

PF-Representation of Tense Feature on DPs: Morphosyntax of the ϕ -Agreeing T-Marker Tau

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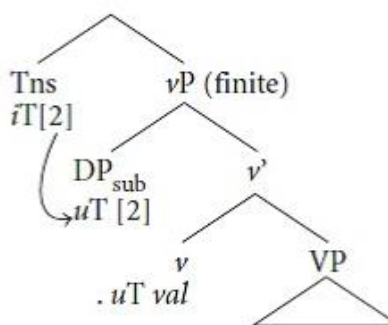
Abstract—This research revises, develops and offers empirical evidence to two assumptions discussed in Pesetsky & Torrego's (2007) theory which claims that tense feature [T] is associated with and expressed on DPs in syntax. Investigating the syntax of a T-marker tau, used in Najdi Arabic, in contexts where tau interacts with DPs in the spine of the clause, empirical evidence is provided that [T] assumed to be associated with DPs is generated in syntax and spelled out at PF. This takes place by the minimalist strategy where a clitic ϕ -agreeing with the relevant DP is spelled out on tau.¹This clitic is a PF device indicating that a DP is marked with Tense information RECENT. This clitic is morphological realisation of ϕ -content on tau that is processed in syntax in turn of tau's valuation to [T] on a DP. Mapping syntax-morphosyntax to LF, Agree (Chomsky 2001) is established between tau and a DP in which i-[T] on tau values u-[T] on the DP on the condition that i-[ϕ] on the DP value u-[ϕ] on tau. Furthermore, this analysis, contrary to Pesetsky & Torrego (2007), claims that [ϕ]-features on T^o are crucial in valuing [T] feature on DP.^{2,3}

Index Terms—syntax, tense feature, PF-chain, T-marker, probe goal

I. INTRODUCTION

One of the consequences of the theory of disentangling the notion of interpretability/valuedness and uninterpretability/unvaluedness associated to syntactic features (Pesetsky & Torrego, 2007) is the assumption that [T] on T^o is interpretable but unvalued, which needs to probe, in the sense of Chomsky (2001), to receive a value from an occurrence of a valued instance of [T] on a matching goal. Crucial to Pesetsky and Torrego's (2007) theory, though, is the assumption that there exists in syntax an occurrence of [T] on the subject DP, being uninterpretable and unvalued. With this at hand, Pesetsky and Torrego (2007, p.277) submit that, in the sentence derivation of finite clauses, T probes by virtue of an interpretable unvalued [T], finds the subject with an uninterpretable unvalued [T], being the most local goal, and establishes an Agree relation with it (Chomsky, 2001), as in (1) below.⁴

(1)



This Agree relation results in creating a T-link, composed of the T-properties on T and the T-properties on the subject DP. Though this T-link that T and the subject DP now share is interpretable, due to [T] on T being interpretable, it is still unvalued, due to [T] on the subject DP being unvalued. This, consequently, results in requiring syntax to allow for an additional operation of Agree between T and a further goal that has a valued instance of [T] below in the vicinity of the Probe. This is the finite verb contained in v^o, which has an uninterpretable but valued occurrence of [T], as

¹ T-marker = Tense marker.

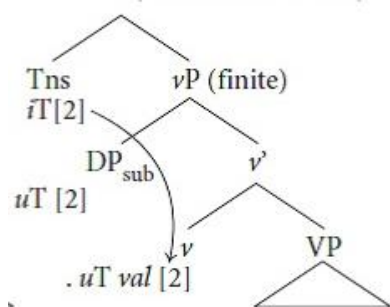
² We represent the notion of feature using the convention 'square brackets' with the feature label. So, [T] means Tense feature and [ϕ] means [ϕ]-features.

³ LF = Logical form interface (Thought interface). PF = Phonological form interface (Sound interface).

⁴ Head category is marked with the notation 'o'. So, T head of TP is notated as T^o.

represented in (2) Pesetsky and Torrego (2007, p. 277).

(2)



As a result of this additional Agree relation, Pesetsky and Torrego (2007) claim, valuation of the unvalued [T] on T by the valued [T] on *v* has an additional desired consequence: The uninterpretable unvalued [T] on the subject DP is valued, since T, the subject DP and *v* are now all in a chain.⁵

Having characterised the spirit of this novel, there arise two theoretical wrinkles facing the view of Pesetsky and Torrego's (2007) theory. On the one hand, this theory assumes an occurrence of [T] existing on DPs, which is challenging, for it is only based on conceptual evidence, as evidenced in (1) and (2). From an interface perspective, especially thought-interface, though, there doesn't seem to be empirical evidence that the subject DP has [T] on it. Pesetsky and Torrego's (2007) theory doesn't provide evidence from syntax, morphology, morphosyntax contributing to the semantic-pragmatic interface (or sound interface) that the subject DP shows in some manner that it has an occurrence of [T] and that this [T] has a role in the interpretive properties of the relevant DP that are pretty clear in the overall derivation and interpretation of the DP. Furthermore, Pesetsky and Torrego's (2007) theory assumes that uninterpretable unvalued [ϕ] on T need not be assumed to take part in Agree between T and the DP since valuation of the unvalued [T] on T is achieved via holding Agree with the valued [T] on *v*.

This research tackles the two theoretical consequences just raised. With evidence from morphosyntax and syntax of a T-marker *tau* and its interaction with clause internal DPs, this research provides empirical, morphological evidence supporting Pesetsky and Torrego's (2007) stipulation that [T] is associated to DPs, which Pesetsky and Torrego's (2007) work already lacks on empirical groundings. On the other hand, this research will argue that, contrary to Pesetsky and Torrego's (2007) argument, it is uninterpretable unvalued [ϕ] on T° that is crucial to the Agree relation resulting in valuing the uninterpretable unvalued [T] on DPs in a mutual manner of Agree, following (Alshamari & Holmberg, 2019).

The research will be an investigation to the linguistic properties of a T-marker *tau*. Interesting about *tau*, which is equivalent in interpretation to the English aspectual marker *just*, is that it interacts with the clause internal constituents, the subject DP and the object DP. The research will explore data such as those in (3).⁶⁷

(3) a. kamal-at **tau** ?al-muxrid3-ah ?al-maʃhad

complete.PST-3SG.F **T.PRT** DEF-director-3SG.F DEF-scene.M

'The director just completed the scene.'

b. kamal-at **tau-ah** ?al-muxrid3-ah ?al-maʃhad
complete.PST-3SG.F **T.PRT-3SG.F** DEF- director-3SG.F DEF-scene.M

'The director, she just completed the scene.'

c. kamal-at-h **tau-h** ?al-maʃhad ?al-muxrid3-ah
complete.PST-3SG.M **T.PRT-3SG.M** DEF-scene.M DEF- director-3SG.F

'The scene, the director just completed it.'

On the groundings that *tau* agrees with DPs, where this agreement is morphologically realised (Ouhalla, 1997) as an agreeing clitic on *tau* associated with and spelling out the ϕ -content of the relevant DP, this clitic will be used as a leading factor for demonstrating the proposal we advance in this paper.

The paper is structured as follows. Section 2 highlights basic assumptions of the minimalist practice of grammar adopted here, including Chomsky's (1995, 2000, 2001) mechanisms and strategies of derivation and interpretation of sentence. Section 3 shows that *tau* is endowed with temporal information, postulating an instance of [T] on it as well as

⁵ When discussing and analysing the data in the following sections, we will abstract away from Pesetsky and Torrego's (2007) characterisation of (un)valuedness/(un)interpretability of features, and follow Chomsky's (2001) model. So, a feature being unvalued presupposes its being uninterpretable. Therefore, throughout the paper, we will use the notation *v*-[T], with italicised *v*, for interpretable valued instance of [T] and *u*-[T], with italicised *u*, for uninterpretable unvalued instance of [T]. This is extended to all types of features.

⁶ Interlinear glossing for all data in this paper is in accordance with Leipzig Glossing Rules available at <https://www.eva.mpg.de/lingua/pdf/Glossing-Rules>.

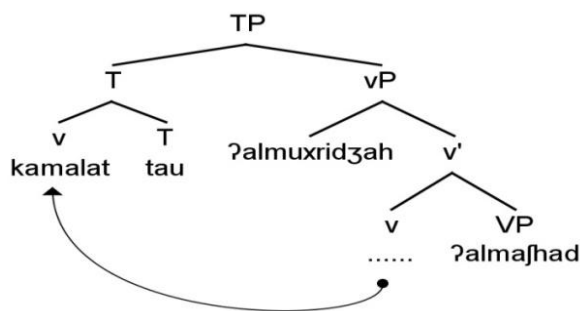
⁷ Current version of Leipzig Glossing Rules doesn't provide a notation for the category 'particle', so we follow conventions used in recent the related literature and represent it as PRT in bold font.

[ϕ]. It also touches on the headedness and cliticisation properties of *tau*. It provides a description of pragmatic distribution of *tau* and syntactic and morphosyntactic properties *tau* displays, including the impact of its semantic import on the proposition of the sentence and the clause DPs. Section 4 advances a proposal on the morphosyntactic properties of *tau*, formulating a proposal that the clitic spelled out on *tau* is a linguistic device that assists LF determine DPs marked with tense. Section 5 is dedicated for a minimalist analysis to *tau*. Section 6 raises some emerging issues that motivate further research. Section 7 concludes the paper.

II. GENERATIVE ASSUMPTIONS OF MINIMALIST PROGRAM

Processing and producing a linguistic product (be it phrase, clause or sentence) starts life in the computation system of language faculty (Chomsky, 1995 *et seq*). In computation, linguistic items (particle, morpheme or marker) that have been selected for the relevant linguistic product undergo the operation Merge, so they merge together, undergoing conditions and constraints imposed by the interface system: the PF-interface (which interprets the sound component of a linguistic product) and the LF-interface system (which interprets the semantic-pragmatic component of a linguistic product). What also takes place in computation are syntactic operations triggered by discourse interpretive properties and other reasons like marking, including case and aspect. One very universally attested operation is movement, proposing a linguistic item from its first Merge syntactic position to another syntactic position, for formal and discourse reasons. Disguised in every derivation is the operation of Agree, where items agree with each other once merged. At the end of a derivation, the linguistic product is sent over to the interface system for legitimacy, where legitimacy can be translated as judging if a product turns well-formedness and ill-formedness in terms of PF-interface and LF-interface interpretation. Using the schemata implemented in the generative practice of the syntactic theory, in terms of X-bar theory, let us see how (3a) above is derived in (4) below.

(4)



We will assume the scenario in (4), in which the lexical verb undergoes v to T movement, due to rich agreement in Arabic, including dialectal Arabic (Ouhalla, 1988, 1994, 1996, 1997; Ouhalla & Shlonsky, 2002). We will also assume that *tau* is first merged at T, being the lexical realisation (spell out) of [T] on T. It is important here to stress that sentence processing is derivational in this framework, meaning that sentence derivation proceeds in a bottom-top manner. This being so, once T is merged in syntax, *tau* is merged at T and spells out [T] on it. This is immediately followed by movement of the lexical verb to T, left-adjoining to T, following Kayne (1994).⁸

III. SYNTACTIC AND MORPHOSYNTACTIC PROPERTIES AND PRAGMATIC DISTRIBUTION OF TAU

In this section, we start by addressing the syntactic-pragmatic impact of *tau* on the associate clause and the clause internal DPs. This includes syntactic, semantic wide-scope and pragmatic effect of *tau* on the interpretive properties of the clause and the clause items. We then highlight some syntactic and morphosyntactic properties that provide important evidence for headedness characterization of *tau*.

A. Syntactic Position, Semantic Scope and Pragmatic Function of Tau

Relating the pragmatic distribution of *tau* to the syntactic position it occupies, *tau* is dubbed a temporal item, T-marker, which marks the proposition expressed by the associate clause, and clause constituents, with TELICITY of an event that has just completed at the utterance time.⁹ In syntax, as represented in (4), *tau* is believed to have first merged at T.

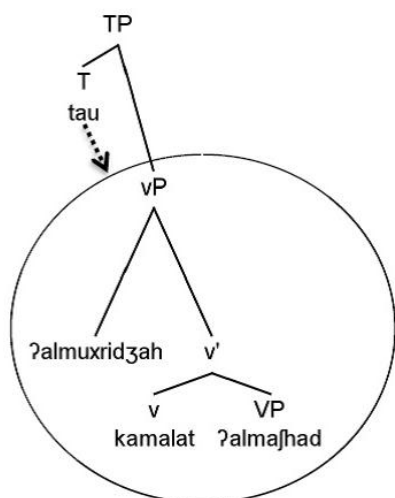
Consider (3a) above, repeated below in (5) and schematically represented in (6) (in (6), we omit irrelevant material here, the lexical verb, to make it easy to follow the semantic wide-scope of *tau*. The propositional content expressed by the clause involved in vP is being circled. The dotted arrow indicates temporal, wide-scoping of *tau*).

⁸ See Alshammari (2019) for work on movement, including sideward movement in Najdi Arabic.

⁹ *Tau* expresses temporal information referred to as *telicity*, the completion of a state of affairs but, slightly different from the conventional use of *telicity*, *tau* information expresses telicity at a very recent point of time in past with respect to utterance time. For ease of exposition, we refer to the temporal information that *tau* expresses as RECENT and represent it by small caps font throughout the paper.

- (5) kamal-at **tau** ?al-muxridz-ah ?al-maʃhad
 complete.PST-3SG.F **T.PRT** DEF-director-3SG.F DEF-scene.M
 ‘The director just completed the scene.’

(6)



The scenario in (6) represents the point of the derivation at which *tau* merges at T, prior to movement of the lexical verb to T. At this point of the derivation, *tau* is semantically wide-scoping the proposition expressed by vP, assigning the event expressed by vP RECENT interpretation. Put another way, this semantic-pragmatic and syntactic behaviour of *tau* can be explained by assuming that *tau* is the PF-interpretation (or PF-spell out) of the temporal information on T interpreted at the LF-interface system as RECENT on the syntactic position T, where tense is interpreted.

B. Morphosyntax of *Tau*: Cliticisation and Headedness Status

Worth noticing here is that *tau* not only interacts with the whole clause, colouring the propositional content of the clause with RECENT interpretation as in (6), it also interacts with nominal items within the clause, entering into an Agree relation with them, in the sense of Chomsky (2001). Consider (3b, c) above, repeated below for convenience as (7a, b) respectively.

- (7) a. kamal-at **tau-ah** ?al-muxridz-ah ?al-maʃhad
 complete.PST-3SG.F **T.PRT-3SG.F** DEF- director-3SG.F DEF-scene.M
 ‘The director, she just completed the scene.’
 b. kamal-at-h **tau-h** ?al-maʃhad ?al-muxridz-ah
 complete.PST-3SG.M **T.PRT-3SG.M** DEF-scene.M DEF- director-3SG.F
 ‘The scene, the director just completed it.’

In addition to the scopal T-properties of *tau* evidenced in (6), gleaned from (7) is the fact that *tau* displays morphosyntactic properties that immediately reflect on its pragmatics and morphological structure. As (7) evidences, *tau* is suffixed with a clitic which agrees in [ϕ] with the DP that *tau* marks in the relevant clause, *ah* agreeing with the subject DP *?almuxridz-ah* in (7a) and *h* agreeing with the object DP *?almaʃhad* in (7b).

What can be deduced from these properties is that *tau* is best characterized as a head category, rather than a maximal projection. We base this argument on the widely held assumption that clitic is a property of head, mostly in Semitic languages (Ouhalla, 1988) and that clitic is argued to target the right side of functional T-items, which is evidenced cross-linguistically (Ouhalla, 1988; Boukhris, 1998).¹⁰ Further, in recent minimalist research on particle that have discourse import, the category particle is believed to instantiate a head in vP domain and in CP domain (Bayer, 1996; Bayer & Obenauer, 2011; Biberauer & Sheehan, 2011; Biberauer et al., 2014; Struckmeier, 2014; Bayer & Trotzke, 2015; Coniglio, 2008; Coniglio & Zegrean, 2010; Alshamari, 2017a,b; Bayer & Struckmeier, 2017), hence, a property that can be extended to all particles merged at functional positions, as *tau*.¹¹

How morphosyntactic property of *tau*, the temporal information that *tau* has, and the assumption that *tau* sets

¹⁰ Boukhris (1998, p. 318) sets the following Tamazight example to show how clitic targets the Futurity marker (data glossing in this paper is set in compliance with Leipzig Glossing Rules).

(i) is ur **dad-tn** clu-x?
 Q NEG FUT-3P.ACC see-I
 ‘Will I not see them?’

¹¹ Extensive research characterise particles as head based on several properties that particles maintain, including the fact that they are immobile in syntax because they scope in their first merge position, thereby they have accomplished their function. We will not discuss the headedness property of particles further but refer the reader to Bayer & Trotzke (2015), Struckmeier (2014), Bayer & Struckmeier (2017), Jarrah & Alshamari (2017), Alshamari (2017a,b), Alshamari (2021) and Alshamari & Al-Ghamdi (2021).

empirical evidence that DPs have tense information, [T], expressed on them can be portrayed will be tackled in the next sections. For this, we start by highlighting the expressiveness property that *tau* maintains, which is captured by the fact that *tau* hosts clitics that express $[\varphi]$ features of DPs, which indicates that *tau* is expressive in that it overtly marks DPs in syntax.

IV. EXPRESSIVENESS PROPERTY OF TAU: MECHANISMS OF EXPRESSING TENSE ON DPs

Natural language makes extensive use of functional categories like Tense, which in some varieties is encoded in syntax as a morphological item (Ouhalla, 1994, 1997) and viewed as a PF-product component of computation (Sigurðsson, 2009; Zeijlstra, 2012; Jarrah, 2019), for which NA sets morphological example, by *tau*. However, with respect to generative, interface-related considerations, what does it mean for a functional item like the T-marker *tau*, on a functional head like T, to host a clitic that agrees in $[\varphi]$ with a certain DP in overt syntax? We link this issue to Miyagawa's (2010) logic of expressiveness property of natural language and Alshamari's (2017a,b) topical clitic generalisation. We dedicate the following sub-section to addressing this issue.

Interpretive Properties and LF-Value Value of the Clitic on Tau

Alshamari (2017a,b) investigates a set of discourse particles that mark various topic values on clause constituents, including DPs, in which case they agree in $[\varphi]$ with the DPs. He argues that spelling out a clitic on a certain topic particle is a sign that the relevant topic particle marks a certain DP and assigns it a certain topic interpretation, depending on the particle involved in the numeration of the relevant clause. In this way, a clitic spelled out on the topic particle, he concludes, is a by-product of a DP valuing $u-[\varphi]$ on the topic particle and the topic particle valuing $u-[\text{Top}]$ on the DP. Furthermore, Miyagawa (2010) argues that $[\varphi]$ is an aspect of the expressiveness property of natural language, being associated to nominal items, expressing the discourse and non-discourse status they have like subjecthood and topichood, for instance.

Reconciling these two lines of thought, the clitic *tau* can well be assumed a consequence of valuing $[\varphi]$ of a DP marked by *tau*.¹² Recall that *tau* marks the whole proposition expressed by the vP in (5=6), in which case *tau* is void of a clitic. Compared with the scenario in (5) and (6), it follows from the clitic phenomena in (7) that what *tau* marks with RECENT is DPs, hence, the theory predicts that there is a kind of relation between the two items, *tau* and the subject DP, in some manner, for certain interpretation. On the groundings that *tau* interacts with the subject, it is not a huge leap to assume that tense is expressed on the subject DP in (7a) and the LF-interface interprets the entity expressed by the subject DP as RECENT.

On theoretical assumptions, then, what we see as a morphosyntactic property of *tau*, carrying a clitic spelling out $[\varphi]$ of a nominal item, mirrors the linguistic expressiveness of *tau* that *tau* performs in overt syntax. This expressiveness property of *tau* indicates that *tau* has a sophisticated mechanism in overt syntax to mark and discharge the functionality it has and the information it carries across the clause. Under this view, the clitic spelled out on *tau* is a linguistic device provided by the grammar of NA in narrow syntax to assist the LF-interface system detect and determine the syntactic item that is endowed with tense information. *tau* serves as a PF-clue that makes LF-interface aware of which clause DP is being marked with RECENT. We therefore advance the proposal in (8) below:

(8) Interface condition on mutual valuation of $u-[\varphi]$ on *tau* and $u-[\text{T}]$ on DPs

*In order for $u-[\text{T}]$ on a DP to be valued, the DP value $u-[\varphi]$ on *tau* and have its φ -content spelled out on *tau* as a clitic so that RECENT is expressed on the DP at LF-interface.*

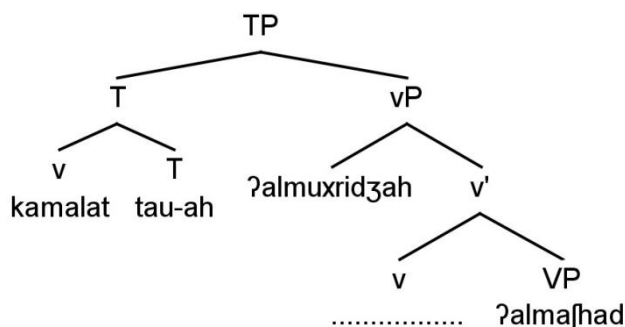
Under the logic in (8), the clitic on *tau* is a by-product of the valuation of $u-[\text{T}]$ on the subject DP by the $v-[\text{T}]$ on *tau* at T, which is achieved once the $v-[\varphi]$ on the relevant DP values the $u-[\varphi]$ on *tau*. This clitic is a computational linkage of tense interpretation on DPs at the interface system, serving as a detector for DPs being associated with tense interpretation.

Further, as an implication on the minimalist theory, this marking mechanism is in par with the minimalist principles; DPs that *tau* marks are marked as far as they are visible to *tau*, without appealing to a Spec Head configuration to agreement. In this case, movement of a DP is only triggered when probe-goal mechanism is not possible.¹³ As we will see, the interaction of *tau* with clause DPs sometimes triggers movement. Compare (7a) represented in (9) with (7b) represented in (10).

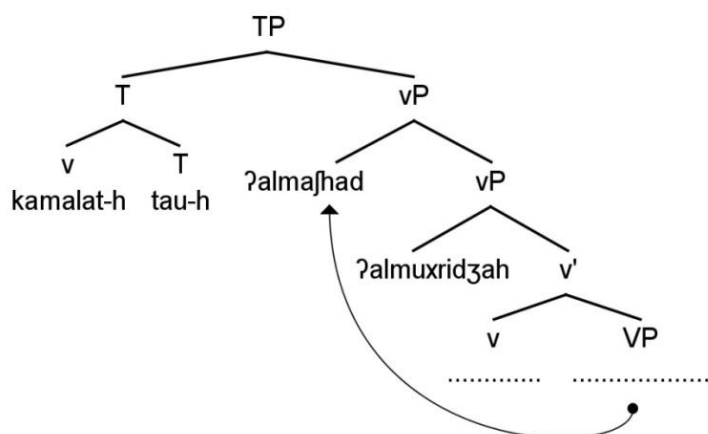
¹² See Alshamari (2017a,b) for argument on this view on clitic in dialectal Arabic context.

¹³ This is due to the goal being invisible and distant from the probe, in a lower phase which is invisible to the probe (Chomsky 2001).

(9)



(10)



While in both cases *tau* marks DPs with tense information RECENT, the object DP in (10), unlike the subject DP in (9), moves in syntax to the edge of the vP phase (Chomsky, 2001). The object DP not remaining in its thematic position indicates that syntax activates certain operations whose role is crucial in terms of full interpretation (Chomsky, 2001), subject to locality conditions (Chomsky, 2019). Such operation is movement, being imposed on syntax by the interface system, as will be shortly discussed in the next section.

V. EXPRESSING [T] ON DPS: MINIMALIST STRATEGIES AND MECHANISMS

With this grasp of the linguistic properties of *tau*, we are now ready to turn to the minimalist investigation to explain how tense is expressed on DPs and how this is achieved in syntax via implementing the expressiveness property that *tau* maintains, as proposed in (8). We first introduce a plausible assumption of the featural grid that *tau* and the associate DPs have, following the model put forth by Chomsky (2001). As a functional T-marker merged on the syntactic position where tense is interpreted, T head of TP, we propose that *tau* has v -[T], which is valued by theory. Given that *tau* hosts a clitic that agrees with a DP, we propose that *tau* has a set of $[\varphi]$ which is deemed unvalued, on conceptual grounds, being on a functional head.¹⁴ For this, we develop a minimalist, feature-based analysis to the syntax and morphosyntax of *tau* with respect to the clause and the clause internal DPs, and then incorporate this analysis to advance a logic-related generalisation on how tense is marked on DPs in overt syntax and is interpreted at the interface system.

A. Feature Valuation and Full Interpretation: Chomsky's (2001) Theory of Agree and Move

We notice in (7a=9) that *tau* agrees in $[\varphi]$ with the subject DP. This results in spelling out the clitic *h* that expresses the $[\varphi]$ features THIRD SINGULAR FEMININE, spelling out the φ -content of the subject DP *?almuxridʒah*. Within the practice of the current minimalist standard proposal (Chomsky, 2001), this proceeds in syntax as follows. *tau* is merged at T^o and has v -[T], interpreted at PF-interface as *tau*, and interpreted at LF-interface as RECENT. This feature and the value it contains suffice to make *tau* licit at the interface system. However, *tau* has an instance of u - $[\varphi]$, which needs to receive a value during the course of the derivation and eventually be deleted before the sentence is transferred to the interface system for interpretation and legitimacy. In next sub-section, we provide a minimalist analysis, using

¹⁴ In Chomsky (2001), being uninterpretable presupposes unvaluedness of a feature. We follow this model of Agree, and use an italicised *u* for unvalued/uninterpretable feature while valued/interpretable feature is notated with an italicised *v*. So, unvalued [T] is u -[T] and valued [T] is v -[T], unvalued $[\varphi]$ is u - $[\varphi]$ and valued $[\varphi]$ is v - $[\varphi]$.

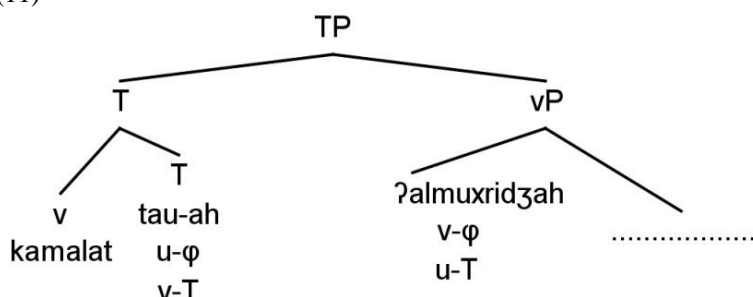
Chomsky’s (2001) probe-goal strategy of agreement and further formal Minimalist assumptions and conditions when need be.

B. Probe-Goal Strategy of Agreement

In the spirit of Minimalism, the syntactic operation Agree, activating a probe-goal relation, is triggered by an occurrence of a *u*-feature on a certain functional head, a probe. This feature needs to get a value during the course of the derivation, by searching in the *c*-command domain of the probing item for a matching *v*-feature on a goal.¹⁵ Perusing this approach to sentence analysis, in practice, with its *u*-[ϕ], *tau* ϕ -probes in its *c*-command domain and finds the subject with the matching *v*-[ϕ]. Restricting to facets of this approach, it will be shown that Agree that holds between *tau* and the relevant DP is of mutual manner, which means both of the probe and the goal, each carrying an occurrence of a distinct *u*-feature, needs to get a value (Alshamari, 2017a,b; Alshamari & Holmberg, 2019).

We represent the point of derivation at which Agree holds between *tau* and the subject DP in (11) below.

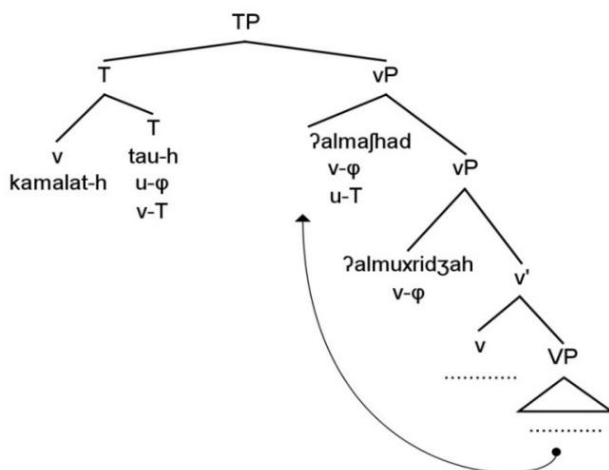
(11)



The schemata in (11) shows that Agree is established between *tau* and the subject DP. *tau* ϕ -probes the subject DP and *v*-[ϕ] on the subject DP values *u*-[ϕ] on *tau*. Associating this with the proposal raised in in (8), as a result of valuing *u*-[ϕ] on *tau*, the clitic is spelled out on *tau*, depending on the ϕ -content of the valuator, the goal, which is here being the subject DP. What is more, holding to (8), the fact that the clitic *ah* on *tau* spells out the ϕ -content of the subject DP is explained by the fact that it is the subject DP that values *u*-[ϕ] on *tau*, which in turn, results in *tau* valuing *u*-[T] on the subject DP and identifying the subject DP as RECENT at the LF-interface system.

The scenario in (7b) is straightforward. Agree takes place between *tau* and the object DP, where evidence is provided by the fact that the clitic *h* spelled out on *tau* agreeing the object DP, spells out the grammatical relation THIRD SINGULAR MASCULINE. We discuss the observation that the object DP moves across the subject DP in the next subsection.

(12)



At this point of the derivation, all the occurrences of unvalued features have received a value during syntax, and are deleted before the sentence is handed over to the interface system. However, a linguistic inquiry that emerges is: what accounts for the assumption that [T] exists on the subject DP in (11) and the object DP in (12)? In more formal way, what is the empirical (syntactic) and conceptual (semantic) evidence that [T] lives on these DPs and, moreover, that [T] is actually expressed on DPs in syntax and interpreted at the LF-interface? How can we peruse this line of reasoning on both conceptual and empirical groundings?

We here develop further the proposal we formulated in (8), on the expressiveness property of *tau* (the clitic on). From

¹⁵ Movement in this sense applies in case the goal is invisible to the probe, be it Greed-driven movement (Bošković 2007) in which case the goal wants to be valued or altruism-triggered movement (Lasnik 1995), in which case the goal moves to value a *u*-feature on the probe.

an interface view, any item derived in syntax needs to be legitimised at the interface system, PF and LF, contributing to the full interpretation of the associated linguistic product (Chomsky, 1995). Under the spirit of this logic, the clitic phenomenon has been extensively analysed in Arabic varieties, though without reasonable groundings, where it is stipulated that a clitic spelled out on lexical verb, for instance, is a sign of movement of the associate DP. Recent generative, minimalist work has shown that clitic is not a consequence of movement but a PF-product that is derived in syntax by an Agree relation held between a functional head, be it PF-spelled or PF-null, and a phrase (Ouhalla, 1994, 1997; Alshamari, 2017a,b) and that it is the output of the Agree for some functional and discursal marking reasons, as in (12) and (12). To formulate a plausible theory, we reconcile this PF-product-view on clitic with Pesetsky and Torrego's (2007) theory.¹⁶ We reformulate (8) above in (13) below, adopting Ouhalla's (1997) principle of morphological realisation.¹⁷

(13) Clitic is a morphological device for LF-interface interpretation of tense on DPs

Clitic is a morphological realization of the Tense feature on DPs. It is the PF-output of the process of tense valuation on a DP that links up the marked DP to tau in a PF-chain in syntax and delivers this PF-chain to the LF-interface for tense, RECENT interpretation.

Under this view, and with the DP being visible to the LF-interface, tense is expressed on DPs in syntax. That is, the subject, not the object DP for instance, is assigned RECENT information at the LF-interface by virtue of the clitic, being co-indexed with the subject DP, spelled out at the PF-interface. This immediately explains the motivation behind the condition the interface system imposes on computation that syntax provides a linguistic device to assist LF-interface to determine what category has a value of tense, which happens to be morphosyntactic tool here, clitic on *tau*. Mapping syntax to interpretive, interface system, then, in (11), once the v -[ϕ] on the subject DP values u -[ϕ] on *tau*, in turn, simultaneously (Chomsky, 2019), v -[T] on *tau* values the u -[T] on the subject, creating a PF-chain that contains a T-link that LF-interface will read at phase Transfer.

We now return to the case of movement of object DP we raised above, shown in (12). Considering the featural grid of the object DP, we can see that it has its [ϕ] lexically valued. Maintaining current assumption of minimalist practice (Bošković, 2007; Holmberg et al., 2017), It follows that the object DP is not expected to move, for it would only move if it has an unvalued feature that needs to get a value which would have otherwise triggered phasal movement of the object. The phenomenon of movement of the object DP and the clitic on *tau* agreeing with the object DP, then, supports the proposal that (i) the object DP has u -[T], which can further be explained by the fact that (ii) the object DP moves to the edge of v P (Chomsky, 2000, 2001) to be local ad potentially visible to *tau*. We discuss this issue in the next subsection.

C. Movement of the Object DP

It's now already established that there are syntactic strategies and operations, agreement and movement, activated in the computational system and triggered by certain interpretive properties of *tau*, which have direct impact on the associate clause and the clause items, including marking DPs and the clitic spelled out on the DPs. Further, we already highlighted that the derivation of constructions involving *tau* and include such effects is in compliance with the minimalist principles, requiring as less efforts in syntax as possible. This is captured by the fact that the subject DP is marked by *tau* in situ, at the thematic position, Spec v P. However, evidenced in (12) is the fact that the object DP moves to the phase edge, which is directly explained if we maintain the view that the object DP cannot hold an Agree relation with *tau*, a phenomenon we analyse in terms of phase theory (Chomsky, 2001, 2008). On conceptual groundings, in theory, the object DP has an instance of unvalued feature that would otherwise be transferred to the interface system unvalued, resulting in derivation crash (Chomsky, 1995, 2001). Hence, this movement of the object DP is phasal, escaping the transfer of v P phase because it has u -[T] (Bošković, 2007; Holmberg et al., 2017). This means that the object DP would have remained in situ in syntax, had it been visible to the probing *tau*. However, being in the lower v P phase, it has to move to escape the transfer of the phase complement to get local to *tau*. In practice, then, this movement results in the object DP c-commanding the subject DP and, consequently, being visible to *tau*.

VI. FURTHER ISSUES

We have proposed that the clitic on *tau* is a PF-product, derived in syntax and interpreted at the LF-interface as a member of a chain that links up *tau* in the tense domain to the DP that *tau* marks with RECENT. Hence, *tau* and the clitic spelled out on *tau* are empirical, diverse evidence, ranging from morphological to morphosyntactic, for Pesetsky and Torrego's (2007) theory that tense feature [T] is associated to and expressed on DPs. Under the view that natural language operates in a minimalist manner (Chomsky, 2001), one of the issues the analyses in this research motivate is that clitic accomplishes more than what is normally assumed to do in the literature. A clitic, as we have seen, has more properties than, for instance, being topical (Ouhalla, 1994, 1997; Frascarelli & Hinterhızl, 2007; Frascarelli, 2008;

¹⁶ See Kramer (2014) for a similar view but without appealing to discourse or functional reasoning to the existence or merge of clitics on object DPs.

¹⁷ A simple characterisation of Ouhalla's (1997) morphological realisation is merger of a particle in the structure.

Bianchi & Frascarelli, 2010; Alshamari, 2017a,b). It is shown in this research that a clitic has an LF-property, being involved in a T-link, linking the T-marker with the tense marked item in syntax while identifying the identity of the tense marked item at the Transfer step of the derivation and the LF-interface. The last valuable insight this research provides into work in natural language is that articulated clausal functional spines in structure can be variable with respect to expressiveness. The distributions of *tau*, being clitic host, and hence, serving as a detector of tense marked items at the interface system can well be an argument for research on language development. Certain varieties might have tense expressed on DPs, as advanced in Pesetsky and Torrego's (2007), but might not have a sophisticated morphologically realised device like *tau*, a property of natural language which can be a good field of research pertinent enough for linguist inquiries in this regard.

VII. CONCLUSION

This research has investigated the pragmatics, syntax and morphosyntax of a T-marker *tau* in NA, arguing that it marks the associate clause and the clause DPs with tense, RECENT interpretation. As a morphological device derived in syntax, *tau* provides a wealth of empirical evidence to the proposal put forward by Pesetsky and Torrego's (2007) theory that [T] exists on DPs. Holding a range of analyses to the syntax and morphosyntax of *tau*, exploring a set of NA data, output of this research develops Pesetsky and Torrego's (2007) stipulative character of [T] on DPs and advances a proposal that this [T] is morphologically realised and is indeed a property of DPs that sometimes can be overtly encoded in syntax, which can be assumed to be extended to other languages. On the basis that *tau* spells out the ϕ -content of a DP that it marks in syntax, it is proposed that the computational system, narrow syntax activates this morphosyntactic operation, linking the DP marked by *tau* with RECENT interpretation with the T-marker *tau* in a PF-chain, and sending this this PF-chain to the interface systems, where it is interpreted at the LF-interface as RECENT. Furthermore, though, this research abstracts away from one of the core assumptions of Pesetsky and Torrego's (2007) theory and argues that u -[ϕ] on T are crucial in valuing the stipulated instance of u -[T] on the relevant DP. Analyses of this research have shown that the clitic on *tau* acts as a morphological device linking the marked DP with the T-marker *tau* being all contained in a PF-chain that has RECENT interpretation, is the source of valuing [T] on DPs.

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