument structure at the same time. However, the role of introducing the external argument can be logically distinguished from the event augmentation, and is the main focus of empirical observations in Marantz (1984) and the arguments in Kratzer (1996). Specifically, it has been argued that while internal arguments are semantically closely selected by the lexical verb in an idiosyncratic way, the external argument is freer and more constructional. Kratzer's VoiceP was proposed to do the job of introducing the external argument, and the event predicate that does so is simply *identified* with the event argument that Voice combines with; Voice does not do any causative augmentation in her proposal.

³ Unlike in DM I actually assume that verbal roots lexicalize different spans in the verbal extended projection, and so combine with the structural semantics in parallel to it, rather than in series (see Ramchand 2014a for discussion), but this is a separate issue.

I agree with the hierarchical generalization that is one of the motivations behind this move, although I have argued that the internal argument has just as predictable and systematic a relationship to event structure as the external argument does. Be that as it may, the history of the Voice head is more closely tied to argument structure than to the internal topology of the events themselves.

The label chosen for this function is also telling. The choice between Active and Passive Voices, for example, makes reference to the abstract choice of “subject” that is not correlated in an absolute fashion with thematic role.

- (9) a. The police chased the thief. *Active subject = Agent*
 b. The thief was chased by the police. *Passive subject = Theme*

But if the Voice head (and its different “flavors” or versions) is supposed to track the kind of externalization that varies with traditional voice morphology, then it certainly cannot be equivalent to the head labeled CAUSE, or INIT for that matter. Clearly, VoiceP is not the same thing as the highest head of the Ramchandian decomposition argued for in section 10.2.

10.3.2 Category defining *v*

In DM, little *v* categorizes the root, which itself contains no category information (Harley 1995; Marantz 1997). However, it is also assumed, or at least hoped, that it can do the semantic job of deriving event typology and introducing external arguments (Harley 1995). To do this, little *v* must come in flavors, with different features necessary to create the different typology of event types. The different flavors of little *v* as listed in Harley (2009) are shown below.

- (10) a. *v_{cause}*: [+dynamic], [+change of state], [+cause]
 b. *v_{become}*: [+dynamic], [+change of state], [–cause]
 c. *v_{do}*: [+dynamic], [–change of state], [–cause]
 d. *v_{be}*: [–dynamic], [–change of state], [z–cause]

There is a difference between this system and the decomposition found in Ramchand (2008) as described in section 10.2. In the above system, there is only *one* extra head, and featural specification is used to capture the different types of Aktionsart. In the system described in section 10.2, the Aktionsart are composed from state vs. event via generalized causative embedding. In the system above, on the other hand, there is no way of accounting for why certain feature combinations and combinations of little *v* heads are possible and others are not. In some sense, it is the idea that little *v* has a defining role as categorizer that lends naturalness to the idea that there is only one such head in any verbal extended projection. (There are, however, even in this system, cases where more than one little *v* is used to create even more complex event types (see Cuervo 2003 for discussion).)

However, in Harley (2009), Harley herself considers whether the category defining job of little *v* can be unified with its roles as introducing the external argument and assigning accusative case. She takes as her test case the phenomenon of verbalizations in English, where morphemes like *-ify*, *-ize*, and *-ate* are actively involved. Subsequent nominalization of these forms means that the nominalizer must be attaching to a full overly “verbalized” *vP*. However, this predicts that an external argument and accusative case should be available in these nominalizations and they are not. Harley concludes,

The inevitable conclusion, then, is that the verbalizer *v* is not the external-argument- introducing head. Further, the verbalizer *v* does not select for the Case-checking head. Rather, the external-argument introducing head does. The Agent head and the Case head must occur outside the verbalizing *v* head, and hence be excludeable from nominalizations. The Agent +Case-head complex, then, takes the verbalizing *v* head as its complement. In other words, the complement of VoiceP really is *vP* (VP!), not an acategorical root.

So *v* in the DM sense is also not equivalent to Kratzer’s (1996) Voice P. Note that DM’s use of *v* as a verbalizer is not restricted to derivational morphology, but is necessary for all verbal projections since roots themselves bear no syntactic category label. I will put this point aside in this discussion since it relates to a whole package of DM-internal assumptions that simply don’t carry over to theories like my own, which have neither acategorical roots nor a lexicalization convention that restricts itself to terminal nodes (see Ramchand 2014b for more extended discussion of this particular issue). However, in terms of the clear descriptive generalizations, we can ask whether the functional head that hosts information about eventivity can be the same as the one that introduces the external argument and assigns accusative case. The answer, as we have seen, appears to be negative.

10.3.3 Phases and “locality”

As a final, but important consideration, we need to ask how the proposed *v* head relates to units of locality, or cyclic domains in the syntactic computation. In a sparse phrase structural decomposition, the widely assumed little *v* functional head is the highest one in the verbal domain, and it is natural to see it also as the edge of the phase. It is generally assumed, in Chomsky (1993) and subsequent work, that (non-unaccusative) *vP* and *CP* are phases for movement. More recently, it has been argued by Legate (2003), and by Richards and van Urk (2013) that there is a phase edge in the general *vP/VP* area that is a required escape hatch for movement. There are unresolved issues here, however, with respect to the timing of spell-out and the size of the edge domain. Is little *v* the phase head, with *VP* being the spell-out domain, or is the phase head actually something a bit higher, possibly *Asp* with *vP* being the spell-out domain? The problem with the work that explicitly addresses cyclicity and locality is that it often operates with a very coarse-grained phrase structure. However,

as we have seen, the experts in the verbal domain seem to be concluding that *v* and Voice *cannot* be collapsed into one functional head. Where does that leave the research that shows evidence for phases, given that such research typically uses a much coarser grain in establishing the patterns? When it comes to evidence from phenomena such as ellipsis, the conclusions too are dependent on the starting assumptions about phrase structure. Merchant (2008) assumes, for example, that the *v* that takes VP as its complement *is* equivalent to Voice. His conclusion is, then, that while VP can be targeted by regular ellipsis, it is the full *vP* that must be the target of pseudo-gapping, where “voice” mismatches are never tolerated. One reinterpretation of the Merchant facts could be that while only the full phase/spell-out domain can be a target for movement (as in one family of plausible theories of pseudo-gapping), any subconstituent of the first phase can be elided under identity as long as it is event-denoting. This would mean in turn, if Harley (2013) is right, that it is the higher VoiceP projection that is the top of the phase, and not the little *vP* itself.

In short, while the notion of phases is important to settling the status of *vP*, syntactic work on locality turns out to be an unhelpful place to look to adjudicate between different versions of the decomposed structure of the higher VP. This is because such work tends to employ a more coarse-grained phrase structure where the relevant distinctions are not made.

10.4 The English auxiliary system and the event domain

We have seen that the event typological head (or heads) probably are not equivalent to the Voice head that licenses the external argument, and that Voice is certainly not equivalent to the category defining head *v* of DM. When it comes to phases, there is general agreement that there is a low zone that contains the verb, which constitutes the first cycle in the syntactic computation, and which induces a locality domain. But since the one-head-does-all view of little *v* cannot work, we are left with much less information about how big the first phase must be and what functional heads it actually contains. In this section, I take a closer look at the auxiliary system of English to push a little harder on the question of locality domains, and argue that the first phase must be populated with more, and different creatures, than is usually supposed. Finally, I will argue that the top of the first phase cannot be Voice in the traditional sense, but a much more abstract notion.

Most modern syntactic representations of the phrase structure of the English verbal extended projection simply assume a templatic ordering of Perf over Prog over Pass (Bjorkman 2011; Sailor 2012; Aelbrecht and Harwood 2012; Bošković 2013), when these elements need to be explicitly represented.

- (11) John might have been being chased by the cops.

Linguists differ with respect to whether they simply represent Perf, Prog, and Voice as functional heads (Bjorkman 2011 and Sailor 2012) and handle the inflectional facts via “affix lowering” or Agree, or whether they additionally assume separate functional heads hosting *-en* and *-ing* (Bošković 2013 and Harwood 2012). The standard syntactic assumption seems to be that some kind of selection is at work (not a cartography in the Cinque 1999 sense), and these projections are left out even for English when the literal perfect or progressive forms are not expressed in the sentence.

However, looking more carefully at auxiliary selection in English, we can see that it actually provides important evidence for “zoning” in the functional sequence. Specifically, one can show there is an important syntactic and semantic joint between progressive and perfect in English that should be represented explicitly by an abstract cut-off point in the phrase structure. Specifically, with respect to a number of different linguistic tests, the progressive, unlike the perfect, appears to pattern qualitatively with the main verb and its arguments.

We have already seen that Aktionsart is one of the verbal properties that is encoded by lexical items within the verbal domain. As is well known (see e.g., Dowty 1979), the progressive in English selects specifically for the Aktionsart of its complement; it combines with dynamic verbal projections and not stative ones (12).

- (12) a. John is dancing the tango.
 b. *John is knowing the answer.

Under the assumption that selectional restrictions are strictly local (Baltin 1989), the fact that the progressive places selectional restrictions on the Aktionsart of the verb phrase it combines with is initial suggestive evidence that Prog is low enough in the extended projection to select for the nature of the event structure described by the verb.

It is instructive to contrast this with the perfect, which does not constrain the Aktionsart of its complement. In (13), we see that the perfect can combine with *any* main verb in the English language. While it is true that the meaning of the perfect changes subtly depending on the type of main verb, the perfect itself seems to be categorially unselective.

- (13) a. John has destroyed the castle. (telic verb)
 b. John has driven on ice (before). (atelic verb)
 c. John has known Sue for three years. (stative verb)

At the same time, the perfect has a relationship with temporal anchoring, which is different from the progressive, showing a more indirect relationship to the VP event description.

I follow previous work in assuming that T is the locus for relating the temporal interval associated with the event to the utterance time, either by precedence or

overlap. Most modern implementations converge on the idea that this must be mediated by the notion of a “reference interval” or “topic interval” that is related in some way to the event (Reichenbach 1947; Klein 1994; Giorgi and Pianesi 1997; Demirdache and Uribe-Etxebarria 2000).

We see this mediation very clearly in the perfect tense, where the interval ordered with respect to utterance time is not the same as the event’s actual run-time.⁴ For example, past tense adverbials are inadmissible in (14a) even though the run time of the event described by ‘writing’ is fully in the past.

- (14) a. John has written the letter (now).
 b. When I saw him, John had already washed the car (the day before).

In the progressive, on the other hand, the event run time and the tense specification of the progressive auxiliary cannot be so distinguished. The progressive picks out a mereological subpart of the event as described by the VP, a relation that is possible *without* the presence of explicit temporal information. The different mereological subparts are not separably temporally modifiable.

- (15) a. *John is building a house tomorrow now.
 b. *John was building the house today yesterday.

The perfect tense seems to require the mediation of a topic interval between the event and temporal anchoring, whereas the progressive expresses a relation to the non-progressivized event that is purely mereological and non-temporalized. The progressive describes a derived eventuality based on the verbal event description, by constructing a new event-concept which is not dependent on actual instantiations of the verbal event in question.⁵

The progressive and passive are both the lowest in the full possible expansion of auxiliaries in English, and while the passive has traditionally been considered to reside within the first phase zone because it is the exponence of Voice, the same has not been systematically claimed for the progressive. It should be pointed out that the progressive shares with the passive the use of the helping auxiliary *be*, which Bjorkman (2011) argues is inserted as a default to spell-out tense features. This makes it more similar to the passive, and less similar to the modals and perfect constructions that introduce their own distinct tense carrying auxiliaries. Next, I turn to more direct evidence that progressive *-ing* heads a qualitatively different projection than the perfect *-en*, and that in particular lies *within the first cyclic domain* of the clause.

⁴ Problems with the semantic description of the English perfect in fact lie behind the original motivation for the idea, as expressed in Reichenbach’s (1947) Reference Time.

⁵ I believe that this is in fact the reason that the progressive gives rise to the “imperfective” paradox. The treatment of this paradox should be within the domain of lexical concept formation, and not in the deployment of possible world semantics.

10.4.1 Expletive associates

In this subsection, I show data from Harwood (2012, 2014) who independently arrives at the same conclusion that progressive must be inside the first phase. Harwood's evidence includes an extended argument based on classical VP ellipsis, and the idea that ellipsis always targets a phasal spell-out domain, although under his account phases are "flexible."⁶

Harwood (2012) notes that the thematic subject of a verb in the expletive *there*-construction in English remains low in the clause and is moreover confined to positions left-adjacent either to the main verb, or to the passive or progressive participles. It can never surface to the left of the perfect participle.

The examples in (16), with the full complement of possible auxiliaries, show that there is only one position in the sequence for an expletive associate, between Perfect *-en* and Progressive *-ing* (cf. Harwood 2012).

- (16) a. *There could have been being a truck loaded.
 b. There could have been a truck being loaded.
 c. *There could have a truck been being loaded.
 d. *There could a truck have been being loaded.
 e. *There a truck could have been being loaded.
 f. A truck could have been being loaded.

Even when the progressive itself is not present, we see that the position to the left of the perfect participle is still unavailable, while the position to the left of the main verb and passive participle is fine, as we see in (17).

- (17) a. There could have been a truck loaded.
 b. *There could have a truck been loaded.
 c. *There could a truck have been loaded.
 d. A truck could have been loaded.

Similarly, leaving out the perfect and building sentences with just the progressive and the passive, as in (18), shows exactly the same restriction: the "low" subject position can surface to the left of the main verb, passive participle, or progressive participle.

- (18) a. *There could be being a truck loaded.
 b. There could be a truck being loaded.
 c. *There could a truck be being loaded.
 d. A truck could be being loaded.

⁶ I am not equally convinced that traditional VP ellipsis is *directly* sensitive to zones the way Harwood suggests, and my own view of the zones involved does not allow "flexibility" the way his account does. Part of the discrepancy between our accounts is that I take the semantic characterization of the lowest zone as "event description" as primary and axiomatic.

Thus, there is a low position for the subject adjacent to the progressive participle (and passive participle), but the perfect participle is outside that low argument position.

10.4.2 VP fronting and pseudoclefts

Turning now to a distinct phenomenon concerning displacement, it has been argued by Sailor (2012) that VP fronting and specificational pseudo-clefts can target a constituent between Perfect *-en* and Progressive *-ing* (cf. Sailor 2012). In (19) we see the constituent headed by *-ing* undergoing fronting, and in we see it forming a grammatical cleft. Crucially, the constituent selected by the perfect auxiliary, and that selected by the modal, cannot be targeted in these constructions.

- (19) If Mary says that the cakes will have been being eaten, then ...
- a. * ... [eaten], they will have been being.
 - b. ... [being eaten], they will have been.
 - c. * ... [been being eaten], they will have.
 - d. * ... [have been being eaten], they will.
- (20) A: John should have been being praised. B: No, ...
- a. * ... [criticized] is what he should have been being.
 - b. ... [being criticized] is what he should have been.
 - c. * ... [been being criticized] is what he should have.
 - d. * ... [have been being criticized] is what he should.

When the progressive is not present, we see that the constituent consisting of the passive participle can also be fronted much like the progressive participle phrase. Nevertheless, the perfect participle phrase and the infinitival phrase selected by the modal are not legitimate targets.

- (21) If Mary says that the cakes will have been eaten, then ...
- a. ... [eaten], they will have been.
 - b. * ... [been eaten], they will have.
 - c. * ... [have been eaten], they will.

The examples in show that when both the progressive and passive are present in the absence of the perfect, it is still the *-ing* phrase that fronts. The fact that the passive participle phrase does not front on its own seems to indicate that what is being targeted here is the maximal phrase of a certain type.

- (22) If Mary says that the cakes will be being eaten, then ...
- a. * ... [eaten], they will be being.
 - b. ... [being eaten], they will be.
 - c. * ... [be being eaten], they will.

These facts show that there is a privileged boundary at the point between Perfect *-en* and Progressive *-ing* which is not dependent on the surface presence of any specific aspectual feature or morphological exponent.

The facts can be modeled by assuming that when they exist, the main verb, passive participle, and progressive participle all lie within a particular distinguished domain targeted by these fronting operations. This is the constituent that is fronted in “VP-fronting,” and what is clefted in the pseudo-cleft construction.

10.4.3 British nonfinite *do*-substitution

Finally, I turn to an argument of my own from British nonfinite *do*-substitution, which exposes the same essential division. Some background description of the facts is in order. In British English, *do* is an abstract *pro*-form that substitutes not just for eventive verbs but for stative verbs as well, after an auxiliary.

- (23) a. John might leave, and Mary might do also.
 b. John might really like oysters, and Mary might do also.

Although British English *do* can replace stative verbs, it is confined to main verbs and never substitutes for an actual auxiliary. In other words, it is in complementary distribution with stranding by auxiliaries.⁷

- (24) a. John might have seen the movie, and Mary might (*do) also.
 b. John might be singing a song, and Mary might (*do) also.

However, even within these constraints, not all nonfinite verbal forms may be substituted for by *do*:

- (25) a. John might leave, and Mary might do also.
 b. John has left, and Mary has done also.
 c. John is leaving, and Mary is (*doing) also.
 d. John was arrested, and Mary was (*done) also.

British nonfinite *do* can substitute for an infinitive modal complement or a perfect participle, but not for a progressive or passive participle. This phenomenon too, motivates a cut between Perf and Prog. The diagnostic is in some sense the converse of the previous one: the very constituents that could participate in the fronting constructions are the ones that British nonfinite *do* cannot substitute for.⁸

⁷ Note that the mismatched reading in (24a), where *do* is construed as substituting for a main verb in non finite form after the modal auxiliary, is marginally possible here, but is irrelevant and will be ignored in what follows. The reading where it substitutes for the auxiliary phrase is robustly ungrammatical.

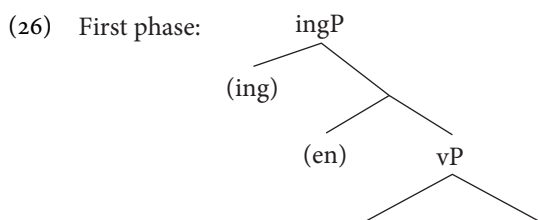
⁸ Note that Baltin (2006) shows that British *do*-substitution does pattern like a *pro*-form, rather than ellipsis with respects to the tests in Hankamer and Sag (1976).

10.4.4 *-ing* lies in the event domain

We have seen robust evidence for two distinct domains from three independent sets of grammatical facts. In each case, the facts point to a joint between the progressive participial phrase and the perfect participial phrase when they exist (and we assume that the joint exists even when the morphological evidence is not so articulated).

1. *-ing* phrases, passive *-en* phrases, and main verb phrases all contain a base position for the external argument
2. *-ing* phrases, passive *-en* phrases, and main verb phrases all form a unit with regard to independent mobility
3. *-ing* phrases, passive *-en* phrases, and main verb phrases cannot be substituted by the pseudo-auxiliary verb *do* in British English

Thus, with respect to a crude macro division of the clause into a VP domain and a TP domain, it seems the progressive and passive forms lie within the lower domain, while modals and the perfect lie within the higher. British English nonfinite *do*-substitution is a *pro*-form for the higher, but crucially not the lower domain.⁹ If we locate passive *-en* in $-en_{\text{pass}}P$, and *-ing* in $-ing_{\text{prog}}P$, then the phrase structural description for what we find in the data can be represented as in (26).



However, this is not yet either explanatory or satisfying, because it simply reuses the specific morphological forms as labels and as such is non-generalizable to other languages. For example, we want to know whether the projection headed by *en* is actually Voice, as described by Kratzer (1996). What then should be the proper abstract label for the projection headed by *-ing*? Whatever we say here, the evidence from the progressive shows us that it is not good enough to simply associate the label Voice with the highest projection in the first phase verbal domain. That would have worked if all we ever found in that zone were passive or middle-like morphology; but the progressive is more properly described perhaps as “Aktionsart” morphology. Even if we could motivate an abstract label for this (for example $Ev(ent)P$ springs to mind) the question still remains whether there is an “absolute” top projection for the

⁹ This makes the difference between the British English dialects and the more restrictive ones, such as the American, quite simple to state: standard dummy *do* support in the more restrictive dialects has only finite instantiations, British English possesses a non finite version of this *pro*-form as well.

spell-out domain. In other words, is it crucial that Voice, or the mystery top projection always be projected at the top of the phase even when they do not host participial morphology/function?

In order to address these questions, I need to expand the discussion somewhat to include some more general theoretical and architectural issues. In section 10.5, I lay out the minimalist cartographic assumptions as discussed in recent work by Ramchand and Svenonius (2014), and return to the questions above in the light of that framework.

10.5 Constructivism, cartography, and functional structure

Ramchand and Svenonius (2014) attempt a reconciliation of the cartographic enterprise with minimalist considerations by reconsidering the division of labour between universal and emergent categories and the role of the interfaces with cognition. We reject the rich functional hierarchy as an axiomatic part of UG. We argue that there is no plausible evolutionary scenario to support the natural selection of a language faculty with such a highly structured organization of functional features. However, we also take the results of the cartographic enterprise seriously, and we seek a source for the rich functional hierarchy as displayed by various languages. In fact, a source for phrase structural category labels and their hierarchical relationship is required no matter how much of the specifics of cartography one accepts—even the pared-down C-T-v-V is a functional hierarchy in need of explanation. Ramchand and Svenonius argued that the rich functional hierarchy has multiple sources, one of which is extra linguistic cognition, and another comes from language-specific morphological and lexical devices.

Ramchand and Svenonius basically accept the evidence of a fundamental tripartition of the clause into a V domain, a T domain, and a C domain (Rizzi 1997; Platzack 2000) and provide this with a formal semantic grounding on a conceptual backdrop. Specifically, we take events (e), situations (s), and propositions (p) to be conceptual primitives recruited by the language faculty, and we take the hierarchy of $C > T > V$ to follow from the interaction of (a) the way these conceptual primitives are organized in the wetware and (b) the way they are harnessed by the syntactico-semantic system. Within the core zones we find a great deal of interlanguage and intralanguage richness and variation. We show that, in some cases, the hierarchy is not in fact fixed; in other cases, there are independent factors giving rise to hierarchical effects. In yet other cases, we find language-specific points of variation that are driven by language and morpheme-specific selectional factors (see also Wiltschko 2014, who arrives at a similar conception of the relationship between a universal spine and language-specific elaborations).

If universal aspects of the phrase structure of natural language are sparse and abstract and follow from the nature of ontological domains, then this somewhat

changes the way we ask the little *v* question. The verbal domain, under this conception, is the domain of event descriptions. It constitutes a first phase that builds a coherent description of this particular ontological type before being passed up and included in the description at the next level, which is that of situations. Situations in our view are complex entities which are built around events but have times, worlds, and possibly locations as parameters.

So far, what we have seen is that the domain of event description involves a specification of event-structure Aktionsart/force dynamical properties, together with causationally ordered participant slots. However, it also seems to include certain modifications of the core event description. In the case of passive, the passive participle selects an eventuality type that has an INITIATOR and constructs an event description that makes the internal argument the aboutness-topic. The progressive also selects a particular eventuality type (in this case a dynamic eventuality) and creates a derived in-progress state (see Parsons 1990). Although Passive does not disrupt Aktionsart properties (states remain states, and events remain events), it does change the choice of event TOPIC by suppressing or binding off the highest argument on the force-dynamical hierarchy. Progressive, on the other hand, leaves participant hierarchies intact but converts an event into a state. What the two have in common is that they *select* for some property of events, and return a derived event, showing that they sit firmly within the event domain.

Let us consider the questions we were left with at the end of the last section.

- A. Is there a hierarchically highest, head, or “phase head” if you will, in the event domain?
- B. Is that head defined in “absolute” or “relative” terms?
- C. Is it equivalent to the head that introduces the INITIATOR, or causally most privileged argument in the event-building part of the phrase structure?

Given the evidence for domains given above, some version of the phase assumption must be correct, with the lowest phase corresponding to the verbal domain of event descriptions. However, whether the phase head is absolute or relative is a trickier question. In Ramchand and Svenonius (2014), the absolute and obligatory position in the phrase structure on top of the event domain is Asp*. This is the head that combines with a complete event description and converts it into a description of the higher ontological type, see (27).

- (27)
$$\begin{array}{lcl} & T & \text{situation, domain of sort } s \\ & \swarrow \text{Asp}^* & \text{transition. } \exists e R(s,e) \\ & V & \text{event, domain of sort } e \end{array}$$

One view would then be that there is no privileged highest head in the event domain per se, but it is the transitional head Asp*, which marks the end of the phase and triggers the spell-out of the lower domain. The existence of progressive and passive

morphology in a particular language are thus language specific and learned facts, together with their selectional relationships and hierarchical order.

Under this view, the V heads in the lowest domain are *all* event descriptors. They order themselves in a particular way because of local selectional requirements, and they each have a single abstract predication position, based on the abstract notion HOLD.

$$(28) V_{proc}: \lambda x \lambda e [\text{Process}(e) \ \& \ \text{Undergoer}(e, x)]$$

$$(29) V_{init}: \lambda P \lambda x \lambda e' [\text{CausedProcess}(e', e) \ \& \ P(e) \ \& \ \text{Holds}(e', x)]$$

$$(30) V_{en_{pass}}: \lambda P \lambda y \lambda e' \exists e [P(e) \ \& \ \text{Transition}(e', e) \ \& \ \text{Holds}(e', y)]$$

$$(31) V_{ing}: \lambda Q \lambda z \lambda e' \exists e [Q(e) \ \& \ \text{InProgressState}(e', e) \ \& \ \text{Holds}(e', z)]$$

The auxiliary verb *be* is inserted at the phase boundary if there is no available main verb to fill Asp* (essentially as in Bjorkman 2011).

Notice that here, we have argument positions for *all* subjects of predication: the force dynamical heads, as well as the derived eventive heads. In principle, all of these specifier positions (except the lowest) could be filled by external *or* internal merge.¹⁰ However, the morphological functors that create *derived* events always fill their specifiers via internal merge, by definition. There is no hierarchically superior Voice head that has the job of just *introducing* the external argument for the first time (as in Pylkkänen-like implementations that separate Cause and Voice (Pylkkänen 1999)). In the system I am proposing, there are derived events and derived “highest arguments.” Entailments accrued from being in particular structural positions simply accumulate. The argument that ends up in the specifier of the top eventuality descriptor is going to be privileged with respect to grammatical subjecthood and nominative case. While the *-ing* head does not disrupt the force-dynamical relative ordering of arguments, *-en* (and presumably other types of morphology traditionally called “voice”) does.

In recent work on Hiaki, Harley (2013) also concludes that there needs to be a separation of causation and highest subject. To this extent, we see a real convergence across frameworks. However, she rejects an account where there is an argument introduced in the specifier of the causation projection which then *moves* to the specifier of Voice in the default case. Her arguments for a more Pylkkänen-like view come from data that involve the presence of an applicative argument. In a

¹⁰ The system in Ramchand (2008) is built to allow movement of a single DP argument through adjacent specifiers, in principle, thus accumulating the entailments from the various predication positions. This creates different kinds of composite thematic roles. Thus, the movements allowed here into the specifiers of derived eventuality predications are no different from what is already standardly assumed in the system.

nutshell, the data show that even though the applicative argument seems to be higher than the causing projection from the point of view of morphology and scope, it never gets “chosen” as the subject of the resulting predication. To avoid this violation of relativized minimality, Harley argues that the external argument must be base generated in Voice and cannot be moved there from the lower causational projection (see also Harley this volume).

Unfortunately, adopting Harley’s conclusion raises deep problems for the syntax–semantics interface. Introducing the external argument via Voice, and, in the case of applicative constructions, at a *distance* from the event describing heads, raises the problem of how the selectional semantics and relationship between that argument and the event description are to be established. Even if we had different Voice flavors, each specific to a particular verbal root and its cluster of functional heads, the selectional subcategorization frames DM would have to use for the job would not even be in a local relationship with those projections. For these reasons, I find her solution untenable.

However, I think Harley (2013) is right that we face a real paradox here. On the one hand, scope and morphological facts tell us that the applicative is added *outside* the whole causational projection while, on the other hand, it is simply bypassed when an argument has to be promoted to subject position, and the initiator argument is chosen instead. As I have argued, I think there are extremely strong reasons for believing that the event describing force-dynamical heads come with their own specifiers and build argument relations in a semantically transparent way. I argued in section 10.2 that this was the only way to model the robust generalizations that we find about argument ordering, event structure, and crosslinguistic event typology. The way to avoid the Harley paradox is to claim that the applicative argument, being outside the force-dynamical profile of the core event, is simply not eligible for promotion to subject. We could technically implement this by assuming some kind of extra prepositional covert structure introducing it. For the purposes of subject selection for the higher inflectional domain, the initiator argument would then (correctly) count as the highest eligible argument. However, just in case a derived event is created, we have a new eventuality and thus a new subject of predication can be established. At that point all bets are off. As far as I understand it from the Hiaki data, genuine passivization operations *can* turn the applicative argument into a derived subject.

So, the upshot of the discussion here is that we can maintain a simple view of zonal semantics by arguing that everything in the verbal domain is a head that constructs an event description of some kind. We keep the inventory and ordering of force-dynamical heads as proposed in Ramchand (2008), and as described in section 10.2 to maintain our crosslinguistic generalizations about aspect and argument structure. We admit that subsequent to the building of the core event, languages often possess (language-specific) formatives that systematically manipulate and construct derived

event descriptions from core event descriptions. As long as one is just building event descriptions from event descriptions, we remain in the first phasal zone of the clause. When the transitional head is reached (Asp* in the notation of Ramchand and Svenonius), the event domain is spelled out and the highest (possibly) derived external argument position is the one that is fed through to subsequent inflectional processes, such as agreement and nominative case.

This is what we *need* to say so far, given the facts we now know about causation and subject selection, and about the progressive. However, it is also possible to maintain all of the above, and propose an *additional* absolute highest head in the event domain that registers a choice of subject of predication for the whole complex event. This could not really be labeled Voice, since, as we have seen, it must also be fed by progressive *-ing*, so one might give it a more neutral label such as Event-TopicP. It is unclear to me whether we gain anything conceptually from making the top of the verbal domain an obligatory head with an absolute label, since the Asp* head which creates the sortal shift already performs that function. It remains to be seen, however, whether there are any empirical arguments or predictions that would distinguish such an account from the more relativistic and minimal one consistent with Ramchand and Svenonius (2014).

Finally, the view I have proposed here is consistent with the view that the event structure head corresponding to causation is distinct from and lower down than the one responsible for argument externalization (as in Harley this volume; Sundaresan and McFadden this volume; Wurmbrand and Shimamura this volume). However, unlike the other contributions in this volume, I argue that we cannot meaningfully label this projection Voice, since it is more general than the passive/active/middle family of distinctions. The evidence for this position came from my examination of the progressive, an event structure modification that has not traditionally been considered to be inside the very first phase of syntactic structure building. The evidence from the progressive leads me to label this final head that hosts the choice of external argument Evt. I have also made no use of little *v* as a categorizing head in my discussion, since it turns out to do no work whatsoever in my framework. Its positioning is essentially a meaningless question in the framework of Ramchand (2008) where the notion of verbhood is spread over a number of heads, and where lexical verbs identify spans rather than roots.

Acknowledgments

Thanks to the workshop participants and members of the audience at the “Little *v*” workshop in Leiden for comments and feedback on this chapter, and to Peter Svenonius for his collaboration on our earlier joint paper on syntactic zones. Thanks also to the anonymous reviewers. I alone am responsible for any remaining errors.

11

The interpretation of external arguments

JIM WOOD AND ALEC MARANTZ

11.1 Introduction

The striking parallels across languages in the syntactic expression of “argument structure” broadly construed has led within generative grammar, at least since Generative Semantics, to generative theories that demand a kind of transparent reflection of argument structure in underlying syntactic representations. This trend is reflected in approaches oriented around thematic roles, such as those that adopt some version of Uniformity of Theta Assignment Hypothesis, as well as event-structure-oriented approaches like Ramchand’s (2008, this volume) in which, in a sense, event structure is underlying syntactic structure. An alternative approach attributes the relative uniformity of the expression of argument structure to the principles that interpret syntactic structure semantically; here, syntax is truly autonomous, with the atoms of syntactic representations and their relations carrying no semantic values. On this alternative approach, we might expect that the same meanings could be expressed by different syntactic structures and that the same syntactic structures might express different meanings.

Recent work from Myler and Bruening illustrate this approach in different though related domains. Myler (2014) argues that the expression of possession in predication (as in ‘I have a book’) varies crosslinguistically in such a way that the same meanings are constructed by different syntactic processes in different languages, without being related to a single syntactic structure. Bruening (2010) argues in the same vein that the double object and the *to*-dative expression of transfer of possession in English involve different syntactic structures, not transformationally related structures. (Here he follows a long tradition in the literature but provides a contemporary demolition of the alternative proposals.)

While Myler and Bruening support the autonomy of syntax by demonstrating that syntactic structures may be semantically ambiguous and semantic structures may

find alternative syntactic representations, in this chapter we will extend the argument to the inventory of syntactic heads. We will argue that syntactic heads crucially involved in the interpretation of argument structure—heads like *v*, voice, *p*, and *appl*—are subject to contextual alloosemy at the semantic interface. Each such head may have a particular range of meanings, including a null (expletive) meaning, depending on the syntactic context. Once syntactic heads are absolved from the necessity of carrying certain features relevant to their interpretation explicitly—when the features are rather computed contextually at the point of semantic interpretation—we can develop a sparse inventory of functional heads for the syntax.

For example, in theories that separate a verbalizing category head *v* from the verbal root, the little *v* node is observed to vary in interpretation across verb categories, in particular alternating between what might be labeled v_{BECOME} for inchoative sentences like “the door opened” and v_{DO} (or v_{CAUSE}) for transitive sentences like “John opened the door.” The alternation here is a reflection of *Burzio’s Generalization*: external argument and transitivity lead to the v_{DO} interpretation, and no external argument and intransitivity lead to the v_{BECOME} interpretation. If the interpretation of the *v* correlates with the syntax, then there is no motivation to include a syntactic feature related to the difference in interpretation, over and above any syntactic features related to the syntactic projection of an external argument and syntactic transitivity.

In this chapter, we present an account of the heads that add participants to events. Within current theories, these heads are usually identified as voice, *appl*, and prepositions, as well as little *v* for some linguists, where the causative little *v* head might introduce an agent or causer. We will follow Pylkkänen (2008), Harley (2013, this volume), and Legate (2014) among others (see e.g., Sundaresan and McFadden, this volume), in arguing that little *v* does not, by itself, introduce an argument, so our account will focus primarily on the voice, *appl*, and prepositional heads. The empirical focus of the chapter revolves around Icelandic figure reflexives, Japanese adversity causatives, and possessor-raising constructions.

The chapter is organized as follows. In section 11.2, we lay out our basic proposal, outlining the syntactic and semantic features of argument-introducing heads. In section 11.3, we present an analysis of Icelandic figure reflexives, which illustrates one basic process that will be crucial to the analysis of possessor raising and Japanese adversity causatives. In section 11.4, we develop the account of Japanese adversity causatives. This will involve an analysis of predicate possession, the internal argument of change-of-state (anti)causatives, and possessor raising. Section 11.5 concludes.

11.2 The proposal

We begin by making a distinction between little *v*, on the one hand, and voice, *appl*, and prepositions, on the other. As we will discuss in more detail in section 11.4, little

v has the syntactic function of verbalizing category-neutral roots, and serves as the semantic locus for a variety of interpretive processes which will be discussed throughout. What little v does not do is introduce argument DPs syntactically; nor does it serve as the semantic locus for the thematic interpretation of DPs. Morphologically, however, the spell-out of little v can be sensitive to the presence of an external argument. For example, in languages like Japanese, the causative-inchoative alternation is often marked with a (“lexical”) “causative” affix on the transitive variant (see Harley this volume, Shimura and Wurmbrand this volume). As we will discuss further below, this causative affix does not always imply causative semantics. What the morphology is telling us, in this case, is not that the semantics involves causativity, but that the syntax involves an external-argument-introducing voice head in a transitive construction. That is, the causative suffix is the contextually determined spell-out of v in the context of an external-argument-introducing voice head.

In terms of argument-introducing heads, we are left with five potentially distinct heads:

- (1) a. **voice** introduces the external arguments of vPs (often agents)
- b. **low appl** introduces an argument related to a DP
- c. **little p** introduces the external arguments of PPs (figures)
- d. **prepositions** introduce non-core arguments in a manner syntactically distinct from high appl
- e. **high appl** introduces a non-core argument

We propose that these five heads can be reduced to one single argument introducer, which we will refer to as i^* , in distinct syntactic contexts. The differences between the apparently different uses of i^* stem from rules that are sensitive to the syntactic context in which it occurs.

Our proposal is thus that from a syntactic perspective, there is one argument-introducing head, which is unspecified categorially and selects for a syntactic constituent of category D (selection for D encodes the “argument introducing” property that characterizes these heads; see Schäfer 2008a, this volume). Following Bruening (2012), we annotate selectional features in brackets, so $P_{[S:D]}$ is a head of category P that selects (S) for a constituent of category D. Since i^* is categorially unspecified, it does not start out with a categorial feature, but is rather something like $\{[CAT: _], [S:D]\}$, where the underscore indicates an unvalued $CAT(egory)$ feature; i^* is simply a convenient notation for this feature bundle. We should note immediately that the selectional feature $[S:D]$ shouldn’t be understood as a necessary condition on Merge, as will be clear below; it is a feature that can, but need not, trigger Merge with a constituent of category D. In the context of the present study, it would be descriptively accurate to say that a selectional feature cannot be checked until the categorial feature is valued. In cases where the selectional feature is checked and the categorial

feature is unvalued, the categorial feature will automatically get the value “P.” This, as we will see, is how prepositions are built.

There are essentially three factors that interact to determine the syntactic and semantic properties of i^* . Firstly, i^* can merge with a variety of syntactic categories, so its interpretation can be read off of its structural position. Secondly, the categorial feature of i^* may be valued by the categorial feature of the first or the second constituent it merges with. Thirdly, lexical roots may adjoin to i^* ; when they do, they will affect the interpretation of i^* (as well as certain syntactic properties of i^* , as we will see).

The “*” notation on i^* indicates a crucial syntactic property of this head, one which does not follow automatically from its other syntactic and semantic functions. Essentially, i^* closes off the extended projection of the first constituent it merges with. If that constituent is a lexical root, it closes off the extended projection of the lexical root (to the extent that lexical roots have extended projections; nothing in the present chapter hinges on answering the question of whether roots may take arguments or otherwise project). If that constituent is an XP, then it closes off the extended projection of that XP. We will notate this by projecting the * only onto the node that immediately dominates i^* . Although this is stipulative, it is definitional-stipulative, telling us something about the basic properties of the system. We leave it to future research to determine whether the stipulation would follow directly from a slightly different general architecture of grammar.

As a final note on notation, we will generally label phrasal constituents as XP in the familiar way, without necessarily committing to the idea that phrasal nodes are actually labeled in this way by the grammar in any sense that matters for the syntax. However, c-selection does require the notion of a head, and thus at least the determination of an asymmetry between merged constituents. Much of the work apparently done by phrasal constituent labeling here could be recast in terms of structural conditions revolving around the head (cf. Collins 2002).

Let us now illustrate how these assumptions derive the basic interpretations of argument-introducing heads. First, we can define the basic heads—little p, voice, and low appl(licative)—as follows:

- (2) a. Little p (figures): Bare i^* that merges with PP.
- b. Voice (agents): Bare i^* that merges with vP.
- c. Low appl (possessors): Bare i^* that merges with DP.

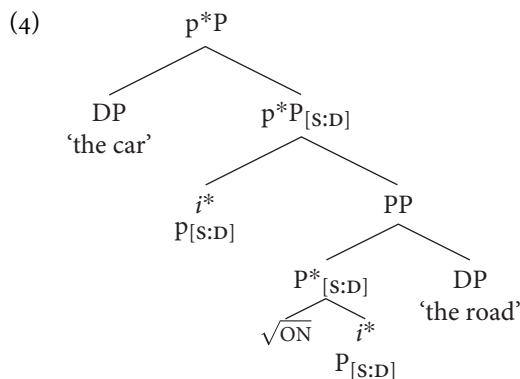
When i^* merges with these constituents, its categorial feature is valued to match that of its complement. So when i^* merges with a vP, it becomes $\{[CAT:v],[S:D]\}$. Since it is a head merging with an XP, it will be the label of the resulting constituent: essentially $v^*[S:D]$. It projects its selectional feature, so that the newly formed $v^*[S:D]$ c-selects for something of category D. Note that this system places voice within the extended projection of v; the * notation indicates that voice also closes this projection.

The interpretive differences between what were formerly understood as distinct heads are now understood as contextually determined interpretation rules. We illustrate this for agents and figures in (3) (returning to possessors in section 11.4).

- (3) a. $[[i^*]] \longleftrightarrow \lambda x \lambda s. \text{FIGURE}(x, s) / \text{___}(\text{locative PP})$
 b. $[[i^*]] \longleftrightarrow \lambda x \lambda e. \text{AGENT}(x, e) / \text{___}(\text{agentive vP})$

Voice, little *p*, and low *apl*, then, are three distinct “uses” of the same syntactic head. We will see below that these heads are indeed syntactically and semantically similar in a way that supports their unification.

(Big) *P* and high *apl* are different, in that they seem to introduce their own thematic semantics in a way that does not depend on the semantics of the element they attach to. According to our proposal, this is because *P* and high *apl* are the names we give to i^* with a lexical root adjoined to it. In the cases of interest here, the lexical roots of prepositions adjoin to i^* to form a DP-selecting preposition. When this i^* merges with a DP, its selectional feature may or may not be checked. When it is checked, the categorial feature of i^* is automatically valued as *P*. This is, then, a configurational definition of a preposition: a preposition is an i^* that checks its selectional feature without valuing its categorial feature.¹ The lexical semantics of the overall preposition stems from the root. They can be determined by the root directly, or else as contextually specified interpretations of i^* in the context of the root. Thus, *in* is different from *on* because the root $\sqrt{\text{IN}}$ has or conditions different semantics from the root $\sqrt{\text{ON}}$ (e.g., container vs. surface). The structure of a *pP* small clause such as *the car on the road* is shown in (4).



First, $\sqrt{\text{ON}}$ adjoins to i^* . This i^* merges with a DP *the road*, satisfying the selectional [S:D] feature; at this point, the categorial feature of i^* is valued as “P,” so it projects a

¹ We might take *of* in its semantically vacuous uses to be an instance of i^* without a root adjoined to it merging with a DP and checking its selectional feature. We set aside, for now, a more detailed investigation of this possibility.

PP. Then, another i^* merges with this PP, which values i^* 's categorial feature as “p,” resulting in $p_{[S:D]}$. Since the selectional [S:D] feature has not been checked, the resulting constituent is $p^*P_{[S:D]}$, i.e., a pP that c-selects a constituent of category D. Finally, the DP *the car* merges with the $p^*P_{[S:D]}$ to form a p^*P . The interpretive rule in (3a) applies, and *the car* is interpreted as a figure of the spatial relation introduced by *on*.

In general (with a principled exception to be discussed below), what the i^* head does is merge with X, and then with Y, and then assign to Y the thematic role implied by X. If X is a lexical root, then it assigns to Y the role implied by that root. In (4) above, the lower i^* merges with $\sqrt{\text{ON}}$ and then a DP and assigns to the DP the role implied by $\sqrt{\text{ON}}$ (so the DP is interpreted as a surface).² The higher i^* merges with a PP and then a DP, and assigns to the DP the role implied by the PP (namely, the figure role implied by the overall spatial semantics of the pP).

This account of prepositions leads us directly to our account of high appl. High appl is like a root-adjoined i^* in that the thematic role (θ -role) it ultimately assigns to a DP (in its specifier) is not implied by the vP semantics. For example, a vP like *hold the bag* may imply an agent before an agent is projected syntactically just by virtue of what it means to hold a bag. But the same would not hold for a beneficiary; there may be a beneficiary of a bag-holding event, but there is nothing about bag-holding that in itself implies the presence of a beneficiary. So when a high appl merges with a vP, it cannot be the case that the θ -role it assigns comes from that vP. Instead, the range of θ -roles available to a high appl tends to be drawn from the kinds of θ -roles that can also be introduced by prepositions: beneficiaries (English *for*), maleficiaries (English *on*), locations (English *in*), etc. Finally, high appl differs from voice in that it does not “close off” the vP projection; by merging first with a root, it closes off the projection of the root, and does not “project” its closing-off star to the appl head it creates. Essentially, a high applP is just like a vP; anything that can select for a vP can select for a high applP. There is no necessary categorial difference between a high applP and a vP (Harley 2013: 50, fn.23).

Following recent work (Acedo-Matellán 2010; Haselbach and Pitteroff 2014), prepositions can be like other lexical categories in consisting of a category-neutral root and a category-determining functional head. We want to say that adjoining a root to i^* can ultimately lead to a P and a PP. But as noted above, this happens when the root-adjoined i^* checks its selectional feature by merging with DP. Another possibility is that i^* does not check its selectional feature on first merge, but instead values its categorial feature. If the root-adjoined i^* merges with a vP, its categorial feature is valued as “v” and its selectional feature is projected onto the resulting

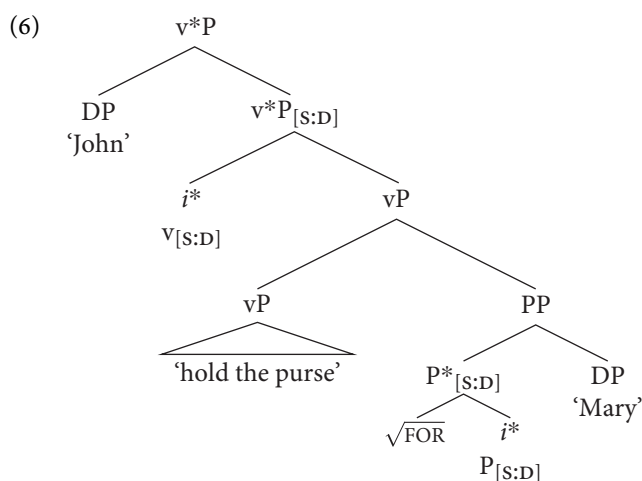
² Here we follow the insights of Svenonius (2003, 2007) in assuming that in figure–ground oppositions (Talmy 1985), figures are true external arguments, analogous to agents in verb phrases, whereas grounds get a variety of interpretations, just like themes in verb phrases.

constituent. However, since this is the second merge, the resulting vP is just $vP_{[S:D]}$, not $v^*P_{[S:D]}$. The θ -role implied by the root will then be assigned not to the vP, but to the DP specifier (a conclusion that follows from how the compositional semantics works, as will be shown below). We can now distinguish what are traditionally called prepositions and high appl heads in the following way:³

- (5) d. Big P (prepositions): root-adjoined i^* with selectional feature checked by complement.
- e. High appl (affectees): root-adjoined i^* with selectional feature not checked by complement.

High appl, then, instantiates the most complex of the i^* configurations. It takes three instances of merge to build it: merge with a root that determines the thematic role, followed by merge with a vP that determines its category, and finally merge with a DP that ultimately bears the thematic role determined by the root.

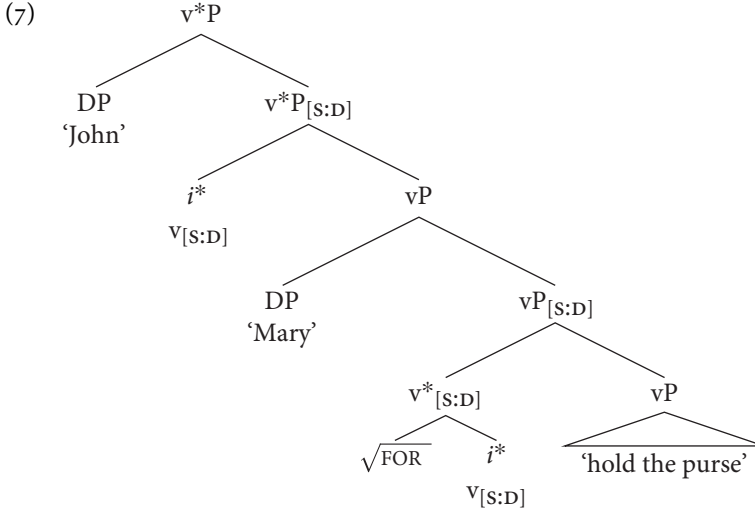
Consider how this derives the similarities between a beneficiary PP and a beneficiary high appl. A beneficiary PP like *for Mary*, adjoined to vP in the sentence *John held the purse for Mary*, would have the structure in (6).



The PP *for Mary* is formed in the same manner as the PP *on the road* was in (4) above. This constituent then adjoins to the vP *hold the purse*. Next, the agent is introduced: i^* merges with vP, valuing its categorial feature as v, and projects a $v^*P_{[S:D]}$, i.e., a vP structure that c-selects for a DP. The external-argument DP *John* merges with this structure, resulting in a complete v^*P .

³ In principle, a low appl could also be root-adjoined, as long as its DP complement values its categorial feature instead of checking its selectional feature. We leave this possibility for future research.

High *appl* is just like the preposition *for* except that instead of merging with DP and then vP, it merges with vP and then DP. In this system, the difference stems from when the selectional feature of i^* is checked, which in turn reflects how the categorial feature is valued. The structure is illustrated in (7).



In this structure, i^* merges first with the lexical root. Secondly, it merges with a vP, valuing its categorial feature as v, and projecting a $vP_{[s:D]}$. Finally, the selectional D-feature is checked by merging $vP_{[s:D]}$ with the DP *Mary*. The external argument is added to this vP in the same manner as in (6).

Semantically, (6) and (7) yield the same results. We write i^*_{FOR} to abbreviate the i^* head with the root $\sqrt{\text{FOR}}$ adjoined to it. We assume it has the semantics in (8), and the vP the semantics in (9). We write vP_1 for the lower instance of vP, and vP_2 for the higher instance.

$$(8) \quad \llbracket i^*_{\text{FOR}} \rrbracket = \lambda x \lambda e. \text{BENEFICIARY}(x, e)$$

$$(9) \quad \llbracket vP_1 \rrbracket = \lambda e. \text{hold}(\text{the purse}, e)$$

Given this, when i^*_{FOR} merges with the DP first, and then the vP, as in (6), the result is as in (10) (see Wood 2015a: 22–6 for definitions of the compositional mechanisms invoked below):

$$(10) \quad \begin{array}{ll} \text{a. } \llbracket pP \rrbracket = \lambda e. \text{BENEFICIARY}(\text{Mary}, e) & (\text{by Functional Application}) \\ \text{b. } \llbracket vP_2 \rrbracket = \lambda e. \text{hold}(\text{the purse}, e) \ \& \ \text{BENEFICIARY}(\text{Mary}, e) & (\text{by Predicate Conjunction}) \end{array}$$

When i^*_{FOR} merges with the vP first, and then the DP, as in (7), the result is as in (11).

- (11) a. $\llbracket vP_{[S,D]} \rrbracket = \lambda x \lambda e. \text{hold}(\text{the purse}, e) \ \& \ \text{BENEFICIARY}(x, e)$
 (by Event Identification)
 b. $\llbracket vP_2 \rrbracket = \lambda e. \text{hold}(\text{the purse}, e) \ \& \ \text{BENEFICIARY}(\text{Mary}, e)$
 (by Functional Application)

Both ways of combining i^*_{FOR} with a DP and a vP yield the same semantic representation, as can be seen in (10b) and (11b).

In sum, our proposal involves one argument-introducing head, varying in terms of what it takes as a complement, and whether or not a root is adjoined to it. Now that we have introduced the basic layout of the system we propose, we turn to the empirical focus of the chapter, which provides support for the basic architecture we are defending, one where a relatively autonomous syntax is subject to specific interpretive rules at the interfaces with semantics and morpho-phonology, generating apparent mismatches between the first-merged positions of arguments and the syntactic loci that determine their thematic interpretation. The general picture will provide support for the view outlined here, that voice, little p, and low appl are syntactically identical, semantically identical (in that their interpretation is conditioned by the semantics of the constituent they attach to), and different from P and high appl only in having no lexical root adjoined to them.

11.3 Voice and p: Icelandic figure reflexives

In figure reflexives, a thematic “figure” role is introduced inside the pP complement of v, and saturated by a DP in Spec, VoiceP. The external argument in figure reflexives may also receive from the voice head an agent role in addition to the figure role.

- (12) $[_{\text{voiceP}} \text{Bjartur} \text{ voice } [_{\text{vP}} \text{squeeze } [_{\text{pP}} \text{FIGURE through the crowd }]]]$

An Icelandic figure reflexive is illustrated in (13), along with the bracketing to indicate its basic syntactic structure (sticking to labels like “voice” and “p” for the moment).⁴

- (13) $[_{\text{voiceP}} \text{Bjartur} \quad [_{\text{vP}} \text{tróð} \quad [_{\text{pP}} \text{st} \quad \text{gegnum} \quad \text{mannþröngina} \quad]]]$.
 $[_{\text{voiceP}} \text{Bjartur.NOM} \quad [_{\text{vP}} \text{squeezed} \quad [_{\text{pP}} \text{-ST} \quad \text{through} \quad \text{the.crowd} \quad]]]$
 ‘Bjartur squeezed through the crowd.’

⁴ The following abbreviations are used in this chapter: 1 = first person, 3 = third person, ACC = accusative, CAUS = causative, DAT = dative, EXPL = expletive, GEN = genitive, NEG = negative, NOM = nominative, O = object, PAST = past tense, S = subject, ST = Icelandic -st morphology, REFL = reflexive.

The point of interest raised by the analysis of Icelandic figure reflexives stems from the following three considerations:

1. *Bjartur* in (13) is interpreted as though it has two θ -roles, “agent” and “figure,” the latter role originating inside the pP.
2. *Bjartur* is an external argument externally merged in Spec,VoiceP (i.e., these are not unaccusative constructions).
3. There are no reflexive morphemes in the structure.

These claims are defended at length in Wood (2014, 2015a), but we will provide a brief overview here. The first consideration can be appreciated by comparing (13) with the sentences in (14).

- (14) a. *Bjartur tróð blýöntunum í pokann.*
Bjartur.NOM squeezed the.pencils.DAT in the.bag
 ‘Bjartur squeezed the pencils in the bag.’
- b. *Bjartur tróð sér gegnum mannþröngina.*
Bjartur.NOM squeezed REFL.DAT through the.crowd
 ‘Bjartur squeezed himself through the crowd.’

In (14), *Bjartur* is no longer interpreted as the “figure,” because there is another DP that bears this role: the pencils in (14a) and the reflexive pronoun in (14b). When the lower DP is gone, as in (13), *Bjartur* is understood as bearing the role that the lower DP bears in (14).

As for the second point, that *Bjartur* is externally merged in Spec,VoiceP, this is shown by a number of considerations; for example, the sentence in (14) can be passivized, as illustrated in (15).

- (15) *Það var troðist gegnum mannþröngina.*
 EXPL was squeezed-ST through the.crowd
 ‘There was squeezing through the crowd.’

Impersonal passives in Icelandic diagnose the presence of an external argument interpreted as an agent (Sigurðsson 1989: 315–21; Thráinsson 2007: 266–9). This shows that *Bjartur* in (14) is externally merged in Spec,VoiceP, and gets an agent role in addition to a figure role.⁵

⁵ A reviewer points out that impersonal passivization isn’t a good diagnostic for external-argumenthood/agency in Dutch, citing Den Dikken (2010: 50–1). As far as has been determined, the diagnostic does hold for Icelandic; see Sigurðsson (1989: 315–21) for extensive discussion of the agency effect, and Thráinsson (2007: 266–9) for a review of the relevant facts. Note that if Maling and Sigurjónsdóttir (2002) are correct, impersonal passives might for some speakers actually be impersonal active constructions. Crucially, however, figure reflexives are passivizable for all speakers. See Wood (2015a: 179 ff.) for a battery of further tests pointing to the conclusion that figure reflexives are agentive.

Turning to the third point, unlike (14b), there is no reflexive morpheme in (13). The *-st* morpheme is not, by itself, reflexive, and there is no evidence that it may bear a θ -role. The reflexive reading of some *-st* verbs is an old and interesting problem, but, in general, “reflexive verbs” are expressed with separate reflexive pronouns. This even holds for “inherent” reflexive verbs (e.g., *hegða sér vel* ‘behave oneself’), which can only take a reflexive object, and “natural reflexives” like *raka sig* ‘shave oneself,’ which most naturally take a reflexive object. Note that these SE-reflexives stand in opposition to complex, “self-” reflexives in the familiar way (see Sigurjónsdóttir 1992; Wood 2015a: 41). The *-st* morpheme ultimately does contribute to the reflexive meaning of (14), but it cannot be maintained that *-st* can in any way bear a θ -role or be “co-indexed” with a DP.

Wood (2014, 2015a) proposes that *-st* is an argument expletive (Schäfer 2008a, this volume; Sigurðsson 2012; Alexiadou et al. 2015): it merges in an argument position syntactically (before cliticizing to the verbal complex), but is effectively invisible in the semantics. The consequence of this “semantic invisibility” depends on which specific position *-st* occupies. For example, suppose it merges in the external argument position, as in (16b).

- (16) a. *María opnaði hurðina.* [_{V*P} Mary *i** [_{VP} opened the door]]
 Mary.NOM opened the.door.ACC
 ‘Mary opened the door.’
 b. *Hurðin opnaðist.* [_{V*P} *-st i** [_{VP} opened the door]]
 door.the.NOM opened-ST
 ‘The door opened.’

In (16a), the DP *María* merges as the external argument of *open the door*. In this case, *i** may be interpreted as introducing an agent θ -role, which will be saturated by (the denotation of) *María*. In (16b), *-st* merges in this same position, which satisfies the D-feature introduced by *i**. But in the semantics, since *-st* is basically invisible, the consequence is that *i** may not introduce an external θ -role. The result is an anti-causative interpretation: a door-opening event is asserted, but no external cause or agent is expressed (see Schäfer this volume). (We elaborate on the interpretation of the causative/inchoative-alternation in section 11.4.2 below.)

There are, then, at least two allosemes—contextually conditioned interpretations—of *i**, as illustrated in (17). (Double arrows indicate an interpretation inserted into a terminal node post-syntactically; equal signs indicate a denotation computed on a nonterminal node by some compositional mechanism.)

Thus, even if Icelandic turned out to be like Dutch in that impersonal passivization doesn’t unambiguously diagnose agentivity, there is independent evidence that the subject of figure reflexives is agentive.

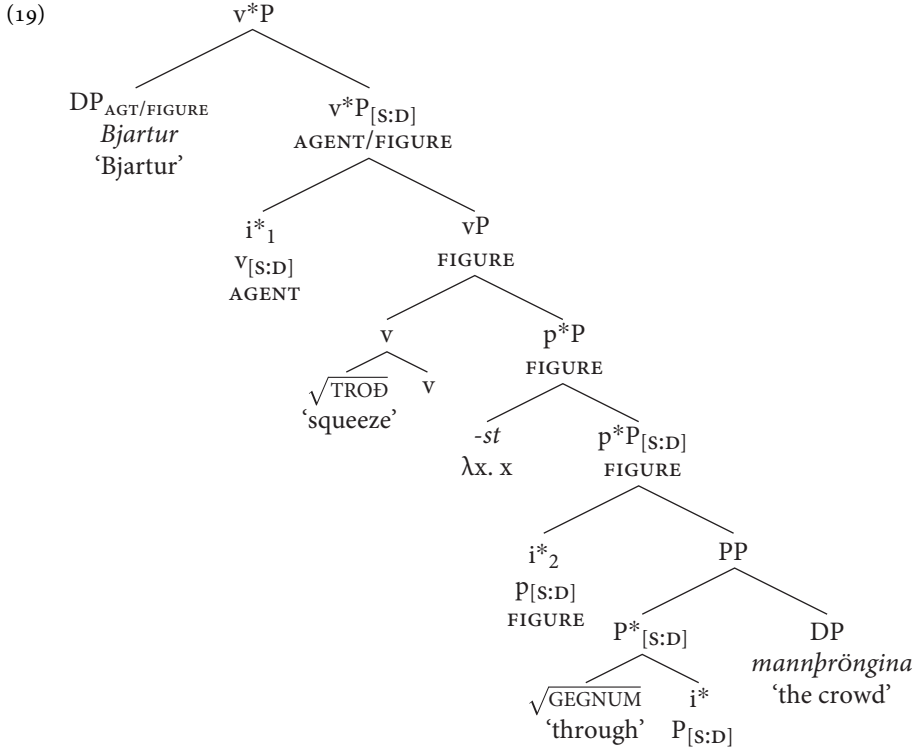
- (17) a. $\llbracket i^* \rrbracket \longleftrightarrow \lambda x \lambda e. \text{AGENT}(x, e) / \text{---}(\text{agentive vP})$
 b. $\llbracket i^* \rrbracket \longleftrightarrow \lambda x. x$

(17a) introduces an agent role, while (17b) is “expletive” voice: it simply takes the denotation of its complement vP and returns that same denotation. (We show below that the availability of an expletive interpretation is a general option for, and perhaps even a defining property of, bare i^* .) The choice between (17a) and (17b) is made in the semantics, after syntactic structure is built and sent to spell-out. If the vP is interpreted as the sort of event that has an agent, (17a) is chosen. If the vP is interpreted as the sort of event that happens on its own (see Haspelmath 1993; Schäfer 2008a; Alexiadou et al. 2015: ch.3), (17b) is chosen. An event like “open the door” can be construed in either way, so both the alloemes in (17a) and (17b) are available. Other events, such as events built with verbs like ‘murder,’ must be construed agentively, so only (17a) will be available. Still other events, such as those built with verbs like ‘blossom,’ must be construed as happening on their own, so only (17b) will be available.

Importantly, certain structures are only compatible with one alloeme or another. For example, when there is a DP external argument, (18b) is impossible unless there is some other mechanism for integrating that DP semantically into the interpretation of the vP (see Wood 2015a: 143 ff. and section 11.4 below). Similarly, when an expletive element such as Icelandic *-st* is in the external-argument position, (17a) is impossible unless there is some other mechanism for semantically saturating the agent role (see Wood 2015a: 259 ff.). Thus, if we choose an event that requires (17a), but try to put *-st* in the external-argument position, the result is ungrammatical:

- (18) *Maðurinn myrtist. [_{vP} -st i^* [_{vP} murdered the man]]
 the.man.NOM murdered-ST
 INTENDED_≈ ‘There was an event of murdering the man.’

The reason that i^* cannot introduce an external θ -role is that doing so would violate “Full Interpretation” (Harley 2011); the external θ -role wouldn’t be saturated, because when i^* attaches to vP, it is the highest argument-introducing head, closing off the vP domain; once *-st* takes that position, there are no more arguments to saturate that θ -role. When *-st* merges in the “figure” position, which is SpecpP according to Svenonius (2003, 2007), this is not the case. Merging i^* with a PP only closes off the PP-domain, but there are more positions in the dominating vP in which an argument can be introduced. Therefore, the “figure” role can be introduced semantically as the external argument of the PP, but saturated by a DP introduced higher in the structure. This is schematically illustrated in the tree in (19), whose compositional semantics is given in (a)–(j).



- a. $\llbracket PP \rrbracket = \lambda s. \text{through}(\text{the crowd}, s)$
- b. $\llbracket i^*_2 \rrbracket \longleftrightarrow \lambda x \lambda s. \text{FIGURE}(x, s)$
- c. $\llbracket p^*P_{[S:D]} \rrbracket = \lambda x \lambda s. \text{FIGURE}(x, s) \ \& \ \text{through}(\text{the crowd}, s)$
(c) comes from (a) and (b) by Event Identification
- d. $\llbracket -st \rrbracket = \lambda x. x$
- e. $\llbracket p^*P \rrbracket = \lambda x \lambda s. \text{FIGURE}(x, s) \ \& \ \text{through}(\text{the crowd}, s)$
(e) comes from (c) and (d) by Functional Application
- f. $\llbracket v \rrbracket \longleftrightarrow \lambda P_{\langle s, t \rangle} \lambda e \exists s. P(s) \ \& \ \text{squeeze}(e) \ \& \ \text{CAUSE}(e, s)$
- g. $\llbracket vP \rrbracket = \lambda x \lambda e \exists s. \text{FIGURE}(x, s) \ \& \ \text{through}(\text{the crowd}, s) \ \& \ \text{squeeze}(e) \ \& \ \text{CAUSE}(e, s)$
 $\approx$ 'The set of squeezing events which cause x to go through the crowd.'
(g) comes from (e) and (f) by Function Composition
- h. $\llbracket i^*_1 \rrbracket \longleftrightarrow \lambda x \lambda e. \text{AGENT}(x, e)$
- i. $\llbracket v^*P_{[S:D]} \rrbracket = \lambda x \lambda e \exists s. \text{AGENT}(x, e) \ \& \ \text{FIGURE}(x, s) \ \& \ \text{through}(\text{the crowd}, s) \ \& \ \text{squeeze}(e) \ \& \ \text{CAUSE}(e, s)$
 $\approx$ 'The set of squeezing events, for which x is the agent, and which cause x to go through the crowd.'
(i) comes from (g) and (h) by Predicate Conjunction
- j. $\llbracket v^*P \rrbracket = \lambda e \exists s. \text{AGENT}(\text{Bjartur}, e) \ \& \ \text{FIGURE}(\text{Bjartur}, s) \ \& \ \text{through}(\text{the crowd}, s) \ \& \ \text{squeeze}(e) \ \& \ \text{CAUSE}(e, s)$
 $\approx$ 'The set of squeezing events, for which Bjartur is the agent, and which cause Bjartur to go through the crowd.'

In plain language, what happens in the interpretation of the tree in (19) is this. The lower i^*_2 head introduces a figure role. (Subscripts are for presentational purposes only.) Since *-st* merges in the argument position i^* makes available, however, that role is not saturated within the p^*P . Semantic composition proceeds, leaving that role unsaturated, until the higher i^*_1 introduces an agent role. It combines in such a way that the two unsaturated roles are identified with one another, so that whatever merges as the external argument will be the semantic argument of both the agent relation and the figure relation. This is how a reflexive-like interpretation is achieved without any anaphoric element in the structure. (See Schäfer this volume for an Agree-based computation of true reflexives.)

We are now in a position to compare the structural properties of voice, which we have proposed is i^* attaching to vP, and Svenonius's (2003, 2007) little *p*, which we have proposed is i^* attaching to pP. Both voice and *p* introduce an external-argument DP related to their complement. Neither imposes any special case or c-selectional restrictions on its specifier (other than the fact that it is of category D). Both allow *-st* in Icelandic to merge instead of a DP; while the semantic consequences of *-st* are different in each case, these differences are derivable entirely from the positions *-st* occupies. Finally, both are interpreted semantically as introducing a role already implied by the semantics of their complements: voice introduces an agent role if its vP complement denotes the sort of event that implies an agent, and *p* introduces a figure role if its PP complement denotes the sort of spatial state that implies a figure. All of this follows if we assume that voice and *p* are, in terms of their syntactic features, one and the same head, which we are calling i^* . The rules for interpreting i^* discussed so far are shown in (20).⁶

- (20) a. $\llbracket i^* \rrbracket \longleftrightarrow \lambda x \lambda s. \text{FIGURE}(x,s) / \text{___}(\text{locative pP})$
 b. $\llbracket i^* \rrbracket \longleftrightarrow \lambda x \lambda e. \text{AGENT}(x,e) / \text{___}(\text{agentive vP})$
 c. $\llbracket i^* \rrbracket \longleftrightarrow \lambda x. x$

Before closing this section, we briefly address a question raised by two reviewers, which is whether there is any connection between Icelandic *-st* figure reflexives and the *way*-construction (Jackendoff 1992; Marantz 1992; Mateu 2005). As noted in Wood (2015a: 193) and illustrated in (21), Icelandic also has a *way*-construction, where the possessor is expressed as a dative reflexive rather than a DP-internal possessive pronoun.

- (21) Risarotta nagaði sér leið inn á heimili í Stokkhólmi.
 giant.rat gnawed REFL.DAT way in to home in Stockholm
 'A giant rat gnawed its way into a home in Stockholm.'

⁶ See Wood (2015a: 197–204) for constructions where i^* has the interpretation in (21c) when it merges with a PP.

In fact, there are important differences between figure reflexives and *way*-constructions. For example, it would be possible (though perhaps marked) to form a *way*-construction from a verb like ‘murder,’ as shown in (22a), but it is impossible to form a figure reflexive with ‘murder,’ as shown in (22b). (Icelandic data comes from Einar Freyr Sigurðsson p.c.)

- (22) a. (?)Hann myrti sér leið til valda.
 he murdered REFL.DAT way to power
 ‘He murdered his way to power.’
 b. *Hann myrtist til valda.
 he murdered-ST to power
 INTENDED: *‘He murdered to power.’

The crucial difference is that *way*-constructions require activity verbs (or verbs coerced into an activity meaning); their meaning is constructed by adding a small clause to this activity verb interpretation. The semantics of figure reflexive constructions combines an activity with a semantically unsaturated path predicate, which forces the verb to be interpreted as a verb of motion. (Note that figure reflexives have no direct object that can be used to “measure out” an activity event.) That is, in order for (22b) to be acceptable, it would have to be possible to interpret ‘murder’ as a verb of motion. In (22a), ‘murder’ is interpreted as an activity that creates the path expressed in the small clause, but it is not part of the traversal of the path.

To summarize, we have proposed that there is one head, *i**, that introduces the external arguments of vPs and pPs. Its syntactic properties are derived from its structural environment: it projects the syntactic category of its complement, it assigns the thematic role implied by its complement, it can be expletive, and the range of interpretations available to it is constrained only by Full Interpretation.

11.4 Possessor raising in change-of-state vPs

In this section, we extend the system discussed in sections 11.2 and 11.3 to Japanese adversity causatives. To do this, we first show how our system generates several other kinds of thematic dependencies, including clausal possession, change-of-state vPs, and possessor-raising constructions, which, when combined, will derive the properties of Japanese adversity causatives.

11.4.1 *Clausal possession, low and high*

Myler (2014) demonstrates that clausal possession in Quechua can take several different forms. The form relevant to this discussion is what Myler calls the “BE-APPL” construction in Cochabamba Quechua. It is exemplified in (23).

- (23) Noqa-qta auto tiya-pu-wa-n.
 I-GEN car be_{EXIST-APPL-1O-3S}
 ‘I have a car.’ (Myler 2014: 306)

Myler argues that, in (23), the possession relation is introduced internal to the possessed DP, but is saturated semantically by a DP introduced syntactically in the specifier of an appl head. Abstracting away from some details (Myler’s PredP in particular), the basic structure Myler proposes for (23) is (24).

- (24) [_{AppIP} SPEAKER *appl* [_{vP} v_{EXIST} [_{DP} D [_{PossP} *poss* [_{nP} car]]]]]

Semantically, *Poss* introduces a possession relation, which remains unsaturated within its DP, much as the figure of figure reflexives remains unsaturated within the pP. The existential copula is argued to be semantically expletive, as is the appl head that ultimately introduces the possessor DP.

Importing this analysis into the current proposal, we can ask what kinds of heads Myler’s *appl* and *poss* are. As for *poss*, it is quite possible that it is another use of bare *i**. Semantically, the possession relation would be the interpretation of *i** when it takes an nP complement.⁷ As for Myler’s *appl*, it is fairly clear that this is also an unmodified *i**; it is interpreted expletively (and thus adds no thematic content to the structure on its own), so it falls into the class of heads like voice, low appl, and little p (rather than canonical high appl or big P). Given the structure that Myler proposes, with *appl* taking a vP complement, the most immediately natural interpretation is that it is a kind of voice head. However, given that the existential copula makes no direct semantic contribution, it is also possible that *appl* (= *i**) merges below v, and is thus more like a low appl head. We will adopt the latter option for expository purposes, and propose the modified structure of (24) in (25).

- (25) [_{vP} v_{EXIST} [_{D*P} SPEAKER *i** [_{DP} D [_{nP} *i** [_{nP} car]]]]]

Even if (25) is the correct analysis of the Quechua BE-APPL construction, the other interpretation of (24) in the current proposal is nevertheless attested. Myler proposes that English sentences like *John has a car* have the structure in (26a), which, according to our proposal, would be (26b).⁸

- (26) a. [_{voiceP} John *voice* [_{vP} v [_{DP} D [_{possP} *poss* [_{nP} car]]]]]
 b. [_{v*P} John *i** [_{vP} v [_{DP} D [_{n*P} *i** [_{nP} car]]]]]

⁷ We abstract away from how the D-feature of *i** is ultimately checked in this configuration. See Myler (2014) and Wood (2015a) for some options. A possibility in addition to those discussed there is that the fact that the D-head merges anyway, to form the DP, is enough to check the D-feature.

⁸ For an extended defense of this structure, and arguments against preposition-incorporation approaches to the relation between HAVE and BE, see Myler 2014: chapters 2 and 4.

Recall that, earlier, we argued that prepositions can either merge with a DP and then a vP (yielding what looks like a standard vP-adjunct pP) or with a vP and then a DP (yielding what looks like a canonical high appl), with no difference in the thematic semantics entailed. If Myler's proposal is correct, we have another example of structures where the same syntactic elements can merge in a different order and yield the same semantic results. Clausal possession is built when a DP introduces a possession relation that is not saturated DP-internally. The elements needed to do so are a verbalizing v head and an (or rather, *the*) argument-introducing head, i^* . Either i^* merges first (introducing the possessor), followed by the v head, or else the v head merges first, followed by i^* (introducing the possessor). We will see that these same analytical options present themselves in the distinction between possessor raising and adversity causatives. First, however, we must present our analysis of change-of-state vPs.

11.4.2 Change-of-state vPs

Marantz (2009a,b, 2013) has argued that the basic structure of a change-of-state vP involves only one v head, which takes a DP complement. The way change-of-state semantics are computed from this configuration is as follows. First, there is a general coercion rule such that the internal argument of a change of state is interpreted as a result state. This is illustrated in (27).

$$(27) \quad \llbracket \text{DP} \rrbracket \rightarrow \text{STATE}(\llbracket \text{DP} \rrbracket) = (\lambda x \lambda s. \text{state}(s, x))(\llbracket \text{DP} \rrbracket)$$

For both a causative sentence like *John shattered the window*, and an inchoative sentence like *The window shattered*, the interpretation of the DP internal argument would ultimately be as in (28).

$$(28) \quad \lambda s. \text{state}(s, \text{ix.window}(x))$$

What happens next depends on the structure. In an inchoative structure, with no external argument, the interpretation of v will introduce inchoative semantics of the sort often abbreviated as BECOME.

$$(29) \quad \llbracket v \rrbracket \longleftrightarrow \lambda P_{\langle s, t \rangle} \lambda e \exists s. \text{BECOME}(s, e) \ \& \ P(s) / \text{___ (no external argument)}$$

That is, v denotes the event of the result state coming to hold. If, however, there is an external argument, the interpretation of v can introduce a causing event, as illustrated in (30). (We will see in section 11.4.4, as we saw in section 11.4.1, that there are also instances where there is an external argument but v is interpreted as an expletive.)

$$(30) \quad \llbracket v \rrbracket \longleftrightarrow \lambda P_{\langle s, t \rangle} \lambda e \exists e'. P(e') \ \& \ \text{CAUSE}(e', e) / \text{___ (external argument)}$$

What is syntactically represented in a causative, then, is the causing event, introduced by v, and the result state, introduced by the coercion rule in (27) applied to the DP

object. What is not syntactically represented is the “become” part of the change-of-state event. The change of state is syntactically represented in the juxtaposition of *v* and the DP object. That is, the *v* presents an event variable and the causing event and the DP creates the stative “event,” with the “change” meaning coming in as the interpretation of the relation between the events. What is available for adverbial modification (‘John opened the door quickly’) and presupposition via *re*-prefixation (‘John re-opened the door’ presupposes ‘the door was open before’) are the “e” CAUSEs *e*, [change of] state *s*” and the “state *s*” from (29) and (30)—two things and no more. The change of state is not separately available. Note that this analysis of the relationship between (lexical) causatives and inchoatives built on the same root explicitly denies that either is built from the other structurally or derivationally; the main event in the inchoative, asserted via *v*, is “become,” while “become” finds no explicit syntactic representation in the causative.

We can notate this analysis of the source of change-of-state semantics within causatives as a semantic combinatory rule in the notational style of Heim and Kratzer (1998) as in (31).

- (31) If α is a branching node, and $\{v, DP\}$ the set of α ’s daughters, then

$$\llbracket \alpha \rrbracket = \llbracket v \rrbracket ((\lambda P_{\langle s, t \rangle} \lambda e \exists s. \text{BECOME}(s, e) \ \& \ P(s))(\llbracket DP \rrbracket)).$$

That is, *v*+DP is interpreted by taking the interpretation of the DP (result state), applying it to the “become” predicate, and feeding that to the interpretation of *v*. Since the “become” predicate cannot be tied to any specific syntactic node, but results instead from a special combinatory rule, it cannot be modified by adverbs like *quickly* or *again*, singled out for presupposition by *re*-prefixation, or targeted for clausal negation. Note that this rule must be understood to apply only to the eventive-*v* that coerces the change-of-state interpretation of the DP complement, and not to the stative-*v* involved in deriving clausal possession. As Myler (2014) argues, the latter is pronounced as *have* in English, while the former is pronounced as *get* (see Wood and Sigurðsson 2014). Since the difference in pronunciation correlates with a difference in interpretation, the distinction between stative- and eventive-*v* must be rooted somewhere in the syntax, but we will not develop an account of what that difference is here (see Alexiadou et al. 2015 for the same conclusion).

11.4.3 Possessor-raising

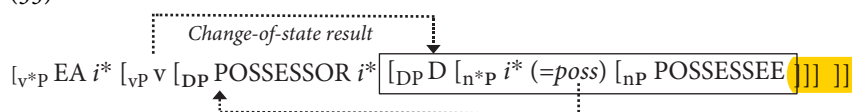
Possessor-raising constructions such as (32) seem to combine properties of the analyses in sections 11.4.1 and 11.4.2.

- (32) Ha-yalda killkela le-Dan et ha-radio.
 the-girl spoiled to-Dan ACC the-radio
 ‘The girl broke Dan’s radio on him.’

(Pylkkänen 2008: 46, citing Landau 1999)

On the one hand, they involve an external possessor in what looks like a low applicative position saturating a possessor relation determined DP-internally. (See Pylkkänen 2008 on the low applicative analysis.) On the other hand, they involve change-of-state semantics on the internal argument. Given the analyses in sections 11.4.1 and 11.4.2, the syntax creates two kinds of interpretive demands on the structure. In order for the possessor relation to be saturated by the external DP, the possessor relation must remain unsaturated. And yet, in order for the change-of-state semantics to be computed, the DP has to be interpreted as a result state. This is illustrated schematically in (33).

(33)



Notice, however, that this result can be achieved by combining the analysis of change-of-state vPs with the analysis of figure reflexives. For change-of-state semantics, we have a coercion rule, as in (34).

(34) $\llbracket \text{DP} \rrbracket \rightarrow \text{STATE}(\llbracket \text{DP} \rrbracket) = (\lambda x \lambda s. \text{state}(s, x))(\llbracket \text{DP} \rrbracket)$

Given the denotation of a DP with an unsaturated possessor relation, we have composition, as in (35), where (35b) derives from (35a) by Function Composition.

(35) a. $(\lambda x \lambda s. \text{state}(s, x))(\lambda y. \text{ix.POSS}(x, y))$
 b. $\lambda y \lambda s. \text{state}(s, \text{ix.POSS}(x, y))$

Given the denotation in (35b), low appl will be interpreted as expletive, and the argument it introduces will saturate the possession relation. All other semantic processes outlined in section 11.4.2 apply in exactly the same way.

Note that possessor-raising constructions of this sort tend to have, in addition to the purely thematic possessive reading, a kind of “affectedness” reading. The translation of (32), for example, is not just ‘The girl broke Dan’s radio,’ but ‘The girl broke Dan’s radio *on him*.’ We don’t have much to say about this affectedness reading, which is also found in the Japanese adversity causatives discussed in section 11.4.4, except to note that such affected roles are, strictly speaking, distinct from the tier of thematic interpretive roles like beneficiary, possessor, agent, etc. Bosse et al. (2012) argue that this kind of meaning is projected on a non-truth-conditional semantic tier, which operates in parallel to, but is strictly distinct from, the truth-conditional tier (see also Horn 2013). In particular, unlike arguments, including standard applicative arguments, these affected arguments stand outside the scope of negation. Here, we focus on the aspects of meaning that are projected on the truth-conditional tier and provide no new account of the source of affected readings (see Bosse et al. for further discussion).

11.4.4 Japanese adversity causatives

Japanese adversity causatives are formally similar to Icelandic figure reflexives in that the interpretation of an external argument depends on the properties of the internal argument. In particular, a thematic “possessor” role is introduced inside the DP complement of *v*, and saturated by a DP in Spec, VoiceP.

- (36) [_{voiceP} Taroo *voice* [_{vP} die-CAUSE [_{DP} POSSESSOR son]]]
- ↑
.....

An adversity causative is illustrated in (37), along with the bracketing to indicate its syntactic structure.

- (37) [_{voiceP} Taroo-ga [_{vP} [_{DP} musuko-o] sin-ase]]-ta.
 [_{voiceP} Taroo-NOM [_{vP} [_{DP} son-ACC] die-CAUS]]-PAST
 a. ‘Taro caused his son to die.’
 b. ‘Taro’s son died on him.’

Japanese adversity causatives have a few notable properties (Oehrle and Nishio 1981; Miyagawa 1989; Pytkänen 2008). Firstly, they seem to look, morphosyntactically, like plain transitive lexical causatives, and, as indicated in the first translation of (37), they may be interpreted as such. Secondly, the adversity reading is only possible when the “affectee” subject is understood as the possessor of the internal argument. Thirdly, adversity causatives are generally only possible on transitive structures for which there also exists an intransitive unaccusative counterpart. Consistent with this last generalization, adversity causatives are morphophonologically identical to lexical causatives, built directly on a verbal root, and not to syntactic causatives in the many cases where these are morphophonologically distinguishable (e.g., when the syntactic causative is built on top of a lexical causative; see Harley this volume for discussion of such cases).

The analysis of the adversity causatives that we propose builds on the analysis of possessor raising outlined in section 11.4.3, combined with the analysis of clausal possession of the English sort outlined in section 11.4.1. Recall that there we saw that clausal possession can be derived in at least two ways from a DP with an unsaturated possessor relation. Firstly, *i** and the possessor can combine with the DP possessee first, with the result then combining with *v*. This was our adaptation of Myler’s proposal for Quechua BE-APPL constructions. Secondly, *v* can combine with the DP possessee first, followed by *i** and the possessor; this was the analysis of English clausal possession with *have*.

The analysis of possessor raising given in section 11.4.3 was essentially the first option, combined with a change-of-state predicate. The analysis of Japanese adversity causatives is essentially the second option, combined with a change-of-state predicate. Adversity causatives look like plain transitive causatives because they have the

same syntactic structure as plain transitive causatives, shown in (38). (See Schäfer this volume on the dissociation of syntactic and semantic transitivity.)

$$(38) \quad [_{v^*P} \text{ EXT-ARG } i^* [_{vP} v \text{ DP }]]$$

Recall that earlier we argued that the interpretation of i^* in the context of a vP depends on the semantics of that vP . For a change-of-state event that can happen without an agent, i^* may be interpreted as expletive. We also noted, however, that when there is an external argument present, i^* cannot be interpreted as expletive unless there is some other way to integrate the external argument into the semantics of the vP . If the internal argument DP introduces a possessor role that remains unsaturated within that DP, the external argument can be integrated into the semantics of the vP by saturating that possessor role. This is illustrated in (39).

- (39) a. $\llbracket \text{DP} \rrbracket = \lambda y \lambda s. \text{state}(s, \text{IX.POSS}(x, y) \ \& \ \text{son}(x))$
 b. $\llbracket v \rrbracket \longleftrightarrow \lambda x. x$
 c. $\llbracket vP \rrbracket = \llbracket v \rrbracket ((\lambda P_{\langle s, t \rangle} \lambda e \exists s. \text{BECOME}(s, e) \ \& \ P(s))(\llbracket \text{DP} \rrbracket))$.
(by combinatory rule (31))
 $\rightarrow \llbracket v \rrbracket (\lambda y \lambda e \exists s. \text{BECOME}(s, e) \ \& \ \text{state}(s, \text{IX.POSS}(x, y) \ \& \ \text{son}(x)))$
(by Function Composition)
 $\rightarrow \lambda y \lambda e \exists s. \text{BECOME}(s, e) \ \& \ \text{state}(s, \text{IX.POSS}(x, y) \ \& \ \text{son}(x))$
(by Functional Application)
 d. $\llbracket i^* \rrbracket \longleftrightarrow \lambda x. x$
 e. $\llbracket v^*P \rrbracket = \lambda e \exists s. \text{BECOME}(s, e) \ \& \ \text{state}(s, \text{IX.POSS}(x, \text{Taroo}) \ \& \ \text{son}(x))$
 $\approx$ ‘The set of events of Taroo’s son coming to be in state s ’⁹

Consider how this analysis captures the properties of adversity causatives mentioned at the beginning of this section. Firstly, they look, morphosyntactically, like plain transitive causatives, because they have the same syntactic structure as plain transitive causatives. In particular, the allomorph of v chosen in a transitive environment for a particular root will be the same in the plain lexical causative and in the adversity causative. Secondly, the adversity reading is only available when the subject is the possessor because it is the possessor role that allows the subject to be integrated into the semantics of the vP in the first place. Without the possessor role, i^* would have to introduce some other role (such as agent) in order for the DP external argument to be integrated into the semantic interpretation. Thirdly, adversity causatives are only possible on transitive structures for which there also exists an unaccusative counterpart because it is precisely those structures that allow for the expletive allo sense of i^* in the context of a vP .

⁹ Note that the verbal root will typically name the end state, which in a sentence like (37) will be the state of being dead; we omit this conjunct from the derivation in (39).

Note that, according to this analysis, the causative morpheme in the Japanese adversity causative does not indicate causative semantics. The affix that we generally call the causative morpheme is simply the way that *v* is pronounced when there is a syntactic external argument (though see Harley this volume for some potentially challenging cases). In many cases, the presence of an external argument correlates with a causative interpretation of *v*. In the Japanese adversity causative, however, no causing event is asserted. Thus, when a sentence like (37) is negated, as in (40), only three out of four imaginable interpretations are actually available.¹⁰

- (40) Taro_o-ga musuko-o sin-ase-nakat-ta.
 Taro-NOM son-ACC die-CAUS-NEG-PAST
- a. (i) ‘Taro’s son died, but Taro didn’t kill him.’ (*negation of causing event*)
 - (ii) ‘Taro’s son didn’t die at all.’ (*negation of result*)
 - b. (i) *‘Taro’s son died, but without any cause.’ (**negation of causing event*)
 - (ii) ‘Taro’s son didn’t die at all.’ (*negation of result*)

In the ordinary causative interpretation, given in (40a), clausal negation can negate either the causing event or the result. That is, the ordinary causative interpretation under negation is compatible with the son dying, but not by the asserted cause. In the adversity causative interpretation, on the other hand, only the result can be negated, although the adversity implication remains. (Taro’s son dying would have resulted in adversity for Taro.) It isn’t possible in the presence of negation to negate a cause of the change of state while retaining the assertion of the change of state (and the adversity implication: nothing caused his son to die on Taro, although he did). These facts support our claim that causative semantics are not present in the adversity causative, despite the presence of causative morphology. The “causative” morphology does not reflect semantics, but rather the presence of *v* in a particular syntactic structure.

This analysis of the Japanese adversity causative agrees with Pytkänen’s (2008) in denying that the construction is built on the semantics of the inchoative form of the base verb and in providing an essentially transitive syntactic structure to the construction. The strongest evidence contrasting the inchoative (e.g., ‘Taro’s son died’) with the change-of-state semantics within the adversity causative is the impossibility of modifying the change of state with adverbials that can occur with the inchoative (e.g., ‘from natural causes,’ or ‘by itself’). Our analysis disagrees with Pytkänen’s in three crucial respects. Firstly, as explained above, the present analysis denies that the adversity causative asserts causative semantics; some evidence for this conclusion is the failure of negation to deny causation, which is possible for negation with the lexical causative. Secondly, Pytkänen analyzes the affected argument as an applicative

¹⁰ Thanks to Yohei Oseki for discussion of the Japanese facts and judgments of the data.

argument; however, according to the distinctions motivated in Bosse et al. (2012), the affected role is not that of an applicative argument, being unable to scope under negation. Finally, Pylkkänen (2008) builds the adversity causative on top of the adversity passive, which she analyzes as an applicative construction; however, the adversity passive is a “high” construction, which can embed a syntactic causative, while the adversity causative is a “low” construction, necessarily built on the verbal root—the causative thus couldn’t be built on top of the passive.

What distinguishes between Japanese and English, preventing English from having the “adversity” causative reading of transitive verb phrases, is (i) the availability of the possessor-raising structure, which allows a possessor role introduced inside a DP to be saturated externally to that DP in non-stative contexts, and (ii) the possibility for active voice above *v* not to assign the “agent” role, if another role is available. In fact, English does have adversity causatives when it can, exceptionally, do possessor raising, as in sentences like *John broke an arm*, which can mean that John is the adversely affected (inalienable) possessor of the arm that broke. Like in Japanese, *John didn’t break an arm*, under the adversity causative reading, entails that John’s arm wasn’t broken, whereas *John didn’t break the window* is perfectly compatible with the window breaking in some other way.

11.5 Conclusion

In this chapter, we proposed an understanding of the syntax and semantics of external arguments that depends on an autonomous syntax, where the atoms of representations don’t carry inherent semantic values. We first proposed a restricted system of argument introduction, where a single argument-introducing head varies only in terms of the syntactic context it is merged in. The relevant syntactic factors for eventual semantic interpretation include the category of its complement along with whether or not a lexical root adjoins to it. Semantically, this argument-introducing head generally assigns to the second constituent it merges with the θ -role implied by the first constituent it merges with. After introducing the properties of the argument-introducing head, we applied the resulting system to a set of cases where the interpretation of an external argument depends on a θ -role introduced somewhere lower in the structure. Icelandic figure reflexives involve an external argument that bears a figure role introduced inside a lower *pP*; clausal possession involves an external or applied argument bearing a possessor role introduced inside a lower *DP*; and adversity causatives and possessor raising involve, essentially, the analysis of clausal possession superimposed over change-of-state *vP* semantics. The basic system ends up being both restrictive and flexible. The restrictiveness stems from the fact that all argument-introducing heads reduce to one syntactic head; any and all syntactic, morphological, and interpretive differences between *prima facie* distinct heads must be reduced to properties of the structure they occur in. We retain

a tight connection between syntactic structure and thematic interpretation, because the latter is derived by interpretive rules defined on the former. And yet, the system is flexible, in that there is no particular principle forcing a DP with a particular thematic interpretation to occur in a particular syntactic position. All that is required is that semantic composition leads to a well-formed semantic representation.

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