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1. Introduction[1]

Standard conceptions of the lexicon-syntax interface assume that morphologically complex words are constructed in the lexicon and then serve as the atomic objects for syntactic computation. On this view, morphologically complex words are the terminal nodes in a syntactic phrase-marker, their internal structure invisible to syntactic operations. The argument-taking properties of words can be altered by rules which apply inside the lexicon, often with a concomitant morphophonological change, but these properties cannot be affected by syntactic operations. In this paper, I explore an alternative grammatical architecture in which morphology applies to the output of the syntactic component (cf. Halle and Marantz 1993; Marantz 1997). Morphologically complex words, on this view, reflect properties of syntactic structure, which includes argument-structure information.

   The argument proceeds from an examination of Kannada 'valency-changing' morphology, revealing that lexical properties alone cannot explain the distribution of the reflexive and causative morphemes. Moreover, given certain independently motivated assumptions about the representation of anaphora, Kannada reflexive morphology provides an argument that the morphological component takes LF representations as input and hence that morphological structure is an interpretation of syntactic structure, not the input to it. The resultant theory is one in which the morphological component determines how a given LF representation should be pronounced. Simply put, LF equals PF. The level of representation that serves as the input to

semantics is the same level of representation that serves as the input to morphophonology. The so-called reflexive morpheme argues strongly for a morphological component which is postsyntactic because it is only at LF that the environment for the insertion of this morpheme is met. A theory in which morphologically complex words are constructed prior to syntax or even during the syntactic derivation cannot explain the distribution of this morpheme. Thus, we need a grammatical architecture in which morphology applies to the output of a syntactic derivation.

2. Jerry Fodor Meets Panini

Examination of change of state (COS) verbs in Kannada reveals a complementarity between lexical and morphological causativity. If a COS verb occurs with causative morphology in its transitive use, then it does not have a morphologically unmarked transitive use:[2]

1) a.   barf-u   karg-i-tu
         ice-NOM melt-PST-3SN
         'the ice melted.'
    b. * surya barf-annu karg-i-tu
         sun   ice-ACC   melt-PST-3SN
         'the sun melted the ice.'
    c.   surya barf-annu karag-is-i-tu
         sun   ice-ACC   melt-CAUS-PST-3SN
         'the sun melted the ice.'
2) a.   neer kud-i-tu
         water boil-PST-3SN
         'the water boiled.'
    b. * naan-u neer-annu kud-id-e
         I-NOM water-ACC boil-PST-1S
         'I boiled the water.'

---

    c.   naan-u neer-annu kud-is-id-e
            I-NOM water-ACC boil-CAUS-PST-1S
            'I boiled the water.'

3) a.   kaar-u   tukk-i-tu
           car-NOM rust-PST-3SN
           'the car rusted.'

    b. * maLey-u karr-annu tukk-i-tu
           rain-NOM car-ACC   rust-PST-3SN
           'the rain rusted the car.'

    c.   maLey-u karr-annu tukk-is-i-tu
           rain-NOM car-ACC   rust-CAUS-PST-3SN
           'the rain rusted the car.'

4) a.   hoov-u   udur-i-tu
           flower-NOM wilt-PST-3SN
           'the flower wilted.'

    b. * gaaliy-u   hoov-annu udur-i-tu
           wind-NOM flower-ACC wilt-PST-3SN
           'the wind wilted the flower.'

    c.   gaaliy-u   hoov-annu udur-is-i-tu
           wind-NOM flower-ACC wilt-CAUS-PST-3SN
           'the wind wilted the flower.'

Conversely, if a COS verb has a morphologically unmarked transitive use, it does not have a morphological causative with only two arguments.[3]

5) a.   baagil-u tere-d-itu
           door-NOM open-PST-3SN
           'the door opened.'

    b.   gaaliy-u   baagil-annu tere-d-itu
           wind-NOM door-ACC   open-PST-3SN
           'the wind opened the door.'

    c. * gaaliy-u   baagil-annu terey-is-i-tu
           wind-NOM door-ACC   open-CAUS-PST-3SN
           'the wind opened the door.'

---

[3] I should note that the (c) cases in (5-8) represent grammatical strings. What is ruled out in these cases is an interpretation with only two arguments. The grammatical interpretation of the (c) cases would have a null pronoun as one of the arguments and hence an interpretation like "I made someone verb..."

    d.   gaaliyu   rashmiy-inda baagl-annu terey-is-i-tu
        wind-NOM Rashmi-INSTR door-ACC open-CAUS-PST-3SN
        'the wind made Rashmi open the door.'

6) a.   baagil-u much-i-tu
        door-NOM close-PST-3SN
        'the door closed.'

    b.   gaaliy-u   baagil-annu much-i-tu
        wind-NOM door-ACC   close-PST-3SN
        'the wind closed the door.'

    c. * gaaliyu   baagil-annu much-is-i-tu
        wind-NOM door-ACC   close-CAUS-PST-3SN
        'the wind closed the door.'

    d.   gaaliyu   rashmiy-inda baagil-annu much-is-i-tu
        wind-NOM Rashmi-INSTR door-ACC   open-CAUS-PST-3SN
        'the wind made Rashmi close the door.'

7) a.   vataga wad-i-tu
        glass break-PST-3SN
        'the glass broke.'

    b.   naan-u vatag-annu wada-d-e
        I-NOM glass-ACC break-PST-1S
        'I broke the glass.'

    c. * naan-u vatag-annu wad-is-id-e
        I-NOM glass-ACC break-CAUS-PST-1S
        'I broke the glass.'

    d.   naan-u rashmi-yinda vatag-annu wad-is-id-e
        I-NOM Rashmi-INSTR glass-ACC break-CAUS-PST-1S
        'I made Rashmi break the glass.'

8) a.   hoov-u   bele-d-itu
        flower-NOM grow-PST-3SN
        'the flower grew.'

    b.   naan-u hoov-annu bele-d-e
        I-NOM flower-ACC grow-PST-1S
        'I grew the flower.'

    c. * naan-u hoov-annu bel-is-id-e
        I-NOM flower-ACC grow-CAUS-PST-1S
        'I grew the flower.'

    d.   naan-u rashmi-yinda hoovannu bel-is-id-e
        I-NOM Rashmi-INSTR flower-ACC grow-CAUS-PST-1S
        'I made Rashmi grow the flower.'

I will temporarily refer to the verbs in (1-4) as lexically non-causative and the verbs in (5-8) as lexically causative.

Note that there is no problem with causativizing the intransitive variant of the lexically causative verbs periphrastically, indicating that the problem with the (c) cases in (5-8) is not semantic in nature:

9) a.   gaaLiy-u baagil-annu tere-vante maad-i-tu
         wind-NOM door-ACC   open-PRED do-PST-3SN
         'the wind made the door open.'
    b.   gaaLiy-u baagil-annu muchi-vante maad-i-tu
         wind-NOM door-ACC   close-PRED do-PST-3SN
         'the wind made the door close.'
    c.   naan-u vatag-annu wadu-vante maad-id-e
         I-NOM glass-ACC break-PRED do-PST-1S
         'I made the glass break.'
    d.   naan-u hoov-annu belu-vante maad-id-e
         I-NOM flower-ACC grow-PRED do-PST-1S
         'I made the flower grow.'

A lexical analysis of the complementarity between lexical and morphological causativization would take the following line of argumentation. The lexically causative verbs are underlyingly transitive while the lexically non-causative verbs are underlyingly intransitive. Adding the causative morpheme to a transitive root creates a ditransitive verb while adding it to an intransitive root creates a transitive verb. Such a solution is problematic, however, because the lexically causative verbs also have an intransitive use. There is nothing in such an analysis to prevent adding the causative morpheme to the intransitive variant of the underlyingly transitive roots. These facts do have a straightforward explanation in the Elsewhere Condition (Panini's Theorem; Kiparsky 1973), however. While all COS verbs alternate between a transitive and an intransitive use, some are marked as lexically causative. The lexical expression of causativity takes precedence over the rule-driven morphological expression. Verbs like 'open' are optionally 'cause-open' in the lexicon and so the morphological expression of causativity is blocked by the more specific lexical form. We defer formal analysis of these facts until section 4.

3. Against a Lexical Analysis

A curious property of COS verbs, from the perspective of the previous section, is that both the lexically causative and the lexically non-causative verbs have an anticausative use, marked by the verbal reflexive morpheme:

10) a. baagil-u   tere-du-koND-itu
         door-NOM open-PP-REFL.PST-3SN
         'the door opened.'
    b. baagil-u   much-i-koND-itu
         door-NOM close-PP-REFL.PST-3SN
         'the door closed.'
    c. vata wad-a-koND-itu
         glass break-PP-REFL.PST-3SN
         'the glass broke.'
    d. hoov-u   bel-a-koND-itu
         flower-NOM grow-PP-REFL.PST-3SN
         'the flower grew.'
11) a. barf-u   karag-i-koND-itu
         ice-NOM melt-PP-REFL.PST-3SN
         'the ice melted.'
    b. neer   kud-i-koND-itu
         water boil-PP-REFL.PST-3SN
         'the water boiled.'
    c. karr-u   tukk-i-koND-itu
         car-NOM rust-PP-REFL.PST-3SN
         'the car rusted.'
    d. hoov-u   udur-i-koND-itu
         flower-NOM wilt-PP-REFL.PST-3SN
         'the flower wilted.'

These differ from the bare intransitives in allowing dative-marked causal adjuncts:

12) a. gaal-ige baagil-u   tere-du-koND-itu
         wind-DAT door-NOM open-PP-REFL.PST-3SN
         'Because of the wind, the door opened.'
    b. gaal-ige hoov-u   udur-i-koND-itu
         wind-DAT flower-NOM wilt-PP-REFL.PST-3SN
         'Because of the wind, the flower wilted.'

13) a. * gaal-ige   baagil-u   terey-i-tu
       wind-DAT door-NOM open-PST-3SN
    b. * gaal-ige   hoov-u   udur-i-tu
       wind-DAT flower-NOM wilt-PST-3SN

The facts in (12-13) suggest that the presence of the anticausative/reflexive morpheme indicates the simultaneous presence and absence of a causer, that is, the presence of a causer which is not syntactically realized by an argument NP. When the causer is expressed in an adjunct marked with dative case, the reflexive morpheme is obligatory. The reflexive morpheme cannot occur if the causer is expressed in subject position, i.e., with nominative case, however:

14) *gaali-yu   hoov-annu udur-i-koND-itu
     wind-NOM flower-ACC wilt-PP-REFL.PST-3SN

Thus, the presence of the verbal reflexive on COS verbs indicates that the causer is excluded from subject position, although this role is present and can be identified by an adjunct (Lidz 1996).

We might explain the fact that the lexically causative COS verbs have an anticausative use by saying that the verbal reflexive 'absorbs' the external theta-role. However, there are two reasons to think that such an analysis is on the wrong track. First, if the external theta-role is absorbed by the verbal reflexive, then we are left with the question of why the verbal reflexive is not required on all intransitive uses of lexically causative verbs. In order to follow the absorption analysis, we will need two accounts of argument absorption, one for the bare intranstives and another for the reflexive-marked intransitives. Second, the fact that the lexically non-causative verbs also have an anticausative use demonstrates that the presence of the verbal reflexive does not depend on the lexical representation of the verb. If it is true that the lexically non-causative verbs are underlyingly monadic (as demonstrated above), then there is no argument for the verbal reflexive to have absorbed in (11).

The puzzle we are left with is that the 'valency-altering' properties of the verbal reflexive are not sensitive to the lexical properties of the verb to which it attaches. When it attaches to an underlyingly transitive verb, it suppresses the external role, but when it attaches to an underlyingly intransitive verb, it adds a 'suppressed' role, i.e., a role that is entailed by the sentence but which cannot be realized by an argument NP. To give the verbal reflexive a uniform function, we might say that it only attaches to intransitive roots, al-

ways adding a suppressed role. On this view, the lexically causative verbs have two entries, one transitive and one intransitive, and the verbal reflexive only attaches to the intransitive variant. But if the verbal reflexive has access to the intransitive entry of such verbs, we should expect the causative to have access to this entry as well. A lexical analysis of the valency altering morphology of Kannada leads to a paradox: we need the intransitive entry of a lexically causative verb to be available to reflexive morphology but not to causative morphology.

4. A Solution

The solution to this problem must have two properties. It must explain the complementarity between lexical and morphological causatives and it must explain the fact that anticausative morphology is not dependent on lexical causativity.

4.1. vP

I will assume without argument that causativity/transitivity is syntactically represented as a 'causative' light verb (Chomsky 1995; Hale and Keyser 1993; Johnson 1991; Kratzer 1994 inter alia; cf. McCawley 1968).[4] Lexical roots are unaccusative; external arguments are licensed by the causative light-verb.[5]
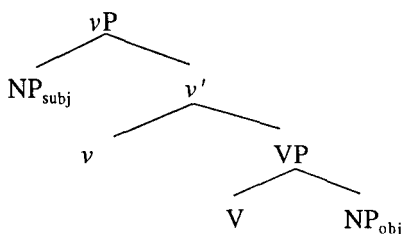
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[4] The representation of causativity here differs from that of McCawley 1968 in being only a single event. That is, the generative semantics proposal was one in which there was no way to distinguish a single causative event from bi-eventive causation (cf. Fodor 1970). The representation also differs from that of Hale and Keyser (1993) in not distinguishing lexical syntax from surface syntax. The decomposition in Hale and Keyser's approach is inside the lexicon, while here it is in the syntactic representation. See Harley 1996 for elaboration.

[5] I follow Hale and Keyser (1993) and Chomsky (1995) in the claim that unergatives are covert transitives, though this is by no means necessary. Given this schema for licensing external arguments, it is possible that unergatives are simply Vs with no arguments of their own. Bare Phrase structure considerations lead to the covert transitive proposal as a way to distinguish unaccusatives from unergatives (given VP-internal subjects), however if external arguments are licensed by v, then the difference between unergatives and unaccusatives can be entirely within VP (i.e., not vP). On this view, vP would be required with unergative roots for reasons having to do with the EPP. If it were not generated, there would be nothing to check EPP features in TP. Exploration of this possibility would take
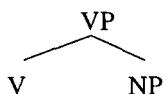
15) a.   unaccusative: b.   transitive (and unergative):

```
                                                    vP
                                              ⁀⁀⁀⁀⁀⁀⁀
                                          NP_subj        v'
                                                      ⁀⁀⁀⁀⁀⁀
              VP                                    v        VP
          ⁀⁀⁀⁀⁀⁀                                          ⁀⁀⁀⁀⁀⁀
        V        NP                                      V       NP_obj
```

The [v [VP]] configuration in (15b) entails a relation between two events where one is a proper subpart of the other. This is commonly referred to as 'causation'. External arguments, from this perspective, are arguments not of the main verb but of the light-verb. Because the configuration entails a complex event structure, the external argument identifies that entity which is responsible for the transition between sub-events, i.e., the agent/causer.

The idea that external arguments are not arguments of the root verb but of the light-verb is in accordance with Marantz's observation that the interpretation of an external argument often depends on the composition of the verb and the internal argument (Marantz 1984, ex.2.19):

16) a.   throw a baseball
     b.   throw support behind a candidate
     c.   throw a boxing match
     d.   throw a party
     e.   throw a fit
17) a.   kill a cockroach
     b.   kill a conversation
     c.   kill an evening watching TV
     d.   kill a bottle
     e.   kill an audience

Because the event denoted by vP includes the VP as a subevent, it follows that interpretation of the NP in [spec, vP] depends on properties of the VP (cf. Kratzer 1994; Marantz 1997).

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us beyond the scope of this paper, but the proposal seems reasonable at first blush.

4.2. Causative

Given the hypothesis that causation is represented in vP, it is natural to assume that the causative morpheme in sentences like (18) is the spell-out of v.[6]

18) surya barf-annu karag-is-i-tu
    sun   ice-ACC   melt-CAUS-PST-3SN
    'the sun melted the ice.'

19) v → [-isu-] / $v(Proj)$
                                        ╱‾‾‾‾‾╲
                                      VP v
                                    ╱‾‾╲   │
                                  NP   V   │
                                        │   │
                                     √verb[7] ___

This rule states that v is pronounced as the causative morpheme. v(Proj) indicates that the category formed when v merges with VP is v. In other words, the rule requires only that v projects. The rule does not state the level of projection of the node immediately dominating v; it could be v' or vP.

If (19) is the correct rule for insertion of the causative morpheme, we have to ask what blocks this rule from applying in the case of lexically causative verbs:
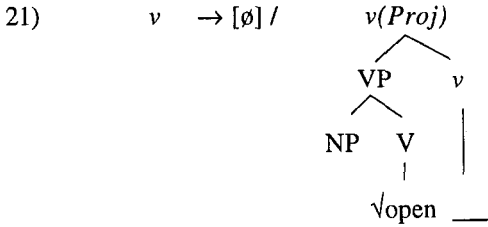
20) *gaaliy-u   baagil-annu terey-is-i-tu
    wind-NOM door-ACC   open-CAUS-PST-3SN
    'the wind opened the door.'

As noted above, the analysis should have the character of the Elsewhere Condition: when two rules are in competition, the more specific rule takes precedence. We need a rule which states that causative head is not pronounced in the environment of lexically causative verbs. Such a rule is given in (21):[8]

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[6]   Note that the trees drawn here are head-final to reflect the syntax of Kannada, though we follow Kayne (1995) and Chomsky (1995) in assuming that linear order is not represented in the syntax proper.

[7]   The symbol √ is used to indicate the root form of the verb, following the notation of Pesetsky 1995.

[8]   An alternative is to have a rule which states that the lexically causative verbs are pronounced unaffixed even in the context of the rule in (19). I will follow the

21) $v \rightarrow [\emptyset] /$ $v(Proj)$

```
                v(Proj)
               /\
             VP    v
            /\     |
          NP   V   |
               |   |
             √open ___
```

All of the so-called lexical causatives can fill the V position in this rule. These verbs are morphologically marked as not taking a causative affix in the environment of v. This rule is more specific than the rule in (19) because it identifies the particular class of verbs in the construction and so the application of (21) will block application of (19).

4.3.   The Verbal Reflexive: Monadic Causativity

It is possible to generate a 'causative' light-verb without an NP in its specifier, giving us a configuration like (22).

22) vP

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          vP
         /   \
        v     VP
             /   \
            V     NP
```
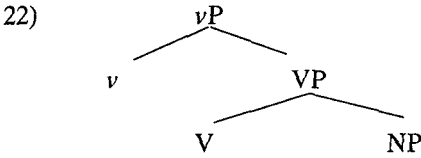
Because the 'causative' interpretation is due to the complex nature of the event composed of v-VP, we do not require an NP to realize the 'agent' theta-role in order for the entire event to be construed as causative. It is simply the relation between verbs that creates the causative role. In this sense, the 'agent' role is not actually assigned by any syntactic mechanism to the [spec, v P]. Rather, causation implicates a causer and an NP found in this position is free to be interpreted as such. If there is no NP in that position, as in (22), then the event is still construed as causative.

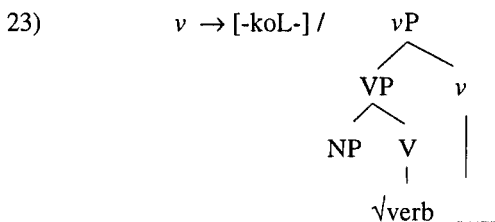If the verbal reflexive were the morphological spell-out of v in (22), we would have an explanation of the interpretive properties of the anticausative COS verbs. We saw above that the anticausative verbs indicate the simultaneous presence and absence of a causer. This is precisely what is expected of

rule in the text for purposes of presentation, though nothing hinges on the precise formulation.

the structure in (22), which is causative because of its complex event structure but monadic because only one argument position is generated. In other words, anticausativity is better thought of in this context as monadic causativity. The actual cause of such an event can be identified by an adjunct, as illustrated in (12), although such an adjunct is not assigned the role of causer through any syntactic mechanism.[9]

We therefore posit the following morphological rule stating when the verbal reflexive is inserted:

23) $v \rightarrow$ [-koL-] / vP
                              /‾‾‾‾‾＼
                          VP v
                          /‾＼ |
                      NP   V |
                            |
                          √verb ____

The rule in (23) states that v is pronounced as the verbal reflexive just in case there is no specifier of vP.[10] This rule is more specific than the rule in (19) because it requires that v be immediately dominated by vP, while (19) specifies only that v be immediately dominated by a projection of v. Thus, if vP has no specifier, then it will be pronounced as the verbal reflexive; if it has a specifier, it will be pronounced as the causative. This rule is also more specific than the rule for lexical causatives in (21). The rule in (21) applies when a certain class of verbs are in the complement to v, independent of what immediately dominates v. Since the rule in (23) applies only if v is immediately dominated by vP it is more specific than (21) and so blocks application of (21).

Because causative and reflexive morphology are interpretive, i.e., they reflect syntactic structure rather than provide an input to it, we predict the impossibility of embedding the verbal reflexive under the causative. (24)

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[9]   The analysis suggests that even the NP which occurs in [spec, vP] is not assigned its semantic role by any syntactic mechanism, but rather is interpreted in accordance with the semantic requirements of the structure. If this turns out to be true, then we will have fully severed the external argument from the verb syntactically, though certain verbs will still require an external argument for reasons having to do with Full Interpretation.

[10]   Why a morpheme would be sensitive to the presence or absence of a specifier in the projection of some head is a much deeper issue than I am prepared to address at this point.

illustrates a verb which has a reflexive-marked intransitive as well as a bare intransitive. The bare instransitive can be morphologically causativized, as in (25b), but the reflexive-marked intransitive cannot, as in (25a). Both variants can be causativized periphrastically, as in (26).

24) a. raaju kuLit-i-koND-a
       Raaju sit-PP-REFL.PST-3SM
       'Raaju sat down.'
    b. raaju kuLi-t-a
       Raaju sit-PST-3SM
       'Raaju sat down.'
25) a. * raajuv-annu kuliti-koLL-is-id-e
         Raaju-ACC sit-REFL-CAUSE-1S
         'I made raaju sit down.'
    b. raajuv-annu kulit-is-id-e
       Raaju-ACC sit-CAUS-PST-1S
       'I made raaju sit down.'
26) a. raajuv-annu kuliti-koLL-uvante maaD-id-e
       Raaju-ACC sit-REFL-PRED   make-PST-1S
       'I made raaju sit down.'
    b. raajv-annu kuliti-vante maad-id-e
       Raaju-ACC sit-PRED   make-PST-1S
       'I made Raaju sit down.'

An analysis in which the causative morpheme attaches to any monadic predicate will not be able to explain the inability of the reflexive to be embedded under the causative. However, in a theory in which morphology interprets syntactic structure, these facts are straightforwardly accounted for. The two morphemes are correctly predicted to be in complementary distribution in these cases because the causative morpheme and the reflexive morpheme are in competition for the same syntactic position. More precisely, these morphemes are allomorphs of the syntactic category v and so cannot cooccur.
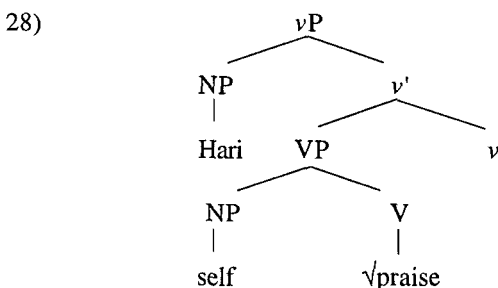
4.3.1. Monadic Causativity and Semantic Reflexivity

In the previous section we demonstrated that the verbal reflexive morpheme occurs on what we called monadic causatives, that is, in structures that are causative because of v but have only one argument position. This hypothesis would appear to be disconfirmed by examples like (27), in which the ver-

bal reflexive occurs but two syntactic arguments are present, i.e., the subject and the anaphor in object position.[11]

27) hari tann-annu hogaL-i-koND-a
    Hari self-ACC   praise-PP-REFL.PST-3SM
    'Hari praised himself.'

A sentence like (27) will have a structure like (28) when the external argument is first merged into the structure.

28)

```
                      vP
              ┌───────┴───────┐
             NP              v'
              │        ┌──────┴──────┐
            Hari      VP             v
                  ┌────┴────┐
                 NP         V
                  │         │
                self      √praise
```

This structure is one in which the vP has a specifier and so we expect the verbal reflexive not to occur. In this section, I will argue that the relevant structure exists at LF even if it does not exist throughout the derivation. It follows from this that the rule in (23) stating the environment for insertion of the verbal reflexive does not apply until LF. Thus, we have an argument not only for the application of morphology after some amount of syntactic structure has been built, but for the application of morphology after the entire syntactic derivation is complete.
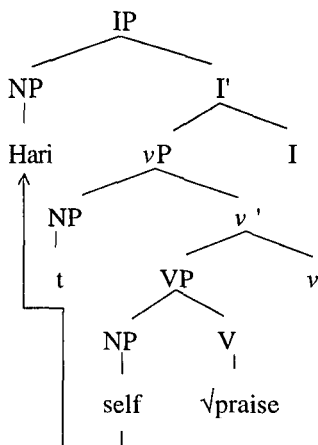
   Lidz (1997) and Lidz and Idsardi (1998) argue that whenever two NPs are semantically covalued, they must be connected in the syntax by a chain (cf. Reinhart and Reuland 1993; Reuland 1996). Two categories are semantically covalued if their reference is determined through the same entity in the discourse. We unify movement, control and anaphora under the chain relation, capturing the intuition that all of these structures involve two categories be-

---

[11]   This fact also argues against an analysis of the verbal reflexive in which this morpheme is the external argument incorporated into the verb, as suggested by Kayne (among others) for Romance reflexive clitics. Both the external argument and the internal argument are syntactically present as full NPs bearing case, providing evidence that no argument incorporation has occurred.

ing interpreted with respect to the same entity in the model. On this view, the sentence in (27) will have a representation like (29), where the chain formed by raising the subject to [spec, IP] is fused with the chain connecting [spec, vP] with the anaphor in object position. The part of the chain connecting [spec, IP] with [spec, vP] is formed via movement, while the part connecting [spec, vP] to the object is formed via the anaphora relation.

29)

```
                          IP
                     ┌────────┴────────┐
                   NP               I'
                    |          ┌─────┴─────┐
                  Hari        vP          I
                   ↑     ┌─────┴─────┐
                   |   NP          v '
                   |    |      ┌────┴────┐
                   |    t     VP        v
                   |      ┌────┴────┐
                   |    NP        V
                   |     |         |
                   |   self     √praise
                   └─────┘
```

I further assume that intermediate traces delete at LF (Lasnik and Saito 1992; Chomsky 1995). Chomsky (1995) argues that intermediate traces of A-movement must be invisible at LF. The conclusion is forced by cases of successive cyclic A-movement like (30). In such cases, chains are formed which do not have their case features checked.

(30) we are likely [t3 to be asked [t2 to [t1 build airplanes]]]
(31) a.   CH1 = <t2, t1>
     b.   CH2 = <t3, t1>
     c.   CH3 = <we, t1>

While CH3 has its Case feature checked, CH2 and CH1 do not (assuming the traces to be copies of all of the features of the moved NP). The solution to this problem is to eliminate CH1 and CH2 entirely. Since these objects have [-interpretable] features (i.e, the case features), the heads of these chains are deleted (i.e., made invisible to the LF component). The base position, t1, cannot likewise be deleted however, since it is this position which bears the theta-role.

Similar reasoning applies to (29), with the chains in (32).

(32) a. CH1= <t, self>
     b. CH2= <Hari, self>

The trace in CH1 bears the [-interpretable] nominative case feature of the subject.[12] We can therefore delete the trace, eliminating the chain CH1. This case differs from the raising case, however, in the deletion of the position to which the 'agent' theta-role is assigned. We assume that every chain must have one theta-role in order to be a legitimate object. As noted above, deletion of t1 in (30) would result in a chain with no theta-roles. In (29), however, deletion of the subject trace leaves the chain with one theta-role remaining and so deletion is possible.
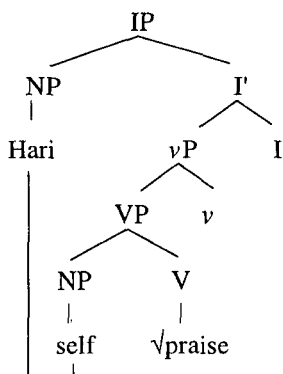
Deletion of the base position of the subject entails that the subject receives the agent theta-role differently from how it would receive this role in the normal case. While this may seem problematic, it is not. We observed above that the agent theta-role is a consequence of the complex event structure entailed by the v-VP configuration and that this role is available for interpretation even without an NP in [spec, vP]. Given that the trace in [spec, vP] is deleted, we are left with the question of how the agent role is assigned. In particular, we can ask why (27) is not interpreted as an anticausative. The answer to this question comes from the interpretive properties of a chain with two independent lexical items in it. The chain itself entails that there is a relation between two objects, although these objects are semantically covalued. So, in order to best satisfy the interpretive properties of the chain (indicating a relation between two covalued objects with only one theta role) and the interpretive properties of the v-VP configuration (indicating an agentive relation) we give the agentive properties to the chain bearing the object theta role. In other words, given a convergent syntactic derivation the semantic component evaluates the output of that derivation in a way consistent with Full Interpretation. In this case, the agent properties entailed by the configuration merge with the relational properties entailed by a chain with multiple lexical items. We return to this issue in Section 4.3.2.2.

At this point we have argued that in a sentence like (27), we have a chain between the subject and object position and that the base position of the subject deletes at LF. This yields the structure (33):

---

[12]   I assume that the accusative case feature on the object is checked by raising it to v, without pied-piping the entire NP, along the lines of Chomsky 1995.

(33)

```
                            IP
                   _____
                  NP               I'
                  |              ___|___
                 Hari          vP      I
                  |          ___|___
                  |         VP     v
                  |       ___|___
                 NP        V
                  |        |
                 self    √praise
```

This structure is one in which the verbal reflexive can be inserted, although in previous stages of the derivation the environment for insertion of this morpheme was not met. Deletion of the intermediate trace in [spec, vP] of (29) makes this position invisible to LF. The node that was v' is now vP, assuming that maximal projection is contextually defined (Fukui and Speas 1986; Chomsky 1995) and that there is no nonbranching projection. To illustrate, let us consider the set-theoretic representation of the relevant portions of (29):

34) a. $\{I, \{\{I, \{\{v, \{\{v, \{VP, v\}\}, Hari \}\}, I\}\}, Hari\}\} = IP$
    b. $\{v, \{VP, v\}\} = v'$
    c. $\{v, \{\{v, \{VP, v\}\}, Hari \}\} = v\dot{P}$

Deleting the trace of *Hari* from (29), erases the fact that *Hari* merged with v' in the course of the derivation. Thus, v' becomes vP. After deletion of the subject trace, we have the representation (35), where the piece of the structure that was v' in (34) is now vP, i.e., the maximal category with the label v:

35) a. $\{I, \{\{I, \{\{v, \{VP, v\}\}, I\}\}, Hari \}\}= IP$
    b. $\{v, \{VP, v\}\} = v$P

Because we now have a maximal projection of v which does not have a specifier, the conditioning environment for insertion of the verbal reflexive is met. On the surface an example like (27) would appear to be a counterexample to the rule in (23). The S-structure representation of (27), given in (29), does not contain the environment required for (23) to apply and so we might ex-

pect the verbal reflexive not to be possible. The LF representation (33), however, does contain the structure required for (23) to apply. Given that (23) does apply, we can conclude that the LF representation provides the input to that morphological rule. (27) is therefore not a counterexample to the rule in (23) provided that this rule applies at LF. We conclude not only that lexical insertion takes place late in the derivation, but also that it takes place after the deletion of intermediate traces, i.e., at LF. We therefore have a theory in which LF is seen only as the level of syntactic representation that interfaces with the conceptual-intentional system and not as the level which reflects covert operations. In other words, there is no covert syntax in the usual sense.[13]

We demonstrated above that reflexive-marked intransitives could not be embedded under causative. The same reasoning applies if a semantically reflexive predicate is embedded under causative. We predict that such a structure will not give rise to the verbal reflexive.
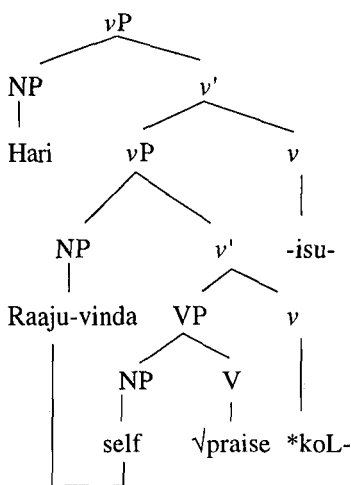
(36) a. * hari raaju-vinda awannu-taane hogaL-i-koLL-is-id-a
         Hari Raaju-INSTR he-ACC-self   praise-PP-REFL-CAUS-PST-3SM
         'Hari made Raaju praise himself.'
     b.   hari raaju-vinda awannu-taane hogaL-is-id-a
         Hari Raaju-INSTR he-ACC-self   praise-CAUSE-PST-3SM
         'Hari made Raaju praise himself.'
     c.   hari raaju-vinda tann-annu hogaL-i-koLL-uvante maad-id-a
         Hari Raaju-INSTR self-ACC praise-REFL-PRED   make-PST-3SM
         'Hari made Raaju praise himself.'

We assume that the representation of (36a-b) is (37):

---

[13] An alternative description of this analysis is that all syntax is covert and that it is only at LF (now equivalent to PF) that words enter into the representation.

(37)

```
                    νP
              ┌─────┴─────┐
            NP            ν'
            │        ┌────┴────┐
          Hari      νP         ν
                  ┌──┴──┐      │
                NP      ν'    -isu-
                │     ┌─┴─┐
          Raaju-vinda VP   ν
               │    ┌──┴──┐ │
               │   NP     V │
               │   │      │ │
               │ self  √praise *koL-
               └───┘
```

Raaju, bearing the inherent instrumental case, does not move to get case and so we do not generate the configuration which licenses *-koL*. [spec, νP] is filled at LF.[14]

---

[14] The complementarity between the causative and reflexive breaks down, however, in a couple of cases. First, causative can be embedded under reflexive, as in (i):

    (i)   Hari Raaju-vinda tann-annu hogaL-isi-koLL-utt-aane
           Hari Raaju-INSTR self-ACC   praise-CAUS-REFL-NPST-3SM
           'Hari makes Raaju praise him.'

This suggests that in order to get the appropriate case marking the causee requires the causative morpheme to surface. The appropriate analysis will probably result from the multiple νPs in this sentence. If we did not pronounce the causative morpheme here, the verb would be indistinguishable from a simple transitive reflexive verb. The details of getting this to work out elude me at present.

    Second, there is a productive way of turning a dative-subject verb into a nominative subject verb by adding both the causative and reflexive to it. I also have no analysis of this fact:

    (ii) Hari-ge jvara   ban-t-u
          hari-DAT fever-NOM come.PST-3SN
          'Hari got a fever.'
    (iii) Hari jvara-vannu bar-isi-koND-a
          Hari fever-ACC   come-CAUS-REFL.PST-3SM
          'Hari got a fever.'

4.3.2. Interpreting *v*P with no specifier.

In the previous section we noted that the agent theta-role is not assigned by any syntactic mechanism. Instead, this role is entailed by the [*v* [VP]] configuration and can be assigned to anything in the sentence which could plausibly fill it. There are several reasons to believe this to be the right analysis. I will examine these in turn.

4.3.2.1. Roll

The verb *urulu- (roll)* allows either an animate or inanimate subject. Either of these is possible with or without the verbal reflexive on the intransitive variant:

(38) a. huDuganu bettada meele urul-id-a
         boy-NOM hill   over roll-PST-3SM
         'the boy rolled down the hill.'
     b. huDuganu bettada meele urul-i-koND-a
         boy-NOM hill   over roll-PP-REFL.PST-3SM
         'the boy rolled down the hill.'
(39) a. chenDu   bettada meele urul-i-tu
         ball-NOM hill   over roll-PST-3SN
         'the ball rolled down the hill.'
     b. chenDu   bettada meele urul-i-koND-i-tu
         ball-NOM hill   over roll-PP-REFL.PST-3SN
         'the ball rolled down the hill.'

If the subject is animate, then the verbal reflexive is incompatible with an accidental interpretation, i.e., the interpretation in which the cause of the event is external to the element undergoing a change (cf. example (12) ff.):

(40) a. huDuganu tann-iche-yinda-lee   bettada meele urul-id-a
         boy-NOM self-will-INSTR-EMPH hill   over roll-PST-3SM
         'the boy rolled down the hill deliberately.'
     b. huDuganu tann-iche-yinda-lee   bettada meele urul-i-koND-a
         boy-NOM self-will-INSTR-EMPH hill   over roll-PP-REFL.PST-3SM
         'the boy rolled down the hill deliberately.'
     c. aaghaata-dinda huDuganu bettada meele uruL-id-a
         accident-INSTR boy-NOM hill   over roll-PST-3SM
         'the boy rolled down the hill accidentally.'

d. * aaghaata-dinda huDuganu bettada meele urul-i-koND-a
   accident-INSTR boy-NOM hill   over roll-PP-REFL.PST-3SM
   'the boy rolled down the hill accidentally.'

However, if the subject is inanimate, the verbal reflexive is required on the externally caused interpretation, as indicated by the presence of the dative adjunct:

(41) a.   gaaL-ige chenDu bettada meele uruL-i-koND-i-tu
           wind-DAT ball   hill   over roll-PP-REFL.PST-3SN
           'Because of the wind, the ball rolled down the hill.'
     b. * gaaL-ige chenDu bettada meele urul-i-tu
           wind-DAT ball   hill   over roll-PST-3SN
           'Because of the wind, the ball rolled down the hill.'

So this means that the causative interpretation depends on the animacy of the subject. If the subject is animate, the subject itself must be interpreted as the causer when the reflexive morpheme is present, but if the subject is inani-mate and the verb is reflexive-marked, some other external cause is required. These facts follow from an analysis in which the agent/causer theta-role is not assigned syntactically but is determined by interpretive principles operat-ing on the structure. Because the animate NP is a possible causer of a roll-ing event, it is interpreted as the causer in the reflexive-marked variant even though it is syntactically assigned the theme theta-role. On the other hand, the inanimate NP cannot be interpreted as the cause of a rolling event and so some other, external, element is interpreted as causer.

4.3.2.2. Externally Caused Transitives: Alienating the Inalienable

I noted above that intransitive verbs marked with the verbal reflexive were interpreted as though there were some external cause responsible for the event. I described such sentences as monadic causatives, capturing both their causative event structure and their monadic status. We find similar interpreta-tions of transitive sentences marked with the verbal reflexive (Lidz 1996):

42) a.   hari kannu-gaL-annu tere-d-a
         Hari eye-PL-ACC   open-PST-3SM
         'Hari opened his eyes.'

    b.   hari kannu-gaL-annu tere-du-koND-a
        Hari eye-PL-ACC   open-PP-REFL.PST-3SM
        'Hari opened his eyes.'

43) a.   hari tale-yannu eTT-id-a
        Hari head-ACC lift-PST-3SM
        'Hari lifted his head.'

    b.   hari tale-yannu eTT-i-koND-a
        Hari head-ACC lift-PP-REFL.PST-3SM
        'Hari lifted his head.'

The reflexive-marked variants of these sentences differ from the bare transitives in the way that the action denoted by the verb was performed. (42a) describes a normal action of eye-opening, that is, one in which internal properties of the eye muscles are responsible for the actual lifting of the eyelids. (42b), on the other hand, describes a situation in which Hari uses his hands to open his eyes. Similarly, (43a) describes Hari lifting his head in the normal way that heads are lifted, i.e., through the muscles of the head and neck. (43b), on the other hand, would be used to describe a situation in which Hari's head has been cut off and his body reaches down and lifts the detached head from the floor. In sum, the subject in the reflexive-marked sentences in (42-43) seems to be interpreted simultaneously as though it were connected to the object via the inalienable possession relation and as though it were an independent causer. The inalienable possession relation is attenuated in the reflexive-marked variants of these sentences.[15] Support for this conclusion comes from instrumental phrases, which are only licensed in these sentences when the verb is reflexive-marked:

(44) a. * hari kai-gaL-inda kannu-gaL-annu tere-d-a
        Hari hand-PL-INSTR eye-PL-ACC   open-PST-3SM
        'Hari opened his eyes with his hands.'

---

[15]   The non-reflexive variants are actually unspecified as to who possesses the body part. In other words, (42a) can also describe a situation in which Hari opens someone else's eyes. An explicit genitive can distinguish these:

    (i)   Hari tann-a   kannu-gaL-annu tere-d-a
        Hari self-GEN eye-PL-ACC   open-PST-3SM
        'Hari opened his own eyes.'

    (ii) Hari awan-a kannugaL-annu tere-d-a
        Hari he-GEN eye-PL-ACC   open-PST-3SM
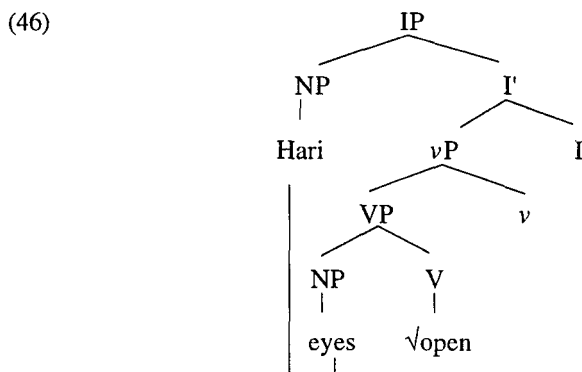   'Hari opened his (someone else's) eyes.'

b. hari kai-gaL-inda kannu-gaL-annu tere-du-koND-a
Hari hand-PL-INSTR eye-PL-ACC   open-PP-REFL.PST-3SM
'Hari opened his eyes with his hands.'
(45) a. * hari kai-gaL-inda tale-yannu eTT-id-a
Hari hand-PL-INSTR head-ACC lift-PST-3SM
'Hari lifted his head with his hands.'
b. hari kai-gaL-inda tale-yannu eTT-i-koND-a
Hari hand-PL-INSTR head-ACC lift-PP-REFL.PST-3SM
'Hari lifted his head with his hands.'

The analysis of the verbal reflexive proposed above requires that there is no [spec, *v*P] in the (b) examples of (42-43). Given that these are transitive structures, we must assign these sentences the same representation assigned to the reflexive example in (27). A chain is formed between the subject and object, resulting in deletion of the subject trace. The LF representation for (42b) is:

(46)

```
                    IP
              _____|_____
            NP            I'
            |           __|__
           Hari      vP      I
                   __|__
                 VP    v
               __|__
             NP    V
             |     |
            eyes  √open
```

Two questions arise from this structure. First, is it justifiable to form a chain between the subject and object in these cases? Second, why do we interpret the predicate in such an unusual way in these cases?

In order to answer the first question, we must first look at the Near-reflexivity cases discussed in Lidz (1996, 1997a). We find a difference in interpretation of reflexive sentences which differ in the choice of anaphor used:[16]

---

[16] There is some variation with respect to the cooccurrence of the complex anaphor with the verbal reflexive. For some speakers, it is possible to have the

(47) a. hari tann-annu hoDe-du-koND-a
         Hari self-ACC   hit-PP-REFL.PST-3SM
         'Hari hit himself.'
     b. hari tann-annu-taane hoDe-du-koND-a
         Hari self-ACC-self   hit-PP-REFL.PST-3SM
         'Hari hit himself.'

Imagine a situation in which Hari is a famous person and that a statue of him
has been erected in a museum. When he gets to the museum to see the un-
veiling of the statue, he finds the statue appalling and becomes angry. Now,
one of two things can happen. In one scenario, he is so upset with himself
for allowing such a horrible statue to be built that he begins to hit himself,
bemoaning his stupidity. In a second scenario, he is so angry with the
statue-builders that he begins to hit the statue in an attempt to destroy it.
The simplex anaphor in (47a) is only compatible with the first interpretation,
i.e., the one in which Hari is both the hitter and hittee. The complex ana-
phor in (47b) is compatible with either interpretation.

       Lidz (1996, 1997a) argues that this difference in interpretations is due to
the semantic properties of the anaphor. The simplex anaphor requires com-
plete identity with its antecedent, while the complex anaphor can pick out an
entity which is representationally related to its antecedent. Thus, the repre-
sentation for (47a) is (48a), while the representation for (47b) is (48b):

(48) a. λx [hit (x, x)] (Hari)
     b. λx [hit (x, $f(x)$)] (Hari)

The morphologically complex anaphor denotes a function which takes the
antecedent as input and returns something which is representationally related
to that antecedent. I call this function the "Near-reflexive" function. For the
analysis being developed here, the simplex anaphor is connected to the ante-
cedent by a chain because together they pick out a single entity. The com-
plex anaphor is connected to the antecedent by a chain because the interpreta-
tion of both NPs is determined by making reference to a single entity.

       We can view a reflexive-marked transitive like (42b), repeated here as
((49), as an instance of Near-reflexivity.

---

complex anaphor without the verbal reflexive while for others the verbal reflex-
ive is required no matter what form of anaphor is used. I put aside discussion of
the first set of speakers for the purposes of this paper.

(49) hari kannu-gaL-annu tere-du-koND-a
     Hari eye-PL-ACC   open-PP-REFL.PST-3SM
     'Hari opened his eyes.'

The subject and the inalienably possessed object are semantically covalued; the interpretation of both NPs is determined by making reference to a single entity, i.e., Hari.[17] A chain can therefore be formed between the subject and object, as in (46). The chain, which bears only the object theta-role, requires that *Hari* and *kannugaLannu* (eyes) together identify a single entity (Hari) and at the same time identify two independent entities. The fact that there are two NPs with lexical content in the chain entails that two entities are semantically identified. At the same time, the chain itself imposes the interpretation that these two NPs are alternative expressions of the same entity. The externally caused interpretation of ((49) comes from a combination of the interpretive properties of the *v*-VP configuration and the interpretive properties of the chain. The *v*-VP configuration requires a causative interpretation, as we have seen. The causative role can now be identified with the chain bearing the object role because this chain picks out two entities (Hari and his eyes), even though these entities are semantically covalued. Thus, Hari is interpreted independently as though he were the cause of the event and the affected entity in the event.

    Further evidence for a nonstructural account of the assignment of the 'agent' theta-role comes from reflexive-marked transitive sentences without a body-part as an argument. In such cases, the causer role is fully externalized. For example, (50a) has the interpretation that Hari acted on his shirt, causing it to tear in the normal causative fashion, while the reflexive-marked (50b) has the interpretation that something external to Hari caused the shirt to tear, perhaps if the shirt got caught on a nail:

(50) a.   Hari angiy-annu har-id-a
          Hari shirt-ACC   tear-PST-3SM
          'Hari tore his shirt.'

---

[17]   *Semantic covaluation requires more than a simple semantic dependence.* Rather, both NPs must ultimately lead to the same entity. A representation of Hari ultimately picks out Hari. Thus, a sentence like "Hari opened his book," does not involve semantic covaluation. While it is true that the referent of "his book" is determined by making reference to Hari (at least on the bound variable interpretation of the pronoun), the book is what is ultimately referred to, not Hari. Therefore, such an example does not involve Near-reflexivity or semantic covaluation.

b. Hari angiyannu hari-du-koND-a
    Hari shirt-ACC tear-PP-REFL.PST-3SM
    'Hari got his shirt torn.'

This fact provides further support for the idea that the identification of the external causer depends on the nature of the NPs involved and not solely on syntactic structure. If the two NPs in a chain can be interpreted as an agentive individual, as when the tail of the chain is a metonymic (i.e., body part) representation of the subject, then the subject NP is construed as the external causer. On the other hand, if the chain cannot be interpreted agentively, as when the tail of the chain is less directly construable as the object denoted by the head of the chain, then a separate external cause is required. That is, in (50b) we cannot construe the shirt as a part of Hari and so we construe Hari and the shirt together as the affected entity, forcing the causer role to be interpreted as something outside the sentence.

5. Conclusions

In this paper I have argued that a theory of morphology-syntax interactions in which morphological material is determined on the basis of syntactic representations can explain the distribution of causative and reflexive morphemes in Kannada better than a theory in which morphological material provides the atomic units of syntactic representation. In particular, I have shown that the causative and reflexive morphemes are alternative spell-outs of a light-verb implicated in sentences with complex event structures. The causative morpheme spells out this head if it has a specifier while the reflexive morpheme spells out this head if it has no specifier. I have further shown that some potential counterexamples to these claims can be accounted for if we adopt a theory of anaphora which requires that semantically covalued NPs are connected by a chain in the syntax (Lidz 1997). Under this analysis, it is only at LF that the 'causative' head has no specifier, conditioning insertion of the reflexive morpheme. The analysis leads us to the conclusion that morphological insertion applies to the LF representation. We therefore derive a theory of grammar in which there is a single level of representation which serves as the input both to morphophonology and to semantics.

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