A Domain-General Approach to Ellipsis Interpretation
Peter W. Culicover and Ray Jackendoff

Overarching goal: Nature of language capacity (UG) – what is innately built into learner
Important subordinate question: What parts of UG are domain-specific (FLN)?
A priori preference: As much of UG should be domain-general as possible – fewer demands on evolutionary process. Ideally, FLN would be null, but that’s an empirical matter.

Our argument: The semantics of ellipsis constructions is based on a domain-general relationship, found throughout perception and cognition: “Same-Except.”

Three questions about ellipsis
• How do we account for syntax of elliptical constructions?
• How do we account for semantics of elliptical phrases?
• What is the relationship between the syntax and the semantics?

Mainstream answer: Underlying syntax is that of ordinary phrases; surface syntax arises through deletion; semantics follows from underlying syntax, e.g. John likes beans, and so does Bill like beans.

Our approach: Semantics comes from Same-Except relation; syntax is just what is present on the surface (Simpler Syntax); ellipsis is a form of data compression in communication – a way of not saying everything you mean, and relying on hearer to construct intended meaning.

Structure of solution:
• Elliptical phrases have an antecedent in earlier discourse or nonlinguistic context.
• They may contain a proform (e.g. one or do it) or they may lack a proform (Bare Argument Ellipsis, Gapping).
• They may also contain fragmentary phrases (one with mushrooms, I wonder who)
• Basic insight of our solution:
  Meaning of elliptical phrase = ‘same as antecedent except for the part that I tell you is different (expressed by fragment)’

Two methodological notes
Observation: There are plenty of fragmentary expressions that are not ellipsis (no antecedent)

(1) a. Fire!
   b. Some coffee?
   c. How about lunch?
   d. Everyone in your seats!
   e. (How many?) One, two, three, four, five.

Conclusion: There should be no problem in “base-generating” fragments.
Observation: There are lots of kinds of ellipsis that bear little or no syntactic relation to their antecedents.

(2) a. John likes pizza, and the same goes for Bill. (= Bill likes pizza)
b. John likes himself, and the same goes for me. (= I like myself, or, I like Bill)
c. John likes pizza, and that goes for Bill too. (= Bill likes pizza)
e. A: I don’t like pizza. B: Same here.
f. Pat likes Kim, and vice versa. (= Kim likes Pat)
g. Pat speaks really good French, but Kim – oy vey! (~ Kim speaks terrible French)
h. Pat speaks pretty good French, but Kim – wow! (~ Kim speaks really good French)

And many ellipsis constructions permit antecedents in nonlinguistic context.

(3) a. [Peter holds up a bottle of scotch] Ray: No, bourbon, please.
b. [Ivan tries to stuff a 12 inch ball through an 8 inch hoop] Jorge: It’s not clear you’ll be able to do it.
c. [Pointing to a rack of shirts in a store:] Do you have a red one with stripes?

Conclusion: A general theory of ellipsis cannot be based on the premise that there is an underlying syntactic form identical to that of its antecedent. These more extreme cases are far from “peripheral.”

The Same-Except Relation

(4) “This one and that one are the same.”

(5) “They’re different.”

(6) “They’re the same, except the one on the right has this gizmo on its head.”
(7) “They’re the same, except this one has a doohickey where that one has a gizmo”

(8) “They’re the same, except the one on the right is bigger.”

(9) “They’re the same, except they have different gizmos on their heads and different stripes”

Nonvisual case:
(10) “The second phrase is just like the first, except the last two notes are higher”

(11) Minimal pair = two words that are identical except for one segment
    Rhyme = two strings that are the same except for the onset of stressed syllable
    Partial reduplication (table-shmable) = replicating syllable or word except for some stipulated part.
    Analytic argument: “These cases are exactly the same, except…”

Same-Except relation obtains between two entities E1 and E2, plus a part or property of E2 (call it P2), and sometimes a part or property of E1 (call it P1).

Constituents of the Same-Except relation
a. E1 and E2 are approximately the same
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
Various configurations:
1. P1 and P2 contrast (exx. 7, 8)
2. E2 has P2, E1 lacks it (= P1 is null) “nothing vs. something” case (ex. 6)
3. Double contrast (ex. 9)

“Tableau” notation for (12):

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME</td>
<td>E1</td>
<td>E2</td>
</tr>
<tr>
<td>EXCEPT</td>
<td>P1</td>
<td>P2</td>
</tr>
</tbody>
</table>

Important: One cannot help establishing Same-Except relation between adjacent percepts. It adds information.

Expression of Same-Except without ellipsis

Overt lexical expressions of the relation as symmetrical predicate:
(13) a. This wug and that wug are the same/identical/similar/alike, except for the gizmo on that one and the doohickey on that one.
   b. This wug is the same as/identical to/similar to/just like that wug, only this one has a gizmo on its head (instead of a doohickey).
   c. See that wug? This wug is the same/identical/similar, aside from that gizmo on its head (instead of a doohickey).
   d. See that wug with a doohickey? This wug is the same/identical, except it has a gizmo instead.

Complement of except for denotes P2; complement of instead (explicit or implicit) denotes P1.
Except-phrase can occur in any sentence-adverbial position:
(14) a. This wug, except for that gizmo on its head, is that same as that wug.
   b. See that wug? Aside from that gizmo on its head, this one is the same.

Expression of Same-Except through contrastive stress:
(15)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.
Stress pattern in second phrase is obligatory:

(16)  
  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 Hoover.  
  d.  *The Red Sox four, the Yankees four.

Parallel phrases are understood as being the same, except for contrastively stressed constituents, which are different. Stress calls attention to differences, so functionally motivated. Consequence: Parts of the interpretation that are the same must not be contrastively stressed. Hence “deaccentuation.”

An example:

(17) Phonology: (Fred likes fish, and) Sue \_\_ likes fish [analyze second conjunct]  
Syntax: [NP [VP V NP]]  
Semantics:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME</td>
<td>E1</td>
<td>[SUE LIKES FISH]</td>
</tr>
<tr>
<td>EXCEPT</td>
<td>P1</td>
<td>SUE$_1$</td>
</tr>
</tbody>
</table>

E1 and P1 must be identified in antecedent. E1 = FRED LIKES FISH; P1 = FRED

(18) Semantics:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME</td>
<td>[FRED LIKES FISH]</td>
<td>[SUE LIKES FISH]</td>
</tr>
<tr>
<td>EXCEPT</td>
<td>FRED</td>
<td>SUE$_1$</td>
</tr>
</tbody>
</table>

(19) Fred likes fish, and Sue likes soup.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME</td>
<td>[FRED LIKES FISH]</td>
<td>[SUE LIKES SOUP]</td>
</tr>
<tr>
<td>EXCEPT</td>
<td>FRED</td>
<td>SUE</td>
</tr>
<tr>
<td>EXCEPT</td>
<td>FISH</td>
<td>SOUP</td>
</tr>
</tbody>
</table>

A case where Same-Except relation cannot be properly imposed: P1 and P2 do not bear same relationship to E1 and E2 respectively.

(20) *Fred ate fish on Tuesday, and Sue ate fish on the porch.

**One-anaphora**

(21)  
  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)). [nonlinguistic antecedent]
Interpretation of (21a) in terms of Same-Except:

(22) a.  
E2 = one 
E1 = antecedent of one = wug 
P2 = complement of except = gizmo on its head 
P1 = complement of instead = doohickey (on its head) 

b. 
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME</td>
<td>WUG</td>
<td>ONE</td>
</tr>
<tr>
<td>EXCEPT</td>
<td>DOOHICKEY</td>
<td>GIZMO</td>
</tr>
</tbody>
</table>

If instead of phrase is absent in (21a), we don’t know if we’re dealing with contrast or with “something in E2 versus nothing in E1” Instead, even with implicit complement, implies contrast.

In (22a), one does not correspond to WUG, but rather to ONE. Identity of ONE with WUG arises as an inference through Same-Except relation.

“Solve for E2”: E2 = E1 – P1 + P2  [An inferential operation!]
ONE = WUG – DOOHICKEY + GIZMO = WUG + GIZMO
(May seem weird at the moment, but it has benefits to be seen….)

Cases in which Except constituent is expressed by an adjunct to one: classical one-anaphora:

(23) a. You know that wug you’ve got? I used to have one that had a gizmo on its head.
   b. See that pizza with olives? I’d like one with pepperoni instead.
   c. I’d like one of those [pointing at a hamburger] on pita bread (instead of a bun).
   d. [pointing at a pizza with olives:] I’d like one with pepperoni instead.

Problems with syntactic account of one (anaphoric to a syntactic constituent):
Problem 1. Nonlinguistic antecedents (e.g. 23c,d)
Problem 2. Discontinuous antecedents

(24) a. Bill ate a pizza with mushrooms from Brothers, and Fred ate one with olives.
   [one = pizza … from Brothers]
   b. Bill ate a pizza with mushrooms that had been burned, and Fred ate one with olives.
   [one = pizza … that had been burned]

Problem 3. Parallelism of (23) with (21): account of one+adjunct should generalize with account of one+except-phrase and with overt same…except. Doesn’t fall out naturally in syntactic account.

In (23b), how do we derive that it’s a pizza with pepperoni?
E1 = pizza with olives; E2 = one with pepperoni; P1 = olives; P2 = pepperoni
Again, “solve for E2”: E2 = E1 – P1 + P2
‘one’ = ‘pizza with olives’–‘with olives’+‘with pepperoni’ = ‘pizza with pepperoni’
Depends only on same semantic relation, not on same syntactic relation:

(25) 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. [pointing to a mushroom pizza:] I’d like one that has pepperoni instead.
    d. Bill has a pizza with mushrooms. *Mine* has *pepperoni* on it.

(26) *One-Anaphora* (a lexical entry)

Phonology: one

Syntax: \([\text{NP} \ldots \text{N}_1\ldots]\)

Semantics:

```
   \(\begin{array}{c|c|c}
     \text{SAME} & \text{E}_1 & \text{[COUNT INDIVIDUAL]}_2 \\
   \end{array}\)
```

(Underlining indicates an antecedent, to be located outside the phrase)

(27) a. Bill has a pizza with mushrooms. *I* have \([\text{NP} \text{one}_1]_2 \) too, except with *pepperoni*.
    b. Bill has a pizza with mushrooms. *I* have \([\text{NP} \text{one}_1 \text{ with pepperoni}]_2\)
    c. \[
    \begin{array}{c|c|c}
      \text{SAME} & \text{PIZZA WITH MUSHROOMS} & \text{[COUNT INDIVIDUAL]}_2 \\
      \text{EXCEPT} & \text{WITH MUSHROOMS} & \text{WITH PEPPERONI} \\
    \end{array}
    \]

*EXCEPT* constituent is supplied in (27a) by interpretation of *except* plus contrastive stress
and in (27b) by contrastive stress alone.

(28) a. [pointing at a rack of shirts:] *Do you have* \([\text{a red one}_1 \text{ with stripes}]_2\)?
    b. \[
    \begin{array}{c|c|c}
      \text{SAME} & \text{SHIRT (from visual context)} & \text{[COUNT INDIVIDUAL, RED, WITH STRIPES]}_2 \\
      \text{EXCEPT} & \text{RED} & \text{} \\
      \text{EXCEPT} & \text{WITH STRIPES} & \text{} \\
    \end{array}
    \]

Summary

- The interpretation of *one* incorporates the Same relation, a domain-general piece of
  meaning. The adjuncts of *one* amplify this to a Same-Except relation, as do *except*--
  phrases.
- The denotation of the *one*-phrase is determined by inferential or pragmatic principles rather
  than by syntactic identity.
- The exact syntactic expression of P1 as a part or property of E1, and of P2 as a part or
  property of E2 is irrelevant. All that matters is the parallelism of semantic relations.
Bare Argument Ellipsis

(29) a. A: I hear Ozzie’s drinking bourbon again.
   B: No, scotch.  \(\text{contrast: “matching”}\)

b. A: I hear Ozzie’s drinking again.
   B: Yeah, scotch.  \(\text{supplementation: “sprouting”}\)

Nonlinguistic antecedent:

(30)  [Ray starts pouring bourbon for Peter]
   Peter: No, scotch!

Classical treatment is based on deletion from canonical sentence form:

(31)  a. Ozzie’s drinking \textit{scotch}.  \(\text{deletion of nonconstituent (Ross)}\)

b. Scotch [Ozzie’s drinking] \(\text{movement of Bare Argument followed by deletion of constituent (Merchant)}\)

This approach affords no purchase on nonlinguistic antecedents!!

Our treatment: BA phrase is P2 in a Same-Except relation; E2 is unexpressed.
“Matching” is contrast Same-Except
“Sprouting” is “something vs. nothing” Same-Except

(32) \textit{Bare Argument Ellipsis}

Syntax:  \([\text{Utterance } XP_2 ]_1\)

Semantics:

\[
\begin{array}{c|c|c|c}
\text{SAME} & E_1 & \text{SITUATION}_1 \\
\text{EXCEPT} & \emptyset/P_1 & P_2 \\
\end{array}
\]

Utterance is not a Sentence: doesn’t embed like a sentence (*Joe realizes that scotch)
Utterance has semantics of a Situation (State or Event).
EXCEPT constituent is expressed by XP (the Bare Argument)
Null P1 = Sprouting; Contrastive P1 = Matching

(33) a. A: I hear Ozzie’s drinking bourbon again. B: No, scotch.

\[
\begin{array}{c|c|c|c}
\text{SAME} & \text{OZZIE DRINK BOUR BON AGAIN} & \text{SITUATION}_1 \\
\text{EXCEPT} & \text{BOUR BON} & \text{SCOTCH}_2 \\
\end{array}
\]


\[
\begin{array}{c|c|c|c}
\text{SAME} & \text{OZZIE DRINK X AGAIN} & \text{SITUATION}_1 \\
\text{EXCEPT} & \text{X} & \text{SCOTCH}_2 \\
\end{array}
\]

“Solving for E2”: SITUATION = ‘Ozzie’s drinking scotch again.’
A minimal pair:
(34) A: Ozzie drank the scotch in five minutes.
B: a. Yeah, in the kitchen.
   b. *No, in the kitchen.

Why? (34a) presents in the kitchen as supplementing A’s utterance, hence Sprouting. (34b) presents in the kitchen as correcting A’s utterance, hence contrastive Same-Except. But there is no proper contrast in the semantics of A’s utterance – nothing in the same relation to E1 as in the kitchen is to E2.

Extension to Sluicing

(35) a. Ozzie’s drinking again, but I don’t know what.
   b. Ozzie drank the scotch in five minutes, but I can’t tell you where.
   c. Abby speaks the same language that some guy in this class speaks, but I’m not sure who.
   d. Fred either ate garlic or forgot to brush his teeth, but I can’t tell you which.

Since Ross, Sluicing has classically been treated in terms of wh-movement + deletion of remainder of sentence: …I don’t know what Ozzie’s drinking.

For every example of Sluicing there is a corresponding BAE:

(36) a. A: Ozzie’s drinking again.
   B: i. Yeah, scotch.
      ii. Yeah, but what?
   b. A: Ozzie drank the scotch in five minutes.
   B: i. Yeah, in the kitchen.
      ii. Where?
   c. A: Abby speaks the same language that some guy in this class speaks.
   B: i. Yeah, Charlie.
      ii. Yeah, but who?
   d. A: Fred either ate garlic or forgot to brush his teeth.
   B: i. Yeah, forgot to brush his teeth.
      ii. Well, which?

But there are many cases of BAE for which there is no corresponding Sluicing.

(37) a. A: Let’s get a pizza.
   B: Pepperoni? [cf. *Pepperoni let’s get a t pizza?]
   b. A: For John to flirt at the party would be scandalous.
   B: Even with his wife?
   c. A: John met a woman who speaks French.
   B: And Bengali?

So the solution for Sluicing has to generalize with BAE, for which no movement solution will work.
And there are cases of Sluicing with no plausible syntactic antecedent:

(38)  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. (Rodgers & Hart)

A difference between Sluicing and BAE: in Sluicing the fragment behaves like a clause for embedding (as an indirect question), for position in clause (39a) and for agreement (39b).

(39)  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 clear. [cf. ... but the answers aren’t/*isn’t clear]

Semantics of wh-phrase in Sluice gives it the force of a question – or an exclamation.

(40)  a.  I knew Murray was a genius, but I never realized what a genius.
    b.  [Upon seeing Murray’s report card:] What a genius!

(41)  **Sluicing**
    Syntax:  \[ s \text{wh-phrase}_2 \text{ }_1 \]
    Semantics:

    |          | 1 | 2          |
    |----------|---|------------|
    | SAME     | E1| SITUATION1 |
    | EXCEPTION| Ø/P1| P2_2       |

**Vice versa**

(42)  Kim likes Pat, and vice versa. (also the other way round)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAME</td>
<td>KIM LIKE PAT</td>
<td>SITUATION</td>
</tr>
<tr>
<td>EXCEPTION</td>
<td>KIM</td>
<td>PAT</td>
</tr>
<tr>
<td>EXCEPTION</td>
<td>PAT</td>
<td>KIM</td>
</tr>
</tbody>
</table>

“Solving for E2” yields ‘Pat likes Kim.’

(43) **Vice Versa**
    Phonology:  [vice versa]_1
    Syntax:  Utterance_1
    Semantics:

    |          | 1 | 2          |
    |----------|---|------------|
    | SAME     | E1| SITUATION1 |
    | EXCEPTION| P1| P2         |
    | EXCEPTION| P2| P1         |

Unlike previous cases, all parts of the Same-Except relation come from the antecedent.
“Except” constituents can be pretty distant from each other:

(44) a. Sandy screams whenever the NY Times publishes an article revealing secrets about Kim, and vice versa.
b. Something Sandy wrote made a big impression on Kim, and vice versa.
c. Einstein bought a slim book that did a pretty good job of explaining Gödel’s major insights, and vice versa.

Further cases discussed in longer paper: do it anaphora, Gapping, Pseudogapping, VP ellipsis, comparative ellipsis

**Possible reasons to prefer a syntactic account of ellipsis**

Anaphora connectivity:

(45) A: Who does John_i like best?
   B: i. Himself_i.
      ii.*Him_i.

Case-marking (Ross):

(46) 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.’

Matching of governed prepositions:

(47) a. A: John is very proud.
    B: Yeah, of/*in his stamp collection. [cf. proud of/*in NP]
b. A: John has a lot of pride.
    B: Yeah, in/*of his stamp collection. [cf. pride in/*of NP]

Lots of further cases (Merchant).
Each of these makes plenty of sense in a syntactically based theory, less sense in a Simpler Syntax theory.

But plenty of problems for deletion:

- Non-continous deletions, requiring unusual movement.
- No way to deal with nonlinguistic antecedents
• Form of linguistic antecedent often cannot be matched to syntactic context of fragment (e.g. (35d), (38)).
• Sluicing, if it involves wh-movement, does not respect island constraints:

(48) a. Bob found a plumber who fixed the sink, but I’m not sure with what (*Bob found a plumber who fixed the sink t).
b. Eating at a baseball game doesn’t interest me, I don’t care what (*eating t at a baseball game interests me).

At worst, a standoff: Semantically-based theory needs extra mechanism that imposes syntactic constraints on elliptical constructions.
BUT prima facie, the theory based on Same-Except relation is in principle more explanatory than a syntactically-based theory: it derives from a general cognitive mechanism. The difficulties for syntactic deletion theory are far more severe.
We have worked out mechanisms for some but not all of the syntactic effects in the paper – will not address them today. Basic idea is that Same-Except relation extends to syntactic structure, enforcing syntactic relations on P2 parallel to those of P1. For instance, if P1 is in a position where reflexive is licensed, then reflexive is possible (and necessary) in P2 as well.

**Summing up**

All sorts of ellipsis construction lend themselves to analysis in terms of Same-Except.
A uniform approach: Relevant constituents are identified in semantics rather than syntax; constructions are specified not in terms of what’s missing from a full sentence, but in terms of what’s present, i.e. additively rather than subtractively.
Same-Except relation, which underpins entire analysis, is not simply a formal predicate made up for this case. It is a general relation expressed in many different ways in language, and manifested in every domain of cognition.
What’s domain-specific about ellipsis (and in some cases specific to particular languages) is the particular syntactic/phonological constructions used to express the Same-Except relation.
Child does not have to learn Same-Except relation – only that these constructions are ways to express it.