1 Parasitic gaps and Ā-movement

Some adjuncts are islands unless the clause they attach to contains a gap as well, giving rise to parasitic gaps:

(1) Some adjuncts tolerate gaps if an additional gap is present:
   a. Which book did you read __ [after buying it]?
   b. *Which book did you read it [after buying ___]?  
   c. Which book did you read __ [after buying ___]?

Restrictions on parasitic gaps:

> The real gap cannot c-command the parasitic gap:

(2) *Which book __ convinced you [to leave [after reading ___]]?

> The adjunct must c-command the real gap:

(3) *Which book did you throw away __ [after keeping it on the bookshelf [without reading ___]]?

> Ā-movement does not license parasitic gaps:

(4) *That book was read __ [after buying ___].

⇒ Parasitic gaps are found in adjuncts that attach along the path of Ā-movement.

2 Nissenbaum (2000) on parasitic gaps

Nissenbaum (2000) develops an analysis of parasitic gaps as predicate conjunction. This approach has three major components:

1. A key component of Nissenbaum’s account is that Ā-movement involves an intermediate movement step to Spec-νP, accompanied by Predicate Abstraction.

(5) Which present did you open __?

![Diagram]

The consequence of this is that ν’ (circled above) is a derived predicate over individuals.

2. Parasitic gaps adjuncts contain a step of null operator movement.

(6) which present did you open __ [OP after buying ___]

The highest copy of the null operator is deleted at LF, so that the parasitic gap adjunct represents another derived predicate over individuals.

3. Parasitic gap adjuncts are those adjuncts which can attach to ν’/νP, specifically right at the circled node in (5).

⇒ A parasitic gap occurs when these two derived predicates undergo predicate conjunction.
An advantage of this approach is that it explains the restrictions on parasitic gaps:

- First, the parasitic gap adjunct must c-command the real gap, otherwise Predicate Modification would not be possible.
- Second, we see why A-movement must cross the parasitic gap adjunct (i.e. the real gap cannot c-command the parasitic gap). This reflects the role of intermediate A-movement.

A problem: This analysis overgenerates. Operator gap adjuncts should, in principle, be able to combine directly with argument-introducing heads like V and v. A-movement too should license a parasitic gap, since it is accompanied by Predicate Abstraction:

(7) a. *Caseyi opened the door [OPi in order for Jess to spot __].
   b. *The presenti was opened __ [OPi after buying __].

3 Depictives and Pylkkänen’s (2008) puzzle

Pylkkänen’s (2008) puzzle:
The licensing of depictives is interestingly similar to parasitic gaps in Nissenbaum’s account, but depictives and parasitic gaps are in complementary distribution.

3.1 Depictives are licensed by A-movement

Depictives in the usual case can modify subjects or objects (8a–b):

(8) Depictives can refer to subjects and direct objects:
    Sami hugged Tedk drunki/k.

Depictives display some restrictions (e.g. Marušič, Marvin, and Žaucer 2008). In English, depictives cannot refer to an indirect object in (9a),

1 Unless a light verb give is used, as in (i). See Bruening 2015 for a proposal for ditransitive structure that provides an account of this.

(9) Depictives in English cannot modify indirect objects and complements of P:
   a. Sami gave Tedk coffee drunki'.k.
   b. Sami danced with Tedk drunki'.k.

A-movement licenses a depictive

When indirect objects/complements of P move to Spec-TP, however, they can be modified by a depictive (Koizumi 1994):

(10) Depictives are licensed by A-movement:
    a. Tedk was given __ coffee drunkk.
    b. Tedk was danced with __ drunkk.

The licensing movement may even be intermediate A-movement:

(11) Depictive licensed by intermediate movement:
    Tedk turned out [__ to have been told __ all the secrets drunkk].

Note: Argument for intermediate A-movement! (See also Legate 2003).

3.2 A predicate conjunction analysis

Following Geuder (2000), Pylkkänen analyzes depictive licensing as predicate conjunction. In this approach, depictives are formed by combining an adjective with a functional head Dep (12a–b).

(12) Semantics of depictive:
    a. \[Dep\] = \lambda f e, \lambda x. \exists s . f(s, x) & e o s
       (where o signifies overlap between two events)
    b. \[Dep drunk\] = \lambda x. \lambda e. \exists s . drunk(s, x) & e o s

To form subject and object depictives, the depictive adjoins to the argument-introducing head, V or v, creating a conjoined predicate:

(13) Subject depictive: (14) Object depictive:

\[
\begin{align*}
\text{DP} & \quad \text{vP} & \quad \text{VP} \\
\text{vP} & \quad \text{v'} & \quad \text{DP} & \quad \text{V'} \\
\lambda x & \ldots & \lambda x & \ldots \\
\text{Depictive} & \quad \text{Depictive} \\
\end{align*}
\]

(i) The nurse gave the patienti his medication asleepi.
3.3 Licensing depictives with movement

**Pylkkänen (2008):** A depictive is licensed in the same fashion as a parasitic gap. Intermediate A-movement to Spec-vP creates a predicate that may combine with the depictive (15).

(15) Intermediate A-movement licenses depictive:
Ted was danced with ___ drunk.

\[
\begin{array}{c}
\text{DP} \\
\text{Ted} \\
\text{\(v'\)} \\
\text{Depictive} \\
\text{\(\lambda x. x \text{ is drunk}\)} \\
\text{there was dancing with \(x\)}
\end{array}
\]

A possible alternative to (15)
This tree puts the licensing of depictives at the vP edge, such that it is intermediate A-movement that feeds the interpretation of a depictive. Note that there are some good reasons for thinking that depictives are not licensed from Spec-TP instead:

\[\text{As Bruening (2015) discusses, depictives talk about a property that holds throughout the causing event, which is introduced by \(v\).}\]

\[\text{When an expletive occupies Spec-TP, A-movement can still license a depictive (Benjamin Bruening, p.c.):}\]

(16) Depictive can be licensed by A-movement below Spec-TP:
There was someone, [who I hadn’t invited] being danced with ___ drunk.

3.4 Pylkkänen’s puzzle

\[\Rightarrow\] In this analysis, depictives and parasitic gaps are licensed in the same way. However, unlike A-movement, \(\bar{A}\)-movement cannot license a new interpretation for a depictive:

(17) \(\bar{A}\)-movement does not license depictive:
   a. Who did Sam give ___ coffee drunk?\(i/\ast\)k?
   b. Who did Sam dance with ___ drunk?\(i/\ast\)k?

The distribution of parasitic gaps and depictives is complementary:

- Depictives modify thematic positions and intermediate A-positions
- Parasitic gap adjuncts attach to intermediate \(\bar{A}\)-positions

**Constraints on attachment**

**Nissenbaum (2000):**
Perhaps parasitic gap adjuncts just never attach to A-positions? If correct, maybe we could say the same for depictives: they can’t attach to \(\bar{A}\)-positions.

\[\Rightarrow\] It’s not actually that clear how to state these restrictions if we need to distinguish parasitic gaps and depictives.

\[\Rightarrow\] Also, as Pylkkänen notes, parasitic gaps can in fact be licensed inside of depictives:

(18) Parasitic gap in a depictive:
   a. Which country did he die for [still loyal to ___]?
      (Pylkkänen 2008:40)

Like other parasitic gaps, such depictives must adjoin on the path of movement (19a–b).

(19) Parasitic gap depictive show path-connectedness requirements:
   a. Which country ___ sent him to war [still loyal to the cause]?
   b. *Which country ___ sent him to war [still loyal to ___]?

If correct, then it cannot be the case that depictives attach in a different syntactic position.

\[\text{Pylkkänen credits this observation to David Pesetsky and Norvin Richards.}\]
4 Choice functions and Ā-movement

As in my general approach to the A/Ā-distinction, I propose that the syntax of A- and Ā-movement is essentially uniform:

- A- and Ā-movement both involve intermediate movement and are sensitive to the same domain edges (e.g. vP)
- A- and Ā-movement are both accompanied by Predicate Abstraction and so create derived predicates that can feed predicate conjunction

The difference between A- and Ā-movement:

4.1 Choice functions and Weak Crossover


Reinhart’s approach has two key components:

1. The wh-phrase denotes a choice function variable, which takes a set and returns an individual

2. An operation of existential closure over choice functions at the interrogative C

(20) In situ wh-word in Reinhart (1992):
   a. CQ . . . which book . . .
   b. \( \lambda p. \exists f (p = \lambda w . . . f (\text{book}) . . . \text{in } w) \)

In this way, an in situ wh-phrase can take wide scope.

Sauerland and Ruys generalize this approach to wh-movement, by treating a moving wh-phrase as an existential quantifier over choice functions. Following Sternefeld (2001; see also Cable 2007), I assume this to be a Q head which combines with the wh-phrase:

(21) Wh-movement with choice functions:
   a. Which book did you read?
   b. \( \lambda p. \exists f (p = \lambda w . \text{you read } f (\text{book}) \text{ in } w) \)
   c. CP

1. There must be an operation in the lower copy that converts Q into a choice function variable.

2. The DP restrictor is deleted in higher copies, because it is not interpretable there. I assume distributed deletion of the DP, which is free up to interpretability (cf. Landau’s constraints on deletion at PF).

\(^3\) As in Sternefeld’s account, I suggest that this Q is a generalized choice function, which returns a member of the set denoted by the pied-piped phrase. The wh-phrase, which generates alternatives, ensures that the pied-piped phrase is always a set, though of different types, varying over the individuals introduced by the wh-word.

\(^4\) This is essentially Determiner Replacement from Fox’s (1999) Trace Conversion.
This account predicts Weak Crossover:
If pronouns are always of type e, then $\bar{A}$-movement can never bind pronouns: it involves abstraction of the wrong type.\(^3\)

### 4.2 A-movement can bind pronouns

In this account, A-movement always involves abstraction over individuals. Such chains are interpreted via Fox’s (1999) Trace Conversion:

(22) A-movement with abstraction over individuals:
- a. Every student read a book.
- b. ... 

1. **Determiner Replacement:** D in the lower copy is replaced by the. (Note that, if we treat the as the iota operator, this is essentially equivalent to conversion to a choice function variable.)

2. **Variable Insertion:** A NP predicate $\lambda y.y = x$ is adjoined to the NP in the lower copy and combines with the NP student via Predicate Modification. This introduces a variable for the higher copy to bind.

\(^3\)A prediction of this account, though, is that there might be choice function variables that can be bound only by $\bar{A}$-movement.

If this movement crosses a pronoun, these can be bound along with the predicate inserted in the lower copy.

### 5 A choice function analysis of parasitic gaps

To allow parasitic gaps, I propose that both intermediate $\bar{A}$-movement and operator movement create predicates over choice functions:

(23) Parasitic gaps with abstraction over choice functions:

Two things to pay attention to:
1. The intermediate copy combines two operations, already used: Q is converted into a choice function variable, and the restrictor is deleted.
2. An restrictor moves along with the null operator OP and undergoes deletion under matching, as in matching relative clauses (e.g. Carlson 1977; Sauerland 1998).
Why does A-movement not license a depictive?
Depictives are of type \(<e,st>\), and so not the right predicate to be conjoined with a predicate over choice functions.

Why does A-movement not license parasitic gaps?
A-movement triggers abstraction over individuals, which is interpreted using Fox’s (1999) Trace Conversion. As a result, predicates created by A-movement cannot be conjoined by operator gap adjuncts.

Note: This account derives why A-movement, and not \(\overline{A}\)-movement, patterns with thematic positions, which also license depictives, since argument-introducing heads are also predicates over individuals.

6 Back to Strong Crossover

How do we account for Strong Crossover in this account?
Remember that A-movement displays Strong Crossover:

(24) *Which student did he say [__ is smart]? 

Strong Crossover and Dahl’s paradigm
Fox (2000) proposes that Strong Crossover derives from an independent constraint on binding, Rule H. Rule H is motivated by Dahl’s paradigm (Dahl 1973, 1974).

(25) John knows that he loves his mother and Bill does too.
   a. Strict-strict
      Bill knows that Bill loves Bill’s mother.
   b. Sloppy-sloppy
      Bill knows that John loves John’s mother.
   c. Sloppy-strict
      Bill knows that Bill loves John’s mother.
   d. *Strict-sloppy
      Bill knows that John loves Bill’s mother.

\(\Rightarrow\) What is ruled out here is a configuration in which the lowest pronoun is bound by John across the highest pronoun. This is blocked by Rule H, which attempts to relate this to economy:

(26) Rule H: A pronoun A can be bound by an antecedent B only if there is no closer antecedent C such that it is possible to bind A by C and get the same interpretation (of the minimal constituent containing A, B and C).

Now note that Strong Crossover involves the same configuration as (25b), binding across a coreferent pronoun. Rule H then blocks such LFs as well.

References
Cable, Seth. 2007. The grammar of Q: Q-particles and the nature of Wh-fronting, as revealed by the Wh-questions of Tlingit. Doctoral dissertation, MIT.