

1 Introduction

Kyle Johnson

University of Massachusetts at Amherst

Ellipsis is the consummate crowd-pleaser.

To the anaphora theorist, it represents an extreme case of context sensitivity. Like a pronoun, an ellipsis gets its meaning from the context it's in. But unlike a run-of-the-mill pronoun such as *her* in (1a), an elided phrase, like the VP in (1b), provides very little guidance in navigating that context to resolve its meaning.¹

- (1) a. Mary kissed John, and then Fred kissed her.
 b. Mary might kiss John or marry Fred, but Sam won't [VP].

The phonological form of the pronoun in (1a) signals that *her* should get an interpretation that involves just singular females, and this is sufficient to make it clear that the utterer of (1a) means *her* to refer to Mary. The elided VP in (1b), by contrast, has no phonological form and provides, therefore, no help in gathering a meaning for it. (1b) is consequently ambiguous in a way that (1a) is not. An ellipsis provides at most information about the syntactic and semantic type of its antecedent. The rest is up to how contexts furnish the information necessary to complete the messages that sentences convey. If you're interested in investigating how the meanings of sentences are made complete by the contexts they are in, then ellipsis provides a dramatically pure laboratory.

To the syntactician, ellipses give an interesting view of the processes that structure sentences. That ellipses seem to be defined over phrases of certain sorts – the ellipsis in (1b), for instance, appears to be restricted to VPs – suggests that the strings they affect should correspond to the standard diagnostics for constituency. Interestingly, they don't seem to. And they have other syntactic abnormalities. Certain ellipses appear to defeat the normal constraints that hold of long-distance dependencies. “Sluicing,” a process that elides clauses, seems to create grammatical sentences from what should be constructions that violate these constraints. Ross (1969) made this discovery, and the contrast in (2) illustrates it.

2 Kyle Johnson

- (2) a. *We will discover something that solves a well-known problem, but I won't divulge which we will discover [something that solves].
 b. We will discover something that solves a well-known problem, but I won't divulge which [IP].

The bracketed string in (2a) constitutes one of Ross's (1967) famous islands, into which the relative pronoun *which* may not bind. Although the ellipsis in (2b) has the same semantic content as this bracketed string, and Merchant (2001) provides compelling evidence that it also has a syntactic form not too different, it nonetheless does not contain an island. There is something about the ellipsis, perhaps its lack of phonological form, or maybe some subtle attribute of its syntax or semantics, that removes islands.² Ellipses confront the syntactician with unexpected deviations from normal behavior, and thereby provide the seeds for the next generation of syntactic theory.

To the semanticist, ellipses provide an intriguing testing ground for hypotheses concerning the syntax – semantics interface, for there are cases in which an ellipsis seems to demand a certain sort of syntax. Perhaps the most famous of these are instances of “Antecedent Contained Ellipsis,” first discussed by Bouton (1970). In these scenarios, an ellipsis seems to be contained within a string from which its meaning derives; (3) is an example.

- (3) She has [_{VP} worked on every ellipsis problem that you have [_{VP}]].

The elided VP means something like “worked on” or “worked on *x*,” where *x* is bound to *every ellipsis*. Because the only sentence in the context that provides this meaning is (3) itself, this would seem to demand that the VP *worked on every ellipsis that you have* be given this interpretation. This somewhat surprising conclusion seems to be related to the fact that the DP containing the ellipsis in (3) can scope out of the VP it's in. When an ellipsis is within a DP that cannot scope out of the antecedent, as in (4), the result is ill-formed.

- (4) *She has [_{VP} decided that no one knows about every ellipsis problem that you have [_{VP}]].

Ellipsis, then, promises to help work out how quantificational expressions like *every ellipsis problem* make their semantic contribution.

And finally, to the ellipsis theorist, ellipses are everything. It is to them that we turn for an account of where ellipses are possible, and where their properties derive from. Sadly, the ellipsis theorist depends on all the others for clear answers, and consequently brings up the rear. So little is known

about ellipsis that even its taxonomy is up for grabs. Some of the cases that need classification, each with the moniker they inherited from the construction-specific days of their discovery, are in (5).³

- (5) a. Sluicing:
 She read something, but she won't say what [IP].
- b. Verb Phrase Ellipsis:
 She read something and he did [VP] too.
- c. Pseudogapping:
 She'll read something to Sam, but she won't [VP] to Billy
- d. Gapping:
 Some read something to Sam and others [VP] to Billy.
- e. Right Node Raising:
 She deliberately [VP], and he accidentally, read something.
- f. Comparative Deletion:
 Mary has read more books than Bill has [VP].

In all of these examples, a VP (and maybe a bit more in the case of (5a)) is missing, and so it might seem reasonable to think of them as particularized results of the same process. And yet, none of them seem to have identical properties. For instance, Verb Phrase Ellipsis does not seem to have the island alleviating property that Sluicing does; compare (2b) to (6).

- (6) *We will discover something that solves a well-known problem, but I won't divulge which we will [VP].

Nor may Sluicing exist in the antecedent contained environments that VP Ellipsis can; compare (3) with (7).

- (7) *She met a guy that you asked who [IP].
compare: "She met a guy that you asked who she met."

Is this because Sluicing and VP Ellipsis are different things? Or could it be that the mechanisms which allow ellipses to overcome island constraints or find antecedents from the strings they are part of are sensitive enough to the differences in (6)/(2) and (7)/(3) to distinguish them? Answering these questions is the ellipsis theorist's first order of business.

Ellipsis is generous, then, helping each advance on the goals of their specializations. But it also focuses these potentially divergent specializations onto a single, coherent, goal and in so doing enforces collaboration. There will be no solution to the problems ellipsis presents that comes from just one area of linguistic theory, and recognizing this has lured those working on ellipsis outside the borders of their disciplines. Ellipsis forces

us to calibrate findings across the syntax – semantics – pragmatics divides, and this alone has generated interesting results. The chapters in this volume spring from this borderless orientation.

Dan Hardt's chapter offers an account for a particularly puzzling instance of sloppy identity that Dahl (1974) discovered. Sloppy identity refers to the ability that certain anaphoric items have to gain new denotations in ellipsis contexts. If the pronoun in the first clause of (8) is understood to refer to the same individual that *Sam* does, then the elided VP in the second clause can be understood as if it had a pronoun in a parallel position that refers to George.

- (8) Sam likes his shoes and George does [_{VP}] too.

The elided pronoun is said to be sloppily identical to the first under such readings. Dahl discovered that when there are two pronouns involved in these constructions, the sloppy interpretation of the second depends on whether the first is understood sloppily. In (9), for example, the elided VP can be understood to mean what (9a) paraphrases, but not what (9b) does.

- (9) Sam said he likes his shoes and George did [_{VP}] too.
 a. [_{VP}] = say George likes George's shoes.
 b. [_{VP}] ≠ say Sam likes George's shoes.

Analyses of this phenomenon range from placing syntactic constraints on the dependencies that sloppy pronouns may have on antecedents (see Fiengo and May 1994) to exploiting locality conditions on Binding Theory (see Fox 1998). Hardt demonstrates how this, and related effects, can be derived from the conditions that determine how ellipses are resolved by the discourse contexts they are in. The effect in (9) reflects constraints on what constitutes the relevant discourse contexts.

The proposal Hardt makes leaves open what an ellipsis consists of. Among ellipsis theorists there are two popular ideas about what an ellipsis is made of. On the one hand, it is a garden-variety phrase, similar in all respects to an overt phrase, but not interpreted phonologically.⁴ On the other, ellipses are a specialized sort of silent word, maybe along the lines of the silent pronouns that languages like Japanese or Italian are thought to have.⁵ This second “proform” approach is appealing as it makes sense of the similarities ellipses have with overt pronominals in finding antecedents from their contexts. If proforms are defined as having denotations that make use of contextual information, then analyzing ellipses as proforms explains this fact about them. And to the extent that the way in which pronouns access contextual information is like the way that ellipses do, we have evidence for equating them. Hardt's proposal is consistent with this view of ellipses.

But it is also consistent with the first view: that ellipses are unpronounced strings. And that is fortunate, for there are obstacles to overcome if ellipses are proforms. Maybe the most serious is that ellipses can be bound into by interrogative pronouns, as (2b) and (10) illustrate, while unambiguous proforms can't, as the contrast with (11) shows.

- (2b) We will discover something that solves a well-known problem, but I won't divulge which [IP].
- (10) I know which problems you've solved but I don't know which you haven't [VP].
- (11) *I know which problems you've solved but I don't know which you haven't done so.

This contrast makes sense if ellipses have internal syntactic structure and proforms don't. On the assumption that proforms are lexical items, it could be reduced to whatever makes words "islands" for anaphoric processes (see the "anaphoric island" constraint on words discussed in Postal 1969a, but also Sproat 1988).

That unpronounced strings derive their meanings from contexts, just as pronouns do, could be related to the fact that deaccented material is also sensitive to contexts (see Rooth 1985 and Schwarzschild 1999, for example) and, of course, unpronounced strings are necessarily deaccented. The anaphoric nature of deaccented material can be exemplified in connected discourses like those in (12).

- (12) a. James ate the yellow banana.
 No, he ate the BLACK banana.
- b. James ate the yellow banana.
 #No, he MASHED the black banana.

In (12a), everything in the second sentence is deaccented except *black* and this partition corresponds perfectly to what is new to this sentence and what has already been introduced in the first sentence. That is, everything that is deaccented in the second sentence of (12a) can be found in the first sentence of (12a). This isn't true for the second sentence of (12b), however, and this results in an ill-formed discourse. In general, deaccented material must convey information that has already been introduced in the discourse.⁶

Ellipsis, then, could be thought of as the limiting case of deaccenting – a suggestion floated in Sag (1976) and pursued in earnest in Tancredi (1992) – and the many properties it shares with deaccentuation could be removed from the list of things that the ellipsis theorist must explain. To

the extent that the anaphoric behavior of ellipsis can be matched to the anaphoric properties of deaccented material, we have evidence in support of equating them.⁷ Here, then, are two opposing views of ellipsis. In one, ellipses are silent in the same way that silent pronouns are, and their anaphoric behavior derives from their being proforms. In the other, because elided strings are necessarily deaccented ones, their anaphoric properties derive from the principles that govern deaccentuation.

Interestingly, there is a way of reading the facts concerning binding into ellipses that suggests both these approaches are correct. The ability of interrogative pronouns to bind into ellipses seems to differ depending on whether the elided phrase is a clause or a VP. The contrast in (2b) and (6) already indicates that there is some difference between these cases. Extraction from an elided clause does not invoke island effects, but extraction from elided VPs does. In fact, extraction from some elided VPs is ungrammatical even when no island is present. These examples, ones like (13), led Sag (1976) to the conclusion that elided VPs are not transparent for binding.⁸

- (13) *What Sandy carried was the baseball bat, and what Betsy did [_{VP}] was the catcher's mitt.

(Sag, 1976, (1.3.23): 43)

Perhaps there is a way of seeing cases such as (10), in which an interrogative pronoun does apparently bind into an elided VP, as exceptional. Maybe, for instance, a more cautious examination of (10) (repeated below) would reveal that the ellipsis site does not contain a variable that the interrogative pronoun binds.⁹ Maybe, in fact, binding into elided VPs is not grammatical, and this contrasts with binding into elided IPs, which are. The proform analysis could be correct for elided VPs, and the radical deaccenting account could be correct for sluices. Perhaps these two approaches to ellipsis provide a framework for modeling the taxonomy of ellipsis.

Jason Merchant's chapter in this volume leans against this direction. Building on observations in Schuyler (2001), he shows that a key ingredient in the grammaticality of (10), a grammatical example of movement out of an elided VP, is that it introduces a contrastive element in the right position. To see this, consider how (10) compares to the minimally different (14).

- (10) I know which problems you've solved but I don't know which you haven't [_{VP}].
- (14) ?? I know which problems you've solved, but Sam doesn't know which you have [_{VP}].

The presence of the contrasting *haven't* seems to license extraction from the elided VP. When the contrast in these two clauses is placed elsewhere, as it is in (14), the result is degraded. Merchant shows that an explanation for contrasts of this sort can be credited to a competition between Sluicing and VP Ellipsis. The availability of Sluicing is another thing that distinguishes (14) from (10), as the contrast in (15) shows.

- (15) a. *I know which problems you've solved but I don't know which you ~~HAVEN'T~~ solved.
 b. I know which problems you've solved but SAM doesn't know which you ~~have~~ solved.

Merchant formulates the competition as a constraint that favors larger elisions over smaller ones, and shows how it captures a range of interesting cases. His idea is explored in Lasnik (2001), where some limiting cases are offered, and extended to cases of pronoun binding in Takahashi and Fox (2006). If what is relevant to making examples like (10) grammatical is that they are immune to Sluicing, then there is no reason to believe that what makes them grammatical is that they are not transparent to an outside binder. They still stand as counterexamples to the proform analysis of VP Ellipsis, therefore.¹⁰

If (10) is problematic for the proform analysis, there are examples which are problematic for both the proform account and the radical deaccenting proposal. Satoshi Tomioka's chapter examines a class of such examples discovered by Dan Hardt and Bernhard Schwarz.¹¹ In these examples an elided phrase behaves like a pronoun in being able to receive a sloppy interpretation. This is possible even in contexts where an interrogative pronoun binds into the ellipsis, as in (16).¹²

- (16) A: When John cooks something, he won't acknowledge what he can't [VP].
 B: And when he BAKES something, he won't [VP] either.

The elided VP in (16A) has the same meaning as *cook*. This makes the main VP have a meaning equivalent to *acknowledge what he can't cook*, and it's this meaning that serves as the antecedent for the elided VP in (16B). And yet, the elided VP in (16B) can have a meaning equivalent to *acknowledge what he can't bake*. It's as if the antecedent for the elided VP in (16B) has the form in (17), and the *pro* gets sloppily bound to *bake*.

- (17) [VP acknowledge what he can't [VP *pro*]].

That's what would be expected under the proform account, of course, but it would seem to be incompatible with the ability *what* has to bind into

[_{VP} *pro*]. Tomioka provides an account for these examples that preserves the radical deaccenting analysis of ellipsis. His proposal makes crucial use of the idea that syntactic representations are interpreted semantically in “phases,” and that these interpretations have access to the information relevant for fixing sloppy interpretations.

Part of resolving the problem posed by examples such as (16) requires understanding the mechanisms which give rise to sloppy interpretations. In a wide range of cases, a pronoun gains a sloppy interpretation just when it is interpreted as a bound variable. In (18a), for instance, *his* can be interpreted sloppily, but it cannot be in (18b).

- (18) a. Every father admires his nephew and every uncle does [_{VP}] too.
 = “every uncle₁ admires his₁ nephew.”
- b. The woman every father marries admires his nephew and the woman every uncle marries does [_{VP}] too.
 ≠ “the woman every uncle₁ marries admires his₁ nephew.”

To get a sloppy interpretation seems to require being interpreted as a variable. Pronouns can be interpreted as variables for some term when they are c-commanded by that term. Because *every father* c-commands *his* in (18a), this pronoun can pick up a new c-commanding binder in the ellipsis site. But because *every father* does not c-command *his* in (18b), this pronoun cannot pick up a new binder in the ellipsis site. This restriction on sloppy interpretations presents something of a problem for the cases of sloppy interpretations for ellipses in (16), since the antecedent VP does not c-command the ellipsis site. Tomioka solves this problem by using a semantics for focus that creates a binding relation between a focused item and the terms that get an interpretation that is dependent on that focused item.¹³ Because the antecedent VPs for the ellipses in cases like (16) are focused, this manufactures the necessary denotations for the sloppy interpretations.

Sloppy interpretations of pronouns also arise in contexts where they are not c-commanded by antecedents, and so the exceptionality of the sloppy readings in (16) is not unexpected. In the case of non-c-commanded sloppy pronouns, a famous example of which is (19), one suggestion¹⁴ about how they gain a variable-like interpretation is to use Evans’s (1977) proposal that pronouns can be interpreted as hidden definite descriptions. This suggestion would give a way of characterizing the sloppy interpretation of (19).

- (19) The police officer who arrested John insulted him, and the one who arrested Bill did [_{VP}] too.
 [_{VP}] = “insulted Bill”

On Evans's view, the pronoun *him* contains a hidden description that makes it equivalent to, say, the expression *that guy*, and this creates the illusion that there is a bound pronoun in the ellipsis. The status of this hidden predicate has been the focus of some attention, and one popular account has it that ellipsis is responsible for hiding it. On this view, personal pronouns like *him* are definite determiners that come with an elided NP. The elided NP expresses the hidden predicate. If the antecedent conditions on ellipsis are amenable, and the meaning of *him* is roughly that of *the*, then this proposal would allow the first clause of (19) to get a representation like that in (20).

- (20) The police officer who arrested John insulted [DP *him* [NP ~~guy~~ ~~the police officer arrested~~]].

The sloppy reading in (19) could then result from the fact that this elided NP has a meaning that manufactures the illusion of a bound variable. Postal (1969b) was the first to propose this account of personal pronouns, and Elbourne (2001) has a fuller working out of the idea in contexts like those of (19). The existence of sloppy interpretations in examples like (19) has led some to include personal pronouns in the roster of ellipses.

In Uli Sauerland's contribution to this volume, he examines the conditions under which pronouns get a variable-like interpretation because of a hidden predicate, and uses properties of focus to investigate the nature of this hidden predicate. He shows that the hidden predicate has to be credited with playing a role in the sloppy interpretations even of c-commanded pronouns, like those in (8). And he argues that an ellipsis account is not correct, at least not always. One of his arguments, interestingly, turns on the difference in how focus works in cases of personal pronouns and the instances of sloppy interpretations discussed by Tomioka.

Like (10), instances of Antecedent Contained Deletion (ACDs) are also cases where an elided VP is bound into, this time by a relative pronoun. In (3), for example, the clause with the ellipsis has a representation like that in (21), where *that* is to be understood as binding the variable *x* in something like the way that a λ operator does.

- (3) She has [VP worked on every ellipsis problem that you have [VP .]]
 (21) every ellipsis problem that₁ you have worked on *x*₁.

The fact that the argument containing this ellipsis must scope out of the VP that serves as antecedent has led some to the conclusion that this antecedent VP must, like the elided VP in (21), have a variable in it. Thus, the clause containing the antecedent VP in (3) should have a representation like that in (22).

10 *Kyle Johnson*

(22) [every ellipsis problem that you have]₁ she has worked on x_I .

This demands a syntax in which the object is outside the antecedent VP, and binds a variable in the object position of this VP. On most accounts, this requisite representation is achieved by covertly moving the object.¹⁵ If the antecedent conditions on VP Ellipsis require that the antecedent VP match the elided VP at least to the degree that they contain variables in the same places, then instances of ACD will require that the argument containing the ellipsis get interpreted outside of the antecedent VP. This, in turn, will guarantee that this argument's scope always includes the antecedent VP, thereby accounting for contrasts like those between (3) and (4).

Chris Kennedy examines this hypothesis in his contribution to this volume. He puts together cases like (23a), first discussed in Wasow (1972), with cases like (23b), mentioned in Fiengo and May (1994), and observes that these share a trait that distinguishes them from (3).

(3) She has [_{VP} worked on every ellipsis problem that you have [_{VP}]].

(23) a. * A proof that God exists does [_{VP}].
 b. * Polly visited a town located in every country that Erik did [_{VP}].

This trait, he argues, is responsible for their ungrammaticality. To see what that trait is, consider the representations for the clauses containing the elided VPs in (23), shown in (24), and compare them to the representation posited for the antecedent VPs in (23), shown in (25).

(24) a. [a proof that God exists]₁ does [_{VP} x_I exist].
 b. every country that₁ Erik did [_{VP} visit x_I].

(25) a. God₁ [_{VP} x_I exists]
 b. [a town located in every country that Erik did [_{VP}]]₁ Polly [_{VP} visited x_I].

Note that (24a) assumes that the elided VP contains a variable bound by the subject; this is necessary to bring the two cases in (23) together. It could be enforced by adopting the now-popular Derived Subjects Hypothesis, which claims that subjects bind a variable within a VP from their surface position,¹⁶ and something that requires elided VPs to be large enough to include this variable.¹⁷ What makes (23) different from (3) is that the variables in the antecedent and elided VPs of (3) are bound by expressions that refer to the "same" objects, whereas the variables in the antecedent and elided VPs of (23) are bound by expressions that don't. In (23a), for instance, the elided VP (= (24a)) contains a