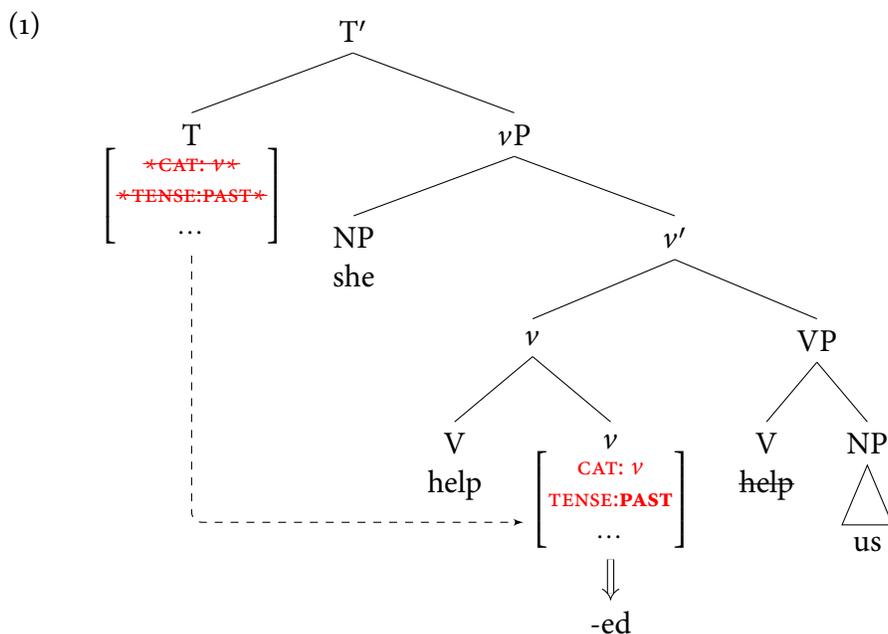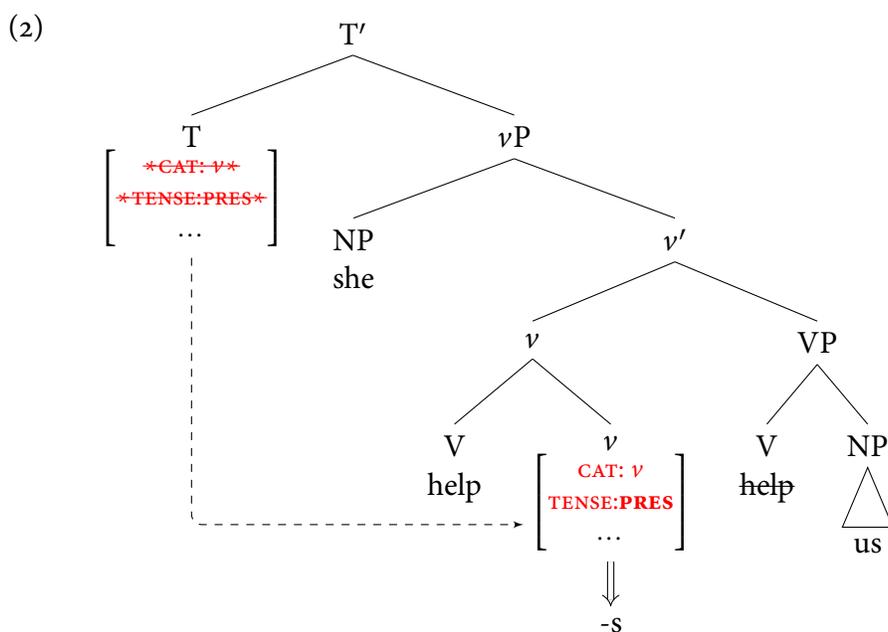# Lecture notes: Week 6
Types of subject

1   Morphology again

- By using Agree, we now have a way of getting the tense information of the clause onto the main verb without having to move the verb to T.

(1)

- This also works with other values for tense such as present:

(2)

- We can capture the different endings with the following morphological realization rules:

(3)   a. $\begin{bmatrix} v \\ \text{TENSE: PAST} \end{bmatrix} \rightarrow$ *-ed*

      b. $\begin{bmatrix} v \\ \text{TENSE: PRES} \end{bmatrix} \rightarrow$ *-s*

- But having a rule such as the one in (3b) is not going to be sufficient in light of the following distinction:

(4)   a.   She helps us
      b.   They help us

- Both of the verbs are in the present tense, yet we only get the ending *-s* in (4a).

- It therefore seems we need features other than present tense to make this distinction. But what are those features? Well, they clearly have something to do with the properties of the subject. Let's consider all the different contexts in which *help* can surface:

(5)

person	number	
	singular	plural
1st	I help	we help
2nd	you help	you/y'all help
3rd	he/she/it helps	they help

- The relevant distinctions here for determining where *-s* shows up are for *person* (1st, 2nd, 3rd) and *number* (singular, plural).

- It therefore seems that the suffix *-s* is only present if the subject has particular features namely: [PERSON: 3] and [NUMBER :SG]. We can bundle these together into a single feature known as a φ-feature ('phi'-feature).

- We should therefore refine our entries for *v* (perhaps we don't even need an entry for the null ending):

(6)   a. $\begin{bmatrix} v \\ \text{TENSE: PAST} \end{bmatrix} \rightarrow$ *-ed*

      b. $\begin{bmatrix} v \\ \text{TENSE: PRES} \\ \varphi\text{: 3SG} \end{bmatrix} \rightarrow$ *-s*

      c. $\left(\begin{bmatrix} v \\ \text{TENSE: PRES} \end{bmatrix} \rightarrow \text{-}\varnothing \right)$

- The question is: How does *v* track the features of the subject? These will vary from structure to structure, so it is unlikely that they are inherently part of the lexical entry of *v*. We need a way of getting the relevant features of the subject onto the *v*.

- Now we have an operation *Agree* that can transfer information perhaps we can use this to get the features onto v.

- We can assume that, in addition to an unvalued tense feature, v also has an unvalued φ-feature:

(7)
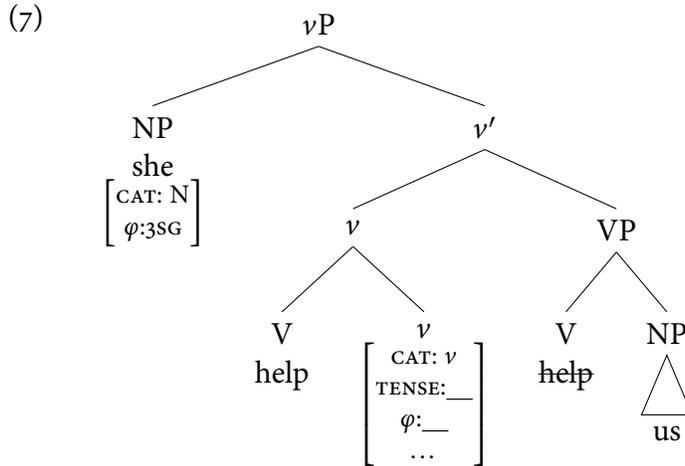
- The subject has a valued φ-feature that can be passed on to v, as can be seen in (8).

- (Note that the NP *she* has an additional gender specification as part of its φ-value. The feature should be [φ:3sgf], but I will continue to omit that for now.)

(8)
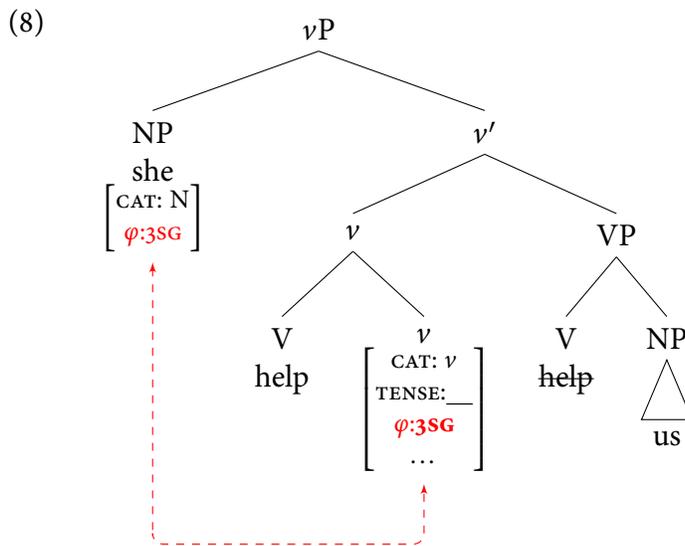
- The question here is now how does this happen? If we make the feature on NP a probe feature [∗φ:3sg∗] (triggering Agree), then it will be deleted. As we will see, this is something we probably do not want.

- If we instead give v the [∗φ:3sg∗] feature, then it does not c-command its goal, so we would have to change our definition of Agree to allow this. In fact, we probably predict that v would encode the features of the object (since it c-commands it) and that is definitely not something we want.

- Perhaps it is possible to have a different way to transfer features. After all, v selects the NP so there is some kind of syntactic relation between the two. If we can have a way of transferring features as part of the selection relation, then this might give us a way of doing what we want here.

- As we will see, this is not an option either. The main reason for this is that, somewhat contrary to our intuitions, not all subjects are selected by v. This is ultimately going to necessitate a different approach to getting the features onto v that does not involve a direct relation between v and the NP.

- To see what I mean by 'not all subjects are selected v', let's think a little about interpretation. In the sentence *He punched me*, the subject has the interpretation of what we call an **agent**. It is the conscious 'doer' of an action, typically doing so volitionally.

- This is not true of the object of *punch*. The object *me* is not the 'doer' of the punching action, but is rather the thing being punched. We refer to this as the **theme** of the action described by the verb (sometimes the term **patient** is also used).

- We call these different semantic characterizations **thematic roles** (or **theta roles (θ-roles)** for short).

- These distinction are semantic and not syntactic. They describe how the referent of a noun phrase participate in the action described by the verb.

- Nevertheless, they are assumed to be relevant for syntax. A common assumption is that the determination of θ-roles is governed by the syntactic structure in which the verb is included. In other words, θ-roles are associated with particular syntactic positions:

> **Assignment of thematic roles**
>
> a. The θ-role Agent is assigned to specifier of v.
> b. The θ-role Theme is assigned to the complement of V.

(9)
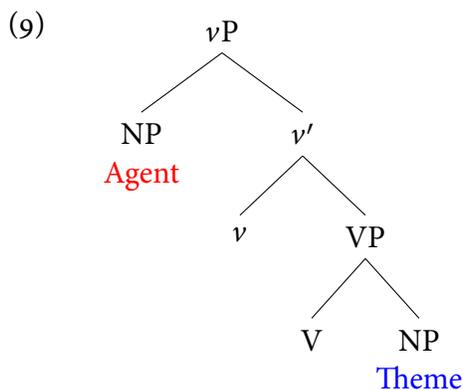
- In light of this, consider the two sentences in (10). Here, the subject of (9a) is an Agent, whereas the subject of (9b) is Theme.

(10) a. The knight has killed the dragon
   b. The dragon was killed

- How could we account for this? One possibility is to say that there are two versions of *kill*, an transitive and and intransitive variant. However, it doesn't seem that *kill* is really optionally transitive.

- So what is the solution? The subject of (10b) is not in Spec-*v*P, it is the object of *kill* just like in (10a).
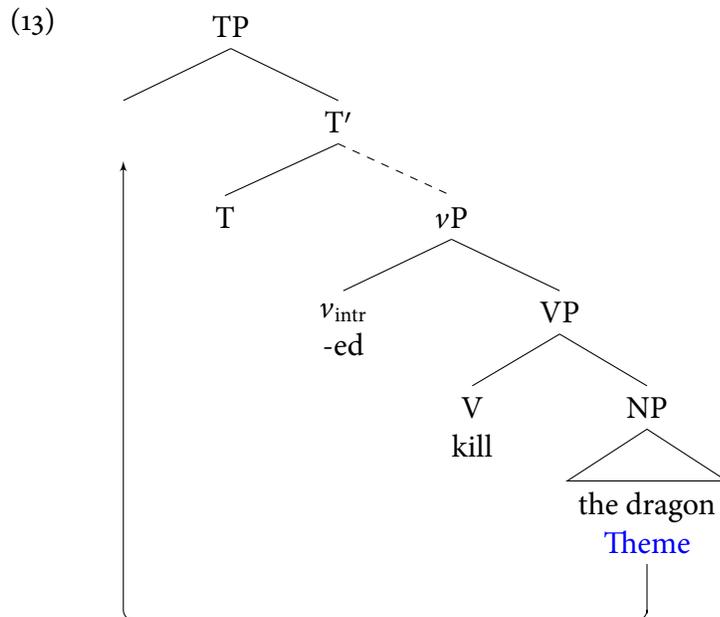
(11)
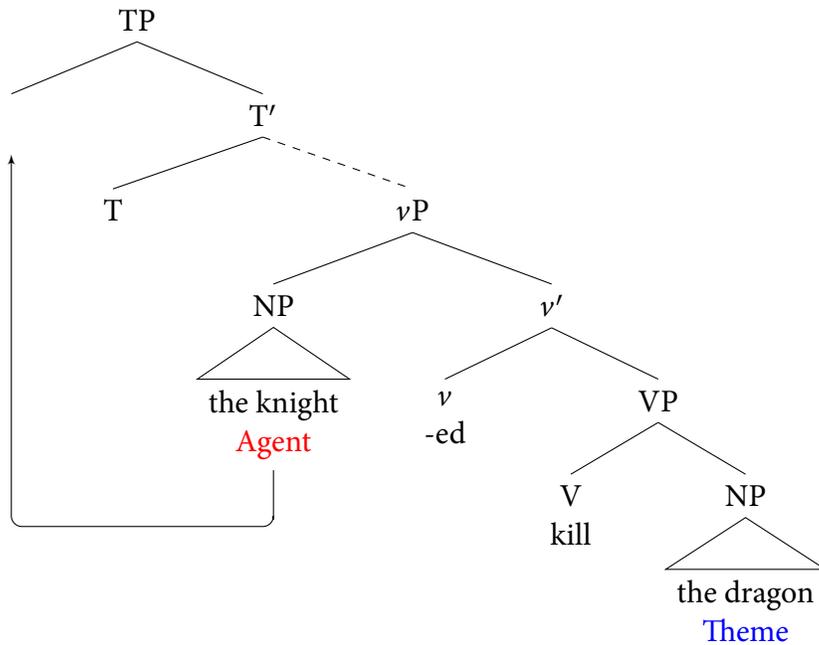
- In (10b), it is the object that moves to subject position:

(12)
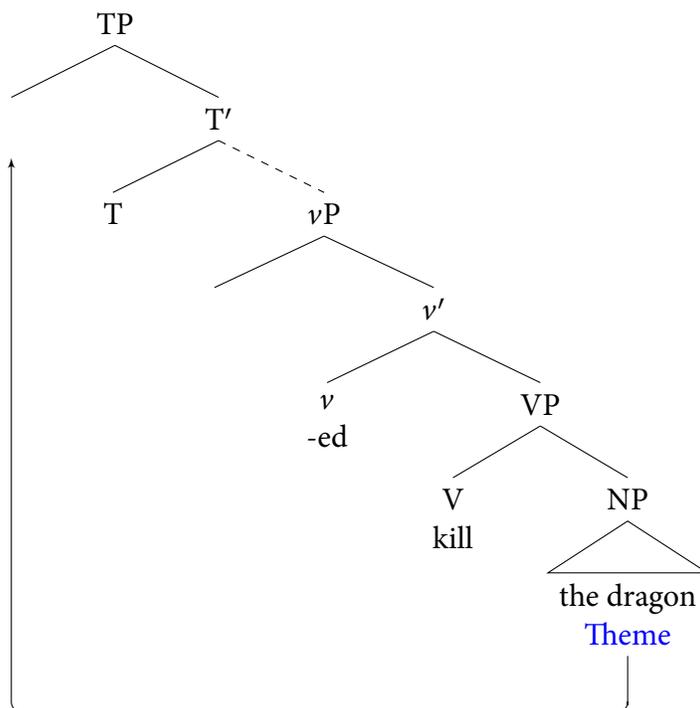
- This preserves the idea that the θ-role 'theme' is always assigned to the complement of V.

- What about the specifier of v – is there one? Well, no. This means that actually we have a different kind of v here that does not select an NP in its specifier. We can call it v_{intr} ('intransitive') to make this clear.

(13)

```
                    TP
                   /  \
                      T′
                     / ⋮
                    T   vP
                       /  \
                   v_intr  VP
                    -ed   /  \
                         V    NP
                        kill
                              the dragon
                               Theme
```

- The two sentences above are what is referred to as the *passive alternation*. A transitive verb may surface in an intransitive form where there is no Agent subject and the Theme object has become the subject.

- This shows that not all subjects are the same. Some actually start out their life as objects (and therefore have a Theme interpretation).

- Is this a specific fact about the passive version of transitive verbs, or is it more general?

- We can see that it is more general if we take another look at intransitive verbs.

- While the subject of a transitive is mostly an agent and its object is mostly a theme, intransitive subjects can have either agent subjects or theme subjects:

(14) a. transitive (agent subject): The knight killed the dragon
      b. intransitive (agent subject): The knight danced, the dragon roared, the mage studied, the knight ran (away) → **unergative**
      c. intransitive (theme subject): The knight died, the dragon slept, the fog disappeared, the knight fell (from his horse) → **unaccusative**

- We call the class of intransitive verbs with an agent subject *unergative verbs* and the class of intransitive verbs with a theme subject *unaccusative verbs*. (This is pretty opaque terminology, but that's what people use.)

- Given the idea of a universal principle for assigning thematic roles, theme subjects are underlying objects of the verb. v is inactive in this case, what we called v_{intr}. We can therefore see the difference between unaccusative and unergative verbs below (I am not showing head movement here):

(15)
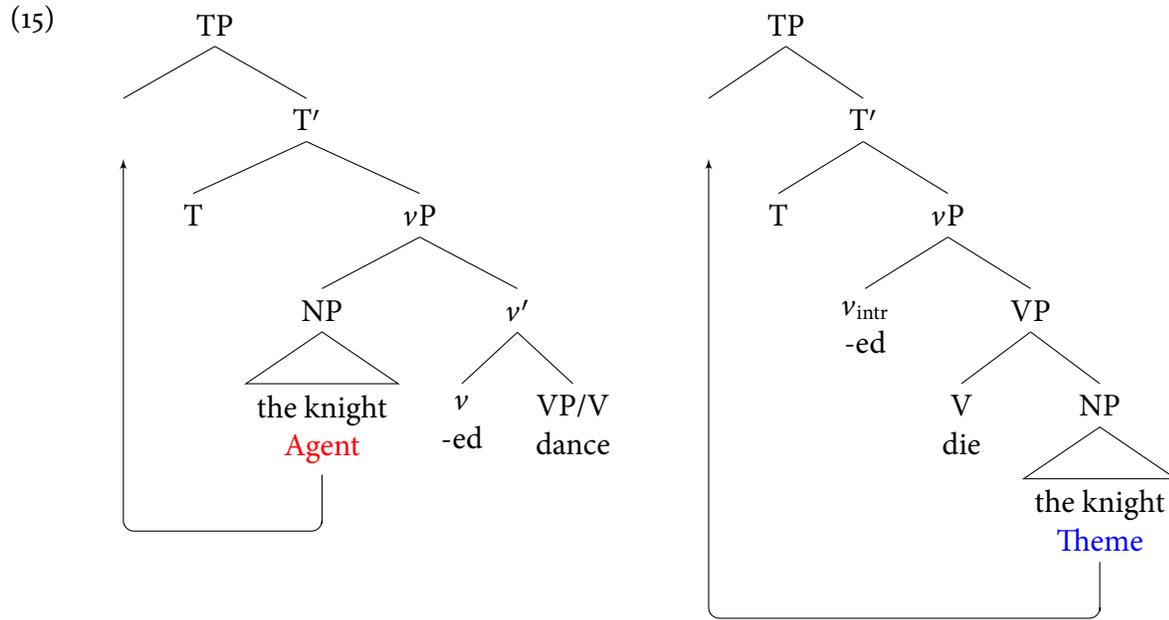
- One might wonder how we know this distinction is real? Well, in other languages the form of the auxiliary *be* vs. *have* tracks whether a verb is unaccusative or unergative. The following German examples illustrates this:

(16)   a.   Der Ritter   hat den Drachen getötet
              the   knight has the   dragon   killed
              'The knight has killed the dragon.'
     b.   Der Ritter   hat getanzt
              the   knight has danced
              'The knight has danced.'
     c.   Der Ritter   ist gestorben
              the   knight is   died
   'The knight has died.'

- Both transitive (17a) and unergative verbs (17b) take the auxiliary 'have', whereas the unaccusative verb (16c) takes 'be'. We could say that the generalization here is that you get the auxiliary 'have' with verbs that have an agent subject, and 'be' with verbs that have a theme subject. We actually also get 'be' with passive verbs too, so this makes sense.

- Furthermore, there are verbs in English that alternate between transitive and unaccusatives. The verb *melt* is one such example:

(17)   a.   The sun$_{\text{Agent}}$ melts the ice$_{\text{Theme}}$.
   b.   The ice$_{\text{Theme}}$ melts.

- This is analyzed in a similar way to what we saw with the passive. The choice of whether we have a transitive or intransitive verb is really a choice of what kind of *v* we have.

(18)
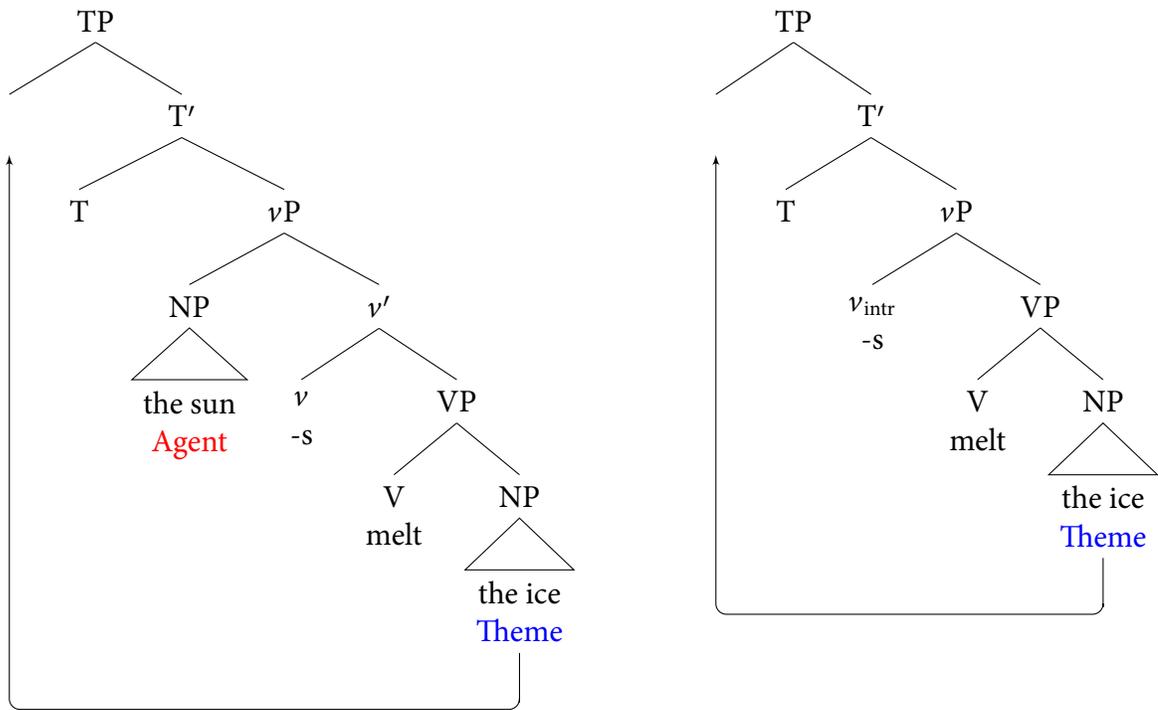
- Furthermore, it seems that v can have a kind of 'causative' meaning here, i.e. (17a) can be paraphrased as 'I caused to the ice to melt'. Some languages even show a marker for 'causation' with this kind of verb.

- Now let's get back to our original problem: How can we get the φ-features of the subject onto v in order to get the right distribution of *-s*?

- Remember how we suggested it might be some kind of relation between v and the subject. Well, given the heterogeneity of subjects we have just seen, this is unlikely to work. There is another way we can do it, though. We know that T already passes on tense information to v so maybe it can also pass on the features of the subject, too.

(19)
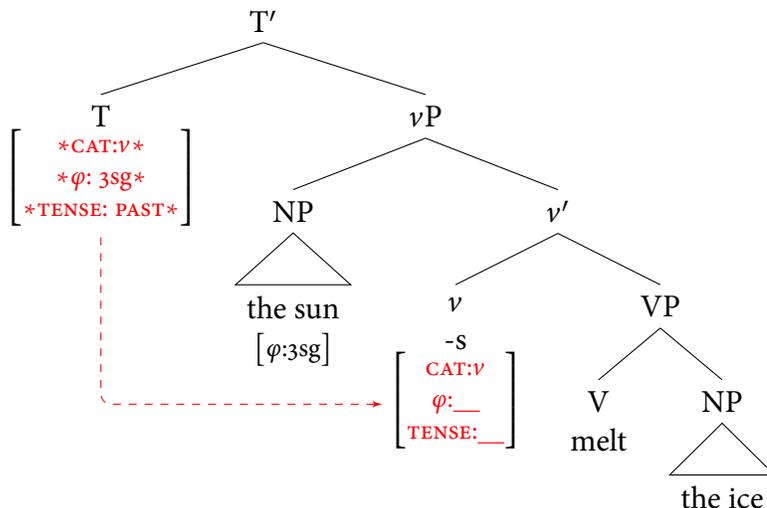
- If T has the φ-feature we need, then it can pass it down to v, giving us what we want. But the φ-feature has to get onto T first. So there must be a prior Agree relation of this kind:

(20)
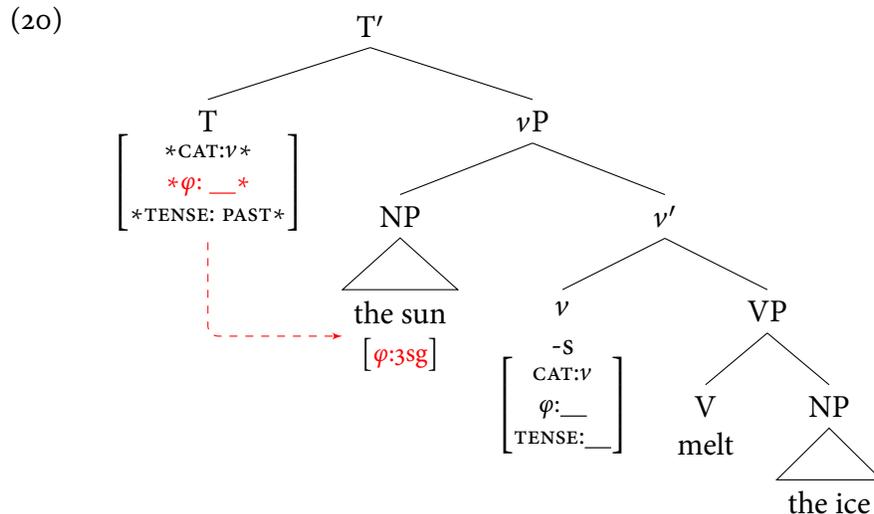
- There are a few technical issues here, though. The first is that we need the step in (20) to apply **before** the step in (19). For this reason, we need to re-order the features on T. (Recall that the higher features in the stack take precedence over the lower ones.)

- In addition to this re-ordering, shown in (21), the result of the $[\ast\varphi:\_\_\ast]$ feature agree with NP should be that it is deleted (by virtue of being a $\ast$-feature). This will cause a problem because this feature still needs to be available to be passed on to v.

(21)
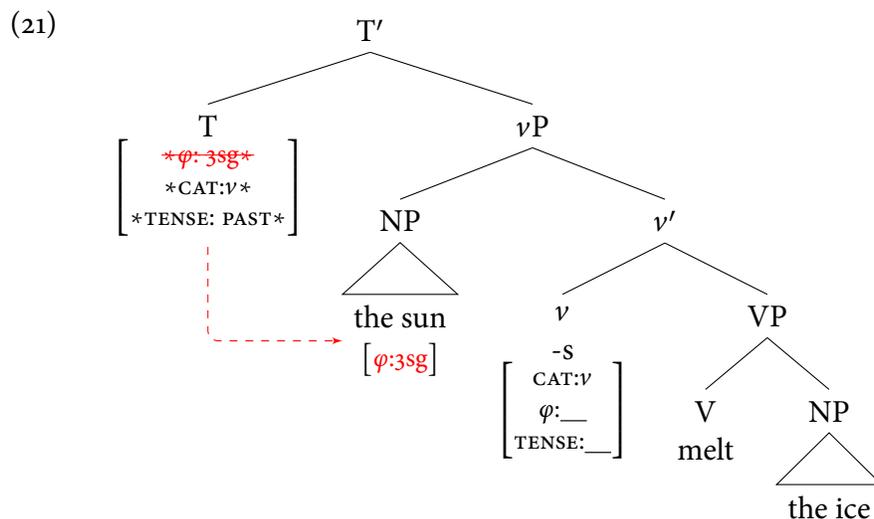
- How can we solve this problem? The obvious solution seems to be to say that $[\varphi:\_\_]$ is not a probe (i.e. lacks $\ast$), but then why would T agree with NP at all? We said that Agree needs to involve a checking relation between a feature $[\ast F\ast]$ and a matching feature $[F]$ under c-command. Other features can be valued as a side-effect of this primary relation.

- Perhaps, then, T is agreeing with NP for another reason and the transfer of φ-values is a secondary part of the Agree relation. Consider these sentences:

(22)   a.   They killed them.
         b.   They were killed.
         c.   They died.

- One might wonder why one cannot say things like:

(23)   a.   *Them killed them
         b.   *Them were killed
         c.   *Them died

- This becomes especially clear with passive/unaccusative verbs since we have been saying that their subjects *are* objects. We could expect to have them:

(24)
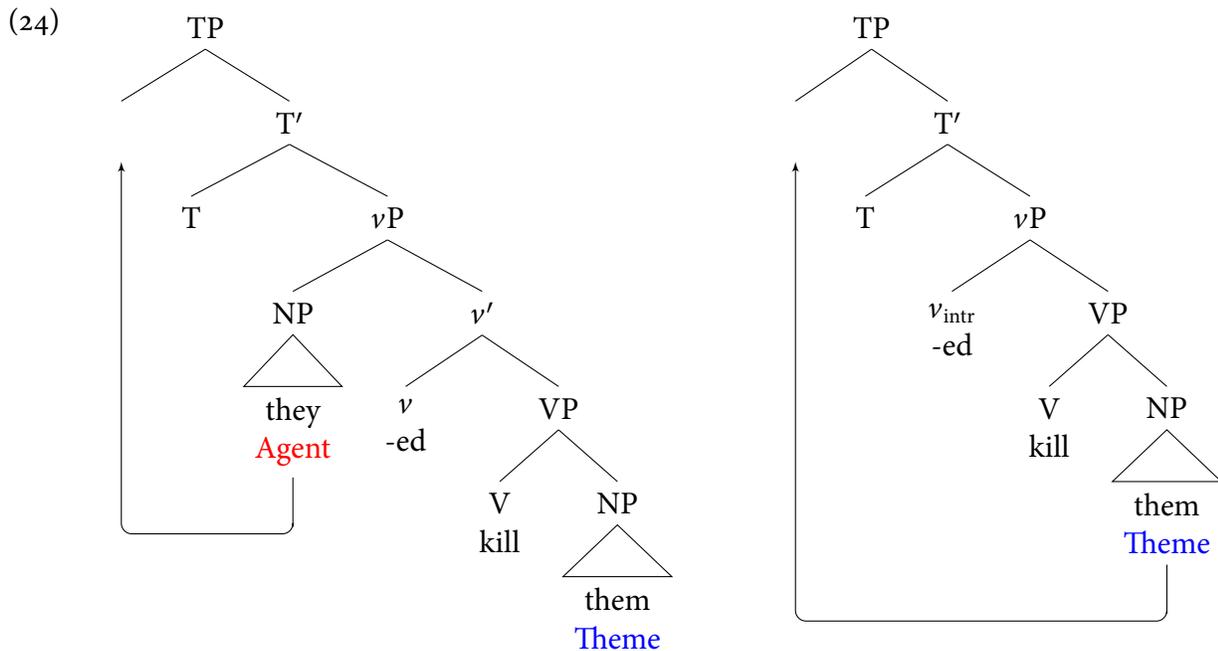
- Why must an object *them* show up as *they*? Well, they all have in common that they move to subject position (specifier of T). As part of this, T agrees with them.

- So what is the relevant feature? Traditionally, we call it **case** (though English has a very impoverished system of case that we only see in the pronouns). We can see the range of pronoun case forms below:

(25)

| Person/number	Case Subject (nominative)	Object (accusative)	Possessive (genitive)
1sg	I	me	my
1pl	we	us	our
2sg/pl	you	you	your
3sg	he/she/it	him/her/it	his/her/its
3pl	they	them	their

- This means that 'subject case' (nominative) is assigned to anything that becomes a subject. We have to assume that pronouns are not inherently specified for this feature. We can give them an unvalued feature [CASE:___]. This feature will determine their realization. The realization of pronouns will be determined by rules like the following (remember that the φ-specification of the pronoun is part of its lexical entry):

(26) a.

$$\begin{array}{c} \text{N} \\ \text{pro} \\ \left[\begin{array}{l} \varphi\text{: 3,pl} \\ \text{CASE: NOM} \end{array}\right] \end{array} \rightarrow \textit{they}$$

c.

$$\begin{array}{c} \text{N} \\ \text{pro} \\ \left[\begin{array}{l} \varphi\text{: 3,sg,m} \\ \text{CASE: NOM} \end{array}\right] \end{array} \rightarrow \textit{he}$$

b.

$$\begin{array}{c} \text{N} \\ \text{pro} \\ \left[\begin{array}{l} \varphi\text{: 3,pl} \\ \text{CASE: ACC} \end{array}\right] \end{array} \rightarrow \textit{them}$$

d.

$$\begin{array}{c} \text{N} \\ \text{pro} \\ \left[\begin{array}{l} \varphi\text{: 3,sg,f} \\ \text{CASE: ACC} \end{array}\right] \end{array} \rightarrow \textit{her}$$

- Now, we have to assume that T has a feature [∗CASE: NOM∗] that must be checked under agree with a matching feature on the closest c-commanded node.

- Furthermore, the object case (accusative) is assigned [∗CASE: ACC∗] to the object of a transitive verb. We will put this feature on *v* (we will see why in a moment).

- With all of these assumptions, the assignment of case in a sentence like *He loves her* would look like this (enough talk about killing!):

(27)
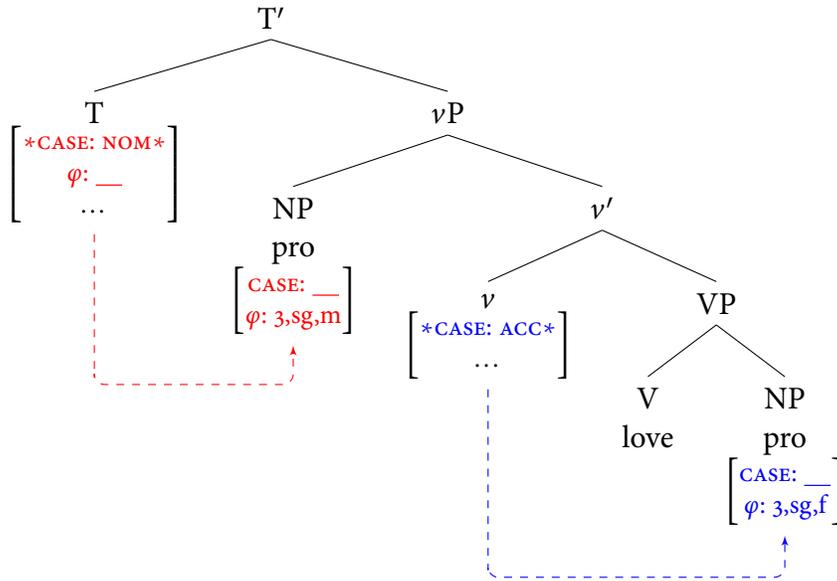
As a result of these Agree relations, the case features on each NP are valued, the case features on T and v are checked and the φ-feature of T is valued.

- (English does not show agreement with the object. We have said it has a φ-feature, so we have to stop valuation by the object somehow. Some languages do show agreement with the object in addition to the subject!)

(28)
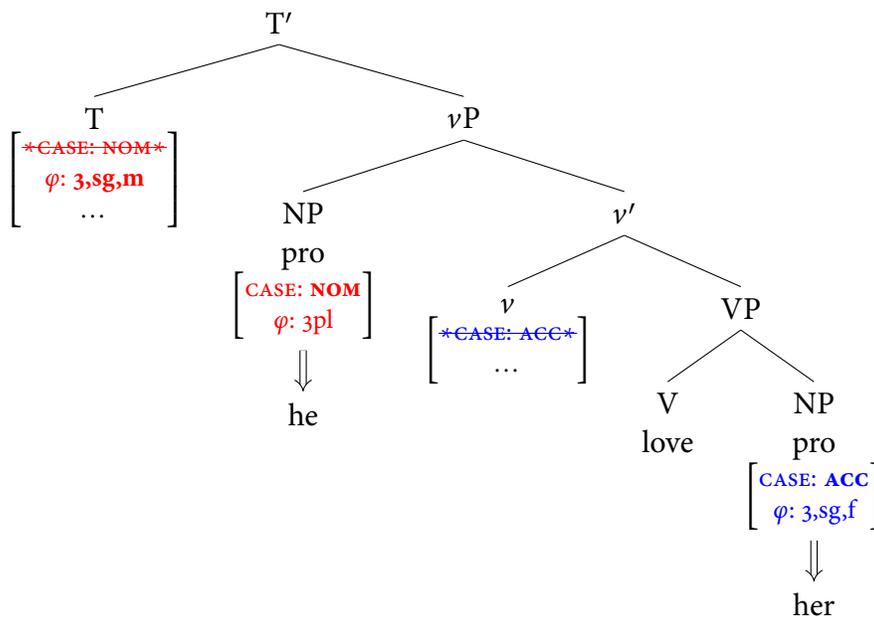
- What happens next? Well, the feature we were leaving out as '…' become relevant. There is a $[*v*]$ feature on T as well as the tense feature that need to be passed down to v under Agree. The valued φ-feature can also be passed down too, now!

(29)

$$
\begin{array}{c}
\text{T}' \\
\diagup \qquad \diagdown \\
\text{T} \qquad\qquad\qquad \nu\text{P} \\
\begin{bmatrix} *\text{CASE: NOM}* \\ \varphi\text{: } \mathbf{3,sg,m} \\ *\text{CAT: } \nu* \\ *\text{TENSE: PRES}* \end{bmatrix}
\end{array}
$$

νP branches to NP pro [CASE: **NOM** / φ: 3pl] ⇒ he, and ν′.

ν: [*CASE: ACC* / φ: __ / *TENSE: __*]

VP branches to V (love) and NP pro [CASE: **ACC** / φ: 3,sg,f] ⇒ her.
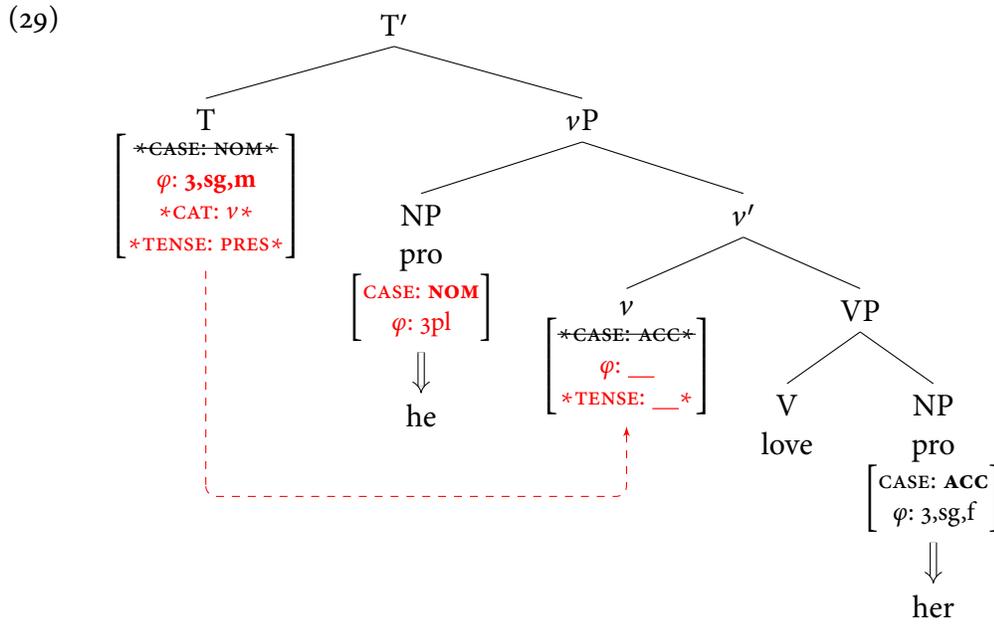
- Now the features can be valued and the right form for *v* can be determined:

(30)

$$
\begin{array}{c}
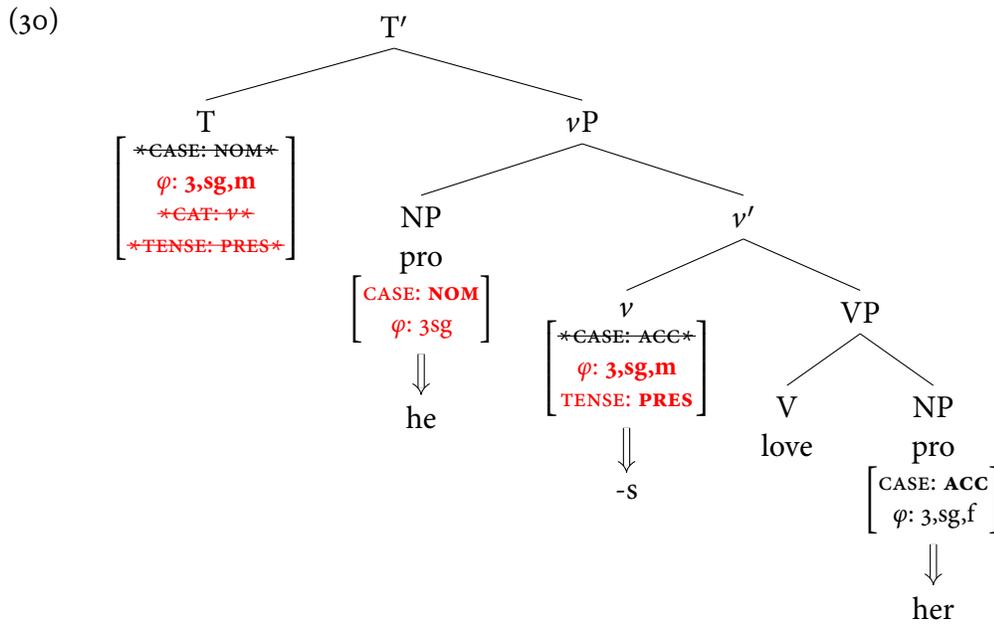\text{T}' \\
\diagup \qquad \diagdown \\
\text{T} \qquad\qquad\qquad \nu\text{P}
\end{array}
$$

T: [*CASE: NOM* / φ: **3,sg,m** / *CAT: v* / *TENSE: PRES*] (all struck through)

νP branches to NP pro [CASE: **NOM** / φ: 3sg] ⇒ he, and ν′.

ν: [*CASE: ACC* / φ: **3,sg,m** / TENSE: **PRES**] ⇒ -s

VP branches to V (love) and NP pro [CASE: **ACC** / φ: 3,sg,f] ⇒ her.

- We also know that we have movement of the verb to V and movement of the agent NP to the specifier of T, so let's include that (We will mark the checked feature [•N•] on T rather than T′ for convenience):

(31)
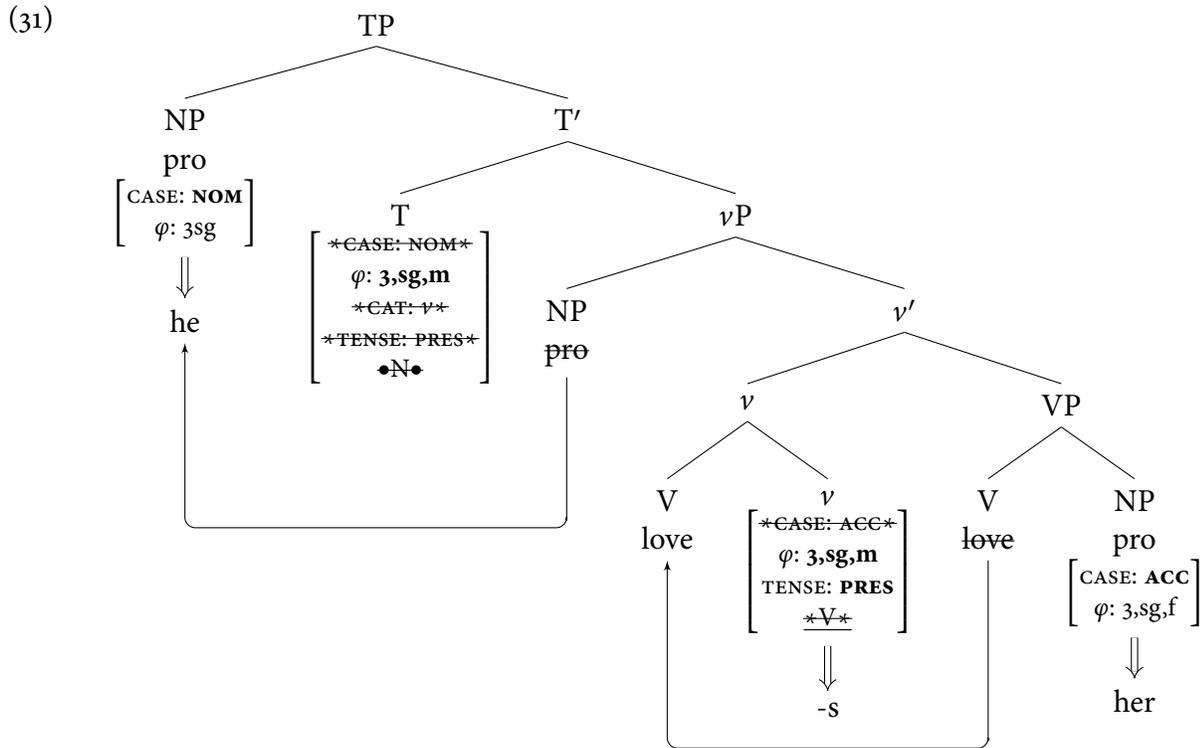
- What about the passive? This would be *She was loved*. We would have the structure below:

(32)
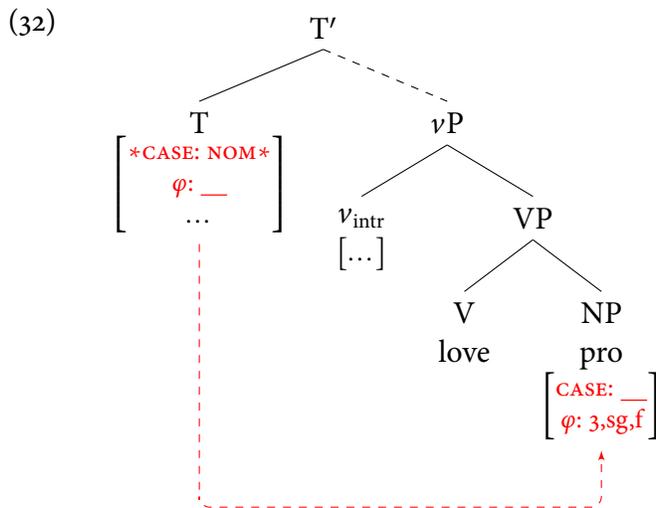
- Note that we have selected the v_{intr} head here: This lacks the feature [•N•] to introduce an agent NP and it also lacks a feature assigning accusative case.

- As a result of this, the case feature of the object NP will be valued as nominative by T. This causes the pronoun to be realized as *she* rather than *her*. This NP will also move to the specifier of T:

(33)

$$
\begin{array}{c}
\text{TP} \\
\text{NP} \quad \text{T}' \\
\text{pro} \\
\begin{bmatrix}\text{CASE: \textbf{NOM}} \\ \varphi\text{: 3,sg,f}\end{bmatrix} \\
\Downarrow \\
\text{she}
\end{array}
$$

T: $\begin{bmatrix}\ast\text{CASE: NOM}\ast \\ \varphi\text{: \textbf{3,sg,f}} \\ \dots\end{bmatrix}$ vP → v_{intr} [...], VP → V (love) + NP (~~pro~~)
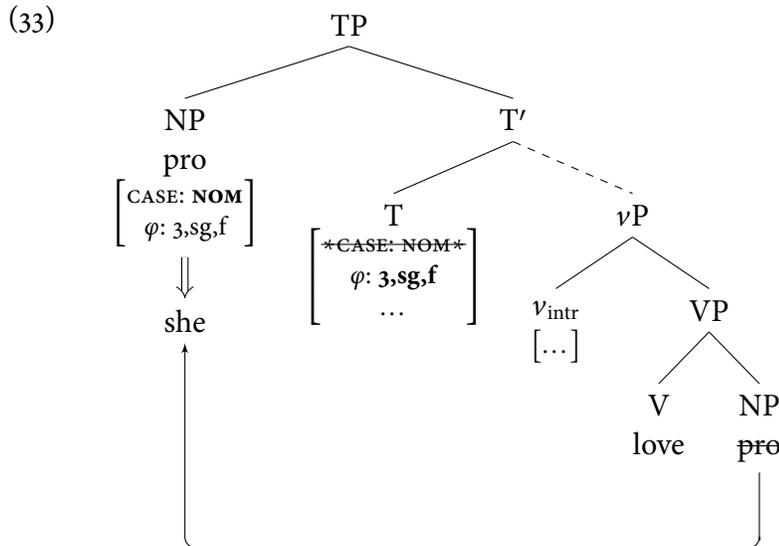
- We are still missing a few details here for our analysis of *She was loved*, though. We would expect T to now agree with *v* so that it can realize the tense of clause. But hold on, we have an auxiliary *was* in the passive (in fact, this is obligatory). So, where is past tense real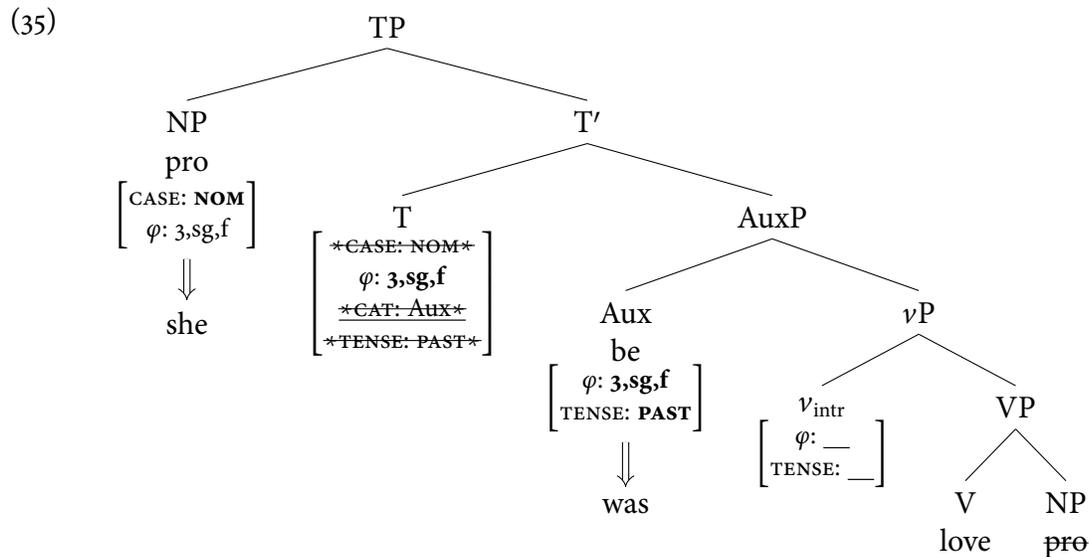ized? It looks, at first glance, that past tense is on the auxiliary (*was* is the past tense form of *be*), but then what is the *-ed* on *love*?

- Let's include both the auxiliary and the relevant features on *v* in our structure, as in (34). Since T selects AuxP, it will have the Agree feature [∗Aux∗] rather than [∗*v*∗]. What do we expect here? Well, [∗Aux∗] will cause T to enter an Agree relation with the Aux head.

(34)

$$
\begin{array}{c}
\text{TP} \\
\text{NP} \quad\quad \text{T}' \\
\text{pro} \\
\begin{bmatrix}\text{CASE: \textbf{NOM}} \\ \varphi\text{: 3,sg,f}\end{bmatrix} \\
\Downarrow \\
\text{she}
\end{array}
$$

T: $\begin{bmatrix}\ast\text{CASE: NOM}\ast \\ \varphi\text{: \textbf{3,sg,f}} \\ \ast\text{CAT: Aux}\ast \\ \ast\text{TENSE: PAST}\ast\end{bmatrix}$

AuxP → Aux (*be*) $\begin{bmatrix}\varphi\text{: \_\_} \\ \text{TENSE: \_\_}\end{bmatrix}$ + vP

vP → v_{intr} $\begin{bmatrix}\varphi\text{: \_\_} \\ \text{TENSE: \_\_}\end{bmatrix}$ + VP

VP → V (*love*) + NP (~~pro~~)
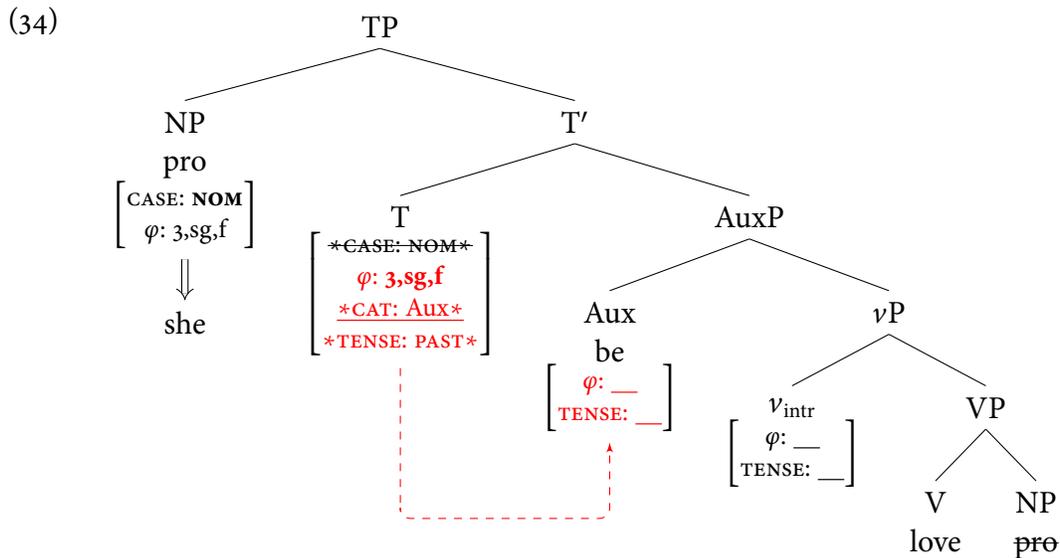
- As a result, the φ and tense features of Aux are valued by T (with the corresponding ∗-features checked on T). The 3rd singular past form of *be* is *was*, so the Aux head is realized as this by a relevant rule.

(35)

```
                          TP
            ┌──────────────┴──────────────┐
           NP                             T′
           pro                 ┌───────────┴───────────┐
     ┌──────────────┐          T                      AuxP
     │ CASE: NOM    │   ┌──────────────┐      ┌─────────┴─────────┐
     │ φ: 3,sg,f    │   │ *CASE: NOM*  │     Aux                  vP
     └──────────────┘   │ φ: 3,sg,f    │     be            ┌───────┴───────┐
           ⇓            │ *CAT: Aux*   │  ┌──────────┐   v_intr           VP
          she           │ *TENSE: PAST*│  │ φ: 3,sg,f│ ┌─────────┐    ┌─────┴─────┐
                        └──────────────┘  │TENSE:PAST│ │ φ: __   │    V          NP
                                          └──────────┘ │TENSE: __│   love         pro
                                               ⇓       └─────────┘
                                              was
```

- Now, we have to answer the question of what *-ed* on *v* is. Is it past tense? It could be that Aux passes on the past tense feature to *v*, too.

- This isn't quite right though. The *-ed* suffix is actually something else, it just happens to look like the past suffix in a lot (most) cases. We can see this by looking at different verbs

  (36)   a.   She **wrote** these books in 2006.
              b.   These books were **written** in 2006.

  (37)   a.   The rock **broke** the window.
              b.   The window was **broken** (by the rock).

  (38)   a.   France **beat** Brazil in the World Cup.
              b.   Brazil was **beaten** (by Brazil) in the World Cup.

- This form of the verb is often called a **participle**.

- The generalization we want is that the verb takes this participle form when it is selected by a particular Aux, namely the one we find in the passive (*be*).

- Let's encode this as a feature [FORM:__]. The Aux will bear a probe version of that feature [*FORM: PART*] (corresponding to the participle form), while *v* will have the unvalued feature [FORM:__].
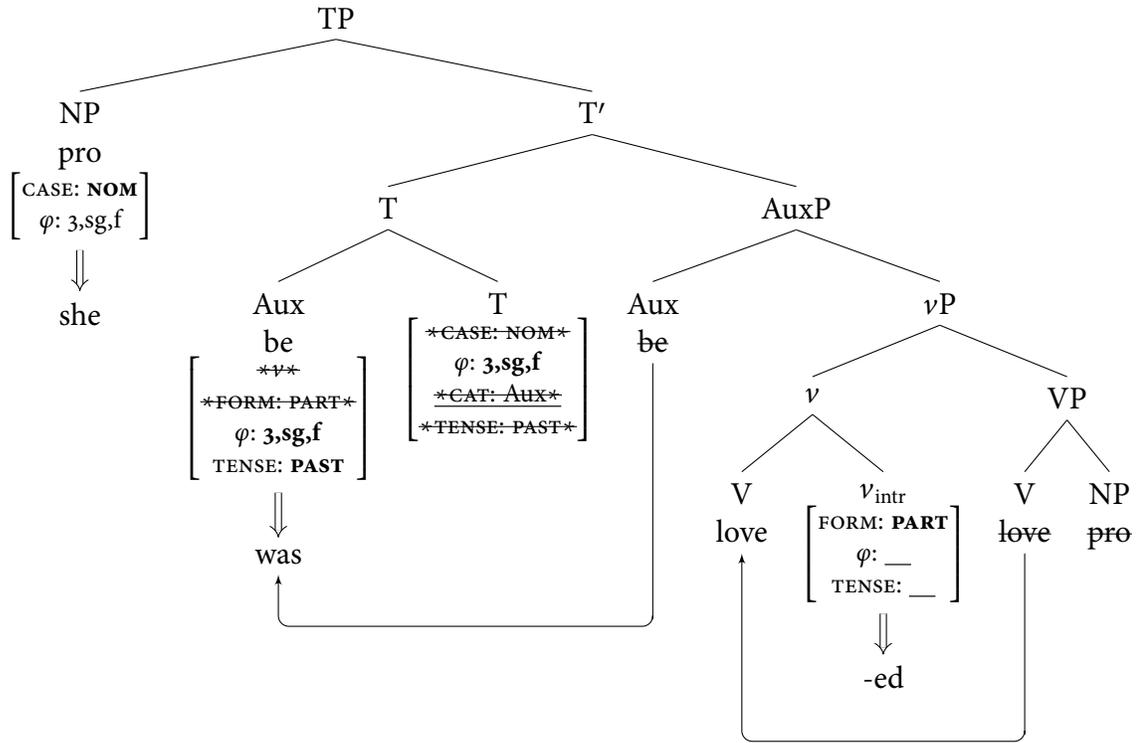
(39)
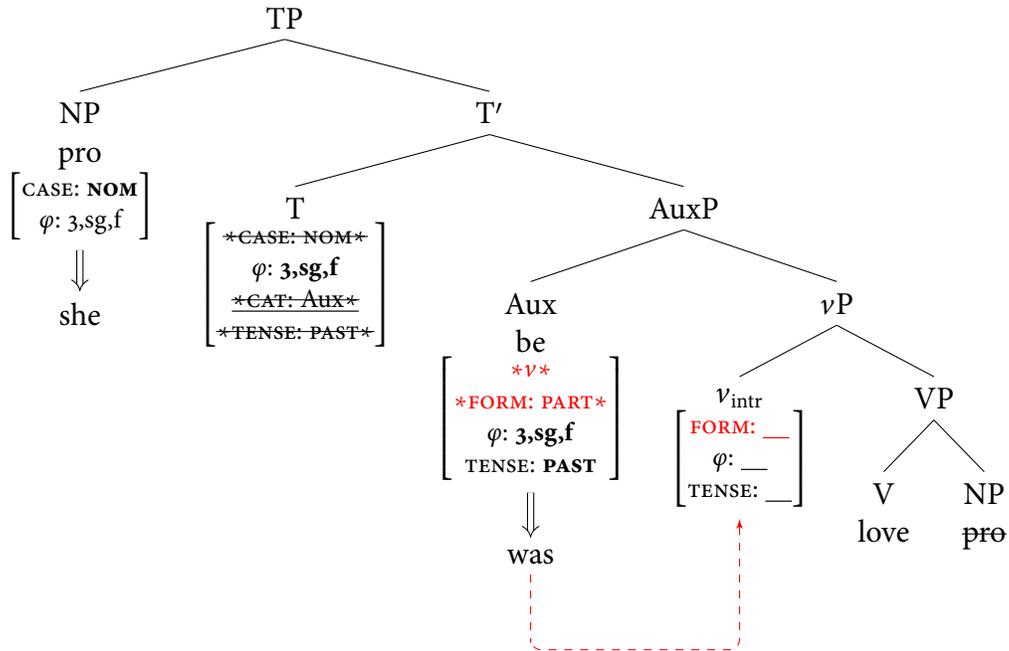
- Assuming that the rule for realizing v with the participle ending *-ed* just requires the [FORM: PART], we get the following structure:
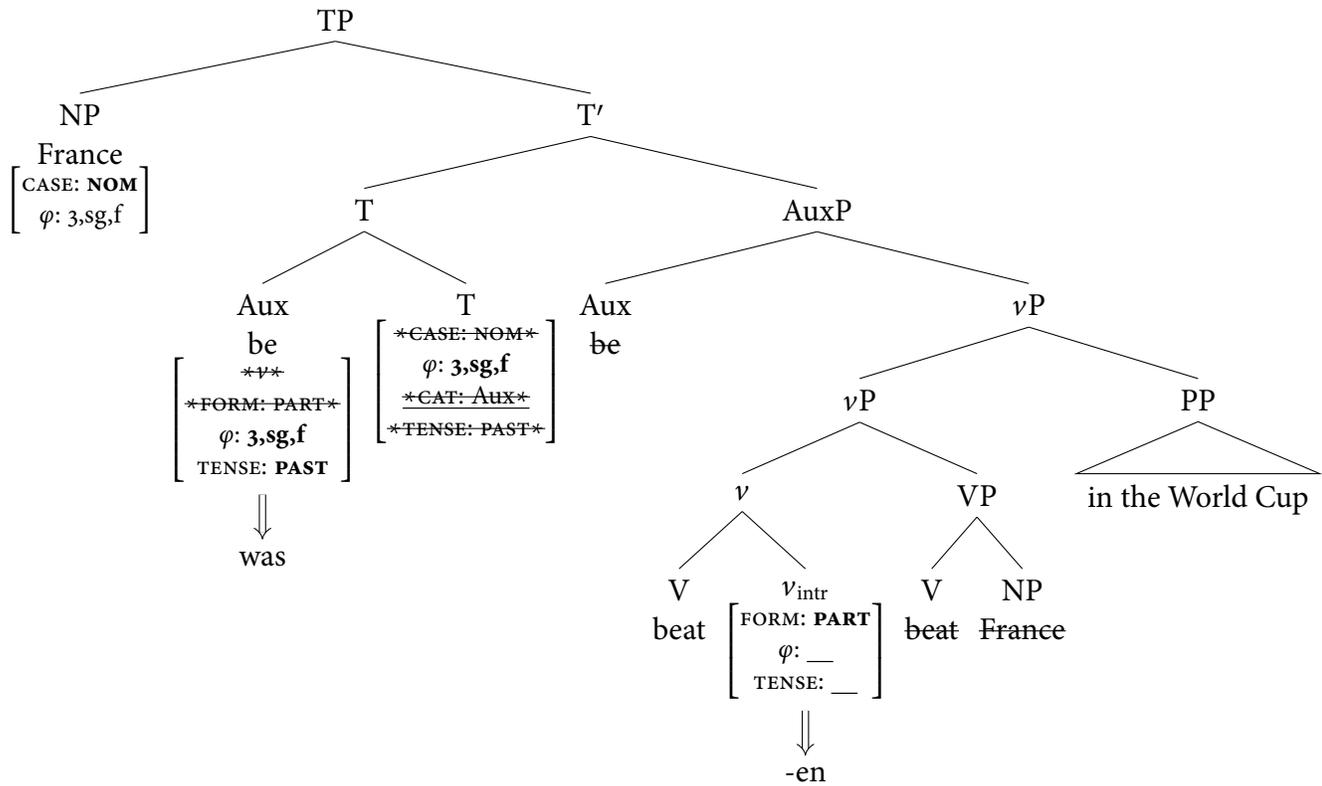
(40)
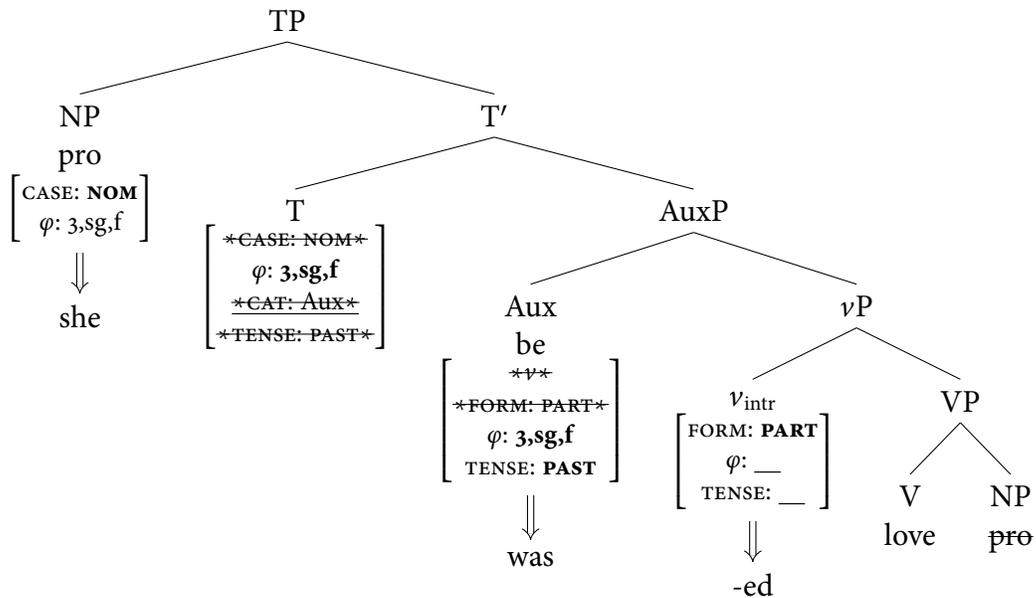
- Recall that there are 'strong' features on v and T respectively, which trigger head movement of Aux to T and V to v, so let's include that and we have the full analysis:
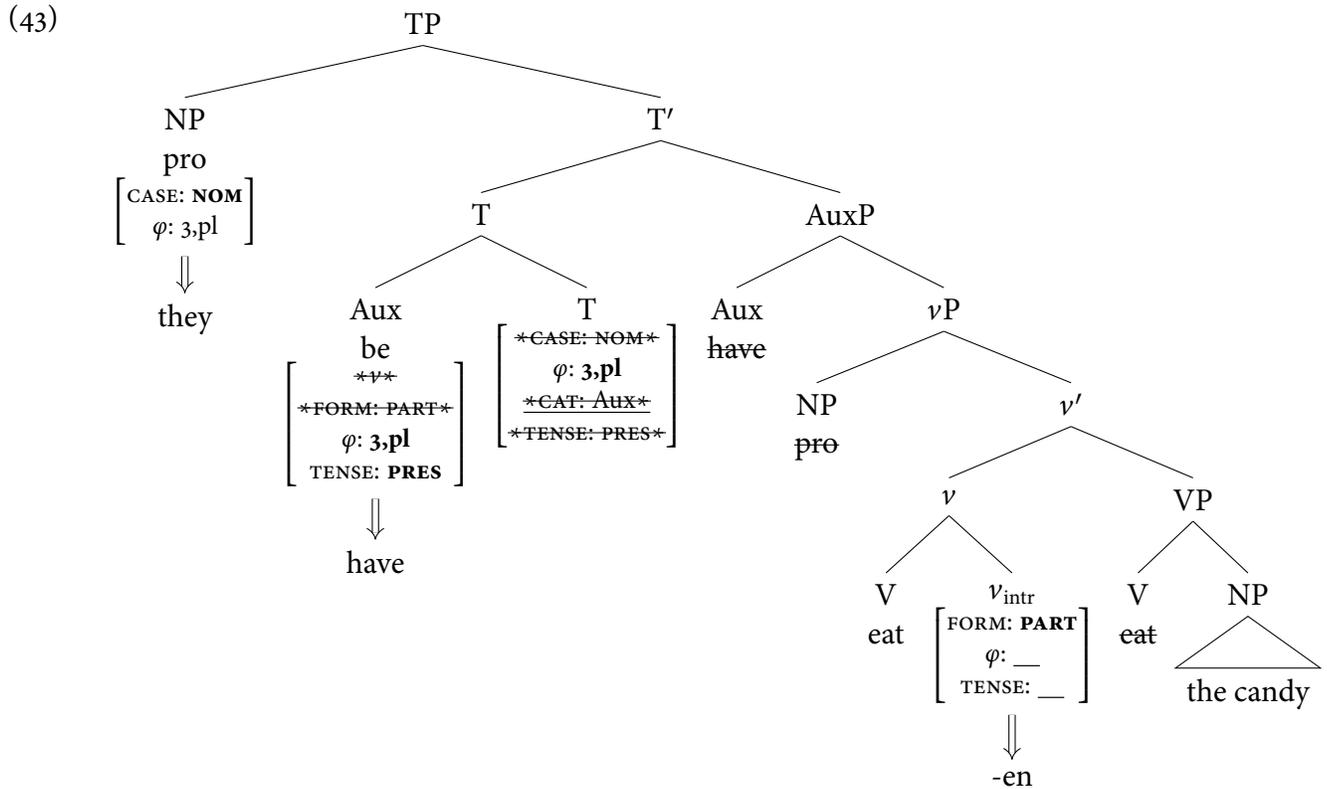
(41)

• The same structure will work when the participle has another realization:

(42)

- The very final thing to consider is: What about other auxiliaries that don't involve passive? Think of a sentence like *They have eaten the candy*. This would have a similar analysis:

(43)

- Here, *have* also assigns the same kind of feature ([FORM: PART]) as the passive auxiliary *be*. But have is not a passive auxiliary (its vP is not v_{intr}). We call *have* the **perfect auxiliary**.

- What would happen if we omitted Aux in the structure above? Then, we would expect the present tense feature of T to be passed to v (together with the tense and φ-feature) and we would get *They eat the candy*.

- What about if we have <u>both</u> a perfect and passive auxiliary? More on this next week.