ON THE USE OF PREPOSITIONS IN ENGLISH FREE RELATIVES: AN FDG ACCOUNT

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1 Introduction

This paper deals with free relatives (FRs) in English, two examples of which are given in (1):

(1) a. I ate *what he cooked*.
b. Whatever she says annoys me.

In particular the paper focuses on one specific subset of FRs, namely those that take the form of a Prepositional Phrase (as in example (2)), addressing the question of what determines whether the preposition is repeated in the FR (example (2a)) or not (example (2b)):

(2) a. I will live in whatever town you will live in.
b. I will live in whatever town you will live. (e.g. Grosu 1996: 258)

After a brief characterization of the most important semantic and syntactic properties of (standard) free relatives[1] (Section 2), an analysis is proposed within the framework of Functional Discourse Grammar (Section 3). Subsequently, in Section 4, an attempt is made, on the basis of examples from the British National Corpus (BYU-BNC) and the Corpus of Contemporary American English (COCA), to identify the circumstances under which a preposition can, has to or cannot appear within the FR. After a brief discussion of some relevant factors

[1] This paper will not deal with what have come to be known as 'transparent' free relatives, such as *John saw what he thought was a dog in the garden*. For discussions of the differences and similarities between 'transparent' and 'standard' FRs, see e.g. Wilder (1999), Van Riemsdijk (2000) and Grosu (2002, 2003).

mentioned in previous accounts (Section 4.1), some corpus data are presented, showing that these factors cannot explain the actual (non-)occurrence of prepositions in FRs (Section 4.2). Subsequently, an alternative explanation is offered (Section 4.3), as well as an indication of how some of the findings can be accounted for in FDG (Section 4.4). Section 5 concludes the paper.

2 Free relatives: main features

FRs have the internal structure of a clause with a *wh*-element in initial position; apart from the element *what* in example (1a), FRs are frequently introduced by the elements *who*, *when* and *where*:[2]

(3) a. I have found *who you were looking for*. (Quirk et al. 1985: 1061)
b. I will leave *when he arrives*.
c. The book must be *where I left it*.

Examples (1)-(3) also show that FRs can fulfil a range of syntactic functions in the higher clause of which they are part: in examples (1a) and (3a) the FR functions as the direct object, in (1b) as the subject, in (2) as a prepositional object, in (3b) as an adjunct and in (3c) as a subject complement.

Another important feature of FRs is that they can have specific reference (as in (1a) and (3)), or non-specific (or universal) reference (as in (1b) and (2)). In the latter case, the *wh*-element typically takes the form *wh-ever*. Finally, in FRs with the element *what(ever)*, the *wh*-element can function either as a pronoun (as in examples (1) and (3)) or as a determiner (as in example (2)) (cf. Quirk et al. 1985: 1056). For reasons of space the discussion here will be restricted to FRs with the element *what(ever)*, as by far the most frequent form with the widest range of uses.

As the name suggests, FRs have often been regarded as a subtype of relative clause; not only because they have the internal structure of a clause, but also because they can be paraphrased by regular relative clauses (e.g. Quirk et al. 1985:

[2] The elements *how* and *why* can also be found in FRs but are far less frequent. The element *how* is typically used in combination with *-ever*, e.g. *You can do it however you like* (BYU-BNC, spoken). The element *why* is only used in pseudo-cleft constructions with *because* in the matrix clause: *Why we left early was because we were tired* (Quirk et al. 1985: 1059).

1056). This is shown in example (4) for examples (1a) and (3c):

(4) a. I ate what he cooked. → I ate that which he cooked
b. The book must be where I left it. → The book must be there where I left it

Unlike regular relative clauses, however, FRs lack an explicit head: the distinctive feature of FRs is that the matrix clause and embedded clause share an element, both semantically (in terms of the entity designated) and morphosyntactically (in terms of the form used to express this entity). Thus, in (1a), the entity referred to by the FR *what he cooked* functions as an argument of both the verb *eat* in the matrix clause and the verb *cook* in the embedded clause; formally, however, this entity is expressed only once (by means of the FR as a whole).

This particular feature of FRs imposes a number of constraints on their use. The first constraint is of a semantic nature: since the entity designated by the FR is an argument of both the matrix and the embedded verb, it must comply with the selection restrictions of both verbs; constructions like **I ate what you said* will therefore be regarded as semantically anomalous.

The fact that the shared element is expressed only once also means that its formal realization must be compatible with its function in both the matrix and the embedded clause. Logically speaking, this means that the two arguments must be assigned the same case; or rather, cases that trigger the same form. In other words, we would expect examples (5a-b) to be fully acceptable, but not examples (5c-d) (expected forms are given between brackets):

(5) a. *Whoever* loves you must be mad. (Nom – Nom → who)
b. I hate *who(m)ever* you love. (Acc – Acc → who(m))
c. ??I hate *whomever* loves you. (Acc – Nom → who)
d. ?**Whomever* loves you must be mad. (Nom – Nom → who)

As it turns out, however, this constraint is not very strict (cf. Huddleston et al. 2002: 1974): although the constructions in (5c-d) are more likely to be regarded as questionable, they frequently occur (especially in the COCA). Some examples are given in (6):

(6) a. … to investigate, pursue and apprehend *whomever* started the fire (COCA)
b. In fact, we know that *whomever* is nominated by our party will be subjected to the same kind of withering attacks. (COCA)

A third constraint on the use of free relatives concerns the fact that the shared element must fulfil the categorial selection restrictions of both the verb (or rather predicate) in the matrix clause and the verb (predicate) in the embedded clause (e.g. Van Riemsdijk 2006: 349-352). Thus, example (1a) is well-formed because the verbs in the matrix and embedded clauses (*eat* and *cook*) both require an NP complement. In (2a), both the FR and the corresponding element within the embedded sentence function as the NP complement of the preposition *in*, while in (2b) both FR and the corresponding element within the FR function as the PP complement of the verb *live*. This also explains the contrast between the sentences in (7) (taken from Van Riemsdijk 2006: 349-250). In (7a) both verbs require an NP complement; this complement can therefore be shared by matrix and embedded clause. In (7b) and (7c), however, the two verbs have different categorial requirements, resulting in a mismatch:

(7) a. The police arrested *who* the witness identified. (NP – NP)
b. *The police arrested *who* the witness pointed. (NP – PP)
c. *The witness pointed *who* the police had arrested. (PP – NP)

Note finally that this last constraint does not apply to regular relative clauses (Van Riemsdijk 2006: 349): since in relative clauses antecedent and relative pronoun are expressed separately, they need not belong to the same category. Example (8) is therefore fully acceptable:

(8) a. The police arrested *the man to whom* the witness pointed. (NP – PP)

One way of accounting for the fact that FRs do not really behave as relative clauses is to assume that they are not clauses at all. Various linguists have argued that, despite their internal clausal structure, FRs are, in fact, phrases (typically NPs). Support for this position can be found in their syntactic behaviour: like NPs (but unlike clauses) FRs can exhibit plural subject-verb agreement, can undergo subject-

auxiliary inversion and resist extraposition; moreover, FRs have the same range of syntactic functions as NPs (for detailed discussions, see Quirk et al. (1985: 1056-1061) and Huddleston et al. (2002: 1068-1070)). In the next section we will see how linguists have tried to deal with the distinctive features of FRs, in particular their ambivalent categorial status and the presence of a shared element.

3 Analysis

The challenges posed by the specific features of FRs have given rise to a number of different analyses. Huddleston et al. (2002: 1073), for instance, analyse FRs as NPs with a fused head (realized by the *wh*-element) filling at the same time the head position of the NP and the initial position of the modifying relative clause. Van Riemsdijk (2006: 371), on the other hand, suggests a grafted structure, in which the *wh*-element is shared by two connected trees, one representing the matrix clause, the other representing the embedded clause. What these analyses have in common is that they try to capture the relevant features of FRs on the syntactic level only. As we have seen, however, FRs are characterized by a combination of semantic and syntactic features. A model like Functional Discourse Grammar (FDG; Hengeveld & Mackenzie 2008), with its top-down organization and its four levels of representations, might therefore be better suited to reflect the specific features of FRs. The sharing of elements, for instance, would be reflected on the semantic level through co-indexing of the variable representing the entity designated (Van der Auwera 1992: 342; Hengeveld & Mackenzie 2008: 241). The formal requirements (case and category matching) would be taken care of at the syntactic level. This is illustrated in the (partial) representations in (9):[3]

(9) (I ate) what you cooked.

IL: ... (+s R_1: [(T_1) (R_2)] (R_1)) ...

RL: ... (x_1: (past ep_1: (e_1: (f_1: [(f_2: cook) (x_2)$_A$ (x_1)$_U$] (f_1)) (e_1)) (ep_1)) (x_1))$_U$

ML: ... (Cl_1: [(Np_1: what (Np_1)) (Np_2: you (Np_2)) (Vw_1: cooked (Vw_1))] (Cl_1))$_{Obj}$...

[3] Since it is not relevant to the discussion, the Phonological Level has been omitted. The representation at the Morphosyntactic Level (ML) is given in simplified form.

At the top we find the Interpersonal Level (IL), representing the pragmatic aspects of a linguistic expression. The units (layers) at this level represent actions performed by the speaker, and include one or more Ascriptive Subacts (T) and Referential Subacts (R), evoking properties and referents, respectively. In (9), we see that at the IL the FR *what you cooked* is represented by a specific Referential Subact (+s R_1), which itself contains two further Subacts: an Ascriptive Subact (T_1) evoking the property *cook* and a second Referential Subact (R_2) evoking the referent of the pronoun *you*. Note that the shared element within the FR is not evoked by a separate Referential Subact (i.e. there is no Referential Subact within R_2 evoking the entity cooked).

The next level, the Representational Level (RL), deals with the semantic aspects of an expression. The units at this level represent different hierarchically organized semantic categories (e.g. Propositional Content, p; Episode, ep; State-of-Affairs, e; Property, f; Individual, x; Location, l; Time, t). Here the entity evoked at the IL by the single Referential Subact R_1 is represented twice: once as the Undergoer argument of *eat* in matrix State-of-Affairs, and once as the Undergoer argument of the verb *cook* in the embedded State-of-Affairs (e_1); the fact that these two arguments represent the same entity is reflected by the co-indexing of the variable representing this entity (x_1). Note also that the Individual (x_1) representing the FR is headed by an embedded Episode (ep_1), the layer at which absolute tense is specified.

It is this last feature that triggers the realization of the FR as a finite clause (Cl_1) at the Morphosyntactic Level (ML). In addition, the presence of a single Referential Act at the IL (R_1) corresponding to two (co-indexed) units at the RL (x_2) leads to a single realization of these units at the ML. Naturally, this is only possible if the two co-indexed units can be expressed by one and the same morphosyntactic form (in terms of case and syntactic category).

Let us now once more consider the examples in (2) (repeated here for convenience), with a partial FDG representation at the IL and RL:

(10) a. (I will live in) whatever town you will live in.
IL: ... (-s R_1: [(T_1) (R_2)] (R_1)) ...
RL: ... (**x_1**: (pres ep_1: (cert[4] e_1: (f_1: [(f_2: live (f_2)) (x_2)$_A$ (l_1: [(f_3: in (f_3)) (**x_1**)$_{Ref}$] (l_1))] (f_1)) (e_1)) (ep_1)) (x_1))$_{Ref}$

b. (I will live) in whatever town you will live.
IL: ... (-s R_1: [(T_1) (R_2)] (R_1)) ...
RL: ... (**l_1**: [(f_1: in (f_1)) (x_1: (pres ep_1: (cert e_1: (f_2: [(f_3: live (f_3)) (x_2)$_A$ (**l_1**)] (f_2)) (e_1)) (ep_1)) (x_1))$_{Ref}$] (l_1)) ...

At the IL, the FR is now represented as a non-specific Referential Subact (-s R_2); apart from this, the IL representation is identical to the one in (9). At the RL, the representation in (10a) is also very similar to the one given in (9): again it is an Individual (x_1; in this case designating a town) that is shared by the matrix and the embedded clause. The only difference is that this Individual now functions as the (Ref)erence argument of the preposition *in* (f_3); the preposition itself, not being part of the shared element, is repeated within the embedded State-of-Affairs. In (10b), on the other hand, the shared element is a Location (l_1) functioning as the prepositional argument of the verb *live* (f_3). Since now the element *in* is part of the shared Location, it is not expressed within the FR.

4 One or two prepositions?

As shown in examples (2)/(10), one and the same preposition can, but need not, be expressed twice, both in the matrix and in the embedded clause. This suggests that speakers can choose whether or not to repeat the preposition in the embedded clause. As it turns out, however, there are circumstances in which one of the two forms is not acceptable. In this section I will try to identify some of the factors responsible for determining the form of the FR.

4.1 Previous accounts

The literature on free relatives provides a number of suggestions. Bresnan & Grimshaw (1978: 368-371), for instance, state that only locative, directional and

[4] The cert(ainty) operator triggers the use of the modal verb *will*.

temporal PPs can be omitted in the embedded clause, i.e. PPs for which a proform is available (e.g. *there* or *then*). This would then explain the ungrammaticality of the sentences in (11) (examples from Bresnan & Grimshaw 1978: 370; the grammaticality judgements given in this section are those of the cited authors):

(11) a. *I'm interested in whatever subjects I think I should be interested.
b. *I'll speak to whatever group you're willing to speak.

When, however, the noun within the PP is inherently locative, directional or temporal, Bresnan & Grimshaw (1978: 362-367) claim, the preposition cannot be repeated. This would account for the contrast in (12) where *at* is allowed (though not required) in (12a), but not in (12b) (examples from Bresnan & Grimshaw 1978: 362):

(12) a. The nurse was present at whatever operation the doctor was present (at).
b. The nurse was present at whatever hours the doctor was present (*at).

Van Riemsdijk (2006: 351) observes that leaving out the preposition in the embedded clause can lead to a degraded result when different verbs (with identical categorial selections requirements) are used in matrix and embedded clause (examples from Van Riemsdijk 2006: 351):

(13) a. ?Why don't you ever dance with whomever I come to parties.
b. ?She always dotes on whomever you can't count.

According to Grosu (1996: 287-291), "missing-P" FRs like the one in (2b/10b) have a "relatively marginal status".[5] Grosu further states that (irrespective of the presence of a preposition in the second FR) expressions with different verbs in the matrix and the embedded clause are more acceptable than those where the same verb is used (even in those cases where the two verbs do not have the same categorial selection restrictions). Grosu explains this difference in terms of nuclear stress

[5] Grosu (1996: 288-291) explains the reduced acceptability of these FRs by that fact that they contain a null PP consisting of an unexpressed preposition and an empty NP (*pro*). In order for the properties of the *wh*-element to reach *pro*, these properties have to go through this null PP; semantically, however, these NP properties make no sense to the PP.

assignment. In a sentence like (14a) speakers are likely to assign nuclear stress to the rightmost token of *live*, which makes little sense in the particular context, since *live* does not contrast with anything. Use of two different verbs, however, creates a contrastive environment, thus making the construction more acceptable (cf. Grosu 1996: 287-288; small capitals indicate nuclear stress):

(14) a. ?I want to live in whatever city you live.[6]
b. I want to LIVE in whatever city Michelangelo DIED.

4.2 Some corpus data

This section will present some corpus data to find out whether the predications and explanations provided in previous accounts are correct. For this purpose a corpus search was conducted in the BNC and the COCA using the search string {*at*, *in*, *on*, *from*, *with*, *for*, *to*} {*whatever, whoever*}. Only those relevant examples were selected which functioned as an argument of modifier within a clause.

In many cases Bresnan & Grimshaw's (1978) predictions are borne out. In the examples in (15), for instance, a proform is available (*then*, *there*); the preposition can therefore be omitted. Moreover, since the nouns in question (*hour*, *place*) are inherently temporal/locative, repeating the preposition would lead to a degraded result:

(15) a. The next morning breakfast was laid ready in the dining room for the Bradfords' guests to help themselves at whatever hour they chose to rise. (BYU-BNC, W-fiction)
b. I considered following him down the hill and pleading with him at whatever place he spent the rest of his time (COCA, W-fiction)

There are, however, also plenty of counterexamples to Bresnan & Grimshaw's predictions. In expressions with nouns such as *pace*, *speed* and *rate*, no proform is available; nevertheless, the second proposition is consistently omitted:

[6] Note, however, that in (14a) nuclear stress will normally go the element *you*, due to the contrast with *I* in the matrix clause. In that case the construction becomes entirely acceptable (cf. also Grosu 1996: 279).

(16) a. So they are building up an infrastructure to continue their space program at whatever pace they decide to proceed. (COCA, spoken)
b. So she pretended she wasn't trying, pretended she was being borne along at whatever speed the wheels wanted to take her (COCA, spoken)

Similarly, in FRs introduced by the preposition *from*, indicating a source, the preposition is typically not repeated (e.g. example (17a)), despite the fact that the corresponding proform (*thence*) is archaic and cannot be assumed to be available to the average speaker. Finally, the prepositions *in* and *to* can be left out even if a proform is not available (examples (17b) and (17c)):

(17) a. they should welcome truth from whatever source it comes (COCA, W-magazine)
b. and work to improve themselves as best they can in whatever economic state they find themselves. (COCA, W-academic)
c. Advertising is simply the action of drawing public attention to goods, services, events, or to whatever you want them to pay attention. (BNC, W-commerce)

Bresnan & Grimshaw's (1978) second observation also does not seem to be entirely correct. On the assumption that *position* and *source* are inherently locative/directional, they should not allow for repetition of the preposition in the embedded clause. As shown by the following examples, however, such constructions are not excluded:

(18) a. When the organizer stops, the person stops in whatever position she happens to be in. (BYU-BNC, W-instructional)
b. and to get help from whatever sources you can get it from. (COCA, spoken)

Van Riemsdijk's (2006) observation that omitting the second preposition leads to a more questionable result in those cases where two different verbs with the same categorial selection restrictions are used is also not supported by the data; in fact, most FRs without a second preposition involve the use of two different verbs.

Example (19) provides some examples:

(19) a. I would gladly follow him to whatever strange land he would lead me (COCA, W-fiction)
b. bees zooming out of the hive and circling up and then shooting off in whatever direction they want to go (COCA, W-magazine)
c. The wind was strong that night, and the fire moved in whatever direction the wind pushed it. (COCA, W-magazine)

Instead, the lower acceptability of the examples in (13) seems to be due to other factors: firstly, the corpus data show that the preposition *with* (omitted in (13a)) is always repeated; secondly, fixed verb-preposition combinations (*dote on*, *count on* in (13b)) require the presence of a preposition.

Moreover, even with verbs with different categorial selection requirements the preposition can felicitously be left out:

(20) a. that artifacts should remain in whatever country they were found (COCA, W-magazine)
b. Jack Bowditch had always been the scariest guy in whatever town he'd happened to be living. (COCA, W-fiction)

Nor does there seem to be much support for Grosu's claim that constructions with different verbs in the matrix and embedded clause are more acceptable than constructions with the same verb; the examples in (21), for instance, are not only perfectly fine, but even distinctly better without than with the second preposition:

(21) a. and then I want to wake up at whatever time I need to wake up. (COCA, spoken)
b. there are going to be people who are going to abuse it for whatever purpose they want to abuse it. (COCA, spoken)

From these examples, we may conclude that previous accounts do not provide a satisfactory explanation for the presence or absence of a preposition within the embedded clause. Whereas Bresnan & Grimshaw's (1978) predictions turn out to be partly correct, there are also many counterexamples. The (partly contradictory)

explanations provided by Van Riemsdijk (2006) and Grosu (1996) do not fare any better: not only do the corpus data fail to support their predictions, in addition, their accounts (i) cannot explain the different behaviour of FRs with different prepositions; (ii) cannot explain why certain prepositions are never left out (e.g. *with*); and (iii) cannot explain why some examples are actually more acceptable without a preposition. In the remainder of this paper, I will try to provide a more satisfactory account of the factors determining the presence/absence of a second preposition.

4.3 Relevant factors

As we have seen in the previous sections, there are three possibilities, when it comes to repeating a preposition in FRs introduced by the same preposition: (i) the preposition cannot be left out (or rather: leaving out the preposition would lead to a degraded result, e.g. (13)); (ii) the preposition has to be left out (see (15) and (16)); (iii) repetition of the preposition is optional (e.g. (19) and (20)). What follows is a (non-exhaustive) list of factors that may play a role in triggering the correct (or rather attested) forms.

a. The use of fixed verb-preposition combinations

As already mentioned in Section 4.2, use of a fixed combination of verb and preposition in the embedded clause requires the presence of a preposition. Thus, the two corpora only contained examples like the following:

(22) a. the president seems to be determined now to atone for whatever it is he thinks he ought to atone for (COCA, spoken)
b. and fix his mind on whatever he wanted to focus on at the time (COCA, W-fiction)

b. Meaning of the preposition

Another factor that has not been explicitly mentioned in the literature concerns the meaning (or sense) of the preposition. As convincingly shown in work in cognitive linguistics, English prepositions are highly polysemous (e.g. Brugman & Lakoff 1988; Tyler & Evans 2001, 2003). It is therefore plausible to assume that

the second preposition can only be omitted if it has the same meaning in both matrix and embedded clause. This would explain why the following examples would be questionable without the second preposition:

(23) a. Dr. Shannon gave his professional opinion to whoever he talked to in New York. (COCA, spoken)
b. her slim figure always half dancing to whatever music she was listening to on her iPod. (COCA, fiction)

c. Implied arguments
Consider the examples in (24) and (25):

(24) a. they will post it to whoever it has to go to. (BYU-BNC, spoken)
b. and her dad, Guy Newcomen Surfaceblow, ran off to whatever Shangri-La he had fled to. (COCA, fiction)
(25) a. bees zooming out of the hive and circling up and then shooting off in whatever direction they want to go, (= (19b))
b. I would gladly follow him to whatever strange land he would lead me, (COCA, W-fiction)

In all these examples the matrix verbs (*post*, *run off*, *go* and *follow*) take a PP argument. In (24), the verbs in the embedded clauses (*go*, *flee*) also take a PP argument, expressed in the form of the preposition *to*. In (25), however, the PP arguments of the verbs *shoot off* and *lead* in the embedded clauses are not expressed. Given the meaning of the verbs in question, their PP arguments are implied to such an extent that they can easily be omitted (as evidenced that these verbs frequently occur without their PP argument also in other circumstances).

d. Implied modifiers
The notion of impliedness can also help to account for the presence or absence of a second preposition in the case of PPs functioning as modifiers. Dik (1997: 227-228) characterizes manner adverbs as "implied satellites" (i.e. modifiers): when we describe an action, it makes no sense to assert or deny that this action was performed in a manner, since this is implied by the action itself. In a similar way, we

can say that time modifiers are implied, since all events take place at a time, or that modifiers indicating speed are implied, since things move at a particular speed:

(26) a. *Peter removed the lid from the jar, and he did it in a manner. (Dik 1997: 227)
b. *Sue cycled home, but not at a speed.
c. *Robert bought a book, and he did so at a time.

Other types of modifiers, however, are not implied in this way. Thus, it does make sense to assert that an action was performed with or for someone:

(27) a. Sean baked a cake, and he did it for someone.
b. Susie went to the cinema, and she did so with someone.

When we look at PP modifiers used within the FR, it seems to be the case that the second preposition can be (and often is) left out when the modifier is implied. Example (28) illustrates this for FRs with a manner adverb; other examples were given in (15a) and (16), for modifiers indicating time and speed, respectively.

(28) Upon completion, participants were allowed 3 to 5 minutes to warm up in whatever way they felt necessary to prepare for a basketball-shooting contest. (COCA, W-academic)

When the modifier is not implied, as in the case of modifiers expressing concomitants or beneficiaries, the preposition is expressed (cf. example (13a)):

(29) a. You come around here every week with whatever chick you fell into the sack with the night before (BYU-BNC, W-fiction)
b. But I still think that sports fan, he or she is still the little kid who started out cheering at age 5 or 6 for whatever team they were cheering for.[7] (COCA, spoken)

[7] It is possible to omit *for* here, but in that case *cheer* is used as a transitive verb, subcategorizing for an NP, not a PP.

4.4 Implied modifiers: an FDG explanation

Ideally, the aim of this last section would have been to demonstrate how the various factors listed in the previous section can be accounted for in FDG, and to argue that the constraints on the (non-)repetition of prepositions within the FR are not entirely arbitrary. Due to lack of space, however, I will concentrate on one factor only, the degree of impliedness of PP modifiers.

Let us first consider the hierarchical organization of the Representational Level, the level at which the sharing of elements takes place. As shown in (30), the highest layer at this level is that of the Propositional Content (p), which consists of one or more Episodes (ep), which in turn consist of one or more States-of-Affairs (e). Each State-of-Affairs consists of a Configurational Property (f), which contains a Lexical Property (f, typically a verb) and one or more arguments (typically Individuals (x) and Locations (l)). Each layer has a position for operators (π), representing grammatical information relevant at that layer (e.g. tense or number), and a position for modifiers (σ), providing additional lexical information (e.g. PP modifiers).

(30)	$(\pi p_1: [\quad]: (p_1): \sigma (p_1))$	Propositional Content
	$(\pi ep_{1\text{-}n}: [\quad]: (ep_1): \sigma (ep_1))$	Episode
	$(\pi e_1: [\quad]: (e_1): \sigma (e_1))$	State-of-Affairs
	$(\pi f_1: [\ ]: (f_1): \sigma (f_1))$	Configurational Prop.
	$(\pi f_2: [...]: (f_2): \sigma (f_2))$	Lexical Property
	$(\pi x_1: [...]: (x_1): \sigma (x_1))$	Individual
	$(\pi l_1: [...]: (l_1): \sigma (l_1))$	Location

On the basis of the data discussed in the paper, we can account for the obligatory or optional presence of a preposition within the embedded clause by taking into consideration the layer (i.e. the kind of entity) that they modify. Time modifiers, for instance, occur at the layer of the Episode. Since one of the defining features of Episodes is that they show unity or continuity of time (Hengeveld & Mackenzie 2008: 157), time modifiers are inherently implied. As a result of this, these modifiers are omitted from the embedded clause. The same is true for manner adverbs, which have scope over the Lexical Property, i.e. the unit that specifies the kind of action

performed (Hengeveld & Mackenzie 2008: 157): since actions are always performed in a manner, these modifiers, too, are typically left out (example (28)). Modifiers at this level also include those indicating speed (see example (16)) and degree (example (31)). In all these cases, it is natural to leave out the second preposition.

(31) I completely encourage him and all of us born into Muslim households in whatever degree we're going to address this (COCA, spoken)

In between the Episode and the Lexical Property, we find two other layers: the State-of-Affairs and the Configurational Property. In the case of the State-of-Affairs, modifiers tend to be implied as well. Thus, since events take place at a location, locative modifiers are implied. Consequently, they are typically (32a), but not necessarily (32b), left out:

(32) a. and resolutely resists imperialists' aggression in whatever distant region of our planet it may appear. (BYU-BNC, W-non-academic)
b. to figure out a way to make trade-offs, survive, thrive and re-produce in whatever social and physical environment it finds itself in. (COCA, W-magazine)

The same is true for purpose modifiers: since (controlled) actions are performed for a purpose, purpose modifiers have a certain degree of impliedness and can (but need not) be omitted:

(33) a. My guess is that like any other relatively new tool for communicating there are going to be people who are going to abuse it for whatever purpose they want to abuse it. (COCA, spoken)
b. Our company is leasing these out to operators for whatever purpose we need them for (COCA, spoken)

As shown in example (29), however, modifiers at the layer of the Configurational Property (additional participants like concomitants and beneficiaries) are not implied. In these cases the second preposition needs to be expressed. So why is it that modifiers at this layer behave differently from modifiers at the other layers? The answer may lie in the kinds of entities designated by each layer. In FDG, units at

the Representational Level are semantic categories, i.e. ontological categories that are reflected in grammar (Hengeveld & Mackenzie 2008: 130). In most cases the ontological category can easily be defined. Individuals are concrete entities that are located in space and can be evaluated in terms of their existence. States-of-Affairs can be located in space and time and can be evaluated in terms of their reality; the same is true for Episodes, as combinations of thematically coherent States-of-Affairs. Finally, there are the verbal Lexical Properties, which do not have independent existence, and which can only be evaluated in terms of their applicability to some other entity. Configurational Properties (also referred to as Situational Concepts; Olbertz & Gasparini Bastos 2013), however, are different in this respect. Although as the non-lexical characterization (head) of a State-of-Affairs they serve an important function within the architecture of FDG, it is not entirely clear what kind of non-linguistic entity they designate. As a result, the presence of Configurational Property does not raise any expectations concerning additional features of this entity. This means that modifiers at this layer are not inherently implied, which in turn leads to repetition of the preposition in the embedded clause.

5 Conclusion

The aim of this paper has been to establish more precisely the circumstances under which prepositions can, cannot or have to be omitted from the embedded clause in an FR construction. Since the paper is based on a small-scale study, looking only at FRs with the elements *whatever/whoever* and at a limited number of prepositions, no definitive conclusions can be drawn. Nevertheless, it has been shown that previous accounts do not offer a satisfactory explanation for the variation found in the use of prepositions within FRs. On the basis of corpus data, an alternative list of determining factors has been suggested which, although far from complete, can be used as a basis for further research. Finally, it has been shown that FDG, with its different levels and layers of analysis, can not only provide a coherent analysis of FRs in general, but can also provide an elegant explanation of one of the most important factors identified – degree of impliedness.

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