

External arguments and the Mirror Principle: On the distinctness of Voice and v

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Abstract

Evidence from the Uto-Aztecan language Hiaki (Yaqui) shows that the internal structure of the verb phrase is tripartite, made up of (at least) VoiceP, vP and a lexical projection (\sqrt{P} or VP). The interaction of applicative and causative morphology, the existence of two kinds of causatives, and the interaction of passive and verbalizing morphology show that the external-argument introducing projection VoiceP (Kratzer, 1996) must be distinct from the verbalizing head vP (Marantz, 1997), as first proposed by Pykkänen (2002) and subsequently by Cuervo (2003), Collins (2005), Alexiadou et al. (2006), Merchant (2008) and Harley (2009), among many others. This result stands in opposition to earlier proposals in which a single projection, vP, serves both to verbalize and to introduce the external argument, as in Chomsky (1995), Marantz (1997), and Harley (1995). It also challenges the conclusions of Coon and Preminger (2010), who give explicit arguments for the identity of external-argument-introducing Voice and verbalizing v.

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1. Introduction¹

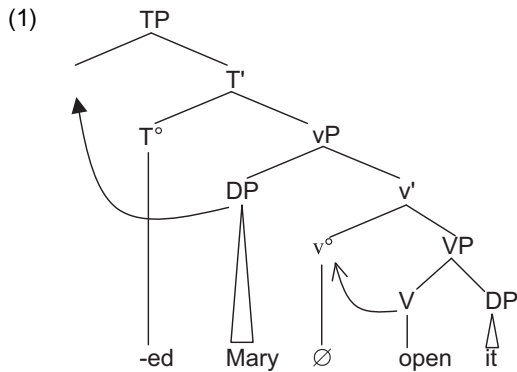
In this paper, two primary questions concerning the syntactic position of external arguments will be considered. First, where are such arguments introduced into the syntactic structure? Evidence from the interaction of applicatives and causatives will be presented that indicates that they are not selected by their predicates which semantically require them. Second, how are such arguments “suppressed” by morphology like the passive? In a syntactocentric theory of morphology, the addition of morphological material cannot produce the deletion of extant syntactic structure and thus explain the absence of the external argument. The solution to both these issues is argued to be VoiceP, a dedicated functional projection which makes no lexical-semantic contribution whatever. VoiceP is a projection distinct from, and necessarily in addition to, the vP projection which hosts causative and verbalizing morphology.

In the past decade and a half, the conclusion that the VP is made up of at least two projections has become standard among Chomskyan linguists. Building on the VP-shell proposal of Larson (1988), the work on verbal morphology and argument structure of Hale and Keyser (1993), and the work on idioms and subject selection of Marantz (1984, 1997) and Kratzer (1996), the erstwhile VP came to be understood as a cover term for two substructures: a functional or semi-lexical projection, vP, in whose specifier external arguments are introduced, and a lexical VP or \sqrt{P} , which introduces selected internal arguments. This structure is illustrated in (1):

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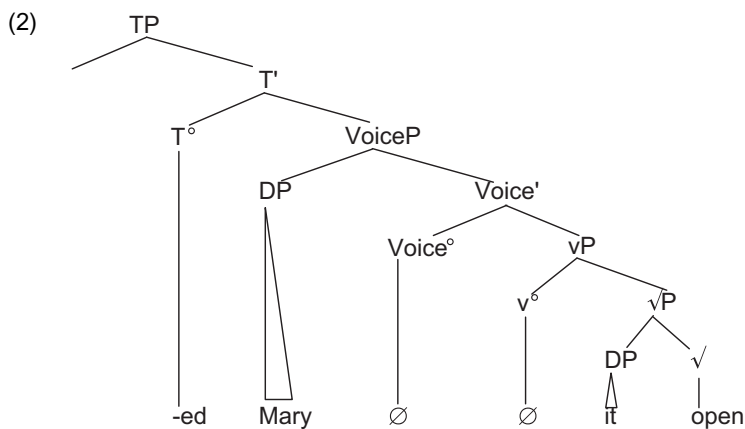
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¹ *Abbreviations:* 1sgS = 1st person singular subject; recip = reciprocal; 3pS = 3rd person plural subject; pl = plural; appl = applicative; prf = perfect; acc = accusative; refl = reflexive; pass = passive; $\sqrt{\quad}$ = root; vrb = verbalizer; caus = causative; ppl = participle; s.rel = subject relative; compl = complete; fut = future; sg = singular; ♀ = female; desid = desiderative; caus.indir = indirect causative.



In previous work, e.g. Harley (2005, to appear), I have argued that an explanatory theory of argument structure needs only this much VP decomposition, and that additional functional categories are unnecessary.

In this paper, however, I present evidence that more structure is indeed needed, namely, at least a VoiceP in addition to an external-argument-less vP, as in (2), as originally proposed by Pykkänen (2002):



The central argument is based on a Mirror Principle problem in Hiaki² verbal derivational morphology. The three-layered structure VoiceP–vP–√ which is motivated by this data is isomorphic to several other three-layered structures for the verb phrase in modern theories of argument structure, albeit with differently named projections, mostly closely mirroring that of Alexiadou et al. (2006) but also that of Ramchand (2008), Borer (2005), Cuervo (2003), Merchant (2008) and Harley (2009). This result also challenges the conclusions of Coon and Preminger (2010), who give explicit arguments from Chol for the identity of external-argument-introducing Voice and verbalizing v.³

The paper is structured as follows: First, we briefly review some of the original arguments for the Mirror Principle (Baker, 1985), and the syntactic theory of morphological structure building that it motivated, in section 2. We then review the analysis of applicative structures within the split-vP architecture (McGinnis, 2001; Pykkänen, 2002), showing how applicatives provide strong evidence for at least the split-vP, in section 3. The central argumentation follows in sections 4 and 5. First, we briefly review the relevant Hiaki verbal derivational morphology and syntax, including lexical causatives, productive causatives and applicatives. Subsequently, we see how the interaction of productive causatives and applicatives argues for the more elaborate VP structure in (2), including VoiceP. The key argument for the separation of Voice and v is a minor variation on the argument presented by Pykkänen (2002:122–125). The key point is that the behavior of the applicative

² Hiaki is also known as Yaqui, Yoeme and Jiaki. “Hiaki” is the spelling in the official orthography adopted by the Pascua Yaqui Tribe in Arizona (explicitly reflecting the presence of the initial glottal fricative), and is the spelling preferred by my consultants; consequently, we will refer to the language by this name throughout.

³ Note that element labelled √P here is semantically and syntactically a ‘small clause’; although I espouse the ‘small clause’ label for these and other similar structures (resultatives, directed-motion constructions), the category of this lowest phrase in the tripartite tree is not crucial to the argument developed in the paper, and the small-clause structure is only appropriate for change-of-state verbs, not verbs of creation or unergative activity verbs which happen to form the bulk of the exemplification in this paper. See Emonds (in this issue) for a succinct and compelling presentation of the case against the small clause as a constituent, which deserves a response that it will not get here.

shows that the causative v° head does *not* introduce the overt external argument in Hiaki causatives. Rather, the external argument must be introduced by a Voice $^\circ$ head which selects for the causative vP . Finally, in section 7, I introduce Hiaki indirect causatives and passives and show how VoiceP allows us to understand how they interact with the direct causative as well. Section 8 concludes with a brief review of some of the implications of the proposal, particularly concerning how the interpretive component identifies the role played by the external argument in the situation described by the verb phrase.

2. Background: grammatical architecture, the Mirror Principle and monotonicity

Baker (1985) pointed out that certain morphological and syntactic patterns appear to mirror each other. In particular, he exhibited cases where there is a one-to-one correlation between the linear ordering of verbal grammatical-function-changing morphology, the syntactic behavior of the arguments of the resulting verb form, and the semantic interpretation of the entire structure.

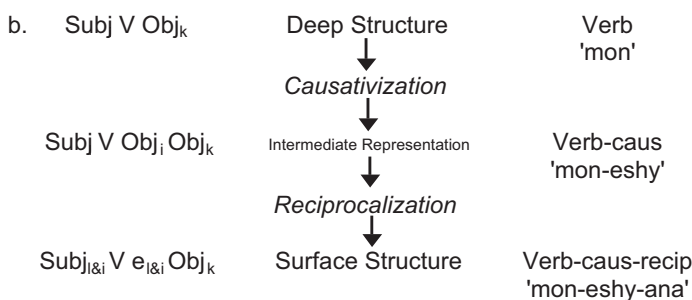
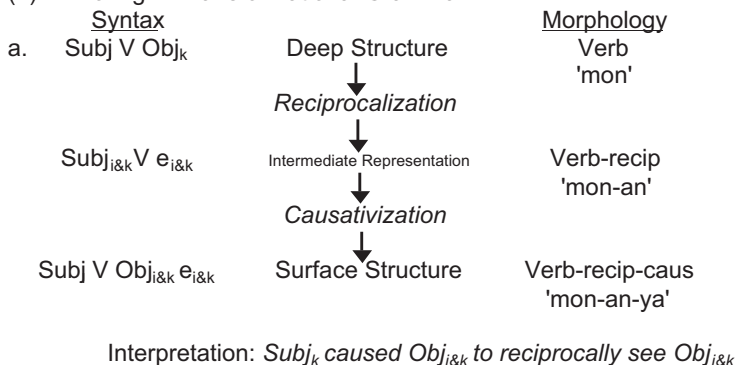
2.1. Grammatical-function changing morphology

Key cases in Baker's (1985) paper involved the interaction of reciprocalization and causativization. The change in morpheme order in Bemba examples like (3a, b) forces exactly the same change in interpretation as the different syntactic positions of *each other* does in the English translation. A different argument is bound by the coordinated NP depending on whether morphological reciprocalization applied before morphological causativization, or vice versa.

- (3) a. Naa-mon-an-ya [Mwape na Mutumba]
1sgS-see-recip-cause Mwape and Mutumba
"I made Mwape and Mutumba see each other."
b. [Mwape na Chilufya] baa-mon-eshy-ana Mutumba
[Mwape and Chilufya] 3pS-see-cause-recip Mutumba.
"Mwape and Chilufya made each other see Mutumba."

This effect can be derived if the syntax and morphology go hand in hand. Transformational Grammar (Chomsky, 1965), in which transformations manipulated both syntactic and morphological representations, could express the interdependence extremely clearly, as the same transformation could implement both kinds of effects:

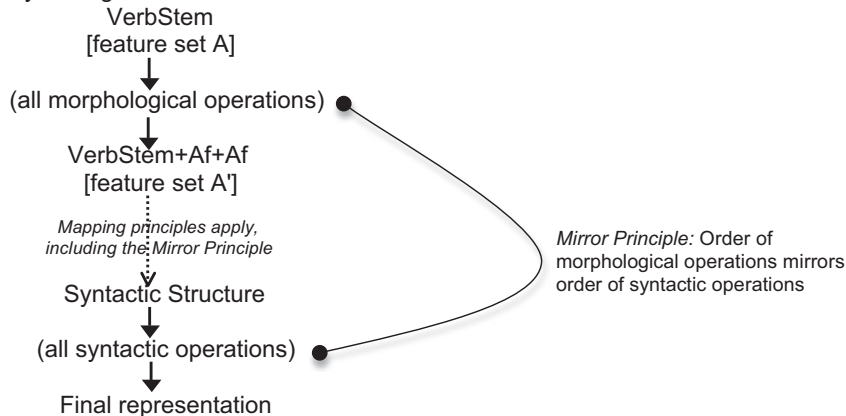
(4) Mirroring in Transformational Grammar:



Interpretation: Subj_{i&i} reciprocally caused Obj_{i&i} to see Obj_k

In a typical Lexicalist framework, in contrast, morphological operations create new word-forms and subsequently feed the syntactic derivation.⁴ In such a framework, a complex verb form is built in the morphological component before being introduced into the syntactic derivation. That, is, all the operations in the rightmost column would be logically prior to all the operations in the leftmost column in (4) above. Baker pointed out that, in such a framework, the isomorphic relationship between the morphological derivation and the syntactic hierarchy which is subsequently built from the lexical representation must be independently stipulated by a mapping principle—the Mirror Principle. The Mirror Principle would ensure that if morphological causativization preceded morphological reciprocalization in the word-formation component, so too should syntactic effects of causativization feed syntactic effects of reciprocalization, and vice versa, as follows:

(5) 'Very Strong Lexicalist' architecture



In the conclusion, Baker wrote the following:

“In order to derive the Mirror Principle, what is needed instead is a syntactic framework in which adding morphology and changing (or referring to) grammatical functions necessarily go together. . . Given this viewpoint, the observed parallelism between morphological derivations and syntactic derivations is a trivial consequence of the fact that there is only one derivation with both kinds of effects.” (Baker, 1985:407–408)

2.2. The incorporation framework and the Monotonicity Hypothesis

The framework in Baker (1988) presented an integrated approach to morphosyntactic word formation, according to which agglutinative word-formation is driven by syntactic head-movement. He argued that syntactic constraints on head-movement (e.g. the Head Movement Constraint of Travis, 1984) explain the distribution of attested causativizations and incorporations.

This approach has exactly the property of deriving the Mirror Principle: Because the morphological derivation simply *is* the syntactic derivation, changes in morpheme order can be expected to function syntactically and semantically in the same way that changes in word order do. Scope relations and grammatical relations can be read directly off of the hierarchical morphological structure because it simply *is* the hierarchical syntactic structure. A causative affix attached outside of a desiderative has a different interpretation than a desiderative affix attached outside of a causative for the same structural reason that the interpretation of *John made Bill want to go* is different than that of *John wants to make Bill go*.

In this approach, morphosyntactic terminal nodes are the subparts of words. Morphologically complex words are created when terminal nodes are brought together via head-movement.

This view of morphological processes entails what Koontz-Garboden (2007) calls the “Monotonicity Hypothesis”. Word-formation can manipulate existing syntactic terminal nodes, creating a single word out of two separate terminals. Addition of morphological material thus reflects the addition of syntactic structure, since morphological structure simply *is* syntactic structure. Syntactic structure-building is inherently monotonic: you can add to existing structure, but sub-parts of

⁴ In a framework in which the relevant syntactic operations, such as binding relations and A-movement, are also accomplished within the lexical component, this point does not apply, of course; as a reviewer notes, the crucial thing is that the grammatical architecture executes both morphological and syntactic operations within the same submodule. Certain strongly Lexicalist theories accomplish this already, e.g. LFG and HPSG; for a comparison of causative formation in HPSG with syntacticocentric approaches, see Harley (2008).

an existing tree cannot be deleted by the addition of morphological structure (a case of Emonds' (1970) Structure Preserving Hypothesis). At best, the new structure might trigger movement of sub-parts of the embedded structure—but nothing can destroy or remove existing structure once it is built.

Consequently, the core cases addressed in Baker (1988)—noun incorporation and causativization—are the paradigm cases for syntactic approaches to morphology. Theme incorporation involves manipulating existing structure by performing normal head-movement from the object position to its sister V node. Causativization involves embedding a clausal structure under a causative affixal verb followed by head-movement of the embedded verb to adjoin to the matrix causative verb, as in the Predicate Raising analysis of Kuroda (1965). In neither case does an existing structure 'lose' anything by virtue of the morphologically additive process. These are the easiest kinds of cases for a syntactic morphology to account for.

Other morphological operations, however, are more difficult to account for. As noted above, adding morphological material to a structure cannot function to delete material from that structure. Passives, for example, are conceptually difficult to accommodate, because it appears that the result of adding a morpheme to a verb is to cause that verb to lose its external argument. The problem is acute in a VP-internal subjects architecture where the external argument is directly selected by the verb and introduced in the specifier of VP, as in the Principles and Parameters framework of the late 1980s and early 1990s.⁵ In such a framework, an Incorporation approach to the formation of passive verbs is problematic. The passive morpheme can't be an incorporated external argument, in the way that a detransitivizing incorporated noun is an incorporated internal argument, because of the nature of head-movement: External argument incorporation would involve downward head-movement, of an argument in a specifier position into the head of its own projection. Such a syntactic operation seems to be ruled out on principled grounds by independent evidence (*pace* Baker et al., 1989).

If bound morphemes are heads of terminal nodes in the syntax, they can affect surface grammatical functions in only two ways:

- (6) a. Select (or not) a particular kind of complement
- b. Introduce (or not) a particular kind of specifier

To repeat: in a unified morphosyntactic framework, argument 'suppression' via a morphological process, *per se*, is impossible. If morphemes are heads of syntactic projections, adding morphology can only add syntactic structure; it can't delete/remove any.⁶

Given this assumption, built on the syntactic view of morphology introduced by Baker (1988), I will argue below that the facts of Hiaki prove that external arguments cannot be introduced into the syntactic derivation by the morphemes that semantically must refer to them. The argument is based on the interaction of the causative with the applicative in Hiaki. That is, even in cases where it is clear that there is a separate 'little v' whose semantic contribution is solely to express a causal relationship between an external argument and an embedded event, the external argument is not introduced in the specifier of that little v, but rather in the specifier of another, separate functional projection above that, whose only reason for existence is apparently to accomplish this introduction. In short, vP ≠ VoiceP. This, I argue, can help us understand the role and position of the Hiaki passive morpheme (and 'stacking' passives in other languages, formed by the simple addition of a piece of morphology to an apparently active verb stem), as well as how the Hiaki indirect causative works.

First, however, we need to understand the nature of applicative morphemes, and some of the basics of Hiaki morphosyntax. I turn to these topics next.

3. McGinnis (2001 et seq.), Pykkänen (2002): applicatives and the split vP

In a syntactic approach to grammatical-function changing morphology, one major motivation for the split-vP hypothesis in (1) is that it allows a perspicuous analysis of the behavior of the applicative morpheme and its argument in languages which have applicatives (McGinnis, 2001; Pykkänen, 2002). The analysis straightforwardly predicts the syntactic properties of the applied argument. In this section we briefly describe and exemplify verbal applicatives, and show how they fit into the split-vP architecture.

⁵ If the VP is bipartite, then a 'flavors' of v analysis as in Marantz (1997) and Folli and Harley (2005) can in principle capture the argument-suppression effect of the passive. However, such an analysis predicts that agentive verbalizing morphology should be in complementary distribution with passive morphology. This is indeed the case for certain kinds of adicity alternations, as for causative-inchoative alternations in Japanese (Harley, 2008) or the light verb-based alternations of Persian complex predicates (Folli et al., 2005). However, passive morphology typically embeds such agentive verbalizing morphology, as seen, for example in English cases such as *polar-ize* / *be polar-ize-d* or *clar-ify* / *be clar-ify-ed*. In such cases, a 'flavors of v' view of passive/transitive alternations is inadequate. As will be seen below, it is precisely this problem of the 'stacking' passive—where passive morphology is 'stacked' on top of apparently agent-introducing morphology—that the VoiceP analysis argued for in this paper is designed to address.

⁶ See Kiparsky (in this issue) for a lexicalist view of passive formation involving lambda-abstraction over the verb's lexical-semantic representation, reducing syntactic adicity.

Applicative morphemes are verbal affixes which introduce an additional argument to a clause. This argument is thematically typically a benefactee or malefactee, and it is typically case-marked like an object or indirect object. Applicatives are very productive in many languages. Canonical examples include Chichewa and Kinyarwanda.

Hiaki, which we will be most concerned with here, also has a productive applicative morpheme.⁷ In (7a), a simple imperative sentence containing a transitive verb is illustrated. The understood 2nd-person subject is absent, so the sentence consists of the object and the verb. In (7b), the same verb with an applied argument and the applicative suffix is illustrated, and the benefactive thematic role of the applied argument is clear from the translation. Notice that the benefactive argument, *usi-ta*, ‘child-acc’, is marked with accusative case and appears to the left of the thematic object argument of the verb.⁸

- (7) a. Voocha-m woita
shoe-pl untie
“Untie the shoes”
b. Usi-ta voocha-m woita-ria
Child-acc shoe-pl untie-appl
“Untie the shoes for the child!”

In (8), the combination of the applicative suffix with three different types of verbs is illustrated. (8a) illustrates how the applicative occurs in translations of benefactive ditransitives in English. Applicatives are also used in cases where the English translation equivalent must introduce the benefactive role via a PP, as in (8b). In (8)c we see that the Hiaki applicative *-ria* can attach to unergative verbs. This means that it is a ‘high’ applicative, in [Pylkkänen \(2002\)](#)’s terms.

- (8) a. Inepo Hose-ta chu’u-ta hinu-ria-k
I Jose-acc dog-acc bought-appl-prf
“I bought Jose a dog”
b. Inepo Hose-ta pueta-ta eta-ria-k
I Jose-acc door-acc close-appl-prf
“I closed the door for Jose”
c. U’u maaso uusi-m yi’i-ria-k
The deer.dancer the children-pl dance-appl-prf
“The deer dancer danced for the children”

The Hiaki applicative, then, has all the hallmarks of a typical applicative. It introduces a new core argument into the sentence, and this new argument is a syntactic object, marked with the accusative case. We will call the object introduced by the applicative the ‘applied argument’ or the ‘applied object’ below.

[Rude \(1996\)](#) shows that the Hiaki applied argument is structurally lower than the external argument of the clause in which it is introduced, and structurally higher than all other internal arguments in the clause. That is, it is c-commanded by the subject, and c-commands all other internal arguments. Several independent diagnostics confirm this; I review two of them below.

We can see that the applied argument is c-commanded by the external argument because when the applied argument is coreferential with the external subject argument, the applied argument must be reflexive:

- (9) Aapo tu’i mo’ove-ta au= hinu-ria-k ([Dedrick and Casad, 1999:343 \[17\]](#))
He good hat-acc 3.refl=bought
“He bought himself a good hat.”

We can see that the applied argument c-commands all the other internal arguments, because when the external argument is suppressed by the (impersonal) passive suffix, the applied argument, not the internal argument, becomes the derived nominative subject. In the absence of an applied argument, the internal argument becomes the nominative subject. This is illustrated in (10) and (11) below. In (10a), a normal transitive clause is illustrated, and in (10b), its passive

⁷ Indeed, [Haugen et al. \(2009\)](#) show that it cannot attach to unaccusative verbs, suggesting it selects for an agentive vP complement. The fact that the Hiaki applicative is ‘high’, attaching to agentive verbs, might suggest that it should exhibit ‘symmetric’ behavior with respect to other internal arguments, under the analysis of [McGinnis \(2001, 2004\)](#). However, the fact that the Hiaki applied argument is strongly asymmetric with respect to passive, blocking the promotion of other internal arguments of the clause, is evidence that the Hiaki ApplP is not a phase, given the proposal of [McGinnis \(2001, 2004\)](#) concerning symmetric applicatives. This suggests that the high/low applicative distinction does not necessarily correlate with the symmetric/asymmetric distinction, contra [McGinnis \(2001\)](#).

⁸ In Hiaki, only singular NPs can be marked for accusative case; if *voocham*, ‘shoes’, was instead a singular NP, the example would contain two overtly-marked accusatives, as in (8a, b) below. There is no limitation on the number of accusative-marked arguments that may appear in single Hiaki clause (see (27a) below for an example containing three such arguments), unlike in Japanese ([Harada, 1973 et seq.](#)).

counterpart shows that the thematic object *maaso*, ‘deer’ is promoted to subject position, and bears null nominative case instead of the accusative case it bears in the active (10a).⁹

- (10) a. Hose maso-ta me’a-k
 Jose deer-acc kill-prf
 “Jose killed the deer”
 b. Maaso aman me’e-wa-k
 Deer there kill-pass-prf
 “The deer was killed over there”

In (11a), an active applicative clause is illustrated, in which the new applied argument *Maria-ta*, ‘Maria-acc’, intervenes between the external argument *Hose* and the internal argument *maaso-ta*, ‘deer-acc’. In (11b), its passive counterpart shows that *Maria*, the applied argument, has been promoted to subject position, bearing nominative case, and the thematic object *maaso-ta*, ‘deer’, remains accusative. (11c) shows that promotion of the thematic object *maaso* to subject position, across the intervening applied argument, is ungrammatical.

- (11) a. Hose Maria-ta maso-ta me’e-ria-k
 Jose Maria-acc deer-acc kill-appl-prf
 “Jose killed the deer deer on/for Maria.”
 b. Maria maso-ta me’e-ria-wa-k
 Maria deer-acc kill-appl-pass-prf
 “Maria had the deer killed on her”, “The deer was killed on/for Maria”
 c. *Maaso Maria-ta me’e-ria-wa-k
 deer Maria-acc kill-appl-pass-prf

To summarize: The applied argument appears (structurally) between the verb’s external argument and its internal argument. It is introduced by the *-ria-* morpheme itself. Given the assumptions of a syntacticocentric morphology, presumably *-ria-* is the head of an ApplP, and the applied argument is introduced in the specifier of ApplP, since it is semantically selected by *-ria-*.

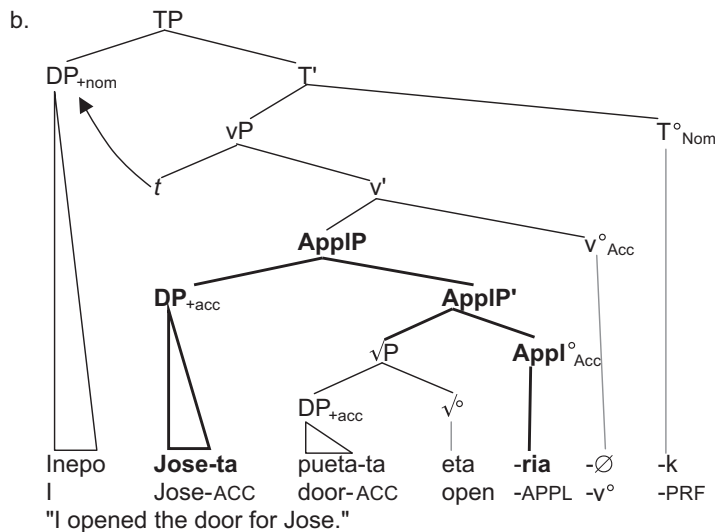
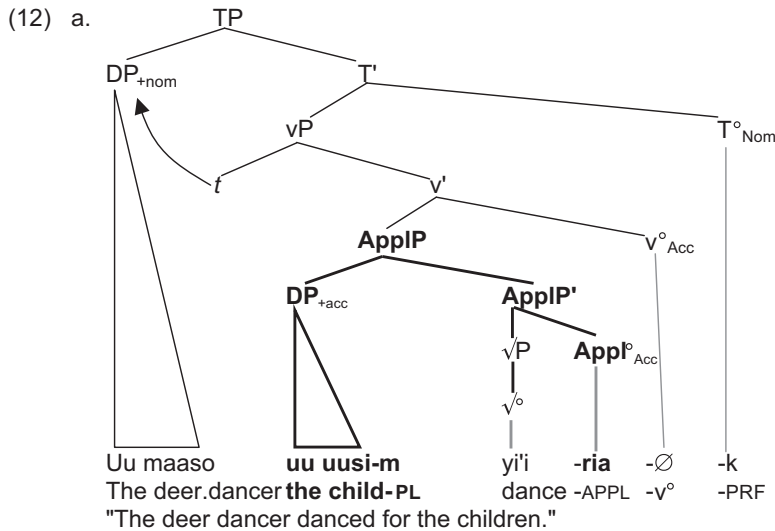
The original split-VP hypothesis illustrated in (1) allows us to compose the VP with the Appl^o *-ria* below the v^o and above the VP, thereby introducing the applied argument below the external argument and above all the internal arguments of the verb, as required. (From this point on, I will notate the core root of the verb as $\sqrt{\text{V}}$, rather than V, and its projection as $\sqrt{\text{VP}}$, rather than VP; nothing hinges on this notational choice at this point).

In (12a), I illustrate the introduction of an applied object to an intransitive clause, and in (12b), I illustrate the introduction of an applied object to a transitive clause. The applicative morpheme heads an ApplP projection which intervenes between the external-argument-introducing vP and the $\sqrt{\text{VP}}$. Because the internal argument is the argument of the root verb, within $\sqrt{\text{VP}}$, the applied argument appears in a position which c-commands the internal argument and is c-commanded by the external argument. Note that the functional head which checks each structural case present in the clause is annotated with that case in a subscript notation; the Appl head must introduce a structural accusative case to license the direct object, since the applicative argument is licensed by the accusative feature of the c-commanding vP.^{10,11}

⁹ Hiaki long vowels are typically shortened when a suffix is added to a stem containing them, so *maaso*, ‘deer’, becomes *maso-ta* ‘deer-acc’ in (10a) here. Similarly, many Hiaki verb stems have bound forms which are used as the base for the suffixation of derivational, but not inflectional, morphology; that is why *me’a* ‘kill’ in (10a) becomes *me’e-* when suffixed with the passive in (10b) or applicative in (11).

¹⁰ Here we follow Chomsky (1995) and Kratzer (1996) in assuming that the external-argument-introducing head has an accusative feature which checks the structural case of the closest c-commanded DP below it (Chomsky, 1995). In non-applicative clauses, this will be the direct object, but in applicative clauses, this will be the applied argument. Note that even unergative v^o, introducing an external argument in a clause which has no overt internal argument, must bear an accusative case feature, since applicatives of unergative verbs are well-formed. The case features on v^o (and Appl^o) are ‘interpretable’, in Minimalist parlance, and do not require checking/deleting, since in typical unergatives the accusative feature of v^o will go unchecked; in applicatives of unergatives, the accusative feature of Appl^o will also go unchecked. On this view, it is the ‘uninterpretable’ case features on the DPs which trigger ungrammaticality if they cannot enter into a checking/valuing relationship with an appropriate case-assigning head, consistent with the original rationale behind the Case Filter. This is in line with the intuition of Pesetsky and Torrego (2001 et seq), in which the Case features of T and v, realized via Agree on nouns, are the inverse of the phi-features of nouns, realized via Agree on verbs. On nouns, phi-features are interpretable; similarly, the Case features of T and v, reflecting finiteness and agentivity values respectively, are interpretable on verbs. On this approach, Burzio’s Generalization becomes something of an epiphenomenon as argued in Harley (1995), involving only the adicity reduction effect of passive Voice or unaccusative v^o, rather than the unavailability of a Case-checking head in the structure.

¹¹ As Hiaki is a robustly head-final language, I represent the structures here with complements base-generated to the left of their heads, which are on the right. The fundamental argumentation would remain unaffected, I believe, in an Antisymmetric analysis adopting Kayne’s (1994) LCA, though the complications of implementing locality effects in the whirlwind of remnant movements and smuggling effects (Collins, 2005) might render a direct translation of the present results into such a framework technically challenging.



A structural approach to applicatives thus effectively necessitates a split-VP within a syntacticocentric morphological theory; otherwise, there would be no way to insert an applied argument in an intermediate position between the external argument and internal argument of a simplex VP. This, then, constitutes McGinnis's and Pykkänen's argument for a split-VP, based on applicative data with these same syntactic properties in other languages.¹²

In the next section, we turn to morphological evidence for a split-VP in Hiaki, showing that morphological patterns distinguishing the root from the v° head can be identified, and where the identity of the v° morpheme correlates with the presence or absence of the external argument.

4. Hiaki bipartite verb morphology and the split-VP

Like Japanese (see, e.g. Harley, 2008), Hiaki exhibits a fair amount of morphological evidence that some causative verbs are made up of a root and a causative verbalizing head. In (13), deadjectival change of state predicates is illustrated, where the verbalizing morphology is added to the adjectival base in both English and Hiaki. The verbalizing morphemes are bolded in the Hiaki examples. If v° is the verbalizing head, as in Marantz (1997), these verbalizing morphemes are morphological realizations of v° .

¹² McGinnis's and Pykkänen's proposals were concerned primarily with the syntactic relationships between the applied arguments and the other arguments of the verb to which the applicative morpheme was attached; they did not consider in depth the interaction of the applicative morphology with other verbal morphology. This latter is the focus of our investigation below.

(13) Change-of-state predicates:

English		Hiaki	
Verb	Adj	Verb	Adj
to redden	red	sikisi	siki
to fatten	fat	awia	awi
to soften	soft	bwalkote	bwalko
to sharpen	sharp	bwawite	bwawi
to warm	warm	sukawe	suka

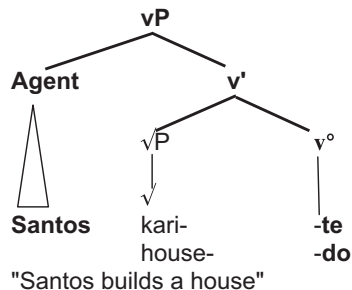
In (14), similarly, denominal unergative verbs are shown beside their source N; in each case, the verbalizing morpheme *-te* has applied, again bolded:

(14) Agentive denominal unergative predicates¹³:

Noun		Verb	
cho'oko	'salt'	cho'okote	'to salt'
heewi	'yes!'	hewite	'to agree'
hiosia	'paper'	hiohte	'to write'
haawa	'steam'	hawassate	'to steam'
hipetam	'mat, bed'	hipette	'to weave, make a mat'
kari	'house'	karite	'build a house'

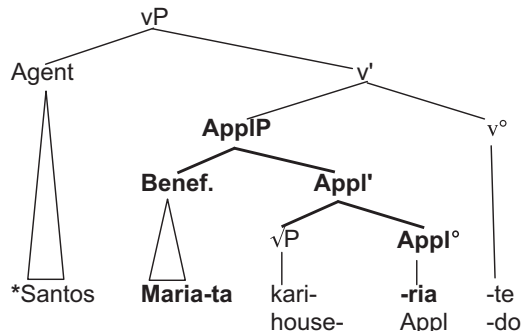
Bipartite verb structure copes with these morphological divisions very nicely: the *-te* suffix in cases like *kari-te* 'house-do', for example, could be analyzed as heading the external-argument-introducing v° , as illustrated in (15). This is one type of evidence that Hale and Keyser (1993 *et seq.*) point to in arguing that unergative verbs are typically derived from a transitive structure, with a nominal root and a verbal projection which introduces the external argument.

(15)



Given this approach to the verbalizing suffix in Hiaki unergatives, we now observe the first hint of a wrinkle in the account of applicatives outlined in section 3. Consider the Mirror Principle prediction about morpheme order made by the split-VP analysis of applicatives, above, when an applicative is introduced to a clause containing one of the bipartite predicates in (13) or (14) above, such as *kari-te*, 'house-do'. We have hypothesized that the applicative head *-ria* introduces an applied object below the external Agent argument, and above any internal arguments, between v° and \checkmark . We have assumed, following Chomsky (1995), Hale and Keyser (1993), and Marantz (1997), that vP is the locus of the introduction of the external argument. The Appl projection headed by *-ria* intervenes between the $\checkmark P$ and the vP . If *-ria* obeys the Mirror Principle prediction, then, it is predicted to intervene linearly between the \checkmark *kari-* and the v° morpheme *-te*, as in the following structure:

(16)



¹³ In Hiaki, /s/ becomes debuccalized /h/ before consonants, explaining the relationship between *hiosia* 'paper' and *hiohte*, 'write'. The noun *haawa* 'steam', is subject to additional stem-forming affixation before the addition of *-te* to produce *hawassate*, 'steam'; this process is less well understood and certainly irregular synchronically.

However, this morpheme order is impossible. The applicative morpheme must follow the purported v° morpheme, in the applicative of verbs like *kari-te*, ‘house-do’:

- (17) Santos Maria-ta kari-te-ria (derived from Santos kari-te
Santos Maria-acc house- v° -appl Santos house- v°
“Santos is building a house for Maria.” “Santos is building a house”)

This is a contradiction within the analysis as it stands so far. One of the assumptions that went into it must be incorrect.

One possible conclusion is that apparently verbalizing morphology like *-te* isn’t actually the realization of v° , though it may historically have been. We could conclude that *-te* has become reanalyzed as part of a verbal root $\sqrt{\text{kari-te}}$, ‘build.a. house’. If this approach were on the right track, the actual v° head would be morphologically null, and could still ‘follow’ the Appl $^\circ$ head, as in the structure illustrated in (12a) above.

In the next set of data, however, we will see that this is not a viable solution for other external-argument-introducing morphology of Hiaki. We next turn to the interaction the applicative with the productive direct causative construction.

5. Splitting the vP: Voice, causatives and applicatives

5.1. Causatives in the bipartite analysis

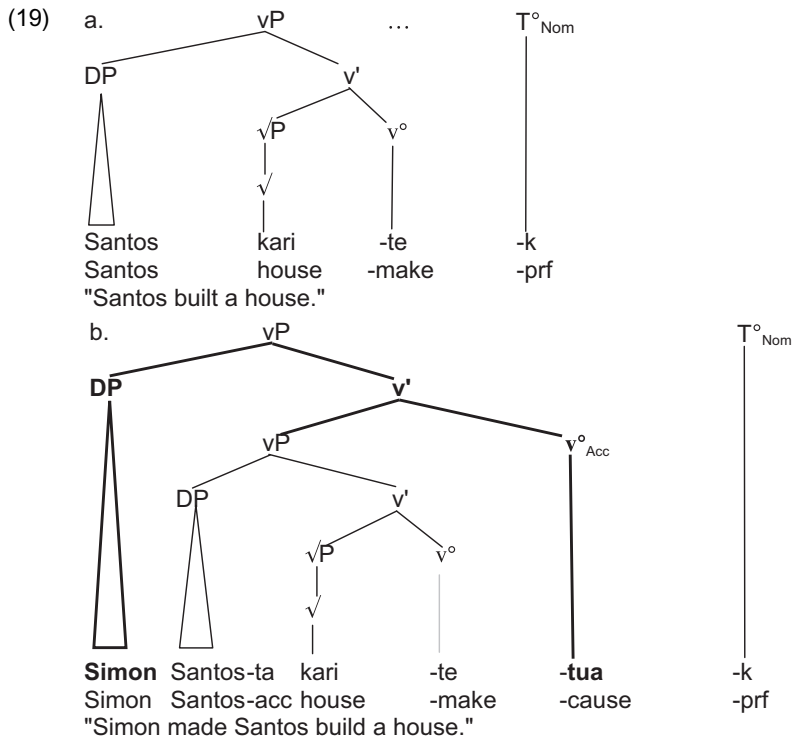
In addition to its applicative and passive morphology, Hiaki has a fully productive affixal causative for expressing garden-variety causation. Several sentences illustrating the use of this suffix, *-tua*, are given below.

- (18) a. Art Heidi-ta utte’a-po hipaksia-tua-k
Art Heidi-acc strength-in do.laundry-caus-prf
“Art made Heidi do laundry against her will.”
(Lit: “Art, in (his) strength, made Heidi do laundry.”)
- b. Simon Santos-ta kari-te-tua
Simon Santos-acc house-*vr*b-caus
“Simon is making Santos build a house.”
- c. Uu maroma ume yoeme-m kari-ta ho’o’oota-ka-m-ta
The foreman the man-pl house-acc back-bone-ppl-s.rel-acc
hoo-tua-taite
make-cause-start
“The foreman is starting to make the men build a house with a peaked roof”
(Lit: “...a house that has a backbone.”)

In the tradition of a great deal of research on affixal causatives cross-linguistically (Miyagawa, 1994, 1998; Harley, 1995, 2008; Kural, 1996; Travis, 2000; Svenonius, 2005, among many others), it is clear that the Hiaki affixal causative morpheme is an instance of v° , heading its own vP projection. A productive causative v° selects another vP as its complement, embedding the former external argument of the verb stem below it. Below, I illustrate the structure for productive causatives which follows, given the original bipartite analysis, and briefly describe the semantic and morphological indicators which support treating the productive causative as a v° head.

On the bipartite analysis of the verb phrase, the causative vP adds both a new external argument (the Causer) to the clause and a causative morpheme to the verb. The embedded external argument (the Causee) becomes the highest internal accusative DP of the clause, getting accusative case from the new causative v° . This analysis is illustrated below in (19). In (19a), the structure of a standard denominal unergative is repeated (from (15) above), illustrating the position of base-generation of the external argument in spec-vP. In (19b) the structure of (18b), the causativized counterpart of (19a), is illustrated.¹⁴ Here, the *-tua*, ‘cause’, embeds the vP denoting ‘Santos build a house’. Simultaneously, the Causer argument *Simon* is introduced in the specifier of the vP projection headed by *-tua*, as *-tua* semantically selects for it. Consequently, the Causer argument becomes the new subject of the clause, raising to TP to check nominative case, and the external argument of the embedded clause, the Causee, instead checks accusative case against its now closest case-assigning head, the causative v° headed by *-tua*, in an ECM configuration:

¹⁴ Note that I do not draw the entire TP projection, inserting ellipses to indicate its presence. I include the T $^\circ$ head, however, as its role in case-licensing the external argument is important in what follows. I assume that the subject argument raises from spec-vP to spec-TP, as usual, to check its nominative case.



Categorizing the causative morpheme as another v° is motivated by both semantic and morphological factors. In terms of its interpretation, of course, the causative morpheme means something like 'cause'. For change of state predicates such as *John opened the door*, as in (1) above, 'cause' or something very like it is taken to be the meaning of the v° hidden inside such predicates. (Indeed, the semantic entailments associated with such a hidden causative were crucial to the empirical results of the theoretical grandparent of the vP analysis, Generative Semantics (Lakoff, 1971; McCawley, 1976, among others). See Harley (2012) for discussion of the differences between v° CAUSE and the lexical English verb 'cause'.)¹⁵

In terms of the morphology, in many languages including Hiaki and Japanese, certain external-argument-introducing v° 's are actually morphologically realized as 'lexicalized' versions of the productive syntactic causative morpheme. Some Hiaki examples are provided in (20) below:

- (20) a. Mala pale-ta aman vittua-la
Mother young.boy-acc there send-compl
"Mother sent the young boy there"
(diachronically: *vit-tua*, 'see-cause', now lexicalized as 'send' and used with both animate and inanimate direct objects)
- b. Itepo am hiapsi-tua-ne
we them heart-caus-fut
"We will feed them/give them strength./give them strength."
(lit: "cause them to have heart")

Other examples in Molina et al. (1999) include *alleatua*, 'amuse', *asoatua*, 'to birth', *asukatua*, 'sweeten', *chihua*, 'nurse (tr.)', *eetua*, 'bother, annoy', *hioptua*, 'confuse', *mahatua*, 'frighten', *na'atua* 'tell on sb.', *puhtua*, 'give sb. the evil eye'. In these cases, *-tua* has been lexicalized as the external-argument-introducing morpheme for a verb like 'send'. The *-ify* morpheme plays the same role in words like *clar-ify* in English. In these cases, the bipartite structure is no different from that of a basic verb—in the split-vP hypothesis, the *-tua* morpheme is reanalyzed as the head of the verb's external-argument introducing

¹⁵ I assume that it is not appropriate to treat a bound derivational morpheme as a V or a $\sqrt{\text{ }}$ morpheme itself; among other things, that might predict that *-tua* should be able to stand alone as the verbal head of a clause, which it certainly cannot do. See, however, Kharytonava (2011) and Belder (2011) for arguments that all derivational morphemes are in fact more perspicaciously treated as $\sqrt{\text{ }}$'s.

vP. There are similar examples in Japanese, where a lexical causative is formed with the default ‘syntactic’ causative morpheme, *-sase* (Miyagawa, 1984, 1998), and, as noted above, in many other languages.

This process is a strong motivation for assuming that the vP in these regular lexically causative verbs (as in (20)) and the vP headed by the productive causative morpheme (as in (18)) have something in common, namely their realization as *-tua*. In a split-vP analysis, therefore, it is reasonable to treat both lexical and productive causative morphemes as v° s.

Crucially, though, the productive causative morpheme is not part of the verb’s lexical entry—it is productive, applying to essentially any verb, including novel and borrowed ones. With the productive causative, it is not possible to claim that the causative morphology has been lexicalized or reanalyzed as part of the verb stem, as was suggested for verbalizing *-te* in section 4 to account for the failure of the applicative morpheme to intervene between it and the verb stem. Since the productive causative is definitively not part of the verb stem, we can then use its interaction with the applicative as a probe into the structure of the vP, which is what we turn to in the next section.

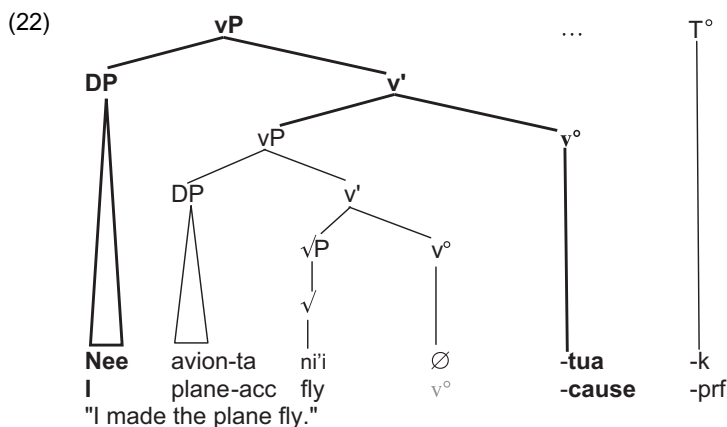
5.2. Causatives WITH applicatives

We have seen that causative morphemes introduce a new external argument. We have also seen that applicative morphemes introduce a new internal argument, between the external argument and the verb—crucially, c-commanded by the external argument. We can now investigate how they interact.

In (21), a regular intransitive sentence is illustrated, together with its causativized variant. As expected, the subject of the intransitive clause becomes the Causee object of the causativized clause with a new external Causer argument.

- (21) a. Uu avion ne'e-k
The plane fly-prf
‘The plane flew’
b. Nee uka avion-ta ni'i-tua-k
I the.acc plane-acc fly-caus-prf
‘I made the (model) airplane fly.’

The structure of causativized (21b) under the analysis to this point is illustrated in (22):



Let us now consider what we expect from a translation of ‘I made the model plane fly for the child’. That is, what will happen if we add an applicative to this causative sentence? The introduced applicative argument (*usi-ta* ‘child-acc’) should appear below the external argument—below the Causer argument, *Nee*, ‘I’, but above all other internal arguments, hence above the object of the causativized verb, *avion-ta*, ‘plane-acc’. By the Mirror Principle, morpheme order should mirror syntactic structure. So if the applicative argument is below the causer argument, the applicative morpheme should definitely be *inside* the causative morpheme.

It is not. The applied argument *usi-ta* ‘child-acc’ appears as an accusative-marked argument following the Causer *nee* ‘I’ and preceding the Causee *avion-ta*, ‘plane-acc’, as expected. But the applicative morpheme follows the causative morpheme in the derived verb.

- (23) Nee usi-ta avion-ta ni'i-tua-ria-k
I child-acc plane-acc fly-caus-appl-prf
‘I made the (model) plane fly for the child.’

When such a verb is passivized, it is the applied argument, not the embedded subject, which becomes the derived nominative subject, which is consistent with the idea that the applied argument is more local to the matrix subject position than the embedded subject:

- (24) Uusi avion-ta aman ni'i-tua-ria-wa-k
 child plane-acc there fly-caus-appl-pass-prf
 "A model plane will be flown for the child over there." (e.g. at a birthday party.)
 (Lit: The child will be flown a model plane there.)

The morpheme order is telling us that the phrasal projection of *-ria* is structurally above the phrasal projection of *-tua*. However, the argument hierarchy test in (24) is telling us that the argument of *-tua* is above the argument of *-ria*, since the causer *c*-commands the applied argument.

It is important to note that the sentence in (23) cannot be interpreted as a causative of an applicative of *fly*. A direct applicative of the embedded clause here, "The plane flew" is impossible, because planes are not intentional—intentionality is necessary to license the applicative in any clause. The semantic ill-formedness of (25) illustrates that (23) *has* to be exactly what its morpheme order proclaims it to be: an applicative of a causative, not a causative of an applicative.

- (25) #Uu avion ili usi-ta ni'i-ria-k
 The plane little child-acc fly-appl-prf
 "The plane flew for the child."

Another example illustrating an applicative of a causative is given in (26):

- (26) Nee Maala-ta uusi-ta hi'ibwa-tua-ria-k.
 I Mother-acc child-acc eat-caus-appl-prf
 "I fed the child for Mother."

Crucially, causatives of applicatives are possible, with the opposite morpheme order, when the semantics are right. This is illustrated in (27a–c).¹⁶

- (27) a. Nee ili usi-ta Mala-ta aa=tu'ute-ria-tua-k
 I little child-acc Mother-acc it=clean-appl-caus-prf
 "I made the child clean it for Mother."
 b. Maala uka in wai-ta voocha-m ne=hinu-ria-tua-k
 Mother the.acc my cadet.brother.of♀-acc shoe-pl 1sg.acc=buy-appl-caus-prf
 "Mother got my younger brother to buy shoes for me."
 c. Itom asu uka San Julia-ta_i itom aa_i=pahko-ria-tua-ii'aa.
 Our mat.grandm. the.acc St. Jude-acc us 3sg.acc=fiesta-appl-caus-desid
 "Our maternal grandmother wants to get us to have a ceremony for him, St. Jude."

In (27a), for example, we have a benefactive sentence—"The child cleaned it for Mother"—which is causativized (I made [the child clean it for Mother]). The morpheme order reflects this derivational history. (Note that the order of argument DPs in (27c) is derived; the Benefactee argument, *uka San Julata* 'St. Jude', has been clitic-left-dislocated from its position following the Causee argument *itom*, 'us'; this movement is reflected in the mandatory presence of the accusative clitic pronoun *aa* 'him' before the verb.)

Scopally motivated reordering of causative and applicative morphemes is impossible in other languages with both kinds of suffixes (Hyman, 2003; Buell and Sy, 2006). In analyzing the applicative and causative morphemes of Chichewa, Hyman (2003) shows that they follow a strict templatic order, in which the causative suffix must precede the applicative suffix, as in (23), regardless of their respective scope, following what Hyman dubbed the CARP template—Causative-Applicative-Reciprocal-Passive. Good (2005) argues that this order follows from general morphophonological restrictions in the language. This is exactly the kind of case where motivated departures from the Mirror Principle are expected to occur; languages are frequently observed to implement various morphophonological repair strategies when a particular morphosyntactic structure produces a morphophonologically un-realizable string (*do*-support in English being one

¹⁶ Note that it takes very particular examples—like the one in (25)—to be sure of the relative scope of the applicative and causative, because the 'benefactee' relationship is quite a loose one. When X makes Y do A for Z, the ways in which Z can benefit from the causation of A include the ways that Z can benefit from A alone, and so many circumstances of caused benefaction or benefactive causation are compatible with either order of derivation. Examples in which the order of causative and applicative vary thus can easily be multiplied, but only in certain circumstances is the change in scopal relations clear-cut—when one depends on the other, as in (23) and (25).

example, see Bobaljik, 1994). If Good is correct, it is reasonable to assume that scopally motivated affix ordering in Chichewa is impossible because of the morphophonology, not because there is anything intrinsically ill-formed about the structure of a causative of an applicative, or vice versa.¹⁷

In the Hiaki case, the situation is clearer, as there are no morphophonological restrictions obscuring the basic structures of the derived verbs in question. The existence of both causative-applicative order and applicative-causative order, with the concomitant interpretive differences, as in (27) and (23) above, should be a paradigm case of a Mirror Principle effect. The different scopes should follow from different syntactic hierarchical structures, which are interpreted exactly as predicted at LF. Nothing, seemingly, could be more straightforward.

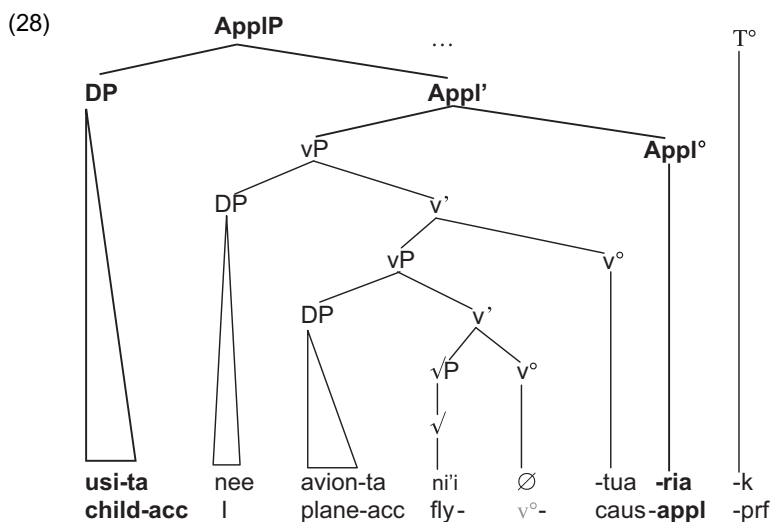
The only fly in the ointment is the relative hierarchical positions of the applied argument and the Causer argument. If each is introduced in the specifier of its respective selecting morpheme, as expected, the applied argument should c-command the Causer argument in the applicative of a causative like (23). The fact that it does not do so, then, poses a thorny syntactic problem. The conclusion I will draw from this below is that the external argument—the Causer—is, in fact, not introduced in the specifier of the projection headed by the causing morpheme, but instead in the specifier of a separate external-argument projection, VoiceP. In the next section, we first review some potential repair-based strategies for dealing with the mismatch between syntactic and morphological ordering, and reject them in favor of the VoiceP approach. We then review the merits of VoiceP in coping with several other similar morphosyntactic problem cases involving apparent suppression of the external argument.

6. Analytical options

Below we consider several different theoretical approaches to resolving the conflict between argument hierarchy and morpheme order illustrated by the data above: (a) syntactic repair, (b) morphological repair, (c) a lexicon-internal analysis and (d) splitting the vP into vP and VoiceP—a syntactiocentric analysis.

6.1. A: morpheme order = syntactic structure, syntax messy

The first possibility under consideration is that the morpheme order reflects ‘true’ syntactic structure. When the applicative morpheme follows the causative morpheme, the applied argument is indeed generated in a specifier above the Causer argument, as illustrated in (28).



If this is the true position of base-generation of the applied argument, this structure would have to be transformed into the actual clause structure, in which the Causer argument is marked with nominative case and serves as the structural subject, by movement of *nee*, 'I', to spec-TP across the applied argument *uusita*, 'chid'. The Causer would have to move around/across the applied argument to land in the Spec-TP subject position.

¹⁷ See McPherson and Paster (2009) for evidence that CARP is only partially active in determining the relevant morpheme orders in Luganda, another Bantu language. Luganda exhibits both Caus-AppI and AppI-Caus orders, showing Mirror Principle behavior in correlating scope and morpheme order for these two; in other cases, CARP-like restrictions are observed, however.

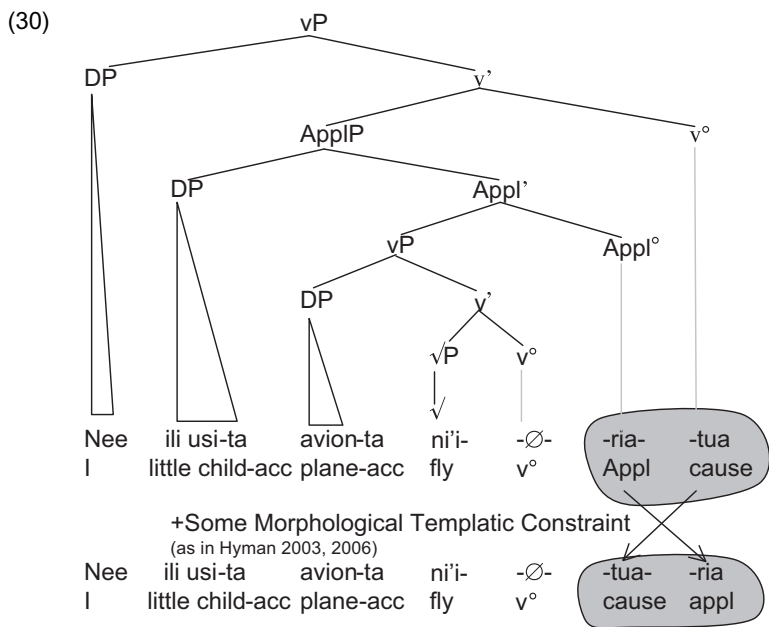
This proposal runs into a number of problems, the primary one being that it would require stipulating that the applied argument is ineligible for promotion to nominative position for some reason. The most natural proposal concerning this hypothetical ineligibility would be to ascribe some kind of inherent/lexical case assignment from Appl^o to its specifier; in many languages applied arguments surface with dative case.¹⁸ However, in Hiaki, the applied argument does not bear a lexical case, and remains active for structural case-checking. As we saw in example (11b) and (24) above, the latter repeated in (29) below, the applied argument is promoted to subject position and receives nominative case when an applicative is passivized.

- (29) Ili uusi avion-ta ni'i-tua-ria-wa-k
 little child plane-acc fly-caus-appl-pass-prf
 "The plane was flown for the little child."
 [Closest translation, structurally speaking:
 "The little child was flown the plane (by someone)."]

In sum, there is no justifiable reason to think that the Causer argument should be able to 'leapfrog' the applied argument in the analysis of sentences like (23) above; indeed, it is the failure of such leapfrogging (as a Minimality violation) which leads us to conclude that the applied argument c-commands internal arguments of the stem, in the discussion of examples like (11). This indicates that an analysis along the lines of (28) is unfeasible.

6.2. B: argument c-command structure = syntactic structure, morphology messy

A second analytical possibility would be to assume that the syntactic indications concerning the relative hierarchical positions of the Causer and applied arguments reflects the base-generated syntactic structure. In that case, the benefactive morpheme would be base-generated inside the causative morpheme, as illustrated in (30), and the surface order in an example like (23) is derived by morphological constraints. One could assume, for example, that templatic morphological restrictions could cause the order *-ria-tua* to be rewritten as *-tua-ria*, much as proposed by Hyman (2003) for inverse scope problems with causatives and applicatives in Chichewa.



¹⁸ Inherently case-marked dative arguments are typically thought to be inert with respect to outside Case-checking mechanisms; one might, consequently, wish to consider (28) as an analysis of high applicatives in such a language. On the assumption that the general hierarchy of phrasal projections and their division of labor is universal, however, with parametric differences implemented via featural distinctions, the conclusions about the base-generation of the external argument in a separate VoiceP in Hiaki should be considered valid cross-linguistically as the null hypothesis. If the specialness of external arguments can plausibly be linked to the properties of the Voice projection, as proposed by Kratzer (1996), the empirical support for the universality of the VoiceP–vP structure proposed here is considerably enriched, as external arguments seem to have a privileged status in most, if not all, languages that have been systematically investigated.

While such an approach is indeed motivated for the Chichewa facts, where there is only one legitimate linear ordering for the causative and the applicative morphemes, it is entirely stipulative if applied to Hiaki. There is no morphological constraint which bars the *-ria-tua* order; indeed, as we have seen in example (27) above, a *-ria-tua* sequence is fine when *-ria* is an applicative of the embedded verb. In other words, the purported morphological template restrictions would have to take into account the scope of *-ria*.¹⁹ Similarly, there is little evidence for templatic effects elsewhere in the language—nearly all the verbal derivational affixes are quite productive, and many can be reordered with respect to each other, if appropriate semantic/pragmatic contexts can be constructed to motivate the intended scope.

The templatic approach to the Hiaki problem has little intuitive appeal, since the order of the morphemes does seem entirely appropriate. Semantically speaking, (23) is an applicative of a causative, and (27) is a causative of an applicative. Surely one would want the fact that the morpheme order reflects this to fall out of the analysis, not be the result of the application of an arbitrary template.

6.3. Option C: Lexicalism + Mirroring

It is worth considering whether this paradox concerning syntactic hierarchical position and order of morphological derivation could serve an argument for abandoning the syntacticocentric approach and returning to lexicalist view of derivational word formation. In such a theory, a linking component relates the theta-grid/lexical conceptual structure of derived word forms to certain syntactic structures; mirror effects are enforced by the linking rules. In the lexicon, adding an applicative suffix to a causative verb augments the theta-grid/LCS of the causative verb with a benefactee argument. General linking principles would then predict that when the complex verb is projected to the syntax, the Causer/Agent argument should be projected to the highest position (subject) and the Benefactee to a lower position (object), in accordance with a UTAH-like²⁰ principle requiring the hierarchy of theta roles to mirror the hierarchy of grammatical functions:

Agent>Benefactee>Theme>Goal/Location correlating with Subject>Object>Indirect Object.

One puzzle associated with such an approach involves the question of how to ensure that the Benefactee is projected higher than the *embedded* Agent in a causative, though lower than the Causer argument. For example, a causative of *ye'e*, 'dance',²¹ would produce a theta grid of the type illustrated in (31a). I assume that some default linking rule will require that the most-recently added Agent be projected to subject position, hence it is underlined as the external argument of the derived verb. What happens when an applicative is added to such a causative? The theta grid would be augmented with a Benefactee role, as illustrated in (31b).

- (31) a. *y'i-tua* [Agent_{cause}, Agent_{dance}]
 dance-cause
 b. *y'i-tua-ria* [Agent_{cause}, Agent_{dance}, Benefactee_{Appl}]
 dance-cause-appl

How can the linking rules ensure the correct hierarchical relationship between the Benefactee argument and the Agent argument of the embedded verb *ye'e*, 'dance'? The usual hierarchy would seem to predict that the Agent of *ye'e* should be projected above the Benefactee, which would then be the most embedded argument. In fact, of course, the Benefactee is projected above the embedded subject, as shown in (23) and (29), counter to the expectations of a simple hierarchy. Perhaps the hierarchical linking principles could be augmented with some notion of 'cycle' to solve this problem, or, as in Alsina (1992), the embedded Agent could lexically demoted to Theme status, or be linked to both Agent and Theme theta-roles simultaneously.²² Whatever the strategy, however, it seems clear that additional complexity must be introduced to the theory to resolve the same problem we are wrestling with here. Consequently, we next turn to the solution we will advocate adopting. External arguments are not introduced by the causative predicate

¹⁹ A reviewer notes that since the vP is a phase boundary on the bipartite hypothesis, the relationship of the applicative to the phase edge introduced by the causative morpheme is different for applicatives of causatives rather than causatives of applicatives, and that perhaps a morpheme reordering operation like that in (30) could be rendered sensitive to the presence and location of this phase boundary. This would be like the 'cycles within theta-grids' approach outlined in section 6.3, in some sense. See also McGinnis (2001, 2004) for discussion of the role of phases in the syntax of applicatives.

²⁰ The Uniformity of Theta Assignment Hypothesis, Baker (1988).

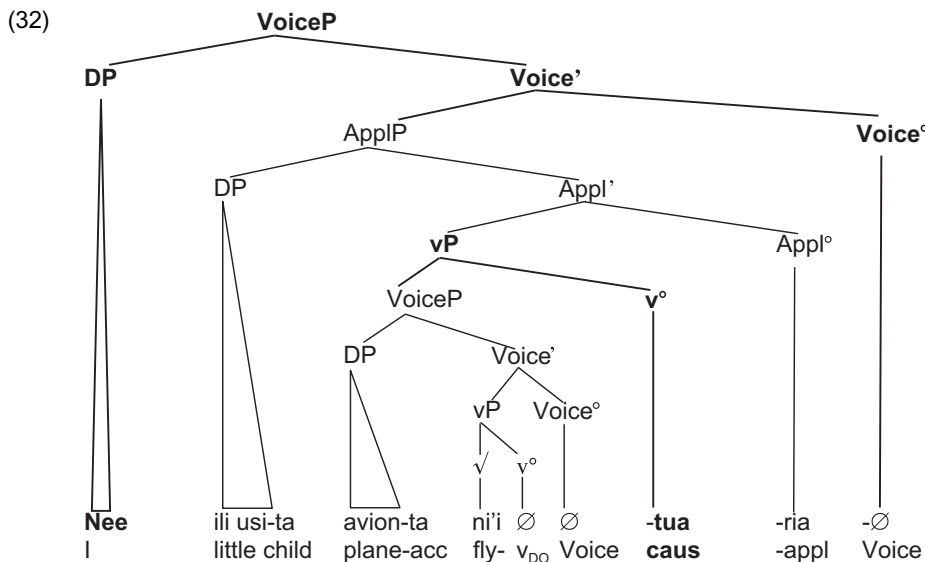
²¹ The free citation form *ye'e* becomes *y'i-* when suffixed with derivational affixes.

²² Thanks to a reviewer for this point!

itself. Rather, they are brought into the derivation by a separate projection, the VoiceP. The applicative morpheme will then intervene between the Voice head and the Causative v° head, and the applied argument will intervene between the external argument and all the arguments of the embedded predicate.

6.4. Option D: splitting vP: Voice for external argument, v° for cause

We propose to adopt the notion that the external argument is not introduced by the causative morpheme at all. Rather, external arguments appear in the specifier of a higher Voice morpheme. The causative morpheme just introduces the idea of causation—it does a semantic and morphological job, but not a syntactic one. The structure is illustrated in (32). Note that the vP headed by *-tua* has no specifier position.



Note also that the causative morpheme embeds a second VoiceP—the VoiceP which introduces the embedded subject argument. Given the morpheme order illustrated in section 4 between the applicative morpheme and lexical causative morphemes like *-te* in *karite*, 'build.house', we must also conclude that external arguments of regular agentive verbs are also introduced by Voice° rather than by v° , and since such an external argument is present in the structure embedded by the causative morpheme, we conclude that the causative morpheme must itself select for a VoiceP complement.

This solution effectively returns to Hale and Keyser (1993, 2002)'s original concept, according to which external arguments are simply added to extant structures, for 'free'. The external argument itself is thematically wholly unrelated to the syntactic argument structure it embeds. That argument structure must be *compatible* with the addition of an external argument, but it does not add/introduce the external argument itself.²³

In the next section, we turn to a couple of morphological arguments for the Voice projection in Hiaki: the indirect causative, and the passive.

7. VoiceP, indirect causatives, and passives

We can now turn back to the original problem mooted in section 1, concerning constructions which appear to 'suppress' an external argument, in contradiction of the Monotonicity Hypothesis (Koontz-Garboden, 2007). There are two constructions in

²³ Of course, the morphological consequence is not as Hale and Keyser (1993 et seq.) saw it, given that they took such verbalizing morphology to be the overt realization of their external-argument introducing V, as in the bipartite proposal outlined in the first sections of this paper. However, we now see that the *-te* morpheme in unergative *karite*, 'house-do', cannot itself be the head in whose specifier the external argument is introduced. Instead, the morphology which is relevant to the presence or absence of an external argument will be of the Voice type. Naturally, active voice is often morphologically empty, however, we will see the overt realization of the passive Voice head in Hiaki illustrated below. It is an open question whether the Voice head actually selects for the verbal projection which is its complement; if it does do so, it must be indifferent to the distinction between an ApplIP and a vP.

Hiaki in which external arguments fail to be projected, even when causative morphology or agentive verbalizing morphology continues to be expressed on the verb. These constructions point to the need to separate the projection of the external argument from the morphological realization of causation. We first consider the Hiaki indirect causative *-tevo*, a more exotic construction than the regular causative *-tua*, and then turn to the Hiaki passive morpheme *-wa*.

7.1. The Hiaki indirect causative *-tevo*

Besides the *-tua* ‘direct’ causative, in which the Causee must be expressed, Hiaki also has a productive ‘indirect’ causative, *-tevo*, where the Causee is necessarily suppressed. When suffixed with *-tevo*, an embedded verb gets a ‘passive’ or ‘impersonal’ reading, despite the absence of any passive or impersonal Voice morphology.²⁴ A *-tevo* causative is illustrated in (33). Note that the subject of the embedded verb is not expressed in the sentence.

- (33) Inepo Santoh-ta hitto-tevo-k
 I Santos-acc treat.medically-caus.indir-prf
 “I had Santos treated” (for a medical condition)

The embedded subject is completely absent from the syntax. When a *-tevo* causative is passivized, the Causer is unexpressed and the object of the embedded verb becomes the derived subject, showing that the Causee—the embedded subject—is truly syntactically absent, as nothing intervenes between the embedded object and the matrix subject position. This is illustrated in (34), which is the passive of (33):

- (34) Santos hitto-tevo-wa-k
 Santos medical.care-caus.indir-pass-prf
 “(Somebody) had Santos treated.”
 (Lit: “Santos was caused to be treated.”)

This can naturally be accounted for if *-tevo* selects as its complement a constituent which does not contain the external-argument-selecting head as in, for example, Folli and Harley’s (2007) treatment of *faire par* causatives, or Ramchand (2006) on Hindi indirect causatives. If *-tevo* has such a selectional restriction, the Causee argument will be absent, since the projection which introduces it will necessarily be absent.²⁵

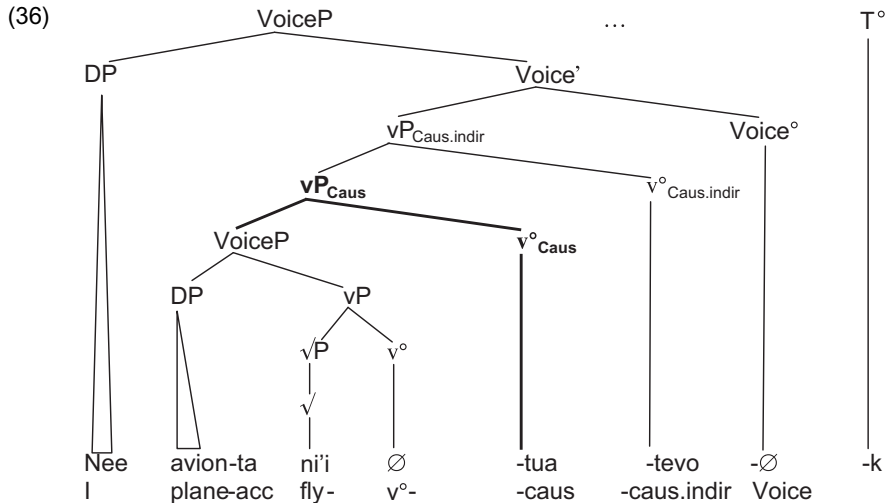
However, *-tevo* is able to attach to a constituent which contains a direct causative morpheme, even though the Causee (associated with the direct causative morpheme *-tua*) is not present. This morphology can be lexical, like the verbalizing *-te* of *kari-te*, ‘house-do’, as in (35a), or the regular productive causative *tua* (35b):

- (35) a. ‘Lexical’ v° morphology under *tevo*
 Nee kari-te-tevo-k
 I house-make-caus.indir-prf
 “I had a house built” (implied: by somebody)
 b. Productive causative morphology under *tevo*
 Nee uka avion-ta ni’i-tua-tevo-k
 I the plane-acc fly-caus-caus.indir-k
 “I had the plane flown.” (implied: by somebody)

The examples in (35) show that causative morphology can be present without introducing a syntactic Causee. This is natural if a causative vP can be present without VoiceP. Such a configuration will result in the desired ‘passive’ reading for the embedded clause, expressing an externally caused event but without specifying who/what caused it. The structure of (35b), on this analysis, is given in (36):

²⁴ The *-tua* causative is like the Romance *Faire Infinitif* construction, while the indirect causative formed with *-tevo* is like the Romance *Faire Par* (Kayne, 1969). The absence of an equivalent of a *by*-phrase in Hiaki (see fn.20), however, means that no Agent may be expressed by any means in a *-tevo* causative—there’s no *par* component.

²⁵ Alternatively, it could be that *-tevo* is the realization of productive causative v° when it embeds a passive VoiceP—that is, it would be an allomorph of *-tua* in the environment of a passive complement. Normally the passive Voice is represented by the morpheme *-wa* in Hiaki, which is never seen inside either *-tua* or *-tevo*, so I have not pursued this possibility here. Alternatively, *-tevo* could be the realization of the causative v° that has undergone the Distributed Morphology operation of Fusion with an embedded passive Voice. I don’t know of any way to tease these options apart empirically at the moment, so I have pursued here what seems to be the least stipulative approach: if Voice morphology cannot be realized there, the Voice projection is not present.



The idea is that the verbal morphology is built up, with internal argument additions if necessary, before any external argument is introduced. Applicative morphemes introduce their applied arguments, which are projected in their own specifier, but morphemes which semantically implicate external arguments, like the causative, do not themselves introduce external arguments.^{26,27}

The most obvious case leading to this conclusion is, of course, the behavior of passives, which we turn to in the next section.

7.2. *VoiceP* ≠ *vP*: passives of causatives

As suggested by its name, *Voice*[°] should be the locus of traditional Voice morphology—passive morphemes included.

There are at least two distinct morphological types of passive in the world's languages. Here, the focus is on agglutinating passives, where a morpheme is simply added to an otherwise independent, active verb stem, with the result that the external argument of this verb stem does not surface. This type of passive is typical of agglutinating languages, and is distinct in its makeup from the periphrastic participial passives familiar from English and other western Indo-European languages.²⁸

When such agglutinating passive morphology is applied outside causative morphology, the Causer external argument fails to appear, but the causative morphology remains present and unaffected, as illustrated for Hiaki in (37) below.²⁹

- (37) a. Aapo kaa yo'o-taka kuna-tua-wa-k (Hiaki)
3sg not old-being marry.f-caus-pass-prf
"She was made to marry/married off when she wasn't very old."
b. Ume yoeme(m) hi'ibwa-tua-wa
The.pl man-(pl) eat-caus-pass
"The men are being fed" (Lit: 'The men are being made to eat.')

²⁶ Note that this analysis entails that the difference between 'lexical' and 'syntactic' affixal causatives, as analyzed in Harley (1995, 2008) is actually not the presence of an extra *vP* between the causative *v*[°] and the rest of the verb, but rather presence of an intervening *VoiceP* between the affixal causative *v*[°] and the rest of the verb.

²⁷ A similar argument is given from English nominalizations containing *-ify*, *-ize* and similar morphemes by Borer (2003) and developed within a Distributed Morphology framework by Harley (2009).

²⁸ For discussion of the latter, see Folli and Harley (2012).

²⁹ No external argument can appear in a Hiaki passive; no *by*-phrase is available in the language. See Escalante (1990). Hiaki passives are otherwise similar to the Latin/German/Lithuanian/Sanskrit type as described in Kiparsky (in this issue): they apply to intransitives and transitives, require promotion of an internal argument to subject position if one is available, and the implicit Agent is always [+human] (an interpretive requirement that can never be cancelled in Hiaki passives due to the absence of *by*-phrases).

The same applies to passives formed from unergative verbs which include verbalizing *-te*, as in (38); the *-te* morpheme is not affected by the addition of the passive *-wa* suffix, but the subject of the unergative verb created by the addition of *-te* is not expressed:

- (38) Aman kari-te-wa (Hiaki)
 There house-v^o-pass
 “Houses are being built there.”

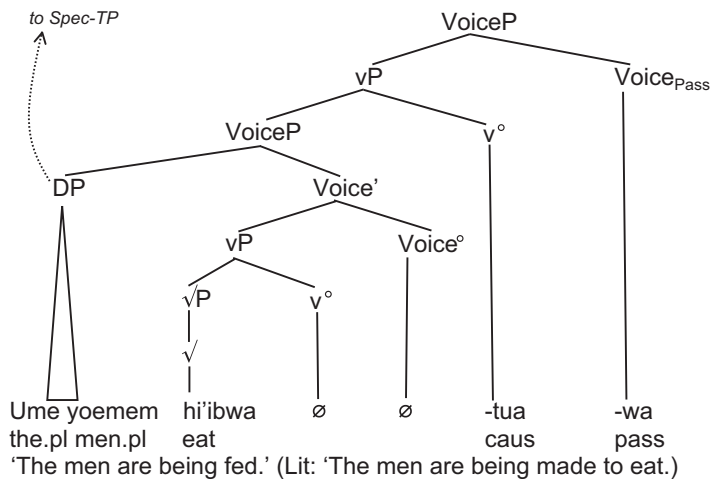
If external arguments are introduced by the very projection which the causative morpheme realizes, it is hard to see how we can implement the suppression of the external argument without also suppressing the causative morphology. If the external argument is introduced separately by Voice, however, then passive Voice morphology can embed a causative v^o without requiring the presence of an external argument.

The same observations apply to the interaction of passive *-rare* and causative *-sase* in Japanese, as illustrated in (39):

- (39) Hiroko pizza-o tabe-sase-rare-ta (Japanese)
 H. pizza-acc eat-cause-pass-past
 “Hiroko was made to eat pizza.”

The structure of the passive of a causative such as (37b), then, is as in (40) below:

- (40) Structure of (37b)

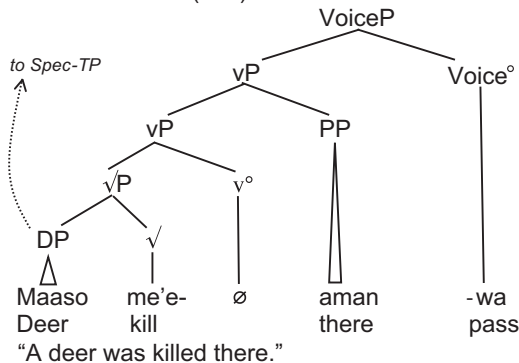


The structure of the passive of an indirect causative like that in (34) is shown in (41):

- (41)
-

The passive of a straightforward transitive verb like that in (10b) is as in (42)

(42) The structure of (10b):



We have, then, a solution to the problem of external-argument suppression in syntactico-centric frameworks posed at the beginning of this discussion.

One positive consequence of the dissociation of Voice from *v* is that passive doesn't have to be connected to any particular semantics associated with various 'flavors' of *v*^o: External arguments need not be Agents; passivized verbs need not be agentive. That is, the concept of a Voice projection captures Williams' generalization as discussed by Collins (2005); stative verbs and perception verbs can be passivized as readily as agentive ones, as illustrated for English in (43). Although the role played by the external argument differs in each of these verb classes, they share the property of having an external argument in active Voice:

- (43) a. John was seen (by Mary).
b. Sue was loved (by John).

Merchant (2008) comes to very similar conclusions based on the grammaticality of VP-ellipsis despite a Voice mismatch in antecedent and elided VP. The type of data he bases his analysis on is illustrated in (44) below. In English, an active clause can provide an appropriate target for VP-ellipsis in a subsequent passive clause, and vice versa.

- (44) a. The janitor must remove the trash whenever it is apparent that it should be.
b. The system can be used by anyone who wants to.

(Merchant, 2008:3)

Merchant concludes that VoiceP itself is not what is elided in VP-ellipsis; rather its complement is. On a VoiceP–vP–vP analysis, the complement of VoiceP can be identical in active and passive, hence one can provide an antecedent that licenses ellipsis in the other.³⁰

There is one key difference between the approach of Collins (2005) and Merchant (2008) on the one hand, and the conclusions of the present work on the other, however. In their analyses, the external argument is generated in spec-vP, and moves up to an empty spec-VoiceP. This is exactly what is counterindicated by these Hiaki data: The external argument has to be itself base-generated higher than the applied argument, which (according to the morpheme order) is base-generated outside the vP. Pykkänen (2002)'s view of the role of Voice, in which the head introducing causation and the one introducing external arguments are independent, is correct.

8. Implications and conclusions

The discussion above has argued that overt external arguments can't be base-generated in spec-vP. Nonetheless, it seems clear that the *v*^o can introduce causative semantics. How then, can we encode the necessary relationship between the external argument in spec-VoiceP and the Causer role introduced by the *v*^o head in a causative?

I will assume that the complement of Voice can include in its semantic representation a variable for the external argument, and that in the active this variable is bound by the DP introduced in spec-VoiceP.

³⁰ Baker and Stewart (2002) reach similar conclusions based on the behavior of Edo serial verb constructions, which they argue involve coordination of vPs under a single Voice head, accounting for their single agent but pair of objects and verb stems.

This variable must be truly syntactically absent; it is not included in the syntactic representation as a *pro* or PRO or any other empty category which might be implicated in minimality effects or case licensing.³¹ I conclude that this variable is bound via what Wurmbrand (2003) calls ‘semantic control’. Wurmbrand proposes tests to distinguish syntactic control of a syntactically present null element like PRO and semantic control, established only at LF via variable binding; the relationship between the external argument DP and the variable introduced by vP obeys these tests (e.g. the binding relation must be exhaustive). This ‘semantic control’ approach to active transitives (and unergatives) thus avoids potential locality problems associated with having a null DP present in spec-vP.³² In passives, this variable lacks a binder, and hence is existentially quantified (as in Kiparsky (in this issue)’s LDG treatment; see also Landau (2009)’s unselective SAT operation), resulting in the unspecified-agent entailments typical of passive.

A full development of the consequences of this approach will have to await future research. Some of the many questions involve the relationship of the active Voice head to the variables in unaccusative reflexive predicates as in many Romance languages, the relationship between active and middle Voice in languages like Greek and Albanian (Kallulli, 2006; Alexiadou et al., 2006) and the relationship between Voice and the phase boundary role proposed for vP by Chomsky (1999).

Nonetheless, I hope to have provided clear motivation for the central conclusions. The Mirror Principle problems posed by the interaction of the applicative and causative in Hiaki require that the head which introduces causative morphology and semantics be distinct from the head which introduces external arguments; that is, vP is not VoiceP.

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³¹ On the other hand, it could be like the PRO external argument of Hallman (in this issue), which seems to serve exactly the same purpose and have the crucial characteristics needed in the relevant ways to make his proposal fit exactly with the facts here. However, it is not clear how to extend the smuggling analysis proposed there to the case of Hiaki, given the ordering of *-tevo* and other morphemes in the verbal complex. Note that the implicit argument of passives, while it can control into adjuncts (in English), cannot serve as an antecedent for reflexive pronouns (**A book was given to oneself/themselves*), and hence is unlike the PRO subject of infinitivals. The relationship between Hallman’s PRO and Wurmbrand’s notion of semantic control, and the implications for the clausal architecture developed here, is very much worthy of future study.

³² One significant issue with this approach again involves applicatives, however. How can we ensure that the variable must be bound by the element in spec-VoiceP, even when there’s a closer potential binder occupying Spec-AppIP in an applicative? The same problem would arise for syntactic empty-category approaches to the lower argument as well, at least if the bound argument were anything like PRO, the most likely candidate for a Case-neutral, theta-receiving empty category with an impersonal interpretation when not syntactically bound.

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