

# Derivations of Transparent Free Relatives by Discontinuous Spellout

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## Abstract

This paper explores the derivation of transparent free relatives (TFRs), exemplified by *John is what you might call a walking dictionary*. We propose that the pivot (*a walking dictionary*) originally forms a small clause with *what*, then internally pair-merges with *what*, and the complex phrase thus formed further undergoes movement to the TFR-initial position, Spec, CP. Furthermore, we claim that the complex phrase undergoes Radford's (2004) discontinuous spellout through which *what* and the pivot are spelled out at different positions, i.e. at the clause-initial position and the post-verbal one, respectively.

**Keywords:** transparent free relatives, standard free relatives, multidominance, sideward movement, internal pair-merge, discontinuous spellout

## 1. Introduction

It is widely known that there are two types of free relatives: standard free relatives (SFRs) and transparent free relatives (TFRs). Although they look similar on the surface, they show different behaviors. The first difference comes from number agreement. Consider the SFR in (1a) and the TFRs in (1b) and (1c).

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- (1) a. What I read last summer was/\*were written by Hemingway.  
 (McCawley (1998: 758))
- b. What seem to be **several jets** \*was / were landing on the freeway.
- c. What seems to be **a jet** was / \*were landing on the freeway.  
 (Citko (2011: 98))

(1a) shows that the SFR headed by the simplex *wh* phrase *what* triggers singular agreement. On the other hand, (1b) and (1c) show that the bold-faced part determines the number value of the TFRs that have the same simplex *wh* phrase *what*. In this paper, following Grosu (2016), we call the bold-faced part “the pivot.”

Second, while the syntactic category of SFRs is the noun as in (1a), that of TFRs is determined by the pivot. Thus, the TFRs in (2) are analyzed as behaving as an adjective in the same way as the pivot *stupid* does:

- (2) a. John is what you might call **stupid**.
- b. \*What you might call **stupid** just walked in. (Wilder (1999: 689))

The TFR with the adjectival pivot occurs in the predicative complement position in (2a) but is prohibited from occurring in the subject position in (2b). This contrast tells us that the syntactic category of TFRs depends on that of the pivot.

Third, while SFRs cannot occur in the post-verbal position of the existential *there*-sentence, TFRs can be a *there*-associate if the pivot is an indefinite nominal.

- (3) a. \*There is what you ordered on your desk.
- b. There is what John might call **a banjo** on his desk.
- c. \*There is what John might call **his banjo** on his desk.  
 (Schelfhout et al. (2004: 2))

(3a) is ungrammatical because SFRs have a definite interpretation. In contrast, the definiteness of TFRs depends on those of the pivot. TFRs with an indefinite pivot do not induce the definiteness effect, whereas TFRs with a definite pivot do. This is shown in (3b) and (3c), respectively.

Thus, the properties of TFRs such as syntactic number, syntactic category, and definiteness are determined by the pivot, and the pivot behaves as if it were in the matrix clause. In previous studies, the transparency of TFRs is explained mainly in two ways; (i) the pivot directly interacts with the matrix clause (Ha (2012), Riemsdijk (2000, 2006)); (ii) the pivot indirectly interacts with the matrix clause (Grosu (2003, 2016)). In this study, after reviewing these previous studies, we try to account for the transparency of TFRs by proposing that the pivot internally pair-merges with *what* and that *what* in Spec, CP and the pivot in the base-generated position are phonologically realized by discontinuous spellout (Radford (2004)).

This study is organized as follows. Section 2 briefly reviews some of the previous studies of TFRs, namely the multidominance (MD) analysis (Riemsdijk (2000, 2006)), the sideward movement (SM) analysis (Ha (2012)), and the free relative (FR) analysis (Grosu (2003, 2016)). Section 3 proposes an alternative analysis of TFRs. Section 4 shows that our proposal correctly derives the properties of TFRs. Section 5 concludes the study.

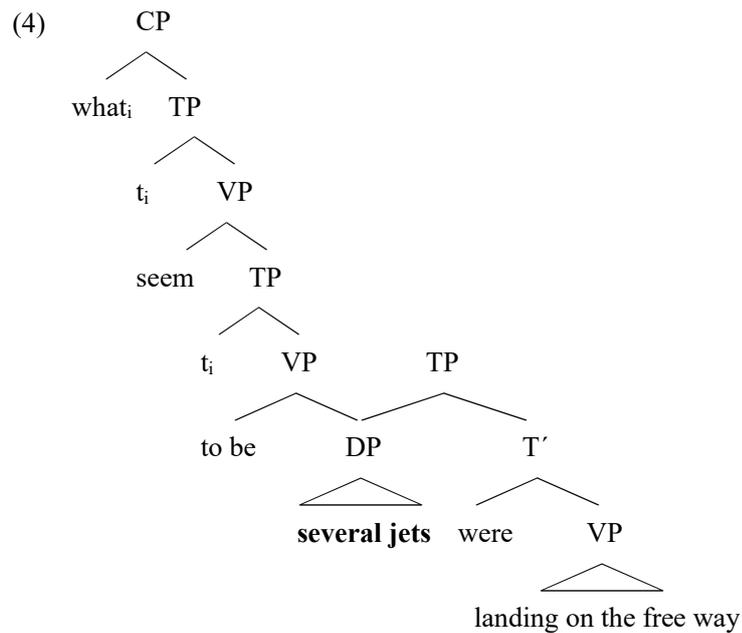
## 2. Previous Analyses

In this section, we will introduce some previous studies of TFRs, namely, the MD analysis by Riemsdijk (2000, 2006), the SM analysis by Ha (2011), and the FR analysis by Grosu (2003, 2016), and point out their problems.

### 2.1.1. The Multidominance Analysis

Riemsdijk (2000, 2006) propose that TFRs have the MD structure, in which the pivot is simultaneously dominated by the element in the matrix clause and the

one in the TFR clause. This analysis assigns to the TFR in (1b) the following structure:



In this structure, the pivot *several jets* is contained in the matrix clause and the TFR clause at the same time. What is more, since the plural subject *several jets* directly occupies the matrix subject position, it agrees with the matrix verb. Thus, this analysis can explain why the TFR allows plural agreement in (1b).

Furthermore, it also explains other relationships between the pivot and the matrix clause such as the availability of an idiomatic reading, the possibility of anaphor binding from the matrix clause, and sub-extraction from the pivot as shown in (5).

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- (5) a. \*Nick lost what his marbles cost in the store.  
 b. Nick lost what according to the dictionary are called **his marbles**.  
 c. \*They<sub>i</sub> live in what Fred uses each other<sub>i</sub>'s backyard for.  
 d. They<sub>i</sub> live in what is often referred to as **each other<sub>i</sub>'s backyard**.  
 (Riemsdijk (2006: 1691))  
 e. \*Who<sub>i</sub> did you order what represented the sole possession of t<sub>i</sub>?  
 f. Who<sub>i</sub> did you order what was advertised as **a first-rate picture of t<sub>i</sub>**?  
 (Riemsdijk (2006: 1690), slightly modified)

Let us first consider (5a) and (5b). (5a) cannot have an idiomatic reading since *lost* does not take *his marble* as its complement. On the other hand, the TFR in (5b) does have an idiomatic interpretation, although *lost* and *marbles* do not seem to form the idiom chunk. Second, while the reciprocal *each other* in the SFR clause cannot be bound by the matrix subject as in (5c), the one in the TFR clause can as in (5d). Third, the extraction of *who* from the SFR clause is impossible, as observed in (5e) because it violates the complex NP constraint (Ross (1967)), which prohibits the movement from a relative clause. In contrast, the extraction of *who* from the TFR clause is possible as in (5f).

The MD analysis directly captures these relationships between the pivot and the elements in the matrix clauses by assuming the following structures:

- (6) a. Nick lost ————— **his marbles**  
 what according to the dictionary are called /  
 b. They<sub>i</sub> live in ————— **each other<sub>i</sub>'s backyard**.  
 what is often referred to as /  
 c. Who<sub>i</sub> did you order ————— **a first-rate picture of t<sub>i</sub>**?  
 what was advertised as /

As shown in these representations, the pivot is contained in the matrix clause and the TFR clause at the same time. In the matrix clause, the verb directly takes the pivot as its complement. Therefore, we get an idiomatic reading in (6a), *they* can locally bind the anaphor *each other* in (6b), and the extraction from the pivot is possible in (6c).

Although the MD analysis accounts for the transparency of the TFRs in (5), this analysis suffers from the fact that the matrix clause and the TFR clause show some interactions with each other in an unpredictable way when it comes to licensing of a Negative Polarity Item (NPI) and variable binding, as illustrated in (7):

- (7) a. John is not what anyone would call **clever**. (den Dikken (2005: 99))  
 b. Every student<sub>i</sub> was kissing what he<sub>i</sub> considered to be **an attractive woman**. (Kluck (2011: 98))

The TFR clause in (7a) contains the NPI *anyone*, which is licensed by *not* in the matrix clause. In (7b), *he* is bound by the quantified antecedent *every student*. These facts show that the element in the matrix clause c-commands the elements in the TFRs. The MD analysis roughly gives (7) the following structures:

- (8) a. John is not ————— **clever**  
           what anyone would call ————  
 b. Every student<sub>i</sub> was kissing ———— **an attractive woman**  
           what he<sub>i</sub> considered to be ————

In both structures, the TFR clause is not c-commanded by the elements in the matrix clause. This is problematic for the MD analysis because the NPI *anyone* will not be licensed by *not* in (8a) and the pronoun *he* will not be bound by *every student* in (8b).

### 2.1.2 Sideward Movement Analysis

Next, let us turn to Ha's (2012) SM analysis, where the pivot "moves" from the TFR clause to the matrix clause under the sideward movement proposed by Nunes (2001, 2004). Let us show how the SM analysis constructs (1b (=9)).

- (9) What seem to be **several jets** \*was / were landing on the freeway.  
(Citko (2011: 98))

First, the TFR clause and the matrix clause are constructed separately, and the pivot sideward-moves from the TFR clause to the matrix clause. Specifically, the computational system makes the copy of the pivot *several jets* in the TFR clause and then the copy merges in the matrix TP as in (10).

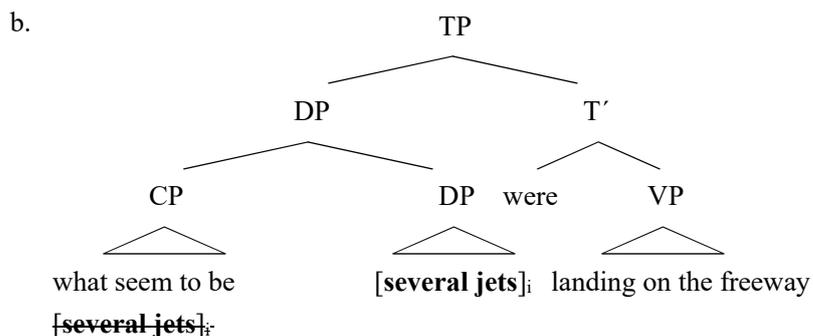
- (10) a. TFR = [<sub>VP</sub> be [**several jets**]<sub>i</sub>]  
b. Matrix = [<sub>TP</sub> [**several jets**]<sub>i</sub> were landing on the freeway]

After the sideward movement, the derivation further proceeds.

- (11) a. TFR = [<sub>CP</sub> what seem to be [**several jets**]<sub>i</sub>]  
b. Matrix = [<sub>CP</sub> C [<sub>TP</sub> [**several jets**]<sub>i</sub> were landing on the freeway]]

When both derivations are completed, the TFR clause adjoins to the sideward-moved pivot in the matrix clause, and the lower copy in the TFR clause is deleted.

- (12) a. [[what seem to be ~~several jets~~<sub>i</sub>] [**several jets**]<sub>i</sub>] were landing on the freeway.



As can be seen from this structure, the pivot *several jets* occupies the matrix subject position, agreeing with the matrix verb. Therefore, the matrix verb shows plural agreement in (1b).

Unlike the MD analysis, the SM analysis accounts for the acceptability of (7). For example, this analysis gives (7b), repeated in (13a), the structure in (13b).

- (13) a. Every student<sub>i</sub> was kissing what he<sub>i</sub> considered to be **an attractive woman**. (Kluck (2011: 98))
- b. Every student<sub>i</sub> was kissing [[what he<sub>i</sub> considered to be ~~an attractive women~~<sub>j</sub>] [**an attractive women**]<sub>j</sub>]

In (13b), the TFR clause is subordinated to the matrix clause. Therefore, the matrix quantifier *every student* can bind *he* in the TFR clause.

However, the SM analysis cannot produce the grammatical sentence such as (14), where the pivot *a meteor* is in the string-medial position in the TFR clause.

- (14) I just saw what might well be taken for **a meteor** by naïve observers when visibility is rather poor. (Grosu (2003: 288))

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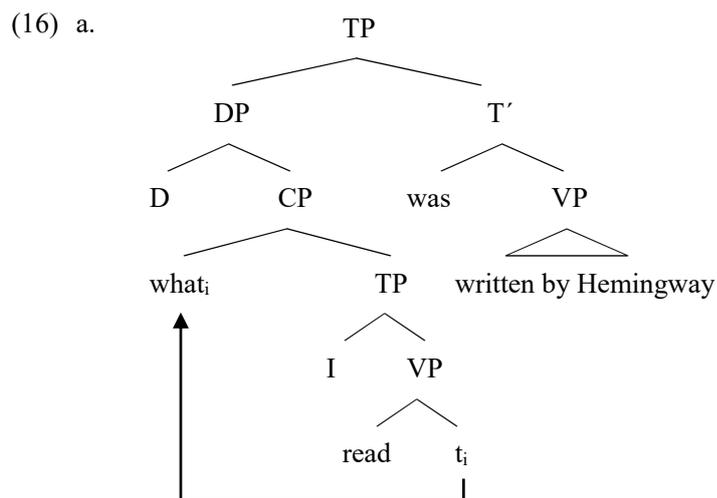
In the SM analysis, the copy of the pivot that survives deletion is the higher one in the matrix clause. Then, this analysis predicts that when some elements follow the deleted copy of the pivot within TFR clauses, they precede the pronounced copy of the pivot in the matrix clause. In other words, the pivot is obligatorily realized in the rightmost position in TFR clauses, as shown below.

- (15) ??I just saw [[what might well be taken for ~~a meteor~~<sub>i</sub> by naïve observers when visibility is rather poor] [a meteor]<sub>i</sub>]

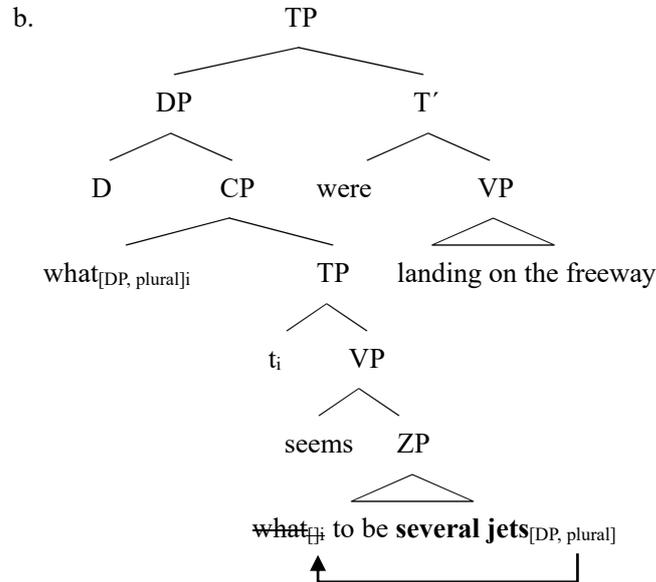
Thus, the linear order attested in (14) cannot be accounted for by the SM analysis.

### 2.1.3. The Free Relative Analysis

Finally, let us consider the Free Relative analysis proposed by Grosu (2003, 2016), which assumes that SFRs and TFRs have basically the same structure. For example, the FR analysis gives the SFR in (1a) and the TFR in (1b) the structures in (16a) and (16b), respectively.



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In this analysis, TFRs are headed by a null external head, which has the same category as the pivot (the null head is D in (16a) because the pivot is DP *several jets*. If the category of the pivot is adjective, the null head will be A). However, the pivot is completely embedded in the TFR clause. How does the pivot interact with the matrix clause? The FR analysis assumes that *what* is under-specified for syntactic category and number, and that the pivot's categorial and number specifications are transferred to *what* in a small clause or a copular construction which Grosu (2016) calls ZP. After *what* receives categorial and number specifications from the pivot, it moves to Spec, CP, and agrees with the null external head. Thus, TFRs indirectly gets the same properties as the pivot. Let us consider how this approach will explain the plural number agreement in (1b). In (16), *what* is assigned the features such as plural from the pivot and it moves to Spec, CP. Then, *what* agrees with the null external head D. As a result, the entire TFR acquires plural number feature, and the matrix verb shows plural agreement with the TFR.

However, this approach cannot explain some differences between SFRs and

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TFRs, because the FR analysis assumes that SFRs and TFRs are analyzed in a uniform manner. For instance, the FR analysis will give (5c) and (5d) the structure in (17a) and (17b), respectively.

- (17) a. \*They<sub>i</sub> live in [<sub>DP</sub> D [<sub>CP</sub> what<sub>j</sub> Fred uses each other<sub>i</sub>'s backyard for t<sub>j</sub>]]  
 b. They<sub>i</sub> live in [<sub>DP</sub> D [<sub>CP</sub> what<sub>j</sub> is often referred to [<sub>ZP</sub> t<sub>j</sub> as **each other**'s backyard]]]

Both in the SFR clause and the TFR clause, *each other* and the antecedent *they* are not contained in the same clause. In other words, *they* cannot locally bind *each other*. Then, the FR analysis predicts that (17a) and (17b) induce a violation of Binding Condition A, but in fact (17b) is acceptable.

Likewise, under the FR analysis, (5e) and (5f) have the structure as in (18a) and (18b), respectively.

- (18) a. \*Who<sub>i</sub> did you order [<sub>DP</sub> D [<sub>CP</sub> what<sub>j</sub> t<sub>j</sub> represented the sole possession of t<sub>i</sub>]]  
 b. Who<sub>i</sub> did you order [<sub>DP</sub> D [<sub>CP</sub> what<sub>j</sub> was advertised [<sub>ZP</sub> t<sub>j</sub> as **a first rate picture of t<sub>i</sub>?**]]]

The FR analysis extracts *who* from the relative clause CP both in the SFR and in the TFR, violating the complex NP constraint (Ross (1967)). Thus, if TFRs and SFRs have the same structure as Grosu (2003, 2016) argues, (18b) should also be ungrammatical, contrary to the fact.<sup>1</sup>

## 2.2. Interim Summary

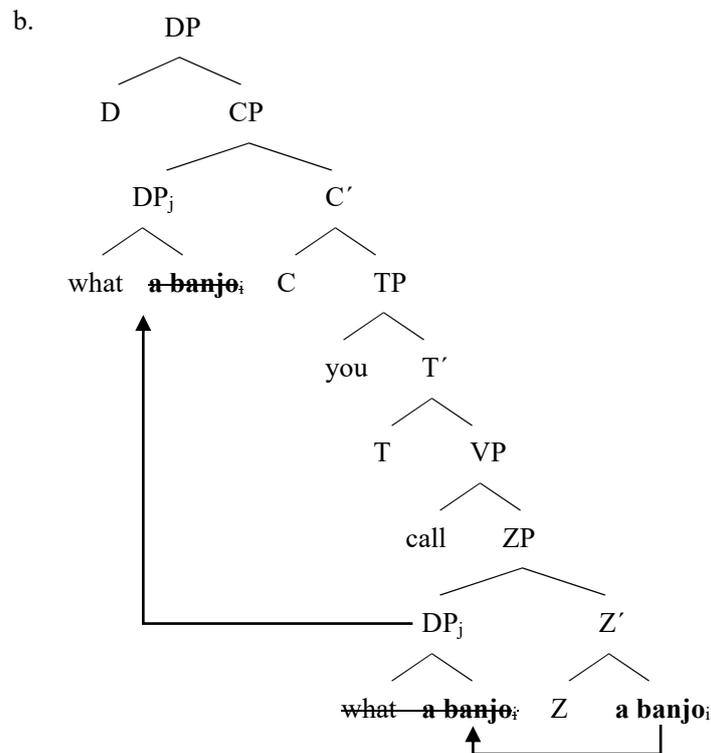
So far, we have briefly reviewed the previous analyses of TFRs, namely the MD analysis by Riemsdijk (2000, 2006), the SM analysis by Ha (2012), and the FR

analysis by Grosu (2003, 2016). The MD analysis cannot account for the c-command relation between the elements in the matrix clause and the elements in the TFR clause. The SM analysis has difficulty in forming correct linear order when something follows the pivot. The FR analysis also faces some problems. For example, it fails to predict the possibility of extraction from the pivot. In the next section, we will propose an alternative analysis of TFRs.

### 3. Proposal and Theoretical Assumptions

In this section, we present our proposal and theoretical assumptions. With respect to the structure of TFRs, we follow Grosu (2003, 2016) in that the pivot and *what* are base-generated in ZP, and TFRs are headed by a null head which has the same category as the pivot. We propose that the pivot internally pair-merges with *what*, and the phrase composed of *what* and the pivot moves to Spec, CP so that the pivot agrees with the null head.<sup>2</sup> For example, in the case like (3b), repeated in (19a), the pivot *a banjo* undergoes internal pair-merge to *what* within ZP, and the resulting phrase [*what a banjo*] moves to Spec, CP, as shown in (19).

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(19) a. There is what John might call **a banjo** on his desk.

In (19), the TFR is headed by a null D head because the pivot is the DP *a banjo*. Note that the spellout position of the pivot is not the moved position but the base-generated position. This way of copy deletion is what Radford (2004: 190) calls discontinuous spellout, by which Radford accounts for the fact that a phrase that moves to CP sometimes leaves one of its constituents stranded like (20).

- (20) a. What hope *of finding any survivors* could there be?  
 b. What hope could there be *of finding any survivors*?  
 c. What proof *that he was implicated* have you found?  
 d. What proof have you found *that he was implicated*?

(Radford (2004: 189))

In (20a), the italicized PP and the *wh* phrase undergo movement to the sentential initial position. On the other hand, the PP is left in the base-generated position in (20b). Likewise, the italicized complement of the noun *proof* in (20c) takes the string-final position in (20d). Radford (2004) assumes that even though these phrases, for example, the *wh* phrase *what hope* and the PP *of finding any survivors*, seem to be base-generated at the positions where they are pronounced, they form a constituent and move together in syntax. In case like (20b) and (20d), the higher copy of PP or CP is deleted, and the bottom copy gets pronounced, as shown in (21a) and (21b), respectively.

- (21) a. [What hope ~~[of finding any survivors]]<sub>i</sub>; could there be [~~what hope~~  
[of finding any survivors]]<sub>i</sub>?~~
- b. [What proof ~~[that he was implicated]]<sub>i</sub>; have you found [~~what proof~~  
[that he was implicated]]<sub>i</sub>?~~

Adopting this mechanism of discontinuous spellout, we assume that the pivot in Spec, CP is deleted and the one in the base-generated position is phonetically realized.<sup>3</sup> Notice that the application of discontinuous spellout in (20) is optional, as shown by, for example, the pair of the examples in (20a) and (20b). In contrast, discontinuous spellout should apply obligatorily to yield correct word order in TFRs. To circumvent this problem, we stipulate that the head Z of the copular/small clause in (19) has to attach to an element that has phonological content. If the pivot in the base-generated position is deleted and the one in Spec, CP is pronounced, there is no element that the Z head can attach to. Thus, the pivot is pronounced in the base-generated position.

#### 4. Deriving the Properties of TFRs

Now let us show how our proposal accounts for the transparency of TFRs. First, the pivot participates in the subject verb agreement, as shown in (1b), repeated here

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in (22a).

- (22) a. What seem to be **several jets** \*was / were landing on the freeway.  
(Citko (2011: 98))
- b. [<sub>DP</sub> D [<sub>CP</sub> [what **several jets**<sub>i</sub>]<sub>j</sub> [<sub>C'</sub> C [<sub>TP</sub> t<sub>j</sub> seem to [<sub>ZP</sub> [~~what several jets~~<sub>i</sub>]<sub>j</sub> [<sub>Z'</sub> be **several jets**<sub>i</sub>]]]]]]] were landing on the free way.

In (22b), the moved pivot has plural number value to agree with the D head. Thus, the entire TFR has plural number value in (22), and then triggers plural agreement with the matrix verb.

Second, the TFR with an adjectival pivot cannot appear in an argument position as in (2b), repeated in (23a). Following Grosu (2003, 2016), we assumed that the external head has the same category as the pivot, as illustrated in (23b).

- (23) a. \*What you might call **stupid** just walked in. (Wilder (1999: 689))
- b. \* [<sub>AP</sub> A [<sub>CP</sub> [what **stupid**<sub>i</sub>]<sub>j</sub> [<sub>C'</sub> C [<sub>TP</sub> you might call [<sub>ZP</sub> [~~what stupid~~<sub>i</sub>]<sub>j</sub> **stupid**<sub>i</sub>]]]]]] just walked in.

In (23b), the TFR is headed by the null A because the pivot is the adjectival phrase *stupid*. Thus, (23) is ungrammatical since the adjectival phrase cannot appear in an argument position.

Third, (3b), repeated as (24a), shows that a TFR can be the associate of the *there*-construction when the pivot is indefinite. Under our proposal, it is analyzed in (24b).

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- (24) a. There is what John might call **a banjo** on his desk.  
 (Schelfhout et al. (2004: 2))
- b. There is [<sub>DP</sub> D [<sub>CP</sub> [what ~~a banjo~~<sub>i</sub>]<sub>j</sub> [<sub>C'</sub> C [<sub>TP</sub> there is [<sub>ZP</sub> [~~what a banjo~~<sub>i</sub>]<sub>j</sub> [<sub>Z'</sub> as **a banjo**<sub>i</sub>]]]]]]] on your desk.

In (24b), the pivot *a banjo* is indefinite. This indefinite pivot agrees with the D head and the entire TFR gets the indefiniteness feature. Therefore, the TFR is allowed as the *there*-associate of the existential *there*-sentence without inducing the definiteness effect.

Fourth, an idiomatic reading is possible in TFRs even though there seems to be no idiom chunk necessary for the idiomatic interpretation, as we saw in (5b). Our proposal gives sentence (25a) the structure in (25b).

- (25) a. Nick lost what according to the dictionary are called **his marbles**.  
 (Riemsdijk (2006: 1691))
- b. Nick lost [<sub>DP</sub> D [<sub>CP</sub> [what ~~his marbles~~<sub>i</sub>]<sub>j</sub> [<sub>C'</sub> C [<sub>TP</sub> according to the dictionary <sub>t<sub>j</sub></sub> are called [<sub>ZP</sub> [~~what his marbles~~<sub>i</sub>]<sub>j</sub> **his marbles**<sub>i</sub>]]]]]]]

In (25b), the pivot *his marble* moves to Spec, CP and agrees with the D head. Thus, it forms the idiom chunk with *lost* in the matrix clause. This is the reason why (25a) has an idiomatic reading.

Fifth, in (5d), repeated as (26a), the anaphor *each other* is bound by *they*, although it seems to be embedded in the TFR clause. (26a) has the structure in (26b) in our approach.

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- (26) a. They<sub>i</sub> live in what is often referred to as **each other<sub>i</sub>'s backyard**.  
 (Riemsdijk (2006: 1691))
- b. They<sub>i</sub> [<sub>VP</sub> t<sub>i</sub> live in [<sub>DP</sub> D [<sub>CP</sub> [what ~~each other<sub>i</sub>'s backyard~~]<sub>j</sub>]<sub>k</sub> [<sub>C'</sub> C [<sub>TP</sub> t<sub>k</sub> is often referred to [<sub>ZP</sub> [~~what each other<sub>i</sub>'s backyard~~]<sub>j</sub>]<sub>k</sub> [<sub>Z'</sub> as **each other<sub>i</sub>'s backyard**]<sub>j</sub>]]]]]]].

As (26b) shows, the pivot with the anaphor *each other's backyard* is in Spec, CP. One might wonder whether the element in Spec, CP can be locally bound from the matrix clause. Quicoli (2008) proposes that local binding is possible when the binder and the anaphor are in the same phase. Let us take (27) for an example.

- (27) John<sub>j</sub> said [<sub>CP</sub> that Bill<sub>i</sub> [<sub>VP</sub> t<sub>i</sub> saw [a picture of himself<sub>i/\*j</sub>]]]  
 (Quicoli (2008: 313), slightly modified)

In (27), *Bill* is the antecedent of the anaphor *himself* in the embedded clause. *Bill* is base-generated in the vP phase, which contains *himself*. *John*, on the other hand, is not contained in that vP phase in any course of the derivation and the vP phase is already transferred when *John* is introduced. Thus, *himself* can only be interpreted as *Bill*.

Given Quicoli's (2008) proposal, the anaphor *each other* can be bound by *they* in (26b). After the completion of the CP phase, its complement, TP, is transferred and the set [*what each other's backyard*] remains visible for binding until the matrix vP phase completes. At that time, the potential antecedent *they* will be introduced into Spec, vP, and it locally c-commands *each other*. Therefore, even though *each other* is in Spec, CP, it can be bound by *they* in the matrix clause.

Sixth, as we showed in (7b), the matrix quantifier binds the variable in the TFR clause, as repeated in (28a):

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- (28) a. Every student<sub>i</sub> was kissing what he<sub>i</sub> considered to be **an attractive woman**. (Kluck (2011: 98))
- b. Every student<sub>i</sub> was kissing [<sub>DP</sub> D [<sub>CP</sub> [what ~~an attractive women~~]<sub>j</sub>]<sub>k</sub> [<sub>TP</sub> he<sub>i</sub> considered to [<sub>ZP</sub> [~~what an attractive women~~]<sub>j</sub>]<sub>k</sub> [<sub>Z'</sub> be **an attractive women**]<sub>j</sub>]]]]]

The proposed structure of the TFR in (28b) shows that the TFR clause subordinates to the matrix clause. Thus, contrary to the MD analysis, nothing prevents the quantifier phrase *every student* from c-commanding and thus binding the variable *he*.

Seventh, we can explain (14), in which the pivot occupies the string-medial position. The relevant example is repeated in (29a), which has the structure in (29b) under the proposed analysis.

- (29) a. I just saw what might well be taken for **a meteor** by naïve observers when visibility is rather poor. (Grosu (2003: 288))
- b. I just saw [<sub>DP</sub> D [<sub>CP</sub> [what ~~a meteor~~]<sub>i</sub>]<sub>j</sub> [<sub>TP</sub> might well be taken [<sub>ZP</sub> [~~what a meteor~~]<sub>i</sub>]<sub>k</sub> [<sub>Z'</sub> for **a meteor**]<sub>i</sub>]]] by naïve observers when visibility is rather poor]]].

The SM analysis has difficulty in yielding the correct word order in (29a), but our proposal does not. In our proposal, the pivot originates and lands within the TFR. As a result, even if some adjuncts follow the pivot, our proposal can produce the correct linear order in (29a).

Lastly, in (30a), which is problematic in the FR analysis, the operator *who* is extracted from the pivot in the TFR clause. We give this sentence the structure in (30b).

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- (30) a. Who<sub>i</sub> did you order what was advertised as **a first-rate picture of t<sub>i</sub>**?  
 (Riemsdijk (2006: 1690), slightly modified)
- b. Who<sub>i</sub> did you order [<sub>DP</sub> D [<sub>CP</sub> [what [~~a first-rate picture of t<sub>i</sub>~~]<sub>k</sub>] was advertised as [<sub>ZP</sub> [~~what [~~a first-rate picture of t<sub>i</sub>~~]<sub>k</sub>] [<sub>Z'</sub> [**a first-rate picture of t<sub>i</sub>**]]]]]]?]~~

In general, extraction from the relative clause is impossible as we saw in (5e), repeated below.

- (31) \* Who<sub>i</sub> did you order what represented the sole possession of t<sub>i</sub>?

However, as in (30b), the pivot is in Spec, CP, which is taken to be an escape hatch for an extracted element. In terms of the phase theory, even after the completion of the CP phase, a syntactic object in Spec, CP is accessible to further operations because the transfer does not target that position. We assume that *who* is extracted from the pivot in Spec, CP, and since the lower pivot is c-commanded by *who* in the matrix clause, *who* in the lower pivots is deleted. As a result, the original copy of the pivot is realized as *a first-rate picture of* as shown in (30b).

In this section, we have shown that our proposal correctly captures the empirical data introduced in the section 1 and overcomes the problems of the previous approaches.

## 5. Conclusion

In this paper, we have proposed that the pivot forms a small clause with *what* then internally pair-merges to *what*, and the complex phrase thus formed further moves to Spec, CP, where the pivot is accessible to the matrix clause. We have also proposed that the complex phrase in Spec, CP undergoes Radford's (2004) discontinuous spellout, and as a result, the pivot is pronounced in the base-generated

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position. These proposals provide a plausible account for the basic properties of TFRs (syntactic number, syntactic category, definiteness, and idiomatic interpretation). Furthermore, we have shown that our proposal can solve the empirical problems of the previous analyses related to binding, linear order, and extraction.

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### Note

1) Kluck (2011: 92) argues that the *wh* phrase is not extracted from the pivot in the sentence like (18). She suggests the alternative bracketing in (i).

- (i) Who<sub>i</sub> did you order [[<sub>DP</sub> D [<sub>CP</sub> what<sub>j</sub> was advertised [<sub>ZP</sub> t<sub>j</sub> as **a first-rate picture**]]] of t<sub>i</sub>]?

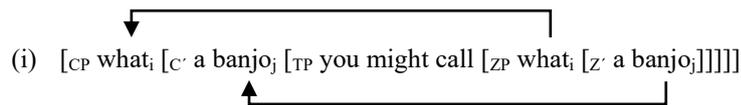
If (18a) has this structure, it is no longer problematic for Grosu's (2003, 2016) proposal since the *wh* phrase is extracted from the matrix clause. However, even if (18a) has the structure in (i), Grosu cannot explain the acceptability of (ii).

Derivations of Transparent Free Relatives by Discontinuous Spellout

- (ii) a. Who is John what you might call a relative of in English?  
 b. Who<sub>i</sub> is John [DP D [CP what<sub>j</sub> you might call [ZP t<sub>j</sub> a relative of t<sub>i</sub> in English]]]?

In (ii), the TFR-internal adjunct *in English* follows *a relative of*, which means that it is contained in the TFR. Thus, Grosu (2003, 2016) has to extract *who* from the relative clause in (ii), violating complex NP constraint.

- 2) One might wonder why *what* and the pivot do not move to Spec, CP separately.



Notice that in the derivation involving the internal pair-merge, the movement to Spec, CP applies once, but if *what* and the pivot move separately, it applies twice. Thus, comparing these two derivations, we take the former to be more economical than the latter, and assume that the derivation involving the internal pair-merge is preferred.

- 3) Sturman (2019) shows that the pivot in TFRs has marked interpretation and pronunciation. That is, the pivot contains what Sturman (2019) calls the Emphatic Juncture (EJ), which is realized as a pause and marks the element next to it as particularly important or noteworthy. The examples are in (i), where the EJ is represented as “%”.

- (i) a. In what NASA is calling % **a room** % **with a view**.  
 (Sturman (2019: 2491))  
 b. Allen poured what he calls **a % beergarita** at the party on Friday.  
 c. In what some folks call **a % silver tsunami**. (Sturman (2019: 2492))

We attribute the existence of the EJ to discontinuous spellout by Radford (2004).

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Discontinuous spellout phonetically realizes *what* in Spec, CP, and the pivot in the base-generated position. The placement of the EJ might be the result of this special type of copy realization. That is, since TFRs are derived by the special type of copy realization, its interpretations in LF and PF also becomes special, resulting in the EJ.

### References

- Citko, Barbara (2011) *Symmetry in Syntax: Merge, Move, and Labels*, Cambridge University Press, Cambridge.
- den Dikken, Marcel (2005) "Transparent, Free... and Polarised: The (Poli) tics of Polarity in Transparent Free Relatives," *Organizing Grammar: Studies in Honor of Henk Van Riemsdijk*, ed. by Hands Broekhuis, Norbert Corver, Riny Huybregts, Uesula Kleinhenz, and Jan Koster, 97-107, Mouton de Gruyter, Berlin.
- Grosu, Alexander (2003) "A Unified Theory of 'Standard' and 'Transparent' Free Relatives," *Natural Language and Linguistic Theory* 21, 247-331.
- Grosu, Alexander (2016) "The Semantics, Syntax, and Morphology of Transparent Free Relatives Revisited; A Comparison of Two Approaches," *Natural Language and Linguistic Theory* 34, 1245-1280.
- Ha, Seungwan (2012) "A Sideward Movement Analysis of Transparent Free Relatives," *Korean Journal of Linguistics*, 37, 737-756.
- Kluck, Marlies (2011) *Sentence Amalgamation*, Doctoral dissertation, University of Groningen.
- McCawley, James (1998) *The Syntactic Phenomena of English (Second Edition)*, The University of Chicago Press, Chicago.
- Nunes, Jairo (2001) "Sideward Movement," *Linguistic Inquiry* 32, 303-344.
- Nunes, Jairo (2004) *Linearization of Chains and Sideward Movement*, Cambridge, MIT Press, Cambridge, MA.

Derivations of Transparent Free Relatives by Discontinuous Spellout

- Quicoli, Carlos (2008) "Anaphora by Phase," *Syntax* 11, 299-329.
- Radford, Andrews (2004) *Analyzing English Sentences: A Minimalist Approach*, Cambridge University Press, Cambridge.
- Riemsdijk, Henk van (2000) "Free Relatives Inside Out: Transparent Free Relatives as Grafts," *PASE Papers in Language Studies, Proceedings of the 8th Annual Conference of Polish Association for the Study of English*, 223-233, University of Wrocław, Wrocław.
- Riemsdijk, Henk van (2006) "Free Relatives," *The Blackwell Companion to Syntax Vol. II*, ed. by Martin Everaert and Henk van Riemsdijk, 338-382, Blackwell, Oxford.
- Ross, John R. (1967) *Constraints on Variables in Syntax*, Doctoral dissertation, MIT.
- Schelfhout, Carla, Peter-Amo Coppen and Nelleke Oostdijk (2004) "Transparent Free Relatives," *Proceedings of CONSOLE XII*. <<http://repository.uibn.ru.nl/bitstream/handle/2066/61322/61322.pdf?sequence=1>>
- Sturman, Bethany (2019) "The Emphatic Juncture: A Novel Use of the IP Boundary in English," *Proceedings of the 19th International Congress of Phonetic Sciences*, 2489-2493.
- Wilder, Chris (1999) "Transparent Free Relatives," *Proceedings of WCCFL 17*, 685-699, CSLI Publications, Stanford, California.

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