


Aggressively non-D-linked construction and ellipsis: A Direct Interpretation approach¹

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(Received 09 November 2020; revised 05 May 2022)

The so-called aggressively non-D-linked construction (ANDC) involving *wh-the-hell* phrases like *what the hell* is of empirical and theoretical interest due to its complex morphosyntactic and semantic/pragmatic properties. This paper focuses on the construction in general as well as in ellipsis phenomena. We first explore its grammatical properties on the basis of attested corpus data and show that the construction can occur more widely in elliptical constructions than suggested by previous literature. We then suggest that the licensing conditions of the ANDC in ellipsis are not solely syntax-based but due to tight interactions among a variety of grammatical components such as morphosyntax, semantics, and discourse/pragmatics. We also argue that the authentic uses of the construction favor a Direct Interpretation (DI) approach that can account for its uses in a variety of environments.

KEYWORDS: aggressively non-D-linked, construction-based, corpus-based, Direct Interpretation, ellipsis, merger, move-and-delete, Sluicing, sprouting, Swiping

1. INTRODUCTION

It is widely accepted that *wh*-expressions can be classified into two types: D-linked (discourse-linked) and non-D-linked ones (Pesetsky 1987, 2000: 16):

- (1) (a) Which book did Kim read?
- (b) What book did Kim read?

The key difference of these two types, as pointed out by Pesetsky (1987) and subsequent work, comes from a discourse structure. The expression *which book* in

[1] Our deep thanks go to three anonymous reviewers for their critical and insightful comments which helped to reshape and improve the paper a lot. The usual disclaimers apply.

(1a) implies the existence of a set of contextually determined entities from which the speaker asks for a choice, whereas *what* in (1b) carries no such implication. That is, in (1a) with the D-linked *wh*-phrase *which book*, there is a set of books determined in the discourse and it is questioned to select one from the members of this set that Kim read. However, in (1b) with the non-D-linked *wh*-phrase *what book*, there is no discourse-provided set referring to the entities Kim read.

In addition to these two types, there is another related *wh*-type that combines with an emotive expression like *the hell*, *the heck*, *on earth*, and *the Dickens*. This phrase is taken to be an ‘aggressively non-D-linked’ *wh*-phrase since it is non-D-linked and further expresses a strong negative feeling, as illustrated by the following examples (Pesetsky 1987; Ginzburg & Sag 2000; Den Dikken & Giannakidou 2002; Huang & Ochi 2004):

- (2) (a) What the hell did Kim buy?
 (b) I wonder what the hell Kim is talking about.
- (3) (a) *Which the hell did Kim buy?
 (b) *I wonder which the hell Kim is talking about.

The contrast here can be attributed to the difference in the D-linking property of *what* and *which*.² The interrogatives in (2) are information-asking questions, but can accompany a negative inference such that Kim should not buy anything for (2a), or the speaker’s negative attitude (surprise, frustration, annoyance, etc.) toward the sentence in question.

Literature has noted that the *wh-the-hell* phrase displays unusual properties with respect to ellipsis. The noted observation has been that the *wh-the-hell* phrase is disallowed in Sluicing, but can occur in the so-called Swiping (Merchant 2001: 111–112, 2002; Den Dikken & Giannakidou 2002; Sprouse 2006; Hartman & Ai 2009). Consider the following data:

- (4) (a) They were arguing about something, but I don’t know what (*the hell). (Sluicing)
 (b) They were arguing, but I don’t know about what (*the hell). (Pied-piping Sluicing)
 (c) They were arguing, but I don’t know what (the hell) about. (Swiping)

[2] Ginzburg & Sag (2000: 248) question the grammatical viability of the D-linking distinction as seen from the following quotation:

although it is clear that *which*-phrases differ presuppositionally from *what* and *who* (in that the former carry a uniqueness presupposition that the latter do not carry), there is no independence evidence for interpretational asymmetries (and hence distinct interpretational mechanisms) between putatively distinct classes of *wh*-phrases.

Ginzburg & Sag (2000: 229) even allow examples like *Which the hell book did they read?* However, most of our consulted speakers agree with the traditional distinction between *which*-phrases and other *wh*-phrases. Even though there could be unresolved issues with the notion of D-linking, we use the term D-linking to account for the data in question. See also Note 6.

Examples in (4a, b) are typical Sluicing examples, but, as observed, cannot have the emotive phrase *the hell* following the *wh*-expression. However, as in the Swiping example in (4c), this ungrammaticality can be saved by having a preposition after the emotive phrase. These three elliptical constructions have been often argued to involve movement as well as clausal ellipsis while attributing the illegitimate presence of the *wh-the-hell* phrase in ellipsis to a phonological constraint such that the rightmost expression needs to be given stress (Merchant 2001, 2002; Hartman & Ai 2009; Güneş & Lipták 2021).

However, a corpus search yields a significant number of *wh-the-hell* phrases in Sluicing environments:³

- (5) (a) If he was to believe what he saw, he was looking at a ball of water, floating in space, within which chlorophyll reactions were proceeding. ‘My God,’ he said. ‘They survived. [How the hell]?’ (COCA 2010 FIC)
- (b) But of course she can’t call. Michael would pick up the phone. He would wait for Rom to finish speaking and then he’d get back on, wanting to know [what the hell], and why Texas. (COCA 2012 FIC)

Such attested examples, in which Sluicing after the *wh-the-hell* phrase occurs in matrix and embedded clauses, indicate that we cannot simply rule out the uses of the *wh-the-hell* phrase in elliptical environments. If the *wh-the-hell* phrase is licensed in Sluicing and other related ellipsis phenomena, questions then arise: when and how the construction can be used, and what licenses the *wh-the-hell* phrase in ellipsis environments. This paper attempts to answer these questions.

We organize the paper as follows. In Section 2, we first review some key grammatical properties of the ANDC (aggressively non-D-linked construction) noted in literature. Section 3 discusses the findings of our corpus investigation to understand its authentic uses in real life. This section also suggests that attested data do not countenance some of the observations made in previous literature. In Section 4, we then offer a construction-based Direct Interpretation (DI) analysis of the construction that introduces no hidden syntactic structures in the putative ellipsis site. In Section 5, we summarize our main findings and conclude the paper.

2. SOME KEY PROPERTIES

The *wh-the-hell* phrase has several unique morphosyntactic properties. First, the combination of the *wh*-expression with an emotive phrase is an inseparable

[3] The corpus COCA, freely available online and the main corpus that we used in this study, is the largest structured corpus of Contemporary American English that continues to be updated (Davies 2008–). When the corpus searches were carried out for this research in 2019, the corpus contained 600 million words of text from 1990 to 2019 and it was divided into five different registers (i.e. spoken, fiction, magazines, newspapers, and academic) in a balanced manner.

syntactic unit, as illustrated in the following examples (Ginzburg & Sag 2000: 229; Merchant 2002; Huang & Ochi 2004):⁴

- (6) (a) How (the hell) potent (*the hell) do you think this is?
 (b) *What did he buy the hell?
 (c) *I wonder what he is talking about the hell.

As the data tell us, the emotive phrase like *the hell* forms a tight syntactic unit with the preceding *wh*-expression. This syntactic cohesion is further evidenced from attested examples like the following:

- (7) (a) [Who the hell]'s in charge of Texas? (COCA 2012 FIC)
 (b) [What the hell]'re those for? (COCA 2009 FIC)
 (8) (a) [Who the hell]'s side are you on, here? (COCA 2000 TV)
 (b) [Who the hell]'s idea was this? (COCA 2010 FIC)

In these examples, the contracted auxiliary or the possessive marker 's hosts the *wh-the-hell* phrase. Given the fact that the former combines with a subject and the latter with an NP, the attested examples here suggest that the *wh-the-hell* phrase is a single constituent as a whole.

A key defining property of the *wh-the-hell* phrase is that unlike normal *wh*-phrases it cannot occur in situ (Pesetsky 1987; Ginzburg & Sag 2000: 229–230; Den Dikken & Giannakidou 2002; Huang & Ochi 2004). Consider the following examples:

- (9) (a) John bought what?
 (b) *John bought what the hell?
 (c) What the hell did John buy?
 (10) (a) Who did you persuade to buy what?
 (b) Who the hell did you persuade to buy what?
 (c) *Who did you persuade to buy what the hell?
 (d) What the hell did you persuade Kim to buy?

[4] Languages like Chinese, Japanese, and Korean have no such restriction. For example, consider the following Chinese data from Huang & Ochi (2004: 280–281):

- (i) (a) daodi shei na-zou-le nei-ben shu?
 daodi who take-away-PERF that-CL book
 'Who the hell took away that book?'
 (b) ta daodi mai-le shenme?
 he daodi bought what
 'What the hell did he buy?'

The adverb *daodi*, roughly corresponding to *the hell* in English, can be adjacent to the *wh*-word as in (ia) but it does not need to be as in (ib).

Examples as in (9) show that a normal *wh*-phrase *what* alone can occur in situ, but its *wh-the-hell* phrase counterpart *what the hell* needs to be ‘fronted’ to the sentence initial position. The requirement for fronting the *wh-the-hell* phrase to the sentence initial position also holds when it is in a lower clause, as demonstrated in (10).⁵

As discussed earlier, a salient property of the ANDC concerns the discourse information. The *wh-the-hell* phrase in general has no referent available in the previous discourse. This discourse requirement disallows it from combining with *which* (N):

- (11) (a) *Which the hell did Kim buy?
 (b) *I wonder which the hell book Kim is talking about.

Different from the *which* (N) phrase, *wh*-expressions like *what*, *who*, *when*, and *how many* (N) do not require a determined set of individuals in discourse (Pesetsky 1987; Den Dikken & Giannakidou 2002; Huang & Ochi 2004).⁶ For instance, consider the examples below:

[5] A similar fact can be observed when the *wh-the-hell* phrase is in an embedded clause:

- (i) (a) Bill assumes that Jill met who?
 (b) *Bill assumes that Jill met who the hell?
 (c) Who the hell does Bill assume that Jill met?

[6] As noted earlier, Ginzburg & Sag (2000: 248) are skeptical about the D-linking distinction among the *wh*-phrases. As Ginzburg & Sag (2000) and an anonymous reviewer point out, there seem to be examples where the *wh-the-hell* phrase, defined as non-D-linking by Pesetsky (1987), introduces a set of salient possible individuals for the argument role which the phrase is linked to. Consider the following examples provided by the reviewer:

- (i) (Context: A and B have a dispute. A punches numbers on her phone, and starts saying ‘Police HQ?’)
 B: Who the hell are you calling? Are you crazy?
 B: Who the hell do you think you are?

In these two possible B’s responses, B can be aware of the potential referential answers to this question. Oguro (2017: 117–118) also offers similar examples where the *wh-the-hell* phrase can be D-linked:

- (ii) (a) Who the hell has the card? (When playing Old Maid, a card game.)
 (b) What the hell is the right answer? (When trying to answer a multiple choice question, like the one in MVA/DMV law test, or in a quiz show.)
 (c) Who the hell is the fastest runner on our team?

In these examples, the interlocutors have in mind a salient set of individuals as possible answers.

One possible way to defend the need for the D-linking distinction for such examples is to follow the suggestion set forth by Martin (2020). That is, the use of the *wh-the-hell*-phrase is a discourse move to declare the speaker’s lack of belief in the provided answer set. That is, the speaker is suggesting that it is implausible to choose any of the salient answers as a licit answer. In this sense, the uses of the *wh-the-hell* phrase given here can still be taken to be non-D-linked.

Despite such an issue, as noted by Ginzburg & Sag (2000: 142, 248), D-linked *which*-phrases differ from non-D-linked *what*-phrases in that the former carry a uniqueness presupposition while the latter do not (e.g. *Which author does every English woman admire most?* vs. *Who does every English woman admire most?*). To reflect such a clear difference among *wh*-phrases, we adopt the D-linking distinction in this paper, leaving open further refinement for the definition of D-linking.

- (12) (a) What did you buy in the store?
 (b) Who did you meet in the store?
- (13) (a) What the hell did you buy in the store?
 (b) Who the hell did you meet in the store?
 (c) When the heck did you buy the item in the store?

In unmarked situations, the interlocutors of these interrogatives do not need to share a particular set of individuals in the discourse to make a felicitous answer. That is, no previous discourse is necessary with respect to the referent of a *what-* or *who-*phrase, as opposed to a *which-*phrase. This is why it is rather infelicitous to utter **What do you like most/more?* while it is fine to say sentences like *Which one do you like most/more?*

This discourse property of having no salient set in the discourse also seems to lead to a difference in the following examples (Den Dikken & Giannakidou 2002; Huang & Ochi 2004):

- (14) (a) I know who left the party.
 (b) *I know who the hell left the party.
 (c) I don't know who the hell left the party.

The badness of (14b), in contrast to (14c), can be attributed to the contradiction that the *wh-the-hell* phrase inherently involves no knowledge of the referent for the non-D-linked *wh-expression* *who*, but the speaker says that she knows who that person is. Observing such a contrast, Den Dikken & Giannakidou (2002) suggest the parallelism between the *wh-the-hell* phrase and NPIs (negative polarity items):

- (15) (a) He didn't {tell me/confirm/realize} who the hell had spread those horrible rumors about me.
 (b) *He {told me/confirmed/realized} who the hell had spread those horrible rumors about me.

The contrast here indicates that the *wh-the-hell* phrase appears only in nonveridical contexts, like NPI licensing items like *not*. This fact is also related to the non-D-linking constraint. Both the nonveridicality and *wh-the-hell* phrase contexts do not express certainty about, or commitment to, the truth of a sentence. That is, the *wh-the-hell* phrase implies that the referent of the *wh-expression* is unavailable to the speaker.

Another prominent discourse property of the ANDC, as briefly noted above, is that the construction with the *wh-the-hell* phrase expresses the speaker's negative attitude toward the possible value of the *wh-the-hell* phrase, as seen from the following data:

- (16) (a) What does Kim really want?
 (b) Who is going to attend the meeting?
 (c) Why should they trust him to do so?

- (17) (a) What the hell does Kim want?
 (b) Who the hell is going to attend the meeting?
 (c) Why on earth should they trust him to do so?

The examples in (17), just like those in (16), can be information-asking in that they ask for a value of the variable introduced by the *wh*-phrase. However, those in (17) at the same time convey the speaker's negative attitude (frustration, anger, or surprise) toward the proposition evoked by the question.

In addition, the *wh-the-hell* phrase gives rise to only a wide scope reading with respect to a quantifier unlike normal *wh*-phrases (Den Dikken & Giannakidou 2002):

- (18) (a) What did everyone buy for Max?
 (b) What the hell did everyone buy for Max?

In the example in (18a) with a normal *wh*-phrase *what*, either a wide or narrow scope reading of *what* is available with respect to the universal quantifier *everyone*. On the other hand, in the example in (18b) with its *wh-the-hell* phrase counterpart, only a wide scope reading of *what the hell* is available with respect to the universal quantifier. Similar to this scope restriction, no non-local reading is available to the *wh-the-hell* phrase (Ochi 2004, 2015):

- (19) (a) Why did you say that Kim is mad?
 (b) Why the hell did you say that Kim is mad?

In the example in (19a), the normal *wh*-phrase *why* can be related to either the event of saying in the matrix clause or the event of Kim's being mad in the embedded clause. In other words, it is ambiguous in that the normal *wh*-phrase *why* allows both a local reading and a non-local reading. However, in the example in (19b), its corresponding *wh-the-hell* phrase can only be related to the event of saying in the matrix clause, not the event of Kim's being mad in the embedded clause, disallowing a non-local reading.

As discussed so far, the ANDC introduced by a *wh-the-hell* phrase shows several intriguing morphosyntactic and semantic/pragmatic properties, which distinguish the construction from other related constructions. In the next section, we discuss our corpus findings for its uses in real life situations.

3. CORPUS FINDINGS AND DISCUSSION

3.1 *Corpus used and search methods*

In order to investigate the authentic uses and grammatical properties of the ANDC, we performed a corpus investigation using COCA (Corpus of Contemporary

American English). To extract ANDC examples from COCA, we first used simple string searches with some regular expressions as given in (20):

- (20) Exemplar search strings used in COCA
- (a) `wh* | how* (in) the hell|heck|fuck|devil` (13,618 tokens)
 - (b) `wh* | how* on earth` (1,783 tokens)
 - (c) `wh* | how* in the world` (1,848 tokens)

Such string searches gave us a total of 17,249 tokens and we then manually excluded irrelevant examples like those in (21):

- (21) (a) The sample contained smectite clay, which on Earth is found in alluvial plains and regions washed by monsoons. (COCA 2013 MAG)
- (b) Come back here, you wetback prick, I'll show you what the devil looks like. (COCA 2007 FIC)

In (21a), *which on Earth* has a literal meaning with the relative pronoun use of *which* rather than functioning as a *wh-the-hell* phrase. In (21b), *the devil* is not used as an emotive expression in a *wh-the-hell* phrase but it functions as the subject of the verb *looks*. After manually filtering out such irrelevant examples from the extracted data, we have identified a total of 15,651 tokens with the *wh-the-hell* phrase, for which we have performed a quantitative and qualitative investigation, as discussed in what follows.

3.2 General distributions of the ANDC examples

As for the data extracted from COCA, we first looked into the registers of the identified tokens. Figure 1 shows the uses of the construction by registers.

As seen from Figure 1, the ANDC is mainly used in informal, colloquial contexts such as fiction and spoken registers and it is less preferably used in formal contexts like academic register. This seems to support the discourse uses of the construction to express the speaker's negative attitude toward the proposition associated with the interrogative.

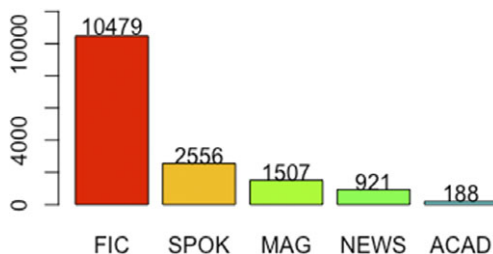


Figure 1
Frequencies of the ANDC by registers in COCA.

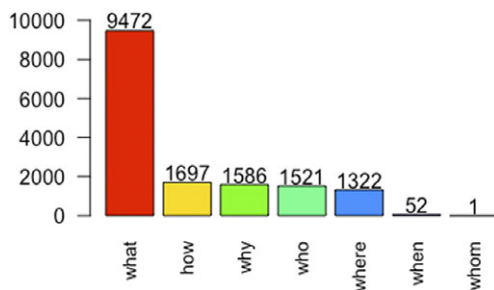


Figure 2
Frequencies of the ANDC by *wh*-words in COCA.

We also identified that the predominant *wh*-expression used in the *wh-the-hell* phrase is *what*, followed by *how*, *why*, *who*, and *where*. Figure 2 shows the distribution of the identified ANDC examples from COCA by *wh*-words.

As seen in Figure 2, the frequencies of *how*, *why*, *who*, and *where* are quite similar. In the meantime, the frequency of *when* and that of *whom* in the construction are quite low, compared to the other *wh*-expressions. The corpus yielded no token of the *wh-the-hell* phrase with *which*, supporting the traditional dichotomy between D-linked and non-D-linked *wh*-expressions. The following include some examples of the construction we identified from the corpus:

- (22) (a) What on earth did you do to make them so angry?
 (b) And how the heck did they get there?
 (c) Why on Earth have I had this conversation?
 (d) Who the hell gets married during football season?
 (e) Shoot you? Where in the world did you get an idea like that?
 (f) When the hell is this show getting a soundtrack release?
 (g) I asked him whom the hell he was yelling at?

The corpus data also include tokens where the *wh-the-hell* phrase is used as part of a complex phrase:

- (23) (a) [[What the hell] rule] did he break? (COCA 2007 NEWS)
 (b) [[How the heck] long] were you in the crapper? (COCA 2009 FIC)
 (c) [[How the hell] much farther] do you want to drive on that miserable crapfest of a trail? (COCA 2015 FIC)

Moreover, the identified tokens have examples where the emotive expression in the *wh-the-hell* phrase includes a pre-modifier as in (24), which is unnoticed by previous literature:

- (24) (a) [What [the bloody hell]] are you doing? (COCA 2016 FIC)
 (b) [What [in the doggone world]] really happened? Judy asked. (COCA 2001 FIC)

In the examples in (24) modifiers like *bloody* and *doggone* are used in the *wh-the-hell* phrase to emphasize the negative connotation inherent in the construction.

In terms of syntactic combination, the data show us that the *wh-the-hell* phrase can combine with either a finite or a nonfinite dependent. In most cases, the *wh-the-hell* phrase combines with a finite sentence (13,126 instances), but it can also combine with a nonfinite sentence or XP:

- (25) (a) [How the hell] [you expect to call them out there]? (COCA FIC 2003)
 (b) [What the hell] [we supposed to do]? (COCA 1998 FIC)
 (c) [What in the world] [y'all doing]? (COCA 2009 NEWS)
 (d) [Where the hell] [you been]? (COCA 2000 FIC)
 (e) Harris sat and wondered [what on earth] [to do]. (COCA 1994 FIC)

In (25), the *wh-the-hell* phrase combines with a nonfinite sentence. One may take the examples in (25a–d) to involve the absence of a finite auxiliary verb, but an example like (25e) indicates that the *wh-the-hell* phrase can combine with an infinitival VP, as does a regular *wh*-phrase.

We have also checked the variations of the ANDC in matrix and embedded environments. The ANDC can occur in both matrix and embedded environments, but it is dominantly used in the former. A total of 13,390 instances of the ANDC (85.6%) occur in matrix environments while only 2,261 instances (14.4%) occur in embedded environments, some of which are given in (26):

- (26) (a) I don't know [what the hell I'm talking about]. (COCA 2011 SPOK)
 (b) He wasn't sure [what the hell his 'chakra' was], but he knew what he was focused on. (COCA 2003 FIC)
 (c) You have no clue [what the hell's going on], do you? (COCA 2008 SPOK)
 (d) I think I need to step away and think about [what the hell I did]. (COCA 1994 SPOK)
 (e) [Why on earth anyone lives year-round in this forsaken wilderness] is beyond me. (COCA 1998 FIC)

As shown in (26a–d), the ANDC can occur as the complement clause of a verb, adjective, noun, and preposition. It can even occur as a sentential subject as in (26e).

Related to this, Den Dikken & Giannakidou (2002), as mentioned earlier, noted that the *wh-the-hell* phrase is only used in nonveridical contexts. However, our corpus search yields examples of the *wh-the-hell* phrase in veridical contexts, as illustrated in (27):

- (27) (a) He knew [what the hell] he stood for. (COCA 2016 SPOK)
 (b) Watch while you still recognize [who the hell] is on it. (COCA 2003 MAG)
 (c) I was trying to find out [what the hell] the rules were. (COCA 2006 ACAD)

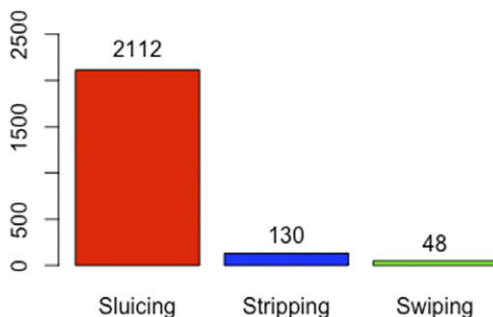


Figure 3
Frequencies of the *wh-the-hell* phrase in ellipsis.

Note, at this juncture, that predicates like *know*, *recognize*, and *find out* do not license an NPI, as seen from the following:

- (28) (a) He knew that he stood for something/*anything.
 (b) Watch while you still recognize that someone/*anyone is on it.
 (c) I was trying to find out something/*anything.

Within the assumption that NPIs occur only in nonveridical environments (Giannakidou 2002), such examples imply either the extended uses of the *wh-the-hell* phrase or a need to revise the claim that the *wh-the-hell* phrase occurs only in NPI environments.

3.3 Uses in elliptical environments

As noted in the beginning, the *wh-the-hell* phrase displays several unexpected properties in elliptical constructions including Sluicing. We have identified a total of 2,290 tokens of the *wh-the-hell* phrase (about 15% of total 15,651 tokens) in the elliptical environments. The tokens are distributed over the three main types, whose frequencies are given in Figure 3.

As represented in Figure 3, the most predominant elliptical environment for the *wh-the-hell* phrase is Sluicing. The frequency of the *wh-the-hell* phrase in Stripping and Swiping is significantly low, but is consistently observed.

3.3.1 Sluicing

One unexpected finding from the corpus data, as in Figure 3, is a significant number of tokens with the *wh-the-hell* phrase in matrix and embedded Sluicing:⁷

[7] French is another language that allows an emotive expression in *wh*-questions as well as Sluicing environments. See Smirnova & Abeillé (2021: 241) for details.

- (29) (a) I handed Angelita a tray of empanadas and a bowl of dipping sauce. ‘Go on,’ I said. ‘I am almost finished in here. Why don’t you bring this out to the men?’ I had earlier told Rafael that it was important to make Angelita feel sorry for him. ‘[Why on earth]?’ The very idea made him bristle. (COCA 2003 FIC)
- (b) If he was to believe what he saw, he was looking at a ball of water, floating in space, within which chlorophyll reactions were proceeding. ‘My God,’ he said. ‘They survived. [How the hell]?’ (COCA 2000 FIC)
- (30) (a) Even when I first got here, the sunflowers were dead. The water view requires jimmying a lock, climbing the ricketiest attic stairs you’ve ever seen, and leaning out the window to spy a distant patch of harbor between bare branches and pine boughs. When I called the owner to ask [what the hell], he apologized and told me he hadn’t been there in a while, then offered to sell me the cottage for what sounds to me like a song. (COCA 2008 FIC)
- (b) ‘Oh, how I’ve missed your humor, Jones.’ Phillips helped him lug his bags into the boot. He was in his late thirties now, his handlebar mustache as thick as ever but flecked with gray. ‘And less of the Bob, will you? I see you’ve brought your big bone as advertised. I don’t know [why on earth].’ (COCA 2012 FIC)

Of these Sluicing tokens, 2,091 (99%) occur in matrix environments and only 21 (1%) occur in embedded environments.⁸

Much of the prior literature has noted that Sluicing introduced by the *wh-the-hell* phrase is unacceptable in matrix environments (Ginzburg & Sag 2000; Merchant 2002). Consider the following example provided by Ginzburg & Sag (2000: 314):

- (31) A: A friend of mine came in.
B: Who (#the hell/#the heck)?

The example indicates that the *wh-the-hell* phrase cannot refer to an overt antecedent or correlate in the previous discourse, reflecting the non-D-linking property of the *wh-the-hell* phrase. This contrasts with examples like the following:

- (32) (Context: A arrives at home to find his house covered with toilet paper.)
What the hell/the heck? (Ginzburg & Sag 2000: 314)

[8] Following Pesetsky (1989), Den Dikken & Giannakidou (2002) argue that in English the *wh*-expression occupies [Spec, FocP] in matrix environments while it occupies [Spec, CP] in embedded environments. With the assumption that the nonveridical Q operator in C licenses a *wh-the-hell* phrase, it licenses a *wh-the-hell* phrase in matrix environments, but not in embedded ones, since the phrase is already in [Spec, CP]. It can be licensed only by an external nonveridical licenser in the matrix clause.

The key difference from (31) is that this example has no overt correlate or antecedent introduced by the discourse. The *wh-the-hell* phrase is used as a nonsentential utterance referring to the situation in question.

This discourse constraint, as we discussed earlier in (4), also holds in the embedded environment. Observe similar examples below (Den Dikken & Giannakidou 2002; Merchant 2002; Sprouse 2006; Almeida & Yoshida 2007; Hartman & Ai 2009):

- (33) (a) *Kim kissed someone tonight, but I wonder who the hell.
 (b) *Someone bought that book, but I don't know who the hell.

Examples like (33) belong to the so-called merger type of Sluicing in that the antecedent clause includes an overt correlate *someone* linked to the *wh*-remnant *who* in the second clause.⁹ The ungrammaticality of these merger examples is rather expected when considering the non-D-linking nature of the *wh-the-hell* phrase. Just like the *wh-the-hell* phrase in (31), the *wh-the-hell* phrase here is linked to an overt correlate introduced by the previous discourse.

Observing these discourse factors, we classified the identified Sluicing examples into three different groups, depending on the correlate/antecedent type, as in (34):

- (34) (a) *Pragmatically controlled*
 Settled at last, she hit the remote, dialed in her favorite channel, and heard the doorbell ring. 'Damn,' she murmured, glancing at the digital clock on the set. It was just before ten p.m. [Who on earth]? (COCA 2010 FIC)
 (b) *Sprouting*
 Being a vegetarian is a positive one. [How on earth]? (COCA 1996 NEWS)
 (c) *Pseudo-merger*
 Ms-BOYD: (Voiceover) Where did he put her? I mean, I sit up at night, 2, 3, 4 AM, just thinking, [where on earth]? (COCA 2007 SPOK)

The example in (34a) is taken to be pragmatically controlled (or exophoric) in the sense that the context with no linguistic antecedent can provide a key to the intended meaning of *who on earth?* Hearing the doorbell ring at 10 p.m., the speaker utters the nonsentential utterance (NSU), *who on earth?* There can be more than one putative source sentence for this NSU, such as *Who on earth is visiting me at this time?* and *Who on earth is ringing the bell at this time?* The sprouting example in (34b) is a case where the correlate is implicit but the previous antecedent clause provides a basis for the intended meaning of

[9] Chung, Ladusaw & McCloskey (1995) classify Sluicing into two types: merger and sprouting. In the merger type of Sluicing, the *wh*-remnant has an overt correlate in the antecedent clause such as *someone* or *something* while in the sprouting type of Sluicing, there is no overt correlate. See Chung et al. (1995) for further discussion of the differences between the two types of Sluicing.

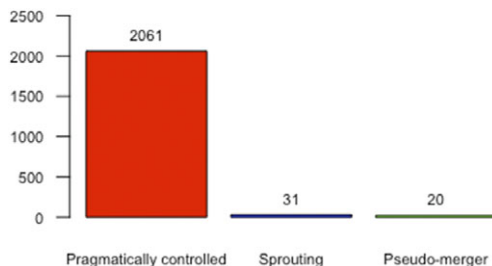


Figure 4

Frequencies of the *wh-the-hell* phrase in Sluicing by the correlate/antecedent types.

the remnant, as in *How on earth is being a vegetarian a positive one?* Lastly, the type involved in (34c) is referred to as ‘pseudo-merger’ in that it is the same as merger in terms of having an overt antecedent clause and an overt correlate but their correlate types and functions are different. For instance, in (34c) the antecedent clause is a *wh*-question *Where did you put her?* and the correlate is the *wh*-expression *where*, not a simple indefinite expression like *somewhere*, as in *He put her somewhere but I don’t know where*. The pseudo-merger example in (34c) is specifically used to emphasize the previously uttered antecedent/correlate. Since it is different from merger in these respects, it is termed ‘pseudo-merger’ here. The frequencies of these three types are given in Figure 4.

As given in Figure 4, the pragmatically controlled type is the most dominant one used in Sluicing with the *wh-the-hell* phrase, possibly due to the main discourse functions of the construction. That is, the key function of the *wh-the-hell* phrase is to add the speaker’s negative attitude toward the situation evoked from the *wh*-question. For instance, (34a) could ask himself who is the one knocking the doorbell, but at the same time expresses the speaker’s negative attitude such that no one should knock the doorbell at that time. Further, since the *wh-the-hell* phrase is non-D-linked, the discourse does not need to provide a discourse referent of the *wh*-expression. This non-D-linking property seems to result in the high frequency of the pragmatically controlled type followed by the sprouting type, but no instances of the true merger type that has an overt correlate in the discourse.

3.3.2 Stripping and Swiping

Stripping or bare argument ellipsis (BAE) is an ellipsis that elides everything from a clause except one constituent. Since the *wh-the-hell* phrase must involve a *wh*-expression, we investigated Stripping with the *wh-the-hell* phrase where the *wh-the-hell* phrase has one remaining constituent. First, consider the following

<i>Wh</i> -word	Stripped remnant category	Freq
why	NP	4
	VP	19
	not	89
	AdvP	5
what	NP	1
	AdvP	8
	PP	3
how	PP	1

Table 1

Frequencies of Stripping with the *wh-the-hell* phrase based on *wh*-words and the categories of the stripped remnant.

Stripping data with normal *wh*-phrases from Ortega-Santos, Yoshida & Nakao (2014: 58):

- (35) (a) A: Lou will ask Doris about syntax. B: Why about syntax? (*Why*-Stripping)
 (b) A: Lou will ask Doris about syntax. B: And who about phonology? (*Wh*-Stripping)

Why-Stripping as in (35a) and *wh*-Stripping as in (35b) differ in that the former is only introduced by *why* while the latter is by a *wh*-expression other than *why*.¹⁰ From these, we would expect examples like *Why the hell about syntax?* and *Who the hell about phonology?* Among the identified examples from COCA, 130 tokens involve these kinds of Stripping as shown in Figure 3. We classified these Stripping tokens with the *wh-the-hell* phrase on the basis of *wh*-words and the categories of the stripped remnant and Table 1 shows their distribution.

Of these 130 Stripping tokens with the *wh-the-hell* phrase, 117 belong to *why*-Stripping while the remaining 13 tokens involve *what* (12 tokens) and *how* (1 token). The categories of the stripped remnant with the *wh-the-hell* phrase vary, including NP, VP, AdvP, PP, and the negation marker *not*.¹¹

- (36) (a) So they end up in Arkansas. Of all possible places, [why on earth] [Arkansas] where so many turtles are to be seen squished on the roads? (COCA 1992 FIC)
 (b) The Super Bowl is the greatest event in the world. [Why the hell] [worry where you play]? (COCA 1990 NEWS)

[10] Examples like (35b) can be analyzed as gapping, and these differ from *why*-Stripping in several respects including locality, islandhood, and preposition stranding. See Ortega-Santos et al. (2014) for the detailed discussion of various differences between *why*-Stripping and *wh*-Stripping.

[11] In the examples like (36b) and (37a), the *wh-the-hell* phrase combines not with an argument, but with a base VP or an AdvP. Ortega-Santos et al. (2014) take such examples to involve Stripping in the sense that the remnant VP or AdvP moves to the focused position and the remaining clause is elided.

- (c) It's just not gonna be that easy. [Why the hell] [not]? (COCA 2007 FIC)
- (d) 'What's up?' he asked. 'I've decided to go now,' she said quickly. 'Where to?' 'To fetch the books.' '[Why on earth] [now]? You can go tomorrow.' (COCA 1996 FIC)
- (37) (a) '[What the hell] [now]?' 'Nothing. I just get nervous with paperwork.' (COCA 1990 FIC)
- (b) ... we're running out of gas, money and everything else, and they are just – we're seeing them walking around with suitcases and everything, but [what the hell] [about us]? (COCA 2005 SPOK)
- (c) WALTER: Well you're right, Dude, I got to thinking. I got to thinking why should we settle for a measly fucking twenty grand. DUDE: We? [What the fuck] [we]? You said you just wanted to come along. (COCA 1998 FIC)
- (d) That ain't my case. They assigned me, go do some legwork, theft of government property. That's what I'm gonna do, and then go home and burn the roast. [How the hell] [about that]? – I'm gonna swim with the current, and I don't care where he is. (COCA 2001 FIC)

In terms of the correlate/antecedent type, Stripping with the *wh-the-hell* phrase also has three different types: pragmatically controlled (48 tokens), sprouting (80 tokens), and pseudo-merger (2 tokens). The following demonstrate these three types:

- (38) (a) *Pragmatically controlled*
Richard and Dan, [why on earth] [put Charlie Manson on a T-shirt]? (COCA 1993 SPOK)
- (b) *Sprouting*
'Will you be needing a ride home from the police station?' '[Why the heck] [not]? Yes, please,' I said ... (COCA 2017 FIC)
- (c) *Pseudo-merger*
'I'm out of here. For good.' 'What do you mean? What about Mom and Dad?' '[What the heck] [about Mom and Dad]?' he said. (COCA 2003 FIC)

As noted in Figure 3, another type of ellipsis we have identified with the *wh-the-hell* phrase is Swiping. The following are a few from the 48 Swiping examples with the *wh-the-hell* phrase:

- (39) (a) 'I got the chains on the car.' '[What on earth] [for]?' (COCA 1997 FIC)
- (b) Even from here, I can see that he's grinning. [What the hell] [about]? (COCA 2005 FIC)
- (c) '... they're going to test the rollers today.' '[What on earth] [with]?' (COCA 2004 FIC)

In these Swiping examples, the *wh-the-hell* phrase combines with a preposition. The *wh*-word and preposition combination patterns in the data are quite limited: of the total 48 tokens, 46 have the combination of *what* and *for*, and the remaining two are that of *what* and *about* as in (39b) and that of *what* and *with* as in (39c). In terms of the correlate/antecedent type in these Swiping examples, we could identify three tokens of the pragmatically controlled type and 45 tokens of the sprouting type, as given in (40):

- (40) (a) The Swedish girls ask me to take their picture. Too flumoxed to refuse, I take a shot of them smiling, heads touching, next to the ash pit behind the oven. When they ask for another, my wife snaps, ‘[What on earth] [for]?’ (COCA 1994 FIC)
- (b) ‘You’ll see him,’ he said with a grin. ‘He hangs around the office.’ ‘[What the hell] [for]?’ I snapped. (COCA FIC 1999)

Some key observations from the corpus data include the following. First, the ANDC is dominantly used in informal contexts such as fiction and spoken registers. Second, its uses are more diverse than observed in previous literature. Third, most notably, contrary to the previous observations, the *wh-the-hell* phrase can be used in a variety of elliptical constructions. When the *wh-the-hell* phrase is used to introduce the elliptical constructions, it occurs more frequently in sprouting or pragmatically controlled contexts than in merger contexts, which seems to be related to the non-anaphoric (non-D-linking) properties of the *wh-the-hell* phrase. In what follows, we try to offer a non-derivational analysis for the construction in general as well as in elliptical environments.

4. A CONSTRUCTION-BASED ANALYSIS

4.1 *Licensing the wh-the-hell phrase*

Let us first discuss the formation of *wh-the-hell* phrases. In licensing *wh-the-hell* phrases, as noted earlier, the grammar needs to allow only a limited set of emotive expressions like *the hell*, *the heck*, and *on earth* to modify a *wh*-expression.

- (41)
$$\left. \begin{array}{l} \text{what} \\ \text{who} \\ \text{where} \\ \text{when} \\ \text{why} \\ \text{how} \end{array} \right\} + \left\{ \begin{array}{l} \text{the hell, the heck, the blaze, the deuce, the devil, the Dickens,} \\ \text{on earth, in the world, in blue blazes, in tarnation, etc.} \end{array} \right\}$$

The possible emotive expressions that can occur in the *wh-the-hell* phase are quite idiosyncratic, as demonstrated in (42):

- (42) (a) {What the hell/*What a hell} does it mean?
 (b) {What the devil/*What the devils} is he doing?
 (c) What the holy hell happened to my country?

As shown here, the emotive expression disallows the indefinite article *a/an* and must be definite as in (42a). The emotive noun cannot be plural as in (42b), but can host an internal modifier (e.g. *the bloody hell*), as discussed earlier in (24) and illustrated here in (42c).

Another basic property of the *wh-the-hell* phrase is that it is only acceptable in contexts with question-orientation (Huddleston 1993; Ginzburg & Sag 2000: 9, 230):¹²

- (43) (a) *Anyone [[who the hell] saw them].
 (b) *[What the hell] [a nice person she is]!

The *wh*-word here has no interrogative use: the *wh*-word in (43a) is a relative pronoun and the one in (43b) is an exclamative pronoun. This requirement can also differentiate between the two examples below:

- (44) (a) I wonder how on earth you saved her.
 (b) *I recall how on earth you saved her.

The example in (44a) is grammatical since the embedded clause introduced by the *wh-the-hell* phrase is selected for by a verb with question-orientation *wonder*; however, the example in (44b) is ungrammatical as it is selected for by a verb with answer-orientation *recall*.

To capture such unique combinatorial properties of the *wh-the-hell* phrase, we first accept Ginzburg & Sag's (2000) suggestion that *wh*-words have nonempty specifications for the feature WH, as in the following feature structure specifications:

- (45)
$$\left[\begin{array}{ll} \text{FORM} & \langle \text{who} \rangle \\ \text{CAT} & \textit{noun} \\ \text{WH} & \{([x, \textit{person}])\} \end{array} \right]$$

[12] As a reviewer points out, the uses of *What the hell/heck!* seem to be exclamatory with no question-orientation. Nonetheless, such examples can also be interpreted as the speaker's surprise or frustration toward the possible value of a contextually provided *wh*-question like *What the hell (is happening)?* or *What the heck (are you doing)?* In this sense, we could say that the construction is a type of 'exclamatory question' (P. Collins 2005). The focus of this research, leaving out the instances of pure exclamative meaning, is also for instances with a certain interrogative meaning in addition. Also, see Ginzburg (2019) for a corpus-based study on exclamative Sluicing in English.

The lexical specifications here ensure that the interrogative *wh*-word *who* bears a nonempty WH feature value which is a parameter referring to a person with an index value *x*. The emotive expression then modifies the preceding *wh*-word with a nonempty WH value. As noted earlier, the emotive phrase cannot modify the *wh*-phrase with a nonempty WH value:

- (46) (a) [Who the hell] did they visit?
- (b) [How the hell many books] did they read?
- (47) (a) *[Which book the hell] did they read?
- (b) *[How many books the hell] did they read?
- (c) *[How many the hell books] did they read?

Further, we have seen that only a limited set of *wh*-words and emotive expressions can participate in the combination. Considering these peculiarities, we suggest that English has an idiosyncratic construction, as given in the following:

(48) *Wh-the-hell* Construction (\uparrow *hd-functor-ctx*)

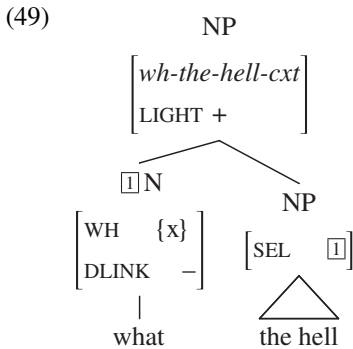
$$\left[\begin{array}{cc} wh\text{-the-hell-}ctx & \\ LIGHT & + \end{array} \right] \rightarrow \boxed{\mathbf{H}} \left[\begin{array}{cc} word & \\ DLINK & - \\ WH & \{x\} \end{array} \right], \left[\begin{array}{c} the\text{-emotive-}ctx \\ SEL \ \boxed{} \end{array} \right]$$

This construction rule licenses the combination of a non-D-linked *wh*-word with an emotive expression which is also predetermined in the grammar of English. The syntactic cohesion of the resulting expression, as noted earlier and further suggested by a reviewer, behaves like a lexical expression (marked with [LIGHT +]) with respect to syntactic distributions (see Section 4.3 also).¹³ The specification of the feature LIGHT is to reflect that the construction is a light, quasi-lexical constituent. Within this system, words as well as the combination of two words are thus [LIGHT +], while phrases are typically [LIGHT -]. However, the combination of a *wh*-word with the emotive phrase results in a [LIGHT +] expression.¹⁴ Note also that the emotive expression is a functor that combines with a *wh*-word via the feature SEL in accordance with the Head-Functor Construction, which is independently motivated for treating specifiers and modifiers in a uniform

[13] The feature LIGHT has been widely used to license complex predicates in French, Korean, and English where two lexical expressions are combined to yield a quasi-lexical expression (Abeillé & Godard 1997, 2000; Bonami & Webelhuth 2013; J.-B. Kim 2018; Kim & Michaelis 2020). It is also used to account for the possible pronominal modifiers in English (Abeillé & Godard 2000).

[14] The emotive phrase could be specified to be [LIGHT +], but there are many instances where it can occur as a phrasal expression, as in *I went through the hell of hating my body in a swimsuit*.

manner (see, among others, Van Eynde 2007; Kim & Sells 2011; Kay & Sag 2012).¹⁵ This construction rule would then project a structure like the following:



As represented in the structure, the NP emotive expression *the hell* is a functor and selects the interrogative *wh*-word *what*. This eventually results in the formation of a well-formed *wh-the-hell* construct bearing the feature [LIGHT +] so that it can behave like a lexical expression. As we will see in what follows, this LIGHT feature allows Swiping to be possible only with a [LIGHT +] expression (*wh*-word and *wh-the-hell* phrase) and a limited set of prepositions.

In the construction, the *wh*-word also needs to have a nonempty parameter value for the feature WH, which bars the emotive phrase from combining with a non-interrogative *wh*-word as in (43) and as in **the student who the hell we met last night* and **I ate what the hell Kim ate*. The requirement for the nonempty WH value could also block examples like the following:

- (50) (a) *I wondered whether in the world/blue blazes/tarnation they were real.
 (b) *I wondered whether the devil/deuce they were real.

The complementizer *whether* can introduce an interrogative clause, but inherently lacks a parameter value of the feature WH, as suggested by Ginzburg & Sag (2000: 214).¹⁶

[15] The Head-Functor Construction thus licenses the combinations of predeterminer constructions (e.g. *all the students, both those books*), big mess constructions (e.g. *so big a mess, such a big mess*), and correlative constructions (e.g. *The fewer mistakes you make, the better your mark is*).

[16] There seem to be some variations in the use of *whose* in the construction. Most speakers do not allow *whose* to combine with the emotive phrase, as in **whose the hell books, *whose books the hell*, etc. However, there are also attested examples such as *Whose the hell's bright idea is it to make them?*, *Whose the hell (job) is it if it's not the president's?*, and *Whose the hell dog?* For such variations, we may need to add a case-marking constraint on the *wh*-word.

The present analysis can also make other predictions, accounting for the grammaticality and ungrammaticality of the following examples:

- (51) (a) [Who the hell]'s idea was this?
 (b) [Who the hell]'s fault is that?
- (52) (a) *What did he buy the hell?
 (b) *I wonder what he is talking about the hell.

The *wh-the-hell* phrase can be an NP constituent and occur as the specifier of the possessive marker, as in (51). The ungrammaticality of the examples in (52) is expected as well, because the head *wh*-word and the emotive modifier phrase are in discontinuous positions so that the emotive phrase cannot select the head *wh*-word.

4.2 Licensing the construction

With the constructional formation of the well-formed *wh-the-hell* phrase, let us now consider how the grammar licenses its occurrences in syntactic environments. The defining property of the *wh-the-hell* phrase in English, as we have noted, is that it cannot stay in situ, whose key data we repeat here:

- (53) (a) *Sandy visited who the heck/hell/devil?
 (b) Who the heck/hell/devil did Sandy visit _?
 (c) Who the heck/hell/devil do you think they visited _?
 (d) *Who visited who the heck/hell/devil?

The *wh-the-hell* phrase is illicit when staying in situ, as in (53a, d). Considering that normal *wh*-phrases in English can appear in situ as in (54), this positional requirement is rather a constructional one.¹⁷

- (54) (a) I wonder who has bought what?
 (b) You asked which book Sandy gave to who?

Another motivation for a construction-based approach, as we have noted earlier, comes from its independent discourse constraint. As observed by Den Dikken & Giannakidou (2002) and others, the construction involving the *wh-the-hell* phrase occurs in NPI environments that trigger a widening effect. For instance, in (53b), the domain of *who the heck* is an open set including all the possible individuals that satisfy 'Sandy visited x'. In addition to this widening effect, we have seen that the construction evokes a negative inference in (53b) such that Sandy should visit nobody or such that the speaker does not have any knowledge of the individual 'x' that Sandy visited. This kind of negative inference does not come from any

[17] This restriction is also language-specific since in languages like Chinese, Japanese, and Korean, both normal *wh*-phrases and *wh-the-hell* phrases can be in situ (Huang & Ochi 2004; Oguro 2017).

individual expression in the sentence in (53b), but arises only when the *wh-the-hell* phrase occurs in a specific construction.

As a way to address these syntactic and pragmatic peculiarities, we suggest that English employs the following independent construction involving a *wh-the-hell* phrase:¹⁸

(55) *Aggressively non-D-linked Construction* (\uparrow hd-filler-cxt):

$$\left[\begin{array}{l} \text{aggr-nd-cxt} \\ \text{CAT S} \\ \text{CNXT | BACKGR } \textit{neg-attitude}(\textit{speaker}, s_0) \end{array} \right] \rightarrow \boxed{\uparrow} [\textit{wh-the-hell-cxt}], \mathbf{H} \left[\begin{array}{l} \text{GAP } \langle \boxed{\uparrow} \text{XP} \rangle \\ \text{SEM | IND } s_0 \end{array} \right]$$

The construction has two daughters: a *wh-the-hell* phrase and a head sentence which has this *wh-the-hell* as its gap (GAP) value.¹⁹ In addition, its constructional constraint also includes the contextual background information such that the speaker has a negative attitude toward the situation (s_0) in question. Since this information refers to a discourse structure, it can be identified even when this head is elided as in *How the hell?*. The constructional rule thus allows a non-D-linked *wh-the-hell* phrase to combine with an incomplete S, which yields a head-filler unbounded construction:

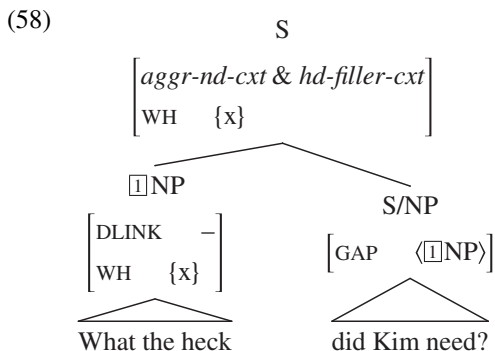
- (56) (a) Who the hell would you call _ ?
- (b) What the heck did Kim need _ ?
- (57) (a) Who the hell do you think you're talking to _ ?
- (b) Who the hell do you think _ recommended you?

In (56), the *wh-the-hell* phrase serves as a filler and combines with a sentence with a gap whose grammatical function corresponds to the direct object of the verb *call* or *need*.²⁰ The examples in (57) even show a long distance dependency between the *wh-the-hell* phrase and the putative gap in the embedded clause. This becomes clear when considering a simplified structure of (56b):

[18] This construction-based approach departs from the analysis sketched by Ginzburg & Sag (2000) in a few respects. The gist of their analysis is to claim that the emotive expression modifies a *wh*-word with the nonempty *wh* specification, which is required by the so-called WH-Constraint such that ‘Any non-initial element of a lexeme’s ARG-ST (argument-structure) list must be [WH { }]’ (Ginzburg & Sag 2000: 189). This constraint would specify all in situ occurrences of interrogative *wh*-words as [WH { }], blocking the in situ occurrence of the *wh-the-hell* phrase. Despite such merits, this direction also raises several key problems such as allowing examples like **which the hell* but not licensing those like *why the hell* or *how the hell*: in this system, *which* selected by a lexeme would be *wh*-specified while *why* would be either *wh*-specified or not since it would not be in the ARG-ST.

[19] See Ginzburg & Sag (2000) and Kim & Michaelis (2020) for the function of the feature GAP.

[20] This implies that the present analysis allows an adverbial extraction for examples like *When the hell does Kim need it?* See Hukari & Levine (1995) and Levine & Hukari (2006) for the syntactic nature of adjunct extraction in English.



The head S has an NP gap (GAP) which is linked to the filler, the *wh-the-hell* phrase. The gap value can be in a long distance relation with the filler, as in (57).

The construction has a contextual background that evokes a pragmatic inference conveying the speaker’s negative attitude toward the situation (denoted by the head S) in question.²¹ For instance, the examples in (56) allow us to infer that the addressee should not call anyone and Kim should not need anything. Even in information-seeking examples like (59), discussed by Güneş & Lipták (2021), there is a negative inference:

- (59) A: John has seen someone.
 B: Who the hell has he seen?

The speaker B wonders about a value for the *wh*-expression (‘I wonder who he has seen’), but at the same time has a negative attitude (unexpected surprise) or rhetorical question such as ‘he shouldn’t have seen anyone’.

Another advantage of this construction-based account comes from examples like the following (Sprouse 2006: 350):²²

- (60) (a) *Who the hell ate what the hell?
 (b) Who the hell knows what the hell he is doing?

The contrast here tells us that we cannot simply disallow double *wh-the-hell* phrases in a sentence. The present system blocks examples like (60a) because the second *wh-the-hell* phrase is not licensed by the construction rule in (55). However, the rule licenses both *wh-the-hell* phrases in (60b) as the non-D-linked nonhead daughter.²³

[21] An anonymous reviewer questions if this negative attitude applies to potential answers. However, we believe that the negative attitude has to do with the speaker of the *wh-the-hell* sentence in question since answers can be positive or even neutral as in *What the hell is going on? Nothing.*

[22] To some speakers including an anonymous reviewer, there is no clear contrast between (60a) and (60b). See Güneş & Lipták (2021) for contributing this difference to a phonological factor.

[23] One remaining issue we need to discuss concerns scope properties of the *wh-the-hell* phrase in the ANDC. As noted in Section 2, the *wh-the-hell* phrase has a wide scope reading and allows only a local reading, which could be expected from the uniqueness of the construction. These

As discussed earlier, the construction typically occurs in nonveridical situations, but our corpus investigation yields examples that at first glance seem to be veridical:

- (61) (a) I want to know what the hell is happening here. (COCA 2018 SPOK)
 (b) Then we need to figure out what the hell we're going to do about this.
 (COCA 2017 NEWS)
 (c) I was trying to find out what the hell the rules were. (COCA 2006 ACAD)

If we take the *wh-the-hell* phrase as an NPI as claimed by Den Dikken & Giannakidou (2002), such examples would not be expected since the *wh-the-hell* phrase is in the embedded clause selected for by verbs like *know*, *figure out*, and *find out*. To make such sentences acceptable, there needs to be a licenser like *not* or a question operator as suggested by Den Dikken & Giannakidou (2002), but there exists none here. Instead, the present system can attribute the possibility of such examples to a discourse factor of the construction. What we can observe here is that the veridical predicate is further embedded by a construction like *want to*, *need to*, and *try to*. These contexts imply that the speaker seeks a value for the *wh*-expression (which is a nonveridical environment) and expresses his or her negative attitude toward the situation in question.

4.3 ANDC in ellipsis

Let us now discuss the distribution of *wh-the-hell* phrases in ellipsis. In accounting for ellipsis in general, there have been two main strands: movement and PF-deletion and Direct Interpretation (DI) approaches. The movement and PF-deletion approach basically assumes that fragments are canonical utterances of the type S (see, among others, Ross 1969; Merchant 2001, 2002, 2004; Weir 2014; Yoshida, Nakao & Ortega-Santos 2015). Within this kind of movement and PF-deletion view, an ellipsis site has internally structured material through derivation and PF-deletion renders some of it unpronounced under some kind of identity and the meaning composition is dependent upon the derivational source. For instance, according to the movement and PF-deletion approach, the Sluicing example in (62a) would be derived from (62b) (Merchant 2001):

- (62) (a) They were arguing about something, but I don't know what.
 (b) They were arguing about something, but I don't know [_{CP} [what]_i [they are arguing about t_i]]

The *wh*-expression *what* is moved to [Spec, CP] motivated by a focus assignment, and then the remaining clause is deleted. As seen earlier in (4), however, we cannot

semantic properties also could be attributed to the constructional constraints in (55). We leave open the specification of these in the construction here.

simply apply such a process as in (63b) because it would allow ungrammatical examples like (63a).

- (63) (a) *They were arguing about something, but I don't know what the hell.
 (b) They were arguing about something, but I don't know [_{CP} [what the hell]_i [~~they are arguing about t_i~~]]

We cannot syntactically bar the clausal ellipsis after the *wh-the-hell* phrase as we have seen from the attested, possible Sluicing data in matrix as well as embedded environments. The existence of such attested examples also casts doubt on the assumption that the ungrammaticality of such examples is due to the lack of a phonological accent on the emotive expression, as suggested by Sprouse (2006) and Güneş & Lipták (2021).

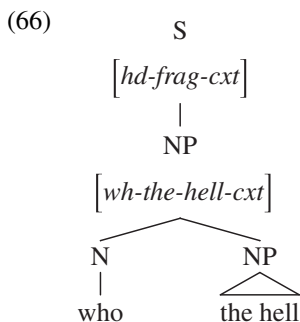
Meanwhile, the Direct Interpretation (DI) approach for ellipsis, which we adopt in this paper, directly generates ellipsis with no clausal source and that allows the resolution of the elided part by structured discourse (Ginzburg & Sag 2000; Culicover & Jackendoff 2005; Sag & Nykiel 2011; Nykiel 2013; J.-B. Kim 2015; Jacobson 2016; Kim & Abeillé 2019; Kim & Nykiel 2020; J. Kim 2021; Nykiel & Kim 2022). Within the DI approach, there is no syntactic structure at the ellipsis site and the fragment is the sole daughter of an S-node, directly generated from a construction rule like the following (Ginzburg & Sag 2000):

- (64) *Head-Fragment Construction*
 Any category can be projected into an NSU (nonsentential utterance) when it matches a SAL-UTT (salient utterance).

All the attested NSUs with the *wh-the-hell* phrase belong to this Head-Fragment Construction. For instance, consider the following attested example:

- (65) A nasty, insistent hotel phone ring that demanded to be picked up. ‘Who the hell?’ I muttered. (COCA 1995 FIC)

This naturally occurring fragment would have a simple structure like the following:



Here, the interrogative *wh*-word *who* combines with the emotive expression *the hell* in accordance with the *wh-the-hell* Construction, forming an NP first, and then this NP is projected into an NSU (nonsentential utterance) S on its own as a type of the Head-Fragment Construction. This S can serve at the same time as an instance of the ANDC whose head S is unexpressed but supplied by the discourse (e.g. *Who the hell is calling me?*).²⁴

To be more precise, as the resolution of this kind of fragment into a propositional meaning, the DI approach relies on the discourse structure, rather than on the putative clausal source. The resolution of the NSU is achieved by discourse-based machinery. That is, the interpretation of a fragment depends on the notion of ‘question-under-discussion’ (QUD) in the dialogue. Dialogues are described via a Dialogue Game Board (DGB) where the contextual parameters are anchored and where there is a record of who said what to whom, and what/who they were referring to (see Ginzburg 2012). DGB monitors which questions are under discussion, what answers have been provided by whom, etc. The conversational events are tracked by various conversational ‘moves’ that have specific preconditions and effects. The main claim is that NSUs, corresponding to salient utterances, are resolved to the contextual parameters of the DGB. Since the value of QUD is constantly being updated as the dialogue progresses, the relevant context offers the basis for the interpretation of fragments. In this system, DGB is part of the contextual information and has at least the attributes SAL-UTT (salient-utterance) and MAX-QUD (maximal-question-under-discussion), given in (67):

$$(67) \left[\text{DGB} \left[\begin{array}{l} \text{SAL-UTT ...} \\ \text{MAX-QUD ...} \end{array} \right] \right]$$

The feature MAX-QUD, representing the question currently under discussion, takes as its value *questions*. Meanwhile, the feature SAL-UTT, taking as its value syntactic as well as semantic information, represents the utterance which receives the widest scope within MAX-QUD.

To see how this discourse-based system works, consider the following sprouting example:

(68) They survived. How the hell? (COCA 2014 FIC)

Uttering the declarative sentence *They survived* can also introduce a QUD, activating the appropriate DGB information, as given in (69):

[24] To be more precise, this construction is also Sluicing (e.g. *They were arguing about something, but I don't know what*). As in Ginzburg & Sag (2000), this Sluicing (*slu-int-cl*, sluice-interrogative-clause) is a subtype of *hd-frag-cxt* (head-fragment-cxt). See J.-B. Kim (2015) for a DI approach to Sluicing.

This discourse-based approach implies that the grammar would license the ANDC in matrix Sluicing as in (29) and embedded Sluicing as in (30). Consider similar examples below:

- (72) (a) 'I got a lift on a private jet.' '[Why on earth]?' (COCA 2013 FIC)
 (b) She was sweating in that firebox shack. Mitchell was too under all the makeup. I'm wondering [what the hell]. (COCA 1994 FIC)

The present analysis assumes that any *wh-the-hell* phrase in Sluicing can be projected into an S so long as an appropriate context can be retrieved. This allows us to account for the cases where the *wh-the-hell* phrase has no linguistic antecedent clause at all but its antecedent is just pragmatically controlled. For instance, the *wh-the-hell* phrase in (34a), repeated in (73), can have several different types of MAX-QUD as given in (74):

- (73) Settled at last, she hit the remote, dialed in her favorite channel, and heard the doorbell ring. 'Damn,' she murmured, glancing at the digital clock on the set. It was just before ten p.m. '[Who on earth]?' (COCA 2010 FIC)
- (74) (a) Who rang the doorbell this late?
 (b) Who wants to visit me now?
 (c) Who is it out there at the door?
 (d) ...

This discourse-based analysis thus could avoid pitfalls that any analysis resorting to syntactic identity between the antecedent clause and the unpronounced material encounters.

The present analysis can also be extended to Swiping with the *wh-the-hell* phrase. Note first that across Germanic languages, Swiping is for the most part possible with 'simplex' *wh*-words and not with *which*, as illustrated in (75) (Chomsky 1995; Uriagereka 1995; Merchant 2002):

- (75) (a) Peter went to the movies, but I don't know [who with].
 (b) *She bought a robe for one of her nephews, but God knows [which (one) for].
 (c) John was talking, but I don't know [{who/*which person} with].

The Swiping example in (75a) is well-formed since it is introduced by a simplex *wh*-word *who*, while the one in (75b) is ill-formed since it is introduced by *which*. The example in (75c) with a minimal pair shows a clear contrast between simplex *wh*-words and *which* in terms of the possibility to license Swiping. Our corpus search also yields Swiping examples with the *wh-the-hell* phrase involving a simplex *wh*-word as in (76) but no examples with *which*, supporting the observation made in previous literature:

- (76) (a) He hangs around the office. [What the hell for]?
 (b) And the only thing he asked in return was to talk to you. Is that so? [What the hell about]?
 (c) ‘He was headed for the site. Says they’re going to test the rollers today.’ [‘What on earth with?’]

Swiping could be dealt with by movement and deletion operations, as suggested by Merchant (2002), Hartman & Ai (2009), and Radford & Iwasaki (2015). For instance, Merchant (2002) introduces operations such as pied-piping *wh*-movement followed by PF-deletion of the remaining clausal material and then an additional head-movement of a *wh*-word to a preposition. For instance, the Swiping example *Mary was talking, but I don’t know who to* would be generated by the following processes:

- (77) *Mary was talking, but I don’t know*
she was talking to who
 ⇒ [to who] [*she was talking*] (*Wh*-movement and pied-piping)
 ⇒ to who [~~*she was talking*~~] (Sluicing = deletion)
 ⇒ who to (PF head-movement)

However, the application of such complex syntactic operations must be quite restrictive since a limited set of *wh*-words and prepositions can participate in Swiping, as illustrated by the following:

- (78) (a) I know they were complaining, but I’m not sure [what about/*during].
 (b) A: I was arguing with John. B: [What about/*before]?

As also noted by Merchant (2002) and Culicover & Jackendoff (2005), prepositions such as *about, after, as, at, by, for, from, in, near(?), of, on, till, to,* and *with* are possible in Swiping, but not those like *above, before, between, despite, during, into,* and so forth. The corpus investigation of Kim & Kim (2020) also shows the idiomatic combinations of *wh*-words and prepositions in Swiping, as shown in Table 2.

The limit of Swiping with a restricted set of *wh*-expression and preposition combinations suggests that it is more plausible to assume that English speakers acquire the possible forms of Swiping directly, without reconstructing a derivation from a regular sentential underlying structure, as suggested by Culicover & Jackendoff (2005). This eventually supports the postulation of the Swiping Construction in the grammar of English.

Adopting Ginzburg & Sag (2000), Kim & Kim (2020) define the Swiping Construction as a subtype of *slu-int-cl* (sluice-interrogative-clause), which is in turn a subtype of *hd-frag-ctxt*, as represented in the following:

<i>Wh</i> -word + P	Freq	<i>Wh</i> -word + P	Freq	<i>Wh</i> -phrase + P	Freq
what for	546	who by	5	what the hell for	19
where to	114	what from	3	what on earth for	17
what about	102	what in	2	how long for	3
who with	27	what to	2	how much for	1
what with	20	who about	2	what on earth with	1
where at	18	what against	1	what the fuck for	1
where from	17	what on	1	what the heck for	1
who from	10	what over	1	what the hell about	1
who to	9	where about	1	Total	44
what of	8	where for	1		
who for	7	Total	897		

Table 2

Frequencies of *wh*-expression and preposition combinations in Swiping in COCA (from Kim & Kim 2020: 498).

(79) Swiping Construction in English (\uparrow *sluice-int-cl*):

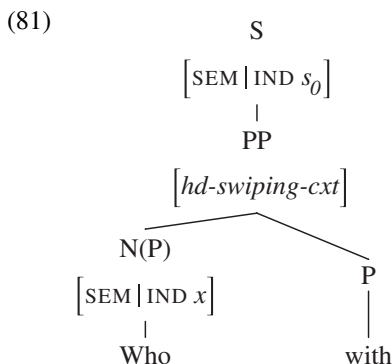
$$\left[\begin{array}{l} \textit{hd-swiping-cxt} \\ \text{SYN} \quad \text{S} \\ \text{SEM} \quad \lambda xQ(x) \\ \text{SAL-UTT} \quad \left\{ \left[\begin{array}{l} \text{SYN} \mid \text{CAT} \ \underline{1} \\ \text{SEM} \mid \text{IND} \ i \end{array} \right] \right\} \end{array} \right] \rightarrow \left[\begin{array}{l} \text{SYN} \left[\begin{array}{l} \text{CAT} \quad \text{N(P)} \\ \text{WH} \quad + \end{array} \right] \\ \text{SEM} \mid \text{IND} \quad x \end{array} \right], \left[\begin{array}{l} \text{SYN} \mid \text{CAT} \ \underline{1} \text{P}[\textit{str}] \\ \text{SEM} \mid \text{IND} \ i \end{array} \right]$$

The construction specifies that the combination of a *wh*-expression and a preposition can be projected into a sentential utterance with a special form-function mapping relation in English. The construction is a subtype of Sluicing since it occurs only in Sluicing environments, as can be observed from the contrast between *I got a date. Who with?* and **Who with did you get a date?* The constructional constraint in (79) also indicates that the preposition functions as the SAL-UTT in the discourse and belongs to the type of strandable (*str*). This allows us to block Swiping Construction examples with nonstrandable prepositions as in (78) (cf. **What were they complaining during?*) and **I know they fell out, but I don't know what because of* (cf. **What did they fall out because of?*). Furthermore, in Swiping Construction, only the preposition can bear stress (e.g. *Mary is going to the prom, but I'm not sure who WITH/*WHO with*) (Merchant 2002; Hartman & Ai 2009; Radford & Iwasaki 2015). The construction constraint thus ensures that in Swiping Construction, only a limited set of *wh*-expressions (lexical as well as phrasal) can combine with a restricted set of prepositions bearing focus.

For instance, producing the antecedent, *I got a date*, would evoke a QUD asking whom the speaker got a date with in the DGB as shown below:

(80) [DGB | MAX-QUD λx [get(*i*, *j*, *x*)]]

The uninstantiated PP argument is linked to the NSU *Who with?* and this NSU is asking a value for this variable (*x*). According to Kim & Kim (2020), then, the Swiping Construction example *Who with?* in this context would have the following structure:



The SAL-UTT information associated with the uninstantiated argument is introduced by context, entering into the QUD. The *wh*-word *who* combines with the following preposition *with* as a well-formed instance of the Head-Swiping Construction. The resulting PP is then projected into an S on its own with the desired interpretation as an instance of the Head-Fragment Construction.

With such a justification that English independently employs the Swiping Construction, let us consider how the present analysis can account for Swiping with the *wh-the-hell* phrase, making use of one attested example:

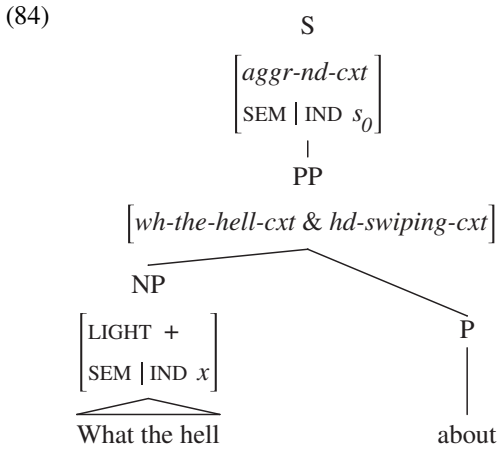
(82) Even from here, I can see that he’s grinning. [What the hell about]? (COCA 2005 FIC)

Adopting the analysis set forth by Kim & Kim (2020), we assume that English introduces the Head-Swiping Construction which licenses the combination of a *wh*-expression with a preposition in order. Since the present analysis takes a simple *wh*-word and the *wh-the-hell* phrase to be identical in bearing the feature [LIGHT +], we could expect the *wh-the-hell* phrase can also occur in the Head-Swiping Construction, combining with a limited set of prepositions.

Now consider the example in (82) again. Uttering the first sentence would activate the uninstantiated second argument in the DGB.

(83) [DGB | MAX-QUD λx [grin.about(*i*, *x*)]]

The NSU *What the hell about?* is asking a value for this variable (x). The present system then would license a structure like the following:



The SAL-UTT information linked to the unrealized or uninstantiated argument is introduced by context, entering into the QUD. The *wh*-word *what* first combines with the emotive expression *the hell* as a well-formed instance of the *Wh-the-hell* Construction. The construction then combines with the following preposition as a legitimate instance of the Head-Swiping Construction. This resulting expression, also functioning as a *wh-the-hell* phrase, is projected into an S as an instance of the Head-Fragment Construction. Since Swiping is a subtype of Sluicing, it cannot combine with a head S as in **[What the hell about] [is he grinning]?*

This direction also offers a possible account for the behavior of the ANDC in Sluicing, which we noted in the beginning. The claimed contrast in the literature has been that unlike normal *wh*-phrases, the *wh-the-hell* phrase only permits Swiping, but not pied-piping Sluicing. Consider similar data again:

- (85) (a) They are arguing but I don't know what the hell about.
 (b) *They are arguing but I don't know about what the hell.

The ungrammaticality of pied-piping Sluicing examples in (85b) could be attributed to a phonological constraint, as suggested by Sprouse (2006) and Güneş & Lipták (2021). They argue that these ellipsis phenomena must end with an accent-bearing material but the emotive expression *the hell* cannot have an accent. This then accounts for examples like (84)–(85), but as noted earlier, corpus data contain a great deal of matrix and embedded Sluicing examples with the *wh-the-hell* phrase. The present analysis would license the *wh-the-hell* phrase in Sluicing environments, but could block examples like (85b) by placing an additional prosodic licensing condition on the construction, as do Güneş & Lipták (2021).

5. CONCLUSION

The ANDC is an independent, idiomatic construction whose syntax as well as semantics/pragmatics overrides a one-to-one form-function relation. In this paper, we first reviewed some key properties of the construction that previous literature has noted. We then explored the real life uses of the construction, making use of authentic corpus data from COCA. The corpus data revealed a variety of interesting facts about it in terms of preferred registers, distribution by *wh*-words, grammatical functions, matrix/embedded environments, and more diverse uses than previous observations, including their occurrences in elliptical constructions.

To capture the peculiar morphosyntactic and semantic/pragmatic properties of the *wh-the-hell* phrase, we first postulated two key constructions: *Wh-the-hell* Construction and ANDC. The former guarantees the formation of idiosyncratic *wh-the-hell* phrases, and the latter controls its syntactic distribution. In addition, we noted that licensing the *wh-the-hell* phrase in elliptical constructions such as Sluicing and Swiping depends on the tight interplay of several different grammatical levels such as syntax, semantics, and discourse. In doing so, we discussed that corpus data pose several non-trivial theoretical and empirical problems for the movement and PF-deletion approach that requires a derivational source sentence. We then showed that the Direct Interpretation (DI) approach, making use of enriched discourse information as well as syntactic and semantic information, can account for much wider uses of the construction in question in a systematic way.

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