SAME-EXCEPT: A DOMAIN-GENERAL COGNITIVE RELATION AND HOW LANGUAGE EXPRESSES IT

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SAME-EXCEPT is a fundamental, domain-general cognitive relation in which entities in proximity to one another are judged to be the Same, Except for some part or property where they differ. This relation can be attested in nonlinguistic modalities such as vision, audition, and taste, and it plays an important role in nonlinguistic categorization. We show that this relation is expressed linguistically by means of a wide range of devices, including (a) lexical expressions such as *same* and *except*, (b) contrastive stress, (c) anaphora (e.g. definite and indefinite NP anaphora and VP anaphora), (d) ellipsis (e.g. bare argument ellipsis, sluicing, gapping, and VP ellipsis), and (e) fixed expressions such as *vice versa* and *that goes for*. Our approach thereby unifies the semantics of all of these phenomena under a common account that is based on a domain-general cognitive principle. We compare our approach with accounts of ellipsis based on syntactic copying or deletion, showing that although both approaches have their difficulties, the challenges to the copying/deletion approach are more severe.*

Keywords: contrastive stress, anaphora, VP anaphora, ellipsis, gapping, sluicing

1. THE SAME-EXCEPT RELATION. This article explores a domain-general cognitive relation that we call SAME-EXCEPT, and shows that language expresses it in at least four different ways: lexical expressions of the relation, contrastive stress, anaphora, and ellipsis. We start by laying out the same-except relation as it appears in nonlinguistic cognition. We then work through the linguistic realizations of this relation, developing an account of a wide range of well-known phenomena as well as some less familiar ones. We conclude with a comparison of our account to more traditional approaches.

The same-except relation was noticed by William James, who writes:

> The perception of likeness is practically very much bound up with that of difference. That is to say, the only differences we note *as* differences, and estimate quantitatively, and arrange along a scale, are those comparatively limited differences which we find between members of a common genus. … To be found *different*, things must as a rule have some commensurability, some aspect in common, which suggests the possibility of their being treated in the same way. (James 1890:528)

To illustrate the same-except relation in a visual context, compare the two entities in Figure 1.

FIGURE 1. Same.

One immediately arrives at a judgment that the two are identical, that is, Same. Presumably, nonlinguistic organisms are capable of such a judgment—they can be trained to respond to the identity of two objects. This judgment can be expressed by an utter-

ance along the lines of *This one and that one are **the same***, in which *the same* is the linguistic device that makes the relation explicit.

   This judgment contrasts with the judgment of the pair in Figure 2.

FIGURE 2. Different.

Here the judgment is obviously that the two objects are different, whether or not one happens to say so by using the word *different*.

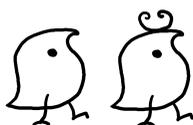   More complex is the judgment arising from comparing the pair in Figure 3.

FIGURE 3. Elaboration.

Here the choice between Same and Different is too coarse. We might want to talk about the judgment using a hedge term such as *sort of the same* or *almost the same*. But this does not capture our full understanding of the comparison. Rather, a linguistic expression of the nonlinguistic comparison might be along the lines of 1.

   (1) They're the same, except that the one on the right has this extra little gizmo
       on its head.

Here, the phrase headed by *except* denotes the part of the object that is different.

   A similar, but slightly different, situation arises in the comparison in Figure 4.
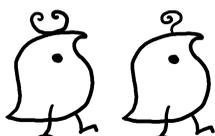
FIGURE 4. Contrast: 'They're the same, except they have different gizmos on their heads.'

Figures 3 and 4 illustrate the two basic cases of the same-except relation. William James (1890:490–91) characterizes them like this:

> In many concrete objects which differ from one another we can plainly see that the difference does consist simply in the fact that one object is the same as the other *plus* something else [as in Fig. 3—*PWC/RJ*], or that they both have an identical part, to which each adds a distinct remainder [as in Fig. 4—*PWC/RJ*].

We call the case illustrated in Fig. 3 ELABORATION and the one illustrated in Fig. 4 CONTRAST.

   As James further points out (p. 491), the differences between the two entities can lie along any dimension at all. For example, the difference can be in a property, as in Figure 5.

FIGURE 5. Contrast: 'They're the same, except the one on the right is bigger.'
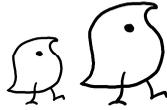
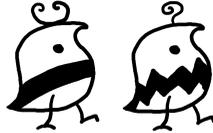Or there can be multiple differences, as in Figure 6.

FIGURE 6. Multiple contrast: 'They're the same, except they have different gizmos on their heads and different stripes.'

As James also observes, judgments of this sort are not confined to visual objects. Consider the first two phrases of 'Happy Birthday' in Figure 7.

FIGURE 7. Musical contrast.

The second phrase can be considered the Same as the first, Except that the last two notes are a step higher. One need not consciously articulate the relationship in order to appreciate it: it is part of what makes the tune catchy.

Judgments of the same sort also arise in phonology. The notion of a minimal pair is two words that are the same except for one segment. The notion of rhyming involves two strings that are the same except for what precedes the stressed vowel (*embraceable you* vs. *irreplaceable you*). Partial reduplication (e.g. *table-shmable*) involves replicating a syllable or word except for some stipulated part.

One can make similar judgments in still other modalities, ones that we cannot notate in print. For instance, one can imagine tasting two bowls of soup, and saying 'They taste the same, except this one has more salt'. But one would not have to formulate the sentence in order to make the judgment.

Similar computations also play a role in lower-level perceptual processes. For instance, detection of differences in images that are almost the same is essential to binocular depth perception (Marr 1982) and echolocation (Simmons 1967).

Finally, as we see throughout the article, same-except judgments are ubiquitous in analytic reasoning: 'These two cases are the same, except for the following difference.' (Readers are invited to count the number of times we say something to this effect in the present article.)

Like parsing a sentence and establishing syntactic and semantic relations among its words, one cannot help establishing same-except between two entities that are sufficiently close in the visual field. It is not just that one sees two adjacent wugs—one sees two adjacent wugs THAT ARE THE SAME or THAT ARE ALMOST THE SAME. In particular, when one views adjacent copies of an ambiguous figure such as a Necker cube (Figure

8), the Same relation effectively precludes seeing them in different interpretations, namely one cube seen from above and one from below.
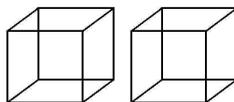

FIGURE 8. Necker cubes.

The same is true of parallel ambiguous sentences. In 2, either both clauses are understood with wide scope for *all*, or they are both understood with narrow scope. Thus 2 has only two readings out of a possible four.

(2) All the boys here speak two languages, and all the girls here speak three languages.

This necessity for parallel structure has often been a puzzle for syntax/semantics. We believe it is actually a special case of the domain-general imposition of a same-except relation on adjacent percepts, and is therefore a constraint independent of syntactic or semantic composition.[1]

How is the same-except relationship established in perception? Gentner and Sagi (2006:261) characterize the process in terms of aligning the structures of the relata:

> … the process of comparison involves the alignment of the two representations compared. The alignment of two representations goes beyond the identification of shared features; it also requires finding correspondences between the relations that connect the features.

Similarly, Markman and Yamauchi (1998:477) point out that finding things to align requires:

> (1) that there are discrete representational elements in complex scenes that can be placed in correspondence and accessed and (2) that the basis of a correspondence can be similarities in perceptual properties, spatial relations, or conceptual relations.

For example, in our contrast case, Fig. 4, the different gizmos are in the same position, so they align.

We can summarize this process in terms of three steps, which we call FIND, ALIGN, and IDENTIFY DIFFERENCES. **Find** involves identifying the entities to be related. In these visual examples, the entities are spatially adjacent to each other, so **find** is trivial. A more complex case is when a percept, such as a particular dog, is compared to an item in memory, either a token (e.g. the memory representation of the dog I saw yesterday) or a type (e.g. the memory representation of a prototypical golden retriever). In such a case, **find** involves a search of memory.

Align, as Gentner and Sagi (2006) put it, involves finding the relevant features of the entities and the correspondences between them. And **identify differences** involves picking out the aligned parts that are different.

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[1] Much of the work on this issue deals with examples in which one sentence has a scope ambiguity and the next sentence has a quantified subject and is elliptical, such as that in (i).

(i) All the boys here speak two languages, and all the girls here do too.

It appears to be impossible to get a reading where there are two languages that all the boys speak, and for each girl there is a (possible) different pair of languages that she speaks. The reverse is also impossible. For discussion, see Sag 1979, Fox 1994, Johnson & Lappin 1999, Kehler 2002, Phillips 2003. We believe that the interpretation of this type of example follows from the very same principles that account for the interpretation of the nonelliptical case in 2.

Putting these observations together, the same-except relation involves four relata. We call the two entities being compared (i.e. objects, sounds, tastes, etc.) E1 and E2. The other two entities are the aspects of E1 and E2 that are different, which we call P1 and P2. For example, in Fig. 4, a case of contrast, the two wugs are E1 and E2, and the two gizmos on their heads are P1 and P2. In Fig. 3, a case of elaboration, P2 is the gizmo on E2's head, and there is no corresponding P1. In Fig. 5, P1 and P2 are not parts of E1 and E2 but rather properties of E1 and E2, namely their respective sizes.

The relationship among these four entities has the conditions given in 3.

(3) Conditions on the same-except relation
    a. E1 and E2 are approximately the same.[2]
    b. P1 is a part or property of E1.
    c. P2 is a part or property of E2.
    d. The relation of P1 to E1 parallels that of P2 to E2.
    e. P1 and P2 are different.

This might be diagrammed as 4, where $\approx$ denotes 'approximately the same', $\Leftrightarrow$ denotes 'parallels', and $\neq$ denotes 'different'.[3]

(4)
$$
\begin{array}{ccc}
\text{E1} & \approx & \text{E2} \\
\uparrow & & \uparrow \\
\text{part-of/property-of} & \Leftrightarrow & \text{part-of/property-of} \\
\uparrow & & \uparrow \\
\text{P1} & \neq & \text{P2}
\end{array}
$$

(picked out by **find**)

(picked out by **align**)

(picked out by **identify differences**)
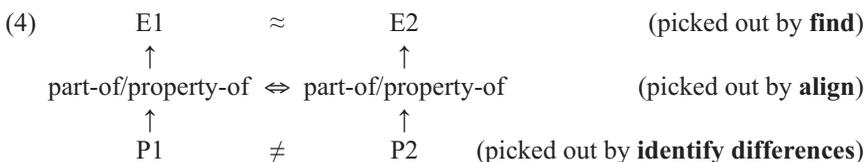
We find it convenient to abbreviate 4 as a tableau of the form given in 5.

(5) (Contrast)

	1	2
SAME	E1	E2
EXCEPT	P1	P2

Tableau 5 leaves implicit the relation of P1 to E1 and that of P2 to E2, but on several occasions we make use of the fact that they must be the same—that is, they must satisfy the conditions of **align**.

Tableau 5 expresses the contrast case (e.g. Fig. 4), in which (as James puts it) 'they both have an identical part, to which each adds a distinct remainder'. The elaboration case (e.g. Fig. 3), in which one entity has a part that the other lacks, can then be abbreviated as 6.

(6) (Elaboration)

	1	2
SAME	E1	E2
EXCEPT	Ø	P2

A case where there are two distinct differences (e.g. Fig. 6) can be expressed as a tableau with two Excepts.

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[2] The real-world conditions that satisfy the predicate 'same' are by no means straightforward to specify—for discussion see Lasersohn 2000 and references cited there. Since our concern is with the relationship between utterances and the conceptual structure same-except, we put this question aside.

[3] Notice that this is a special case of ANALOGY. It says that P1 is to E1 as P2 is to E2—that is, the relations in the two columns of 4 are analogous. However, 4 restricts the class of relations to parts and properties, and it adds the further relations between E1 and E2 and between P1 and P2. The general case of analogy is cognitively more complex than 4, because there need be no resemblance between E1 and E2, and because the range of possible relations is so much broader.

(7) (Double contrast)

	1	2
SAME	E1	E2
EXCEPT	P1	P2
EXCEPT	Q1	Q2

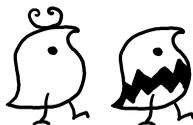Finally, consider the situation in Figure 9, where the differing parts do not have parallel relations.

FIGURE 9. Double elaboration.

This case is probably perceived as two independent elaborations, as in 8.

(8) (Double elaboration)

	1	2
SAME	E1	E2
EXCEPT	Ø	P2
EXCEPT	Q1	Ø

2. LEXICAL EXPRESSIONS OF SAME-EXCEPT. Not surprisingly, the words *same* and *except* can be used to express the same-except relation. They are members of a small family of such expressions, which appear in three possible syntactic frames: symmetric predicates (9a); *X is the same as Y* (9b); and anaphoric *the same* (9c). In each case the *except*-phrase is some sort of adjunct.

(9) a. This wug and that wug are <u>the same/identical/similar/alike</u>, <u>except</u> for the gizmo on this one and the doohickey on that one.
   b. This wug is <u>the same as/identical to/similar to/just like</u> that wug, <u>only</u> this one has a gizmo on its head.
   c. See that wug? THIS wug is <u>the same/identical/similar</u>, <u>aside from</u> that gizmo on its head.

In each case, the things asserted to be the same serve as E1 and E2 in the tableau, and the adjuncts with *except*, *only*, and the like express P2. In the anaphoric case (9c), the identity of E1 must be inferred from discourse or nonlinguistic context—here, the preceding sentence.

Using the notation of the PARALLEL ARCHITECTURE (Jackendoff 2002) and SIMPLER SYNTAX (Culicover & Jackendoff 2005), we notate the lexical entries for *same* and *except* as in 10.[4] (We use normal orthography in place of IPA for phonology, and we deal only with the simplest subcategorization frames.)

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[4] Rule 10c is not the only reading of *except*. One that has received some attention in the literature (Hoeksema 1987, 1990, Von Fintel 1993) is the use in *Everyone except Bill laughed*. Yet another reading of *except* is found in *I like the fish, except for the sauce.* What the three readings appear to have in common is that they pick out a part or property of a larger whole that is different from the other parts or properties (where being a different member of an otherwise uniform set is one such case).

(10) a. Phonology: the same$_1$ as$_2$

Syntax: NP_3 *be* A$_1$ [$_{PP}$ P$_2$ NP_4] (syntactic frame 9b)

Semantics:

	1	2
SAME	*E1$_4$*	*E2$_3$*

b. Phonology: the same$_1$

Syntax: NP_3 *be* A$_1$ (syntactic frame 9c)

Semantics:

	1	2
SAME	<u>E1</u>	*E2$_3$*

c. Phonology: [except for]$_5$

Syntax: [$_{PP}$ P$_5$ NP_6]

Semantics:

	1	2
SAME	*E1*	*E2*
EXCEPT	Ø/P1	*P2$_6$*

Let us unpack this: 10a,b,c are interface rules that link constituents in phonology, syntax, and semantics. The subscripts stipulate correspondences between the three structures. Subscript 1 connects the phonology *the same* to the adjective (or whatever *the same* is) in the syntax; subscript 2 connects the phonology *as* to the preposition. Subscript 3 connects the subject of *the same* to entry E2 in the tableau; subscript 4 connects the object of *as* to entry E1. These two NPs and the corresponding entries in the tableau are in italics to indicate that they are variables that must be satisfied by other elements in the sentence. Thus *This wug is the same as that wug* ends up with the structure in 11.

(11) Phonology: [this wug]$_3$ is [the same]$_1$ [as]$_2$ [that wug]$_4$

Syntax: NP$_3$ *be* A$_1$ [$_{PP}$ P$_2$ NP$_4$]

Semantics:

	1	2
SAME	THAT WUG$_4$	THIS WUG$_3$

Interface rule 10b notates the anaphoric case of *the same*. Here, the subject of *the same* still maps into E2 in the tableau, but E1 must be **found** in the linguistic or nonlinguistic context. We notate this by underlining this constituent in the tableau.[5] Underlining can thus be considered an instruction that invokes **find**. Once an antecedent is **found**, E1 is filled in in the same way as in 10a. Thus we end up with the same tableau as 11 for the discourse *See that wug? This wug is the same*.

Turning to *except for*, which we treat as a compound preposition (subscript 5 in 10c): its complement (subscript 6) maps into the P2 cell of an otherwise unspecified tableau. This tableau combines by Unification with the tableau from *the same* to create a same-except relation.

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(12) Phonology: [this wug]$_3$ is [the same]$_1$ as$_2$ [that wug]$_4$, [except for]$_5$ [that
             gizmo]$_6$
     Syntax: NP$_3$ *be* A$_1$ [$_{PP}$ P$_2$ NP$_4$] [$_{PP}$ P$_5$ NP$_6$]
     Semantics:

	1	2
SAME	THAT WUG$_4$	THIS WUG$_3$
EXCEPT	$\emptyset$/*P1*	THAT GIZMO$_6$

What about P1? As seen in 9b,c and 12, P1 can be left unmentioned. Under such cir-
cumstances, however, we do not know whether we are dealing with elaboration, where
E1 simply lacks a gizmo, or whether P2 contrasts with an unmentioned corresponding
part of E1 (e.g. a gizmo vs. a doohickey).

Instead can be used to resolve this ambiguity. In 13a, P1 is expressed as the comple-
ment of *instead*, explicitly contrasting with the complement of *except*. In 13b, *instead*
has an implicit argument that is identified with P1.[6]

(13) a. See that wug? T<small>HIS</small> wug is <u>the same/identical</u>, <u>except</u> it has a gizmo
        <u>instead</u> of a doohickey.
     b. See that wug with a doohickey? T<small>HIS</small> wug is <u>the same/identical</u>, <u>except</u> it
        has a gizmo instead.

Notice that syntactic frame 13b is doubly anaphoric—*the same* is anaphoric to E1 and
instead is anaphoric to P1. Following Chung et al. 1995, we call the phrase expressing
E1 the O<small>UTER</small> A<small>NTECEDENT</small> and that expressing P1 the I<small>NNER</small> A<small>NTECEDENT</small>.

The lexical entry for *instead* can be notated as 14a,b.

(14) a. (*instead* plus complement)
        Phonology: [instead of]$_7$
        Syntax: [$_{PP}$ P$_7$ *NP$_8$*]
        Semantics:

	1	2
SAME	*E1*	*E2*
EXCEPT	*P1*$_8$	*P2*

     b. (anaphoric *instead*)
        Phonology: instead$_7$
        Syntax: PP$_7$
        Semantics:

	1	2
SAME	*E1*	*E2*
EXCEPT	<u>P1</u>	*P2*

These tableaux combine by Unification with those for *the same* and *except*, to yield a
composite such as 15 for 13a,b.

(15)

	1	2
SAME	THAT WUG	THIS WUG
EXCEPT	DOOHICKEY	GIZMO

Let us sum up how the three operations involved in the same-except relation apply to
these syntactic frames. **Find** involves identifying the two phrases whose denotata are

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[6] Notice the interesting mismatch between the syntax and the semantics: the *instead*-phrase is in the sen-
tence describing E2, not in the sentence that mentions E1.

being compared. In the syntactic frames 9a,b they are arguments of *same*. In 9c, E2 is an argument of *same*, but E1 has to be located in previous discourse, which is what makes *the same* anaphoric.

Align depends on comparing the structure and properties of the denotata. This is a cognitive rather than a linguistic comparison—here, between the conceptual representations of the wugs themselves, not between the linguistic expressions headed by *wug*.

Identify differences does depend on the linguistic expression. P2 is expressed by the complement of *except*, and P1 is expressed by the complement of *instead*, as in 13a, or by the inner antecedent of *instead* when it lacks a complement, as in 13b.

3. CONTRASTIVE STRESS. A second means for expressing same-except is through contrastive stress. As is well known, when successive phrases have parallel structures, the differences are marked with contrastive stress, particularly in the second phrase. The successive phrases can be sentences (16a–c), NPs (16d,e), or other utterance types (16f,g). There may be one, two, or more contrasts.

(16) a. FRED likes fish, and SUE likes fish.
b. FRED likes FISH, and SUE likes SOUP.
c. Fred LIKES FISH, but he just LOVES SOUP.
d. Fred likes OPERAS by VERDI and QUARTETS by HAYDN.
e. JOHN'S biography of Hoover is a lot better than BILL'S biography of Hoover.
f. The RED SOX FOUR, the YANKEES THREE.
g. The RED SOX four, the YANKEES four.

The first of the two parallel phrases may have contrastive stress, but does not require it. In particular, the first phrase typically lacks contrastive stress when the two phrases are spoken by different individuals, because the first speaker obviously cannot anticipate the parallelism.

(17) A: I'll have a mushroom pizza.   (normal focal stress)
B: And I'LL have a PEPPERONI pizza.   (contrastive stress optional on *I*, obligatory on *pepperoni*)

However, the contrastive-stress pattern in the second phrase is obligatory. Contrasting parts must be stressed (18a,c), and noncontrasting parts must be destressed (18b,d).

(18) a. *FRED likes FISH, and SUE likes soup.
b. *FRED likes fish, and SUE LIKES it too.
c. *JOHN'S biography of Hoover is a lot better than BILL'S biography of Coolidge.
d. *JOHN'S biography of Hoover is a lot better than BILL'S biography of HOOVER.

The semantics of contrastive stress can be couched in terms of the same-except relation: the parallel phrases are understood as denoting entities that are the Same, Except for the contrastively stressed constituents, which are different. As with the wugs in §1, these parallelisms are impossible to ignore. In fact, there is an important connection here between contrastive stress and the properties of visual same-except judgments. Just as visual same-except judgments often draw attention to the contrasting parts P1 and P2, so also the contrasting constituents in parallel phrases receive more prominent prosody, which is a way of calling attention to them.

Identifying contrastive stress with the Except parts of the interpretation has the consequence that the Same parts of the interpretation CANNOT be contrastively stressed, for if they were, they would be incorrectly interpreted as contrasting. This fact gives rise to

the illusion of 'deaccentuation', which has been associated in the mainstream literature with deletion in ellipsis constructions (Chomsky 2001).

This account of contrastive stress can be notated in the parallel architecture/simpler syntax notation as 19, for a first approximation. Like the lexical entries for *the same*, *except*, and *instead*, this is an interface rule that links constituents in phonology, syntax, and semantics.

(19) ***Contrastive stress***

Phonology: … [contrastive stress]$_1$ …
Syntax: $[_{XP} … YP_1 …]_2$
Semantics:

	1	2
SAME	<u>E1</u>	*E2*$_2$
EXCEPT	<u>P1</u>	*P2*$_1$

In this linking rule, subscript 1 indicates that a contrastively stressed constituent in the phonology is associated with some phrase YP in syntax, which expresses P2 in the tableau. Subscript 2 indicates that an XP that contains YP expresses the constituent E2 in the tableau. In turn, the tableau says that E2 is the same as some entity E1, except for some property or part P2, which contrasts with a corresponding property or part of E1, namely P1. E1 and P1 are to be determined from previous material in the discourse, using **find**.

To illustrate 19, consider example 16a, *FRED likes fish, and SUE likes fish*. Applying 19 to the second clause, we derive the tableau in 20.

(20) Phonology: *Sue*$_1$ likes fish
Syntax: $[NP_1 [_{VP} V NP]]_2$
Semantics:

	1	2
SAME	<u>E1</u>	[SUE LIKES FISH]$_2$
EXCEPT	<u>P1</u>	SUE$_1$

It is now necessary to **find** E1, the outer antecedent, and to **identify differences**, which means identifying P1 as the inner antecedent. These are picked out by virtue of their juxtaposition in discourse and their parallelism in form and meaning, which allows them to be **align**ed with E2 and P2.[7] In 16a, the outer antecedent is *Fred likes fish*, and the inner antecedent is *Fred*. Substituting their readings into the semantics of 20 yields 21, which is the correct same-except relation between the two clauses.

(21) Phonology: SUE$_1$ likes fish
Syntax: $[NP_1 [_{VP} V NP]]_2$
Semantics:

	1	2
SAME	[FRED LIKES FISH]	[SUE LIKES FISH]$_2$
EXCEPT	FRED	SUE$_1$

A single phrase may contain two contrastively stressed constituents, as in 16b,c,d,f. In this case we end up with a doubly contrastive same-except relation like 22.

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[7] We leave open here the details of how to compute parallelism of form and meaning—this is a complex issue that demands far more space than we can devote to it here, and, again, it probably involves cognition in general, not just language. See §8 for some especially vexing cases.

(22) (FRED likes FISH, and …)
SUE likes SOUP.

	1	2
SAME	E1	SUE LIKES SOUP
EXCEPT	P1	SUE
EXCEPT	Q1	SOUP

Identifying E1, P1, and Q1, we derive 23.

(23)

	1	2
SAME	[FRED LIKES FISH]	[SUE LIKES SOUP]
EXCEPT	FRED	SUE
EXCEPT	FISH	SOUP

As seen in 17, the first of the two parallel phrases does not require contrastive stress. But if it is present, contrastive stress on the inner antecedent is a strong cue for **align**ment, marking it as P1. If the inner antecedent lacks contrastive stress, then **align**ment depends on syntactic, semantic, and pragmatic structure.

A slightly different situation arises when the second of the parallel entities has a contrastive part that the first lacks—the elaboration case. Again this is clearest when there are two speakers.

(24) A: I'll have a pizza.   (normal focal stress)
B: And I'LL have a PEPPERONI pizza.   (contrastive stress)

Interestingly, this relation cannot be reversed.

(25) A: I'll have a pepperoni pizza.   (normal focal stress)
B: #And I'LL have a PIZZA.[8]

In order to accommodate this case, we have to amplify 19 slightly to 26, in which P2 can contrast either with P1 or with null.[9]

(26) ***Contrastive stress***
Phonology: … [contrastive stress]$_1$ …
Syntax: $[_{XP} … YP_1 …]_2$
Semantics:

	1	2
SAME	E1	$E2_2$
EXCEPT	Ø/P1	$P2_1$

When structurally parallel items fail to contrast properly, as in 27, an anomaly results.

(27) #FRED ate fish on TUESDAY, and SUE ate fish on the PORCH.

The semantics of same-except automatically accounts for this anomaly, which is a failure of **align**. The final words of the two clauses are in syntactically parallel positions, so *Tuesday* is a candidate for P1 in 26. This yields tableau 28 for *Sue ate fish on the porch*.

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[8] One might say, for example, *And I'LL just have a PLAIN pizza*, or *And I'LL have a PIZZA-pizza*, using the construction of contrastive-focus reduplication (Ghomeshi et al. 2004). Both of these provide a host for the necessary contrastive stress.

[9] It may be that elaboration receives slightly different prosody from contrast, perhaps the 'discourse-new' prosody discussed by Katz and Selkirk (2011). This prosody involves somewhat less intense F0 rise and fall and less lengthening than true contrastive stress. If so, elaboration and contrast will each have their own special rule.

(28)

	1	2
SAME	[FRED ATE FISH ON TUESDAY]	[SUE ATE FISH ON THE PORCH]
EXCEPT	FRED	SUE
EXCEPT	ON TUESDAY	# ON THE PORCH

The putatively contrasting parts do not have parallel function within the two events, since one is a time and one is a place. Hence they fail to **align**, and therefore the same-except relation is semantically (or cognitively!) ill-formed, as indicated by the # in 28.

   Consider next the classic example in 29.

   (29) John called Mary a Republican, and then SHE insulted HIM.   (Lakoff 1971)

The tableau is given in 30. The two EXCEPTs satisfy the contrastive-stress correspondence, which requires that the stressed element in the second clause correspond to some element in the first.

(30)

	1	2
SAME	[JOHN CALL MARY REPUBLICAN]	[SHE INSULT HIM]
EXCEPT	JOHN	[DEF.SG.FEMALE]
EXCEPT	MARY	[DEF.SG.MALE]

If we interpret the pronouns in terms of their antecedents in the preceding clause (see §4.1), the tableau becomes 31.

(31)

	1	2
SAME	[JOHN CALL MARY REPUBLICAN]	[SHE INSULT HIM]
EXCEPT	JOHN	MARY
EXCEPT	MARY	JOHN

The same-except relation demands that SOMETHING be the same, and the principle for contrastive stress says it is not John and Mary. We therefore infer that the remainders of E1 and E2, namely calling someone a Republican and insulting them, must be the same, which is the desired interpretation.

   This approach (and in fact any approach) has to take into account that there are limits on how many contrasts there can be between two sentences. The formalism in principle allows us to contrast everything in the two sentences, which would yield an example like 32.[10]

   (32) ??John called Mary a Republican, and then SHE inSULTed HIM.

The intended reading would be that calling someone a Republican is not an insult, in contrast with 29.

   Our intuition is that the number of possible contrasts is limited primarily by how much there is left that can be the Same. If there is enough noncontrastive material to support some degree of Sameness, three contrasts ARE in fact possible at once. Moreover, the more noncontrastive material there is, the easier it is to manage the multiple contrasts, as can be seen in 33. Thus the limitation on the number of contrastive stresses is, at least in part, a consequence of the same-except relation.

   (33) a. John called Mary a Republican, and then John's MOTHER inSULTed Mary's FATHER.
        b. John called Mary a Republican at the annual meeting, and then John's MOTHER inSULTed her on a TALK show.

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[10] Thanks to a referee for raising this question.

c. John called Mary a Republican at the meeting in Denver, and then John's MOTHER inSULTed her at the meeting in BOISE.

A full treatment of contrastive stress in this vein would require integration with more general theories of information structure and of contrast, at the same time perhaps linking all of them to attentional structure in vision. We leave this for future research.

4. EXPRESSION OF SAME-EXCEPT USING ANAPHORA.

4.1. DEFINITE PRONOUNS. A definite pronoun such as *he*, *she*, or *it* expresses complete Sameness of reference[11]—there is no Except. The standard coindexation notation in 34 is the usual way of showing this Same relation. In our tableau notation it comes out as 35.

(34) John$_i$ called, and he$_i$ was angry.

(35)

	1	2
SAME	JOHN	[DEF.SG.MALE]

This case works somewhat differently from our previous cases. In the previous cases, E2 has been a fully fleshed-out entity (visual or linguistic) that is compared with E1 and judged the same. This time, E2 is only minimally specified, and it is nevertheless stipulated to be the same as E1. By virtue of this sameness, we can infer that E2 has all of the parts and properties that E1 has, as though we were applying **align** in reverse. Through this inference, we know that the definite singular male in 35 has all of the properties of the individual John. Hence 35 can be fleshed out as 36.

(36)

	1	2
SAME	JOHN	JOHN

And thus the second clause of 34 means 'John was angry'. We call this inferential step RECONSTITUTION. It takes a semantically underspecified linguistic expression (in this case the pronoun *he*) and on the basis of the antecedent, reconstitutes a complete representation of the intended meaning (in this case, reference to John).

Where does the tableau in 35 come from? It is derived from the lexical entry for the pronoun, which stipulates that its referent must be in the Same relation with some antecedent. This lexical entry can be stated as 37.

(37) **he**

    Phonology: he$_1$

    Syntax: NP.SG.NOM$_1$

    Semantics:

	1	2
SAME	<u>E1</u>	[DEF.SG.MALE]$_1$

The underlined E1 says that *he* has to **find** an antecedent. To get from 37 to 35, the antecedent *John* has to be **found** and its meaning substituted for E1.

The pronoun has the same reference as its antecedent because of the feature DEF, which indicates 'same token'. This feature distinguishes it from the indefinite pronoun *one*, which expresses identity of sense, that is, 'same type', and which we discuss in a moment.

As is seen in many of the phenomena to be examined here, **find** can locate an antecedent not only in the discourse, but also in the nonlinguistic context, as in 38.

(38) He's our candidate. [pointing to some individual]

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[11] We are abstracting away here from exactly what counts as 'same reference', given the complex issues surrounding the distinction between discourse anaphora and binding of pronouns, strict and sloppy identity, and so forth. See also n. 2.

This shows that **find** is not always a purely linguistic operation.

However, **find** can also be linguistically constrained. In present terms, principles A and B of the BINDING THEORY take the following form:

- PRINCIPLE A: If a proform's syntactic features mark it as an anaphor, then E1 must be expressed by a local c-commanding argument.
- PRINCIPLE B: If a proform's syntactic features mark it as a pronoun, then E1 must not be expressed by a local c-commanding argument.

In other words, principles A and B restrict the candidates that **find** may consider for E1.

4.2. *One*-ANAPHORA. Next consider identity-of-sense anaphora with the indefinite pronoun *one*.

(39) See that wug? I used to have one.

Parallel to *he*, *one* has the lexical representation in 40.

(40) ***One-anaphora***
Phonology: one_1
Syntax: $[_{NP} \ldots N_1 \ldots]_2$
Semantics:

	1	2
SAME	E1	$[COUNT.SG]_2$

The NP headed by *one* corresponds to a count individual in the semantics, which serves as E2 in the tableau. (The feature COUNT is necessary to rule out mass antecedents, as in **John drank wine, and Bill drank one too*.) As in the case of definite pronouns, the antecedent E1 is supplied by **find**.[12]

Because *one* lacks the DEF feature, it signifies identity of sense. However, DEF can be supplied by a definite determiner, for example, *I want that one* (accompanied by pointing), which signifies identity of reference with a nonlinguistic antecedent.

Definite pronouns stipulate sameness of reference, so they require everything to be exactly the same. In contrast, *one* allows Except-constituents—differences among tokens of the same type. These differences can be expressed in two ways. One is as a sentential adjunct, using expressions like *except*, *instead*, and so on, parallel to the examples in §2.

(41) a. See that wug? I used to have one, except/only with a gizmo on its head (instead (of a doohickey)).
b. I used to have one of those [pointing at a wug], except/only it had a gizmo on its head (instead (of a doohickey)).

The tableau for 41a is shown in 42. Its components come from three sources. First, the SAME row follows from 40, the lexical entry for *one*. Second, by principle 10c, the complement of *except* supplies P2; and third, by principle 14, the complement of *instead* supplies P1.

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[12] As brought to our attention by Greg Carlson, there also must be a stipulation that E1 is expressed by a singular noun, in order to rule out pluralia tantum antecedents, as in **Bill is wearing nice glasses, and Joe is wearing one too*. This might be expressed as a condition on **find**. Culicover & Jackendoff 2005:261–63 observes that similar effects occur even with nonlinguistic antecedents, for instance when the speaker points to Bill's glasses and says, *Those look nice on you./*That looks nice on you.* Similarly, in gendered languages, deictic pronouns acquire the gender of the lexical item that denotes the object being pointed out. This shows that the syntactic form of these anaphoric expressions cannot be determined by syntax alone.

(42)

	1	2
SAME	WUG	[COUNT.SG]
EXCEPT	DOOHICKEY	GIZMO

As in §2, if *instead of NP* is absent, we do not know whether we are dealing with contrast (with the doohickey on E1) or elaboration (no doohickey on E1). And again, if *instead* lacks an overt complement, it is understood as having an implicit argument that is anaphoric to some contextually specified part of E1.

The other way to express Except is as an adjunct of *one*, for example, the underlined phrases in 43.

(43) a. See that wug with a doohickey? I used to have one <u>with a gizmo</u>.
     b. See that pizza with olives? I'd like one <u>with pepperoni instead</u>.
     c. I'd like one of those [pointing at a hamburger] <u>on pita bread (instead of a bun)</u>.

These examples have no explicit *except* that designates P2. So where does the EXCEPT row come from? Here is how it works: Crucially, the lexical entry for *one* (40) stipulates that THE ENTIRE NP THAT IT HEADS denotes the entity E2 that is the Same as the antecedent entity E1. Once E1 is **found**, E1 and E2 are **align**ed. If the phrase headed by *one* has an adjunct, this must be taken into account in the **align**ment process. The adjunct may be identical to a part of the antecedent, as in 44, in which case it will be part of the SAME row (and must be destressed).

(44) A: I'd like a pizza with mushrooms.
     B: I'd like one with mushrooms too.

Alternatively, the adjunct may fail to match a part of the antecedent, as in 43, in which case **identify differences** assigns it to the EXCEPT row of the tableau as P2. As a result, 43a ends up with the very same tableau as 41a, namely 42.

Looking further at tableau 42: Given that the cell for E2 only says [COUNT.SG], how do we interpret E2 as a wug with a gizmo? This is the same problem we faced with reconstituting definite pronouns, but here it is more complicated. Since E1 is a wug with a doohickey, and since E2 is the Same as E1, Except that E2 has a gizmo, E2 must be a wug with a gizmo.

This computation, a more elaborate variant of **reconstitute**, involves three inferential steps. First, E1 and E2 are set in equivalence (symbolized by '$\approx$'), given that the pronoun stipulates that they are the Same. Next, we can think of '**subtract**ing' part/property P1 from E1; and finally, we must '**add**' P2 to the result. This computation is informally summarized as 45a; 45b shows how it applies to 41.

(45) a. $E2 \approx E1 - P1 + P2$
     b. ONE $\approx$ WUG WITH DOOHICKEY – DOOHICKEY + GIZMO = WUG WITH GIZMO

Example 45 illustrates the case of contrast. In a case of elaboration, such as 46a, there is no P1, hence no **subtract** step; so the only step needed for reconstitution is **add**. The schematic equation is 46b and the resulting interpretation is 46c.

(46) a. You know that wug you've got? I used to have one with a gizmo on its head.
     b. $E2 \approx E1 + P2$
     c. ONE $\approx$ WUG + GIZMO = WUG WITH GIZMO

And of course in the case of a definite pronoun (35), there is no Except constituent, so there is no P1 to **subtract** nor P2 to **add**. Hence in this case reconstitution amounts to simple copying of the sort we did in §4.1.

(47) E2 ≈ E1

An important aspect of our analysis is that it does not matter how the contrasting properties P1 and P2 are expressed syntactically. They may appear in an *except*-phrase (41), in a prenominal modifier (48a), in a postnominal adjunct (48a,b), in a relative clause (48b,d), or even through predication (48c). All that matters is that they converge on a same-except tableau, and that **align** detects parallel SEMANTIC relations between E1 and E2. Furthermore, the nonmatching property can be detected nonlinguistically, as in 48d, which involves observing the mushroom pizza in question. All of these are equivalent as far as same-except is concerned.

(48) a. Bill has a mushroom pizza. I'd like one with pepperoni.
   b. Bill has a pizza that has mushrooms on it. I'd like one with pepperoni.
   c. Bill has a pizza with mushrooms. Mine has pepperoni on it.
   d. [pointing to a mushroom pizza:] I'd like one that has pepperoni instead.

Example 48a actually has another reading: as a request for a pizza with both mushrooms and pepperoni. This is the case where *one with pepperoni* is read as expressing an elaboration relation, that is, where P1 is null. The ambiguity can be resolved by adding *instead*, as in 48d, which forces the reading where P2 corresponds to P1. The other reading is forced by *one with pepperoni **too***: *too* calls for an addition instead of a substitution.[13]

Our informal process of **subtract**ing and **add**ing can be instantiated more formally in terms of lambda abstraction of P1 and application of the resulting property to P2. For example, 'subtracting' P1 is equivalent to lambda-abstraction, while 'adding' P2 is equivalent to applying the lambda-abstract to P2. The same basic mechanism has been used in standard accounts of the semantics of focus and ellipsis (e.g. Merchant 2001, Culicover & Jackendoff 2005). It is based in turn on the earlier approach of Kraak (1967), Chomsky (1972), Jackendoff (1972), and Akmajian (1973) and developed formally by, for example, Dalrymple and colleagues (1991), Rooth (1992), and Lappin (2005). In fact, all approaches to focus and ellipsis that we are aware of assume procedures along the lines of **find**, **align**, **subtract**, and **add**; they differ only in terms of the

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[13] A referee suggests that there are cases in which the interpretation of *one* is constrained by more than the linguistic antecedent. An example is (i).

  (i) [Pointing to a giant wug:] See that wug with a gizmo? I have one too, only with a doohickey.

What is at issue is whether (i) entails that my wug is also large, or whether it could be true even if my wug is teensy. We have mixed feelings about the judgment; it probably calls for some careful experimentation. If my wug must indeed be large, this could be due to a number of factors. First, *wug* is not the only antecedent in the context. The visually viewed wug is another possible antecedent. Compare (ii).

  (ii) Look at that [pointing to a giant wug]! I have one too, only with a doohickey.

Here our judgment is biased toward *one* standing for a giant wug, not just any size wug.

Another option, not mutually exclusive with the preceding, is that same-except may focus on one salient difference while ignoring or backgrounding others. For example, in our judgment (iii) is felicitous even if the observed Toyota is red and mine is green.

  (iii) See that Toyota? I have one, only with a sunroof.

By contrast, as the referee points out, (iv) is less felicitous under the same conditions. We do not know why.

  (iv) See that Toyota? Mine is the same, only with a sunroof.

particular level of representation that the procedures apply to: syntax, phonetic form (PF), logical form (LF), or semantics. We return to this issue in §8.[14]

4.3. VP ANAPHORA. When E1 and E2 are events instead of objects, same-except can be expressed in a variety of ways. The most explicit form is 49, where *too* marks what is the Same, and contrastive stress and *except* function as before.

(49) a. You took a nap? *I* took a nap too, except/only/but the phone woke me up.
　　 b. E1 = *you took a nap*
　　　　 E2 = *I took a nap*
　　　　 P1 = you
　　　　 P2 = I
　　　　 Q1 = *the phone didn't wake you up* [implicit]
　　　　 Q2 = *the phone woke me up*

Alternatively, E2 can be abbreviated to *do the same thing*, as in 50.

(50) a. You took a nap? *I* did the same thing, except/only/but the phone woke me up.
　　 b. E1 = antecedent of *do the same thing* = *you took a nap*
　　　　 E2 = *I did the same thing*
　　　　 P1 = you
　　　　 P2 = I
　　　　 Q1 = *the phone didn't wake you up* [implicit]
　　　　 Q2 = *the phone woke me up*

Do the same thing can be further abbreviated to *do it* or *do that*, and the *except* clause can be abbreviated to a simple PP adjunct, giving us classical *do it/that* anaphora. (We distinguish this from VP ellipsis, for example, *but I didn't*, which we take up in §6.)

(51) a. You took a nap yesterday? *I* did that last WEEK.
　　 b. E1 = antecedent of *do that* = *you took a nap yesterday*
　　　　 E2 = *I did that last week*
　　　　 P1 = you
　　　　 P2 = I
　　　　 Q1 = *yesterday*
　　　　 Q2 = *last week*

E1 can be an entity in the visual environment rather than in a previous sentence.[15]

(52) a. Can you do that using a spoon? [when the addressee is spreading peanut butter with a knife]
　　 b. E1 = antecedent of *do that* [spreading peanut butter]
　　　　 E2 = *do that using a spoon*
　　　　 P1 = [something other than *using a spoon*]
　　　　 P2 = *using a spoon*

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[14] The tableau notation can also be applied to complex anaphoric elements. For instance, *something else* has a NONidentity-of-sense reading in examples like *Bill ordered a sandwich, but I'd like something else*. In present terms, this can be formalized as (i).

(i)

	1	2
DIFFERENT	E1	[COUNT.SG]

See Culicover & Jackendoff 1995 for evidence that this is the right analysis.

[15] Note that *do it* with a nonlinguistic antecedent does not always express same-except.

　　(i)　　[Your four-year-old jumps off the diving board:] Wow, she DID it!

Instead plays the same role here as in *one*-anaphora.

(53) a. Can you do that with a spoon instead of a knife? [P1 = *knife*]
 b. Can you do that with a spoon instead? [P1 = discourse or nonlinguistic antecedent]

Following the treatment of *one*-anaphora, we take *do it* anaphora to be an expression of Same.

(54) ***Do it anaphora***
 Phonology: do_1 it_2
 Syntax: $[_{VP} V_1 NP_2]_3$
 Semantics:

	1	2
SAME	E1	X ACT$_3$

Informally, 54 says that *do it* means 'X performs an action that is the same as E1', where X is the external argument of ACT (either an overt or a controlled subject), and E1 is either expressed by an antecedent VP or observed in the nonlinguistic context. In a simple case such as 55a, the semantic structure of *do it* comes out as 55b.

(55) a. A: Someone washed the car.
 B: *I* did it.

b.

	1	2
SAME	INDEF WASH THE CAR	ME ACT
EXCEPT	INDEF	ME

Let us be a bit more precise here. Formally, 55 is a case of contrast in the sense of 19, in that stressed *I* (= ME), which is P2, contrasts with *someone* (= INDEF), which is P1. By contrast, the semantics are more like what we find with elaboration, in that *I* adds information not specified in the previous discourse. Similar observations hold for answers to WH-questions, for example, *Who washed the car?—I did it*. We consider this type of case a third variety of same-except, a mixture of contrast and elaboration that we term SPECIFICATION. It recurs in examples to come.[16]

Returning to *do it*: when it has an adjunct, there are the usual two possibilities, contrast and elaboration. First, it can contrast with a parallel adjunct in the antecedent, as in 56.

(56) A: Bill washed the car TODAY.
 B: No, he did it YESTERDAY.

Second, the adjunct can add an elaboration not present in E1 (57).

(57) A: Bill washed the car.
 B: Yeah, he did it YESTERDAY.

The *no* at the beginning of B's response in 56 is a sign that something contrasting is about to be said; *yeah* at the beginning of B's response in 57 is a sign of assent, and so the adjunct is interpreted as an elaboration.

When there are two contrasts in the sentence, as in 49, the rule for contrast applies twice to yield a double-contrast same-except. Example 58a has contrast both in the subject and in an adjunct, so its tableau is 58b.

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[16] If there proves to be a prosodic difference between elaboration and contrast, as suggested in n. 9, our intuition is that specification will receive the prosody of elaboration rather than contrast, as befits its semantics.

(58) a. A: Robin slept for eight hours after the game.
         B: That's nothing: LESLIE did it for TWELVE hours.

b.

	1	2
SAME	ROBIN SLEPT FOR 8 HOURS AFTER THE GAME	LESLIE ACT
EXCEPT	ROBIN	LESLIE
EXCEPT	EIGHT	TWELVE

In order to infer what Leslie actually did, we have to carry out **reconstitution**, along the same lines as with *one*-anaphora. The double contrast requires a **subtract** and **add** step for each EXCEPT row.[17]

(59) E2 ≈ ROBIN SLEPT FOR 8 HOURS AFTER THE GAME (– ROBIN +
          LESLIE) (– 8 + 12)
        = LESLIE SLEPT FOR 12 HOURS AFTER THE GAME

Note that we have not made any distinction between *do it*, *do that*, *do this*, and *do the same thing*. The differences among them are orthogonal to the analysis here. *Do so* is slightly different in that it is less comfortable with nonlinguistic antecedents (Hankamer & Sag 1976). This does not appear to bear on the semantic analysis in terms of same-except.

Finally, 60 shows a further syntactic frame for *do the same thing*. Here the *as*-phrase picks out P1 and contrasts it with the subject of *do the same thing*, just as in *X is the same as Y* (§2). The semantics is the same.

(60) a. Sam did the same thing as Harry.

b.

	1	2
SAME	E1	SAM ACT
EXCEPT	HARRY	SAM

In short, *do it* anaphora is entirely parallel to *one*-anaphora, except for a few elaborations specific to the meaning differences between the two constructions.

5. EXPRESSION OF SAME-EXCEPT USING ELLIPSIS. So far we have seen that same-except can be expressed by words such as *same* and *except*, by contrastive stress, and by anaphoric expressions. Another way of expressing same-except is ellipsis. We work out an analysis for bare argument ellipsis in §5.1 and then show briefly how the same approach applies to three other ellipsis constructions: sluicing, gapping, and VP ellipsis.

5.1. BARE ARGUMENT ELLIPSIS. Characteristic examples of BARE ARGUMENT ELLIPSIS (BAE) appear in 61.

(61) a. A: I hear Ozzie's drinking bourbon again.
         B: No, scotch.
     b. A: I hear Ozzie's drinking again.
         B: Yeah, scotch.

The basic idea behind our approach is that the BAE construction denotes something that is the Same as some antecedent, but the only part of that something that is overtly expressed is the part that is different. In other words, the bare argument expresses an Except constituent, and what is the Same is completely implicit. As with the other instances of same-except, there are two cases. In 61a, B's reply substitutes information

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[17] Notice that in the antecedent VP in 58a, the contrastive adjunct falls between two noncontrastive parts. See §8 for discussion of the difficulties this raises for classical accounts of *do it* anaphora, which require *do it* to have a syntactic constituent as its antecedent.

for something in A's assertion—that is, it is a case of contrast. As in 56, *no* is a signal that contrast is about to come. In 61b, however, B elaborates A's assertion, and as in 57, *yeah* signals that this is the case.

In order to formalize the BAE construction, we have to decide on its syntactic structure. Culicover & Jackendoff 2005 argues that BAE is not a clause in the usual sense, because it does not embed freely (**Harriet realizes (that) scotch*, etc.). For convenience, we assign it to the category Utterance.[18] This Utterance in turn consists of a bare XP, which may be of any syntactic category.

Using this account of the syntax, the BAE construction can be characterized as 62. Since it has no characteristic phonology, it correlates only syntax and semantics.

(62) ***Bare argument ellipsis***

Syntax: $[_{\text{Utterance}} XP_2]_1$

Semantics:

	1	2
SAME	E1	SITUATION$_1$
EXCEPT	Ø/P1	P2$_2$

The coindexation specifies that the Utterance has the semantics of a Situation (i.e. State or Event), even though the syntax specifies only one of its constituents. Since illocutionary force can be assigned to expressions of Situations, BAE may act semantically as an interrogative or an imperative, as well as a declarative. (Similar arguments appear in Stainton 2006.)

(63) a. A: I'll pour you some bourbon.
       B: No, scotch!   (imperative)
    b. A: Hey, look! Ozzie's drinking something!
       B: Scotch?   (interrogative)

Once E1 and P1 are **found** and **align**ed, they can be substituted into the tableau. Thus B's replies in 61 come out as 64 and 65 respectively.

(64) a. A: I hear Ozzie's drinking bourbon again.
       B: [No, scotch$_2$]$_1$.   (contrast)
    b.

	1	2
SAME	OZZIE DRINK BOURBON AGAIN	SITUATION$_1$
EXCEPT	BOURBON	SCOTCH$_2$

(65) a. A: I hear Ozzie's drinking again.
       B: [Yeah, scotch$_2$]$_1$.   (elaboration/specification[19])
    b.

	1	2
SAME	OZZIE DRINK INDEF AGAIN	SITUATION$_1$
EXCEPT	INDEF	SCOTCH$_2$

Applying **subtract** and **add** to solve for E2, we derive the meaning 'Ozzie's drinking scotch again' in both cases.

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[18] For arguments that justify licensing an Utterance consisting of nothing but a bare fragment or sequence of fragments, see Shopen 1972, Culicover & Jackendoff 2005:§7.2, Stainton 2006, and many of the papers in Progovac et al. 2006a.

[19] From the point of view of syntax, this is a case of elaboration, since *drink* is used intransitively and *scotch* fills in the object. However, intransitive *drink* has an implicit indefinite argument, here INDEF. So from the point of view of semantics, this is a case of specification in the sense of §4.3, since *scotch* fills out the content of INDEF.

An important semantic restriction on BAE follows from the character of same-except. Consider the minimal pair in 66.

(66) A: Ozzie drank the scotch in five minutes.
    B: i. Yeah, in the kitchen.
       ii. *No, in the kitchen.

The difference in acceptability between B's two replies follows from the discourse relations. As before, B's *yeah* in 66a indicates that the following utterance is understood as assenting to and elaborating A's statement. By contrast, B's *no* in 66b marks the utterance as a contrast, and same-except stipulates that the contrast must be found in P1. But no part of A's statement can serve as P1, since the time period *in five minutes* does not bear the same relation to E1 as the location *in the kitchen* does to E2—there is a failure of **align**, just as in 27, the case of contrastive stress discussed earlier. Hence the intended semantics of 66B.ii is ill-formed, as shown by the # in 67b. Notice, though, that the two adjuncts are syntactically parallel; it is only in the semantics that they are distinguished.

(67) a. Yeah, in the kitchen.

	1	2
SAME	OZZIE DRINK SCOTCH IN 5 MINUTES	SITUATION$_1$
EXCEPT	Ø	IN KITCHEN$_2$

   b. No, in the kitchen.

	1	2
SAME	OZZIE DRINK SCOTCH IN 5 MINUTES	SITUATION$_1$
EXCEPT	IN 5 MINUTES	# IN KITCHEN$_2$

5.2. EXTENSION TO SLUICING. Sluicing involves a bare WH-phrase in a position that licenses an indirect question.

(68) a. Ozzie drank the scotch in five minutes, but I can't tell you WHERE.
    b. Ozzie's drinking again, but I don't know WHAT.
    c. Abby speaks the same language that some guy in this class speaks, but I'm not sure WHO.

Example 68a is an instance of elaboration, and 68b is an instance of either elaboration or specification, like 65; both cases are called 'sprouting' in the sluicing literature (Chung et al. 1995). Example 68c is an instance of contrast, where *who* contrasts with *some guy in this class*; this case is referred to as 'matching' in the sluicing literature.

For every example of sluicing, there exists a parallel example of BAE. For instance, the BAE examples in 69a–c parallel 68a–c.

(69) a. A: Ozzie drank the scotch in five minutes.
      B: i. Yeah, in the kitchen.   (= 66a)
         ii. Where?
    b. A: Ozzie's drinking again.
      B: i. Yeah, scotch.   (= 61b)
         ii. Yeah, but what?
    c. A: Abby speaks the same language that some guy in this class speaks.
      B: i. Yeah, Charlie.
         ii. Yeah, but who?

This parallelism suggests that BAE and sluicing are two variants of the same construction.

Bearing this in mind, we work out a structure for sluicing based on that of BAE. The syntax is different from BAE in two respects. First, the single phrase must be a WH-phrase. Second, sluicing counts syntactically as a clause (rather than as an unembeddable Utterance), because (i) it appears in positions characteristic of clauses, such as extraposed position (70a), and (ii) like a clause, it conditions singular agreement even when the WH-phrase is plural (70b).

(70) a. We were supposed to do some problems for tomorrow, but it isn't clear which problems. (cf. ... *but it isn't clear the answers)
     b. We were supposed to do some problems for tomorrow, but which problems isn't/*aren't clear. (cf. … but the answers aren't/*isn't clear)

We take it that the semantics of the WH-phrase accounts for the fact that the sluice has the force of a question. In fact, there are also examples of sluicing with the force of an exclamation, as can be seen from the characteristic exclamative WH-phrase *what an X* in 71a, paralleling the bare argument exclamation in 71b.

(71) a. I knew Murray was a genius, but I never realized what a genius.
     b. [Upon reading Murray's latest paper:] What a genius!

We tentatively conclude that sluicing itself does not have to stipulate its interrogative or exclamative semantics. This leads to the following formulation.

(72) ***Sluicing***

Syntax: $[_S \text{ WH-phrase}_2]_1$

Semantics:

	1	2
SAME	<u>E1</u>	SITUATION$_1$
EXCEPT	Ø/<u>P1</u>	$P2_2$

5.3. GAPPING. We turn next to gapping. Culicover & Jackendoff 2005 analyzes it as essentially double BAE. Within the present framework, gapping emerges as same-except with double contrast. It works exactly the same as full sentences with double contrastive stress such as 73a, except that the noncontrastive parts are left out, as in 73b.

(73) a. FRED likes FISH, and SUE likes SOUP.   (= 16b)
     b. FRED likes FISH, and SUE SOUP.

In 73b, *Fred* denotes P1, *Sue* denotes P2, *fish* denotes Q1, and *soup*, Q2.

(74) Phonology: Sue$_2$ soup$_3$

Syntax: $[_{\text{Utterance}} NP_2 \ NP_3]_1$

Semantics:

	1	2
SAME	FRED LIKE FISH	SITUATION$_1$
EXCEPT	FRED	SUE$_2$
EXCEPT	FISH	SOUP$_3$

As in previous cases, *Sue soup* is understood as 'Sue likes soup' by virtue of 'solving for E2' in 74, using the inferential steps **subtract** and **add**.

(75) E2 ≈ FRED LIKE FISH (– FRED + SUE) (– FISH + SOUP) = SUE LIKE SOUP

The contrastive-focus intonation here reinforces the **align**ment by the principles discussed in §3.

Unlike BAE, gapping always has to involve contrast—it does not appear to be possible to use elaboration.

(76) a. *Fred read the story, and Sue to Sandy. (= 'Fred read the story, and Sue
       read the story to Sandy')
    b. *Fred plays golf, and Sue on Fridays. (= 'Fred plays golf, and Sue plays
       golf on Fridays')

The gapping construction can be stated as 77. Given that only the contrast case is
possible, there is no option for null P1 and Q1.

(77) ***Gapping***

Syntax: $[_{Utterance}\ XP_2\ YP_3]_1$

Semantics:

	1	2
SAME	E1	SITUATION$_1$
EXCEPT	P1	$P2_2$
EXCEPT	Q1	$Q2_3$

After **find**ing the antecedents for E1, P1, and Q1, this yields 74 for the structure of *Sue
soup* in 73b.

As with the other constructions that we have considered, gapping can occur with a
discourse antecedent instead of a conjoined clause (though its possibilities seem much
more limited).

(78) a. A: Who plays what instrument?
       B: Katie the kazoo, and Robin the rebec.
    b. A: Does Robin speak French?
       B: No: Leslie, German.

Unlike BAE, gapping is not always acceptable with nonlinguistic antecedents. Ex-
amples 79a,b are definitely out. However, prepositions that mark the characters' seman-
tic roles can help facilitate the **align**ment and interpretation of gapped constituents, as
seen in 79c,d.

(79) [Peter puts on a hat.]
    a. *Now Charlie the vest!   (cf. BAE: Now the vest!)
    b. *No, no! Charlie a vest!   (cf. BAE: No, no! A vest!)
    c.   No, no! On CHARLIE, the VEST!
    d.   [Handing out candy:] For you, a Baby Ruth. For you, a Snickers.

For discussion of additional conditions on gapping, see Culicover & Jackendoff
2005:Ch. 7.

6. EXPRESSION OF SAME-EXCEPT USING VP ELLIPSIS. Perhaps the trickiest of the major
kinds of ellipsis in English is VP ellipsis (VPE), exemplified in 80.

(80) Joe sneezed, and Bill did too.

VPE occurs also with nonlinguistic antecedents, which shows that in general it cannot
arise through deletion of syntactic material identical to that in its antecedent.

(81) a. Don't! [said to someone who is about to jump into an empty swimming
       pool]
    b. I wouldn't if I were you. [said to someone about to drink an unknown liq-
       uid]
    c. I just can't anymore. [said by an exhausted climber to companions]
    d. Would you care to? [said by someone who has just tried to dump someone
       in a pool of water by throwing a ball at a target at a carnival, holding out
       another ball]

The semantics of the construction is straightforward in present terms: E2 is a Situation unexpressed in syntax that is the same as another Situation E1, which is either expressed linguistically or otherwise contextually available. A first approximation is given in 82.

(82) ***VP ellipsis***
Semantics:

	1	2
SAME	E1	SITUATION

This is almost the same as the semantics of *do it*. It differs only in that it denotes a Situation, while *do it* denotes the more restricted category of Action.

The literature on VPE offers many options for the syntax, including VP deletion under syntactic identity (Sag 1979, Merchant 2001), a pro-VP (Hardt 1993, Lobeck 1995), a fully structured but phonologically empty VP (Wasow 1972, 1979), and no VP (Culicover & Jackendoff 2005). Because VPE can have nonlinguistic antecedents, we can rule out deletion under identity. For convenience, we adopt the pro-VP option, represented in our notation as a phonologically null VP. A first approximation of the rule is 83.

(83) ***VP ellipsis***
Phonology: $\emptyset_1$
Syntax: VP_1
Semantics:

	1	2
SAME	E1	$SITUATION_1$

Rule 83 only has a SAME row. Now, as in previous cases such as *one*-anaphora, we have to put in EXCEPT. If the subject contrasts, **align** and **identify differences** contribute an Except, as in 84.

(84) a. Joe sneezed, and Bill did $[_{VP}\emptyset]_1$ too.
   b.

	1	2
SAME	JOE SNEEZE	$SITUATION_1$
EXCEPT	JOE	BILL

We interpret *Bill did too* as 'Bill sneezed' as usual by solving for E2 inferentially: JOE is **subtract**ed from JOE SNEEZE, and BILL is **add**ed in its place.[20]

(85) E2 ≈ JOE SNEEZE – JOE + BILL = BILL SNEEZE

If there is a contrasting adjunct, as in 86, it comes out the usual way.[21]

(86) a. Bill sneezed today, and he did $[_{VP}\emptyset]_1$ yesterday too.
   b.

	1	2
SAME	BILL SNEEZE TODAY	$SITUATION_1$
EXCEPT	TODAY	YESTERDAY

   c. E2 ≈ BILL SNEEZE TODAY – TODAY + YESTERDAY
       = BILL SNEEZE YESTERDAY

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[20] A more formal realization of this solution is given by Dalrymple and colleagues (1991), who accomplish **subtract** through lambda abstraction and **add** through lambda conversion, using higher-order unification.

[21] The question comes up of where the adjunct to the VP is attached. One possibility under our analysis is that the adjunct is a daughter of the otherwise null VP. In this case, the rule for VP ellipsis might be stated along the lines of (i). This would make it look rather like BAE and sluicing.

   (i) *VP ellipsis*
   Syntax: $[_{VP} (XP_2)]_1$
   Semantics:

	1	2
SAME	E1	$SITUATION_1$
EXCEPT	P1	$P2_2$

If the auxiliaries contrast in tense or polarity, then there is a double contrast.

(87) a. Joe didn't sneeze, but Bill did [$_{VP}$ $\emptyset$]$_1$.

b.

	1	2
SAME	NEG JOE SNEEZE	SITUATION$_1$
EXCEPT	JOE	BILL
EXCEPT	NEG	POS

c. E2 ≈ NEG JOE SNEEZE (– JOE + BILL) (– NEG + POS)
    = BILL SNEEZE

To flesh out this analysis, of course, many questions need to be resolved about how VPE in various syntactic environments is mapped into tableaux, and about the degree to which **align** depends on syntactic configuration. The specifics of the analysis ultimately depend on a number of assumptions about the syntax of VPE, control, raising, and expletive subjects. To pursue these issues in detail would take us far beyond the scope of the present treatment. Some of them are discussed in Culicover & Jackendoff 2005:Ch. 8.

We mention just two such issues here. First, a long-standing problem is 'vehicle change', where the interpretation of the missing VP cannot be derived by copying over the syntax of the antecedent. Four typical cases are presented in 88.

(88) a. John has always enjoyed running, but I've never wanted to (*running).
b. John likes those pictures of himself, but I don't (*like those pictures of himself).
c. John doesn't have any bananas, but Bill does (*have any bananas).
d. These issues should be discussed further, but we won't (*be discussed further).

Such examples are problematic for a theory of VPE that requires syntactic identity. Within the present approach, the issue is how much syntactic parallelism is required to establish semantic **align**ment; these cases show that **align**ment does not require complete syntactic identity. (Recall too that more severe cases of syntactic nonidentity arose in §4.2, in connection with *one*-anaphora.)

Another puzzle for VPE is the 'missing antecedents' problem posed by Grinder and Postal (1971).

(89) John doesn't have a gorilla, but Bill does, and it smells.

The antecedent of *it* cannot be the NP *a gorilla*, because if *but Bill does* is omitted, 89 is ill-formed. Rather, *it* clearly refers to the gorilla Bill has, not to the gorilla John does not have. But this antecedent is not expressed overtly in 89. Grinder and Postal use this fact to argue that the underlying form of *Bill does* is *Bill has a gorilla*, which then undergoes deletion of the VP.

In the present approach, Bill's gorilla emerges in the semantics.

(90) *Bill does* =

	1	2
SAME	NEG JOHN HAVE GORILLA	SITUATION
EXCEPT	JOHN	BILL
EXCEPT	NEG	POS

When we solve for E2, we get the meaning 'Bill has a gorilla', in which the gorilla is asserted to exist. And this gorilla, derived through the inferential process of **reconstituting** the ellipsis, is what *it* refers to.

Setting these syntactic issues aside, the main point we have tried to establish in this section is that the semantics of VPE can be represented in terms of same-except. We believe that the difficulties the construction poses are primarily with how its syntax maps into the tableau.

7. OTHER CONSTRUCTIONS. A number of other constructions of English lend themselves to an analysis in terms of same-except, but have received far less attention in the literature than those addressed in previous sections. We mention them briefly here.

Consider first *vice versa* (Fraser 1970, McCawley 1970, Kay 1989, Yamauchi 2006). Like gapping, *vice versa* requires an outer antecedent containing two inner antecedents.

(91) Kim likes Pat, and vice versa.

In terms of the present approach, the semantics of *vice versa* is clear: the two inner antecedents KIM and PAT exchange places (hence the synonymous *the other way round*).

(92)

	1	2
SAME	KIM LIKE PAT	SITUATION
EXCEPT	KIM	PAT
EXCEPT	PAT	KIM

Solving for E2 yields 'Pat likes Kim'.

(93) E2 ≈ KIM LIKE PAT (− KIM + PAT) (− PAT + KIM) = PAT LIKE KIM

The general case looks like 94. Syntactically, it differs from everything we have seen so far, in that all the Except constituents are anaphoric and are filled in from the antecedents. Yet the semantics is nothing but a variation on the same theme.

(94) ***Vice versa***

Phonology: [vice versa]$_1$

Syntax: Utterance$_1$

Semantics:

	1	2
SAME	E1	SITUATION$_1$
EXCEPT	P1	P2
EXCEPT	P2	P1

In certain cases gapping means the same as *vice versa*, for instance *Kim likes Pat, and Pat Kim*. In many other cases, however, the syntactic relation between the two inner antecedents of *vice versa* is much more distant than gapping tolerates.

(95) a. Sandy is fat, Kim believes, and vice versa/*… and Kim Sandy.
     b. Sandy is fat, according to Kim, and vice versa/*… and Kim Sandy.
     c. Sandy believes that it is likely that an avalanche will bury Sandy within the next eight years, and vice versa/*… and Kim Sandy.
     d. Sandy screams whenever the *NY Times* publishes an article revealing secrets about Kim, and vice versa/*… and Kim Sandy.
     e. Something Sandy wrote made a big impression on Kim, and vice versa/*… and Kim Sandy.
     f. Einstein bought a slim book that did a pretty good job of explaining Gödel's major insights, and vice versa/*… and Gödel Einstein('s).

Next consider *that/the same goes for*.

(96) a. John likes pizza, and that/the same goes for Bill (too). (= Bill likes pizza; cf. *(John) likes pizza goes for Bill.)
     b. John likes himself, and that/the same goes for me (too). (= I like myself, or, I like John; cf. *(John) likes himself goes for me.)

As with *vice versa*, there is no possibility of deriving *that/the same goes for* from some syntactic constituent in the antecedent. Rather, the interpretation of *that/the same goes*

for must be computed by **subtract**ing P1 from the interpretation E1, and **add**ing P2. This is shown for 96a.

(97) a. John likes pizza, and the same goes for Bill.

b.

	1	2
SAME	JOHN LIKE PIZZA	SITUATION
EXCEPT	JOHN	BILL

c. E2 ≈ JOHN LIKE PIZZA – JOHN + BILL = BILL LIKE PIZZA

The lexical entry for *that/the same goes for* is 98.

(98) ***that/the same goes for***

Phonology: [that/the same]$_1$ goes$_2$ for$_3$ X_4

Syntax: [$_S$ NP$_1$ [$_{VP}$ V$_2$ [$_{PP}$ P$_3$ NP_4]]]$_5$

Semantics:

	1	2
SAME	<u>E1</u>	SITUATION$_5$
EXCEPT	<u>P1</u>	*P2*$_4$

This construction is most felicitous when P1 corresponds to the subject of its clause, as in 96a, but other antecedents are also possible. (Examples 99c,d were found on the internet and are far too complicated for us to address here.[22])

(99) a. John likes herring, and that goes for salmon, too.

b. Herring, John can't stand, and the same goes for salmon.

c. It's impossible to say, 'this is an American car' or 'this is a Japanese car,' and the same goes for many other products.[23]

d. Ann's actions in talk are not independent of Bob's, or vice versa, and that goes for their problems as well.   (Clark 1994)

We speculate that the construction favors contexts in which P1 and P2 are contrastive topics.

Similar constructions illustrated in 100 are very restricted in form.

(100) a. A: I don't like pizza.

B: Me neither.

(n.b. *I neither.; cf. *Me don't like pizza neither.)

b. A: I don't like pizza.

B: Same here.

(cf. *I don't like pizza here.; *Same there.)

These are interpreted on the basis of rules that closely resemble 98, but that differ in the specification of the fixed form.

Finally, it is also possible to use intonation and epithets to express same-except.

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[22] However, it is worth noting the degree of data compression achieved through the piling up of three embedded ellipses in 99d: *Bob's* (a construction related to *one*-anaphora), *vice versa*, and *that goes for*. Were one to spell everything out in full, it would amount to something like (i).

(i) Ann's actions in talk are not independent of Bob's actions in talk, nor are Bob's actions in talk independent of Ann's actions in talk; and, as well, Ann's problems are not independent of Bob's problems, nor are Bob's problems independent of Ann's problems.

[23]   http://www.edchoice.org/The-Friedmans/The-Friedmans-on-School-Choice/Public-Schools--Make-Them-Private.aspx

(101) a. Pat speaks really good French, but Kim—oy vey! [≈ Kim speaks terrible French]
b. Pat speaks pretty good French, but Kim—wow! [≈ Kim speaks really good French]

In short, the semantics of same-except extends over a broad range of syntactically unrelated phenomena.

8. COMPARISON WITH COPYING/DELETION APPROACHES. Following the observations of William James, and starting with wugs, we showed that there is a general relation, same-except, that human cognition can establish between entities in visual perception and other domains. This relation adds structure to configurations of juxtaposed objects, sounds, or sentences, highlighting where they **align** and where they do not. This extra structure is what makes the adjacent Necker cubes in Fig. 8 have the same interpretation, and it also enforces such phenomena as parallel quantifier scope in examples such as 2, which, as many people have noted, is independent of whether the sentences are elliptical or not.

The same-except relation is expressed in a wide variety of ways:

- Explicitly: words such as *same*, *except*, and *instead*
- Implicitly: contrastive stress
- Anaphora: definite and indefinite pronouns; *do it* anaphora and its variants, for example *do that*, *do the same thing*
- Ellipsis: bare argument ellipsis; sluicing; gapping; VP ellipsis
- *Vice versa* and other anaphoric fixed expressions (*that/the same goes for*, etc.)

Traditional approaches to anaphora and ellipsis have sought to derive the interpretation of the anaphoric elements or missing material through identity with certain aspects of the linguistic structure of the antecedent. For us, however, the interpretation of this material arises as a consequence of the same-except relation. Each construction has a different syntactic form and maps in a different way into the tableaux. In each case, though, the tableaux are constructed by **find**ing an antecedent, stipulating the **align**ment of their parts and properties, and **identify**ing **differences**. The interpretation of the anaphoric and ellipted material is a consequence of **reconstitut**ing E2 through **subtract**ing and **add**ing. What unifies the full range of these expressions, then, is the fact that they all make use of the same-except tableau, regardless of how it is constructed.

Crucially, on our approach, the computation that produces the full interpretation of anaphoric and elliptical expressions is not grammatical but INFERENTIAL—a consequence of general cognition, as it were outside the language module. Consider, for example, *Ozzie's drinking.—Yeah, scotch*, where we understand the second utterance to mean 'Ozzie's drinking scotch'. The 'missing' part of E2, that is, the meaning 'Ozzie's drinking', is not supplied by copying or deleting a portion of the syntactic structure or LF of the antecedent. Nor are there underlying structures in *Yeah, scotch* that are 'copied/deleted under identity' with the antecedent's syntactic structure (Ross 1969) or LF representation (Chung et al. 1995, Merchant 2004). Rather, on our approach, the 'missing' part is simply missing from the syntax, and the same-except relation permits inferences about the meaning conveyed by the elliptical utterance. In this respect our approach resembles that of Dalrymple et al. 1991 and Lappin 2005, in that the interpretation of the elliptical element is computed from the meaning of the antecedent, not from the meaning of a deleted underlying form.

Approaches based on copying or deleting linguistic structure face a serious obstacle in accounting for definite and indefinite pronouns, *do it* anaphora, BAE, and VPE when

they have nonlinguistic antecedents. In such situations there is no linguistic structure at all that can serve as a basis for copying or deletion.[24] On our approach, the full interpretation of E2 is computed at the level of conceptual structure, which in our view is a cognitive structure shared by language, vision, and other cognitive domains, and therefore not specific to language (as argued at length in Jackendoff 2002).

A further challenge to approaches based on copying or deletion comes from anaphoric fixed expressions such as *vice versa* and *the same goes for*. No approach to syntax since the late 1960s has seriously countenanced the sorts of operations, at any level of syntax, that could derive the interpretation of such constructions. Rather, the correspondence has to be established at the level of meaning. But if these cases have to be accounted for at the level of meaning, then cases such as BAE, sluicing, and VPE, which superficially lend themselves more readily to copying or deletion, should be accounted for at the level of meaning too.

Yet another obstacle to copying/deletion approaches to ellipsis involves examples in which there is no way to convincingly replace the elliptical expression with a full expression in the antecedent that makes the interpretation explicit. Here are just a few such examples.

(102) a. Wendy is eager to sail around the world, and Bruce is eager to climb Kilimanjaro, but neither of them can, because money is too tight.

<div align="right">(Webber 1978)</div>

     b. Fred either ate garlic or forgot to brush his teeth, but I can't tell you which.

     c. It seems we stood and talked like this before. We looked at each other in the same way then. But I can't remember where or when.

<div align="right">(Rodgers & Hart, 'Where or When')</div>

Dalrymple and colleagues (1991:442) and Lappin (2005) recognize that inference is necessary for examples like these, but they do not draw any general conclusions. Hardt (1993) uses such cases to argue for inferential interpretation and against copying/deletion. On his account, the individual antecedent events or acts are combined in the semantics into a composite antecedent for the ellipsis, essentially the approach we advocate here.

Chung and colleagues (1995) propose an LF copying analysis of sluicing. Citing Ginzburg's (1992) objection that sluicing can have a nonlinguistic antecedent (e.g. *Where to, lady?*), they respond:

> It is certainly within the powers of pragmatic reasoning to infer an intended interpretation from an utterance of *John?*, a name with question intonation. It could, depending upon context, be the question expressed by *Is that you, John?* or *Should we hire John?*. The fundamental pragmatic reasoning at work here makes use of the linguistic material as a resource, but is not limited to finding its interpretation in the linguistic material. (Chung et al. 1995:265)

Merchant (2007) expresses a similar view.

But then the question is: If inference can apply to interpret these cases, which have no available LF to copy, why shouldn't it apply to interpret ALL the cases? Accordingly, our position is that the interpretation is ALWAYS inferential. This is clearly an advantage, since it simplifies the grammar, replacing much of the linguistic apparatus with a domain-general cognitive mechanism. At the same time, we would expect that the processing of ellipsis is easier to the extent that simpler **align**ment and less inference are

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[24] For this reason, treatments of definite pronouns gave up copying/deletion approaches decades ago (Jackendoff 1972). However, the same does not go for treatments of the other phenomena on our list.

required. One way to keep **align**ment simple is to maximize syntactic parallelism, which is why so many examples are parallel enough to encourage a copying/deletion approach.

In copying/deletion accounts of ellipsis, the problems we have mentioned so far seem not to have been considered particularly central, despite the daunting issues they raise. More prominent have been the less severe though still vexing problems raised by discontinuous antecedents (103a), constraints on extraction (103b), and vehicle change (103c).

> (103) a. A: Robin slept for eight hours after the game.
>   B: That's nothing: LESLIE did it for TWELVE hours.
>   b. Abby knows someone who speaks a Balkan language, but I forget which one.
>   c. A: Are you going shopping?
>   B: I did already.   (See also example 88.)

Each of these phenomena is prima facie evidence against copying/deletion. In each case a special mechanism has to be introduced whose purpose is to overcome the problem:

- A discontinuous antecedent requires a derivational stage in which it is continuous (e.g. *sleep after the game*); constituents have to be moved around in an otherwise unmotivated fashion to achieve this configuration (Culicover & Jackendoff 2005:125–26, 137–38, 247, 274–75, 292–94).
- It has to be stipulated that extraction-constraint violations do not produce ungrammaticality if the syntactic structure is phonetically null (Ross 1969, Merchant 2008).
- For vehicle change, it has to be stipulated that certain morphosyntactic differences (e.g. *are going* vs. *did (go)*) are irrelevant for calculating syntactic identity (Fiengo & May 1994).

The problem of discontinuous constituents does not arise for the inferential approach, as we saw in the discussion of 58 (repeated here as 103a). The reason is that **align**ment depends not on syntactic continuity but on semantic structure. Similarly, the problem of avoiding extraction constraints in sluicing does not arise, because there is nothing that the sluice is extracted from. These points are taken up in more detail in Culicover & Jackendoff 2005. Vehicle change is not a problem (at least in principle) for the inferential approach either, because what is being compared is the meaning, not the surface form.

Several well-known phenomena constitute problems for any approach to ellipsis, including antecedent-contained deletion (104a), and strict and sloppy identity in ellipsis (104b).

> (104) a. I'll eat what you do.   (Fiengo & May 1994)
>   b. Bill fed his dog, Sam didn't, but Mary did.   (Dahl 1973)

Both of these are problems for copying/deletion, and at the moment we see no particular advantage for the inferential approach.

We must of course consider those phenomena that have been taken to be the strongest evidence in favor of the copying/deletion approach. The arguments that elliptical constructions must be reductions of syntactically complete sentences date back to Ross (1969), who argues against a semantically based theory of sluicing. These arguments have been extended in recent years by, for example, Merchant (2001, 2004).

The arguments are all based on the same principle: the syntactic form of an elliptical construction is subject to those constraints that would have been placed on it, had it

been in a full sentence whose syntax was a copy of the outer antecedent. Moreover, inasmuch as these constraints are sentence-level constraints, the only way they can be imposed on the elliptical construction is by imposing them before deleting the elided material.

For instance, consider 105, the simplest example of so-called connectivity effects.

(105) A: John$_i$ likes someone a lot.
     B: i.   Yeah, himself$_i$.
        ii. *Yeah, him$_i$.

The proper form of B's BAE response is determined by the fact that it has to be bound to *John*. But reflexive pronouns are normally bound intrasententially, not across discourse. So the only way to accomplish this binding, it is argued, is to provide an underlying form for B's reply that contains an antecedent for the reflexive, for example, ~~John likes~~ *himself* ~~a lot~~ (or perhaps *himself$_i$* ~~John likes t, a lot~~) where the material struck out is either deleted in syntax or not pronounced in PF.

Another argument for copying/deletion involves case marking, where a BAE fragment carries the case of the verb of which it is understood as the complement. Example 106, one of Ross's original examples, shows this phenomenon in German.

(106) a. A: Wem   folgt   Hans?
           who.DAT follows Hans
             'Who is Hans following?'
        B: Dem   Lehrer.
           the.DAT teacher
             'The teacher.'
     b. A: Wen   sucht Hans?
           who.ACC seeks Hans
             'Who is Hans looking for?'
        B: Den   Lehrer.
           the.ACC teacher
             'The teacher.'

Merchant (2004) adduces similar examples in Korean, Hebrew, Greek, Russian, and Urdu.

Similar examples in English involve the prepositions governed by verbs, as in 107 (from Culicover & Jackendoff 2005:249).

(107) a. A: I hear Harriet has been flirting again.
        B: i.   Yeah, with Ozzie.
           ii. *Yeah, Ozzie.
     b. A: John is very proud.
        B: Yeah, of/*in his stamp collection. (cf. proud of/*in NP)
     c. A: John has a lot of pride.
        B: Yeah, in/*of his stamp collection. (cf. pride in/*of NP)

The verb *flirt* requires the 'flirtee' to be marked by the preposition *with*. This requirement is apparently responsible for the necessity of the preposition in B's response in 107a. The very close paraphrases 107b,c push the point home further: they differ only in that *proud* requires its complement to use the preposition *of*, while *pride* idiosyncratically requires *in*. The replies, using BAE, conform to these syntactic requirements, just as if the whole sentence were there.

If the antecedent includes the relevant preposition, though, the elipted expression does not need it.

(108) a. A: Harriet is flirting with someone.
            B: Yeah, Ozzie.
       b. A: John is very proud of something.
            B: Yeah, (of) his stamp collection.
       c. A: John has a lot of pride in something.
            B: Yeah, (in) his stamp collection.

In German, however, it is necessary to retain the preposition even when it is present in the antecedent.

(109) A: Mit wem   hast du gesprochen?
            with who.DAT have you spoken
       B: Mit Hans./*Hans.
            with Hans

Merchant (2006) presents evidence that this difference correlates crosslinguistically with the ability to strand prepositions: languages that can strand prepositions behave like English, and those that cannot strand behave like German. Thus his explanation of 109 is that B's reply is derived from a full sentence that has undergone topicalization, which in German must pied-pipe the preposition.

The null hypothesis for an inferential theory is that none of these case-marking and stranding phenomena should occur. At the same time, as we have shown, there is voluminous evidence against a copying/deletion theory. So are we at a standoff?

Not quite. Culicover & Jackendoff 2005 proposes an approach to this problem called INDIRECT LICENSING. Normally, a constituent is syntactically licensed only by a local syntactic context. Indirect licensing, however, permits a phrase XP to be syntactically licensed by a previous sentence S as well, just in case (i) XP plays the role of P2 in a same-except relation, (ii) S plays the role of E1, and (iii) the rest of E2 is implicit.[25] In such a circumstance, indirect licensing says that the syntactic properties of XP are those appropriate for its semantic role in E1.

To be more specific, we must consider three cases. The first case is CONTRAST, in which P1 is expressed by YP, a constituent of S, as in 110.

(110) John drinks bourbon.—No, scotch.

Here indirect licensing says that XP, in this case *scotch*, must have the syntactic features appropriate to the position of YP, here *bourbon*.

The second case is where P1 is present in the semantics but not in the syntax; that is, it is an implicit argument, as in 111.

(111) John drinks.—Yeah, scotch.

Here *John drinks* has an implicit object argument INDEF that is not present in the syntax. The response *scotch* will **align** in the semantics with INDEF. Indirect licensing therefore says that *scotch* acquires syntactic properties appropriate to this role—that is, those on overt direct objects of *drink*.

The third case is ELABORATION, when P1 is null, as in 112.

(112) John drinks scotch.—Yeah, every day.

In this case, S imposes no syntactic licensing conditions appropriate for XP—only semantic conditions. Therefore, we predict that elaboration is possible only when XP is interpreted as an adjunct to S, since the syntactic properties of adjuncts are determined

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[25] In Culicover & Jackendoff 2005, we used the terminology 'antecedent' for E1, 'indirectly licensed' (IL) for E2, 'target' for P1, and 'orphan' for P2.

entirely by their semantic role. Based on the evidence in Culicover & Jackendoff 2005:Ch. 5, we think this is a correct result.

Case connectivity follows immediately from this analysis. For instance, in 106, *dem Lehrer* is P2, so by **align** it receives the semantic role of the individual being followed. That role is expressed as the object of *folgt*. Since *folgt* licenses dative case on its object, indirect licensing says that dative case is licensed for *dem Lehrer*.

Next consider the examples in 107, which involve implicit arguments. Intransitive *flirt* in 107a.A has an implicit 'flirtee', and this role **align**s with OZZIE. Indirect licensing therefore says that *Ozzie* must satisfy the subcategorization requirements of the verb *flirt*. When *flirt* has an overt 'flirtee', it requires the governed preposition *with*, and therefore we get *with Ozzie* and not simply *Ozzie.

Languages apparently differ in the degree to which they invoke indirect licensing to determine the case marking of fragments. Progovac and colleagues (2006b) report that Korean uses invariant default nominative case on BAE fragments. In Russian, when two conjuncts assign different cases to an argument shared between them, there is case conflict and the sentence is ungrammatical (Anastasia Smirnova, p.c.). In 113, *ljubil* assigns accusative case and *dal* assigns dative case.

(113) *Kogo/*Komu   Ivan   ljubil i   dal kol'tso?
       who.ACC/who.DAT Ivan.NOM loved and gave ring.ACC
        'Who did Ivan love and give a ring to?'

But sluicing, which for us invokes indirect licensing, is evidently more tolerant. Here the WH-phrase that refers to the shared argument is grammatical, and its case is determined by the nearest preceding verb, whichever case it assigns—dative in 114a and accusative in 114b.

(114) a. Ivan ljubil kogo-to   i   dal ej   kol'tso, no ja ne znaju
           Ivan loved someone.ACC and gave she.DAT ring   but I not know
             komu.
             who.DAT
           'Ivan loved someone and gave her a ring but I don't know who.'
       b. Ivan dal   komu-to   kol'tso i   eje   ljubil, no ja ne znaju
           Ivan gave someone.DAT ring   and she.ACC loved but I not know
             kogo.
             who.ACC
           'Ivan gave someone a ring and loved her, but I don't know who.'

Binding connectivity (105) works in much the same way. *Himself* in 105B.i plays the role of P2, and *someone*, the direct object of *like*, plays the role of P1. *Someone* is locally c-commanded by the subject *John*, so indirect licensing says that *himself* also counts as locally c-commanded by *John*, and hence can be coferential with *John*. Similarly, the pronoun *him* in 105B.ii counts as locally c-commanded by *John*, and therefore cannot be coreferential with *John*.

The price of our solution is the extra machinery of indirect licensing. But we also achieve a gain by eliminating the machinery of deletion under identity. This might be considered a wash: Why prefer a new untested piece of machinery to the old more or less reliable one? One reason to do so, we believe, is that the challenges we have raised for the copying/deletion approach are much more severe than usually acknowledged. To recapitulate, copying/deletion has to incorporate inferential processes as well as numerous syntactic adjustments in order to handle the many recalcitrant cases that we and others have documented. Moreover, as we have argued, the semantic structures to which these inferential processes apply are domain-general, and not specific to lan-

guage. So the challenge for a copying/deletion approach is to find a principled basis for limiting inferential processes in such a way that there is any work still to be done by copying/deletion.

There are of course many issues we have not addressed, for example:

- Why do some constructions, such as *do it*, allow nonlinguistic antecedents, while others, such as *do so*, do not?
- What are the semantic differences between *do so*, *do it*, *do the same*, *do the same thing*, *do likewise*, and so forth?
- Why is gapping so restricted in its application compared with bare argument ellipsis and with *vice versa*? Does this have to do with processing complexity?
- How do languages that require case connectivity differ from languages that do not?
- How are discourse connections established that support the interpretation of these constructions?
- How can tableaux be formalized further so as to preserve the connection to nonlinguistic same-except?
- Precisely how does indirect licensing work?
- Precisely how do the inferential processes in **reconstruction** work?

Some of these questions have been discussed in the literature at great length, while others have not been discussed at all, to our knowledge.

These gaps notwithstanding, what we take to be the virtue of our approach is that it unifies such a wide range of linguistic and nonlinguistic phenomena. Moreover, since our approach attributes the semantics of all of these constructions to the domain-general cognitive relation same-except, we have managed to take some of the burden of accounting for the properties of language off of the narrow faculty of language, always a desirable result.

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