“Not-so-propositional” islands and their implications for swiping
Chizuru Nakao and Masaya Yoshida
University of Maryland, College Park

1. Introduction

(1) The main claims
a. Propositional islands (PIs) are PF-islands (contra Merchant 2001).
b. LF violations (e.g. ECP violations) cannot be repaired under sluicing, unlike PF violations (e.g. PF-island violations). This is compatible with the PF-deletion analysis of sluicing. (Merchant 2001; Lasnik 2001, etc.)
c. Swiping is not constrained by the ECP.

(2) Sluicing
a. John talked to someone, but I don’t know [who [IP John talked to]]
b. Sluicing as “wh-movement + IP-deletion”

(3) Sluicing types
a. Argument sluicing
   - John fixed the car with something, but I don’t know what.
b. Adjunct sluicing
   - John fixed the car {in a certain way/for a certain reason}, but I don’t know how/why.
c. Pied-piped sluicing
   - John fixed the car with something, but I don’t know with what.
d. Swiping
   (Ross 1969; Rosen 1976; Kim 1997; Merchant 2002; van Craenenbroeck 2004, etc.)
   - (?)John fixed the car with something, but I don’t know what with.

(4) Observations
   (i) Argument sluicing is not sensitive to PIs (e.g. Complex NPs).
   (ii) Adjunct sluicing is sensitive to PIs.
b. Asymmetry between two types of PP sluicing (Section 4)
   (i) Pied-piped sluicing is sensitive to PIs.
   (ii) Swiping is not sensitive to PIs.
(5) a. John wants to hire [someone who fixes cars with something], but I don’t know what.
b. *John wants to hire [someone who fixes cars {in a certain way/for a certain reason}], but I don’t know how/why.

(6) Our accounts
   a. Propositional islands are PF-islands; they are repaired under sluicing.
   b. The argument-adjunct asymmetry is explained in terms of the ECP.
   c. Pied-piped sluicing and swiping have different derivations.


(7) Typology of Island (Merchant 2001)
   a. PF-islands (e.g. Left Branch Condition: (8))
   b. Propositional islands (e.g. Complex NP island: (9))

(8) Left Branch Condition
   a. *[How big]₁ did she buy [a t₁ car]?
   b. She bought a big car, but I don’t know [how big].

(9) Complex NP island
   a. *What₁ did John want to hire [someone who fixes t₁]?
   b. John wants to hire [someone who fixes cars with something], but I don’t know what. (= (5)a)

(10) Merchant’s claims
   a. Sluicing involves PF-deletion: it remedies only PF-island violations.
   b. PIs are not PF-islands (presumably LF-islands).
   c. The apparent PI-repair ((9)b) has an “island-free” source in (11).

(11) The “island-free source” account
   John wants to hire [someone who fixes cars with something],
   but I don’t know [CP what₁ [IP she fixes cars with t₁]]. (She = e-type pronoun)

(12) Problem of the “island-free source” account
   a. It does not predict the argument-adjunct asymmetry in (5).
   b. The unacceptability of adjunct sluicing is unpredicted, because there is no underlying island in (13).

(13) John wants to hire [someone who fixes cars for a certain reason],
    but I don’t know [CP why₁ [IP she fixes cars t₁]]. (She = e-type pronoun)
3. Proposals

3.1. The ECP account of Argument-adjunct Asymmetry in PI under sluicing

(14) Lasnik’s (2005) insight
The argument-adjunct asymmetry should be accounted for by an ECP type approach (Lasnik and Saito 1984, 1992)

(15) The ECP (empty category principle)
(Huang 1982; Lasnik and Saito 1984, 1992, with details divergent)
  a. An empty category must be properly governed.
     (i) Antecedent-government, or
     (ii) Head-government by a lexical head
  b. The ECP constrains LF representations. (Huang 1982)

(16) An ECP-based account
  a. PIs (e.g. Complex NPs) are “barriers” for antecedent government.
  b. Only argument traces are lexically-governed.
  c. Adjunct wh-traces violate the ECP within a PI (*t₁ in (17)).
  d. Assumption: ECP violations are not remedied under sluicing.
     (i) The ECP violations are at LF. ((15))
     (ii) Sluicing is at PF. ((10)a)

(17) *John wants to hire [someone who fixes cars for a certain reason],
    but I don’t know [CP why₁ [IP John wants to hire [PI someone who fixes cars *t₁]]].

(18) Summary
The argument-adjunct asymmetry in PIs under sluicing (5) is accounted for by the ECP, under the assumption that ECP violations are not repaired by sluicing.

---

1 Lasnik and Saito (1992: L&S) argue that the ECP is applied at S-structure and LF for argument traces and only at LF for adjunct and intermediate traces. This asymmetry is proposed to exclude (i) as a that-trace violation at S-structure, while including (ii) and (iii) using that-deletion at LF.

(i) *Who₁ do you think [that [t₁ left]]?
(ii) Why₁ do you think [that [John left t₁]]
(iii) Who₁ do you think [that [Mary said [ t₁ [ t₁ won the race]]]]?

Merchant (2001) claims that that-trace effect is a type of PF-island and is remedied by sluicing. In sum, (i) is an S-structure violation for L&S and a PF violation for Merchant. We concentrate on ECP violation of adjunct traces at LF such as (17), claiming that LF violations cannot be ameliorated by sluicing.
3.2. Extending the ECP account: A Parallelism account

(19) An apparent counter-argument to the ECP account
   a. Adjunct wh-phrases cannot escape *even complement clauses* under sluicing. ((20): Lasnik 2005)
   b. Without sluicing, wh-movement can escape complement clauses. (21)
   c. The adjunct wh-trace (t) is antecedent-governed by the intermediate trace at the embedded [Spec, CP] (t').

(20) ?*Mary said that John left [for some reason], but I don’t know (exactly) why\textsubscript{1}.
   a. ?*Long reading: I don’t know 
      
      \[ CP \text{ why}_1 \ [IP \text{ Mary said } [CP \text{ t}_1'=\text{ that } [IP \text{ John left } \text{ t}_1]]]. \]
   b. Short reading: I don’t know \[ CP \text{ why}_1 \ [IP \text{ John left } \text{ t}_1]\].

(21) \begin{align*}
\text{[CP Why}_1 \text{ did } [IP \text{ Mary say } \text{ [CP t}_1' \text{ that } [IP \text{ John left } \text{ t}_1]]]}
\end{align*}

(22) Solution to (19)
   a. Sluicing obeys certain parallelism constraints. (Fox and Lasnik 2003)
   b. Parallelism requires different derivations for sluicing (i) from non-sluiced wh-movement constructions (ii).
      (i) **One fell swoop movement** in sluicing\textsuperscript{2}
      (ii) **Successive-cyclic movement** in non-sluiced wh-constructions
   c. Without successive-cyclic movement, the original t of the adjunct is not antecedent governed: hence, violation of the ECP.

\textsuperscript{2} A sluiced wh-phrase, however, undergoes successive-cyclic movement when the corresponding phrase undergoes successive-cyclic movement as in (i). See (Fox and Lasnik 2003) for details.

(i) I know **which book** John said that Mary read, but YOU don’t know **which one**.
(23) **The Parallelism account** of sluicing (Fox and Lasnik 2003)
  a.  (24)b satisfies Parallelism with its antecedent (24)a by means of “one fell swoop” derivation.
  b.  PF-deletion averts the locality violations of one fell swoop movement.

(24) Fred said that I talked to a certain girl, 
  but I don’t know which1 [Fred said that I talked to t1].
  a.  *The antecedent*: Fred said that I talked to a certain girl
      \( \exists f \lambda f'[\text{Fred said that I talked to } f'(\text{girl})] \)
  b.  *The sluice*: (which girl) Fred said that I talked to t which g girl \( \lambda g'[\text{Fred said that I talked to } g'(\text{girl})] \)

(25) The points of this account
  a.  Intermediate traces in the sluices are banned to satisfy Parallelism.
  b.  Even complement clauses behave like islands under sluicing (remedied by PF-deletion).

(26) Sluice/Non-slui ce asymmetry in **adjunct wh**-movement
  a.  *Why* in the sluice in (27) undergoes “one-fell-swoop” movement to satisfy Parallelism.
  b.  The semantic representations in (27) are as well-formed as those in (24).
  c.  The locality violation of long-movement is remedied by PF-deletion.
  d.  However, the long-movement causes an ECP violation at LF, because the trace is not head-governed or antecedent-governed.
  e.  Non-slui ced (28) does not violate the ECP because of the intermediate trace.

(27) ?*Mary said that John left for a certain reason, 
  but I don’t know why1 [Mary said that John left t1]. (= (20)a)
  a.  *The antecedent*: Mary said that John left for a certain reason
      \( \exists f \lambda f'[\text{Mary said that John left for } f'(\text{reason})] \)
  b.  *The sluice*: (why) [Mary said that John left t which g reason \( \lambda g'[\text{Mary said that John left for } g'(\text{reason})] \)

(28) \[CP \text{ Why1 did } [IP \text{ Mary say } [CP t1' that } [IP \text{ John left t1}]]] (= (23))
(29) Returning to **Argument-adjunct Asymmetry in PIs under sluicing**
   a. The sluice and the antecedent in (30) and (31) satisfy Parallelism.
   b. The island violation in (30) and (31) is remedied by PF-deletion.
   c. The trace of *an adjunct* causes ECP violation, not being head-governed.

(30) John wants to hire [someone who fixes cars with something], (= (5)a) but I don’t know *what* [John wants to hire [someone who fixes cars with *t*]].
   a. **The antecedent**
      \[\exists f. f'[\exists h. h'h'[John wants to hire \(h\)'(person) who fixes cars with \(f'\)(thing)]]\]
   b. **The sluice**
      \[\text{which } g \text{ thing } \lambda g'[\exists k. k'k'[John wants to hire \(k\)'(person) who fixes cars with \(g'\)(thing)]]\]

(31) *John wants to hire someone who fixes cars for a certain reason,* but I don’t know *why* [John wants to hire [someone who fixes cars *t*]]. (= (5)b)
   a. **The antecedent**
      \[\exists f. f'[\exists h. h'h'[John wants to hire \(h\)'(person) who fixes cars (for) \(f'\)(reason)]]\]
   b. **The sluice**
      \[\text{why (what reason) } g \text{ thing } \lambda g'[\exists k. k'k'[John wants to hire someone who fixes cars (for) \(g'\)(reason)]]\]

(32) **Theoretical consequence**
   a. An offending LF representation cannot be repaired by sluicing.
   b. Intuition behind Merchant’s PF-deletion analysis of sluicing:
      - **PF-violations** can be remedied by PF-deletion.
   c. The complementary claim:
      - **LF-violations** cannot be remedied by PF-deletion.

(33) **Summary**
   a. Employing the Parallelism system by Fox and Lasnik (2003), PI repair is also explained as amelioration by PF-deletion.
   b. We do not need distinction between PF-islands and PIs.
   c. Merchant’s (2001) “island-free source” account is untenable.
4. Extentions: Swiping/Pied-Piping asymmetry

4.1. Two types of PP sluicing

(34) Pied-piping/Swiping asymmetry
   a. **Pied-piped sluicing** is constrained by PI/complement clauses. (35)a, (36)
   b. **Swiping** is not constrained by PI/complement clauses.\(^3\) (35)b, (37)

(35) a. *John wants to hire [someone who fixes cars with something],
       but I don’t know **with what**.
   b. ?John wants to hire [someone who fixes cars with something],
       but I don’t know **what with**.

(36) John claimed [that Mary fixed the car with something],
       but I don’t know **with what**.
   a. ?*Long reading:  I don’t know **with what**\_1 John claimed that Mary fixed
               the car\_t_1.
   b. Short reading:  I don’t know **with what**\_1 Mary fixed the car with t_1.

(37) John claimed [that Mary fixed the car with something],
       but I don’t know **what with**.
   a. ?Long reading:  I don’t know **what with**\_1 John claimed that Mary fixed
               the car\_t_1.
   b. Short reading:  I don’t know **what with**\_1 Mary fixed the car with t_1.

(38) Problem
   a. All the examples above involve **adjunct PPs**.
   b. The **ECP account** does not predict the asymmetry.

(39) Pied-piping + Head-movement analysis of swiping (Merchant 2002)
   a. (?)John danced with someone, but I don’t know **who with**.
   b. \([\text{CP} [\text{with who}]_1 [\_t_1 John danced t_1]]\) pied-piped sluicing
      \(\rightarrow [\text{CP} [\text{who+with}]_1 [\_t_1 John danced t_1]]\) head-movement of who onto P

(40) a. Under Merchant’s account,
       Swiping = pied-piped sluicing + head-movement.
   b. Swiping across islands should cause ECP violations. (41)

\(^3\) Kim (1997) claims that long-distance Swiping is impossible, based on examples of Swiping
   without an antecedent PP (e.g. **with something**). See **Appendix A**.
(41) Swiping with a PI (under Merchant 2002)
John wants to hire [someone who fixes cars with something],
but I don’t know [\textbf{what} + with]$_1$ [John wants to hire [someone who fixes cars $t_1$]].

4.2. Proposal: PP shift analysis of swiping

(42) Possible solution
a. The derivation of swiping is different from pied-piped sluicing.
b. The derivation of swiping is free from ECP violation.

(43) PP shift analysis
(see also: Focus movement analysis by Kim 1997)
a. The swiped PP undergoes rightward movement (PP shift: (44))
b. This rightward movement does \textbf{not leave a trace} in the original position.
c. The \textit{wh}-phrase moves to the CP domain with the preposition stranded.

(44) PP shift
a. [IP [IP John talked to someone] yesterday].

(45) The PP shift analysis of swiping
a. [IP [IP John danced $\_PP$] [PP with who]] PP shift (no trace left)
b. [CP who$_1$ [IP [IP John danced $\_PP$] [PP with $t_1$]]] wh-movement of who
c. [CP who$_1$ [IP [IP John danced $\_PP$] [PP with $t_1$]]] IP-deletion at PF
4.3. PP shift as a trace-free operation

(46) Nakao, Ono and Yoshida (2006): PP shift as a trace(copy) -free operation
    PP shift does not leave a trace, unlike wh-movement. (See also Tanaka 2005)

(47) PP shift does not block contraction (Lasnik 1984)
    a. One observation on the distribution of ‘s:
       The clitic’s needs to have a morphologically realized category *on its right.*
       (Bresnan 1971; Boeckx 2000)
    b. Wh-traces block contraction.  
    c. PP shift traces do not block contraction: hence, no trace.  

(48) a. John is/’s in the room (now).
    b. I don’t know where, John is/*’s t1 (now).
    c. John is/’s tPP.now [PP in the room].

(49) The PP shift analysis4
    a. \[IP [IP John danced _PP] [PP with who] \] PP shift
    b. \[CP who0 [IP [IP John danced _PP] [PP with t1]] \] wh-movement of who
    c. \[CP who0 [IP [IP John danced _PP] [PP with t1]] \] IP-deletion at PF

(50) Advantage of the PP shift analysis
    a. Swiping is not sensitive to the ECP, as there is no trace left by PP shift. 
       (The trace left by wh-movement is not an adjunct.)
    b. The fact that swiping shows PI-repair/Long reading is accounted for.

\[\text{Consider the logical structure of the Swiping example such as (i).}\]

(i) John wants to hire [someone who fixes cars with something], but I don’t know what with.
    a. The antecedent: John wants to hire someone who fixes cars with something
       \[\exists f.f’[ \exists h,h’[John wants to hire [h’(person) who fixes cars with f’(thing)]]}\n    b. The sluice: (what) John wants to hire someone who fixes cars with t
       which g thing \[g’[ \exists k,k’[John wants to hire [k’(person) who fixes cars _PP]] [PP with \]
       g’(thing)]]

If the PP shift analysis of Swiping is on the right track, the necessary assumption is that the
rightward movement in (ib) does not induce violation of the Parallelism because it does not create
an operator-variable chain. It indicates that the Parallelism does not require “exact syntactic
identity.”
4.4. A potential problem of remnant movement and its solution

(51) A potential problem
   Does the derivation in (49) violate derived position island?

(52) **Derived position island** (Wexler & Culicover 1980; Takahashi 1994; Merchant 2001)
   a. Wh-movement out of a moved element is not allowed.
   b. *[CP Who did [IP [IP you talk _PP yesterday] [PP to t1]]?]*
   c. *I don’t know [CP who [IP [IP you talked _PP yesterday] [PP to t1]]]?*

(53) Conjecture
   a. The wh-feature of *who* in (49) is satisfied by **head-movement**, instead of movement into [Spec, CP]. (55)
   b. (52) only constrains phrasal movement, and not head-movement.

(54) a. This is compatible with the observation that only minimal (X⁰-type) wh-elements allow swiping (Merchant 2002; Van Craenenbroeck 2004).⁵
   b. John danced with some girl, but I don’t know (?) who with/*which girl with.

(55) The PP shift analysis (**Revised**)
   a. [IP [IP John danced _PP] [PP with who]] \hspace{1cm} PP shift
   b. [CP who₁+C⁰ [IP [IP John danced _PP] [PP with t₁]]] \hspace{1cm} head-movement of **wh**
   c. [CP who₁+C⁰ [IP [IP John danced _PP] [PP with t₁]]] \hspace{1cm} IP-deletion at PF

(56) Non-sluiced wh-questions (e.g. (52)b/c) do not allow such a derivation.
   a. I-to-C movement blocks head-movement onto C.
      (We assume covert I-to-C for embedded wh-questions for (52)c)
   b. Sluicing is incompatible with I-to-C even in matrix.
      ((57): Merchant 2001; Lasnik 2001)⁶
   c. C⁰ is available for head-movement of the wh-phrase only in Sluicing.

(57) a. A: John will meet someone.
   B: *Who will?/*I don’t know who **will**.
   b. [CP Who **will** [IP John t**will** meet]]?

---

⁵ The head-movement in (55)b does not seem to obey the Head Movement Constraint. See, however, Roberts (1994), Chomsky (1995) and Takahashi (2002) for the dubious status of the Head Movement Constraint.

⁶ Our analysis has to assume there is no T-to-C movement in sluicing at all, even covertly. (cf. Pesetsky and Torrego 2001)
5. Conclusion

(58) a. We observed: (i) **Adjunct/pied-piped sluicing** is constrained by PIs while (ii) **Swiping** is not.
   b. To account for (i): we employed Fox and Lasnik’s (2003) **Parallelism** condition, combined with the claim that **ECP violations cannot be remedied** by sluicing.
   c. To account for (ii): we proposed the **PP shift analysis of swiping**, with the assumption that PP shift does not leave a trace.
   d. There is **no distinction between PF-islands and PIs**: both islands are PF-islands.
   e. The claim that an LF (ECP) violation cannot be remedied by sluicing is compatible with the **PF-deletion analysis of sluicing** (Merchant 2001).

6. Remaining Questions

(59) **Question 1**: How is PP shift motivated in swiping? Is it related to Focus? (Kim 1997)

(60) **Question 2**: Why is long-distance PP shift possible in swiping with PIs? Is (61) violation of Right Roof Constraint?

(61) a. John wants to hire [someone [who fixes cars with something]], but I don’t know what with. (= (35)b)
b. I don’t know [CP what1+C0 [IP [IP John wants to hire [IP someone [who [PP fixes cars _PP]]] [PP with t1]]]
c. The PP shift (at least) crosses the IP inside the relative clause.

(62) **Right Roof Constraint** (Ross 1967)
   No element may be moved rightward out of the next higher S node.

(63) Tentative explanation
   a. Right Roof Constraint is violated by the PP shift and ameliorated by sluicing in (61). (cf. Lasnik 2005 on multiple sluicing in English)
b. We have shown that PP shift does not leave a trace.
c. PF amelioration not only saves illegitimate **representations** (e.g. illegitimate trace), but saves a illegitimate **operations** (e.g. PP shift) that would have caused PF-violations.
Appendix A: On the long-distance reading and Right Roof Constraint

(64) Kim’s (1997) claims
   a. Spill-over Sluicing (=swiping) does not allow long-distance reading, (when there is no antecedent PP for swiping: (65)).
   b. The unavailability of long-distance reading is due to the Right Roof Constraint (Ross 1967).
   c. Right Roof Constraint violations cannot be ameliorated by sluicing. (cf. (63)c)

(65) Mary claimed that the opera was written in the 19th century, but we are not sure who by.
   a. Long reading
      *we are not sure who Mary claimed that the opera was written in the 19th century by.
   b. Short reading
      we are not sure who the opera was written in the 19th century by.

(66) Problems
   a. Long-distance adjunct sluicing (20) is also degraded; it does not involve Rightward movement.
   b. Swiping with propositional islands should also violate Right Roof Constraint, but it doesn’t. (37)
   c. (65) is an example of “sprouting” (= swiping without an antecedent PP). This apparent Right Roof Constraint is also ameliorated when swiping has an antecedent. (35)b

(67) “Sprouting” vs. “Swiping with an antecedent”
   Rosen (1969): Swiping is possible with no complement antecedent PP. “sprouting”: (68)a/b, or an adjunct PP antecedent (68)c is possible.

(68) a. John fixed the car, but I don’t know what with. (sprouting adjunct)
   b. John was talking, but I don’t know who to. (sprouting argument)
   c. John fixed the car with something, but I don’t know what with. (adjunct)
   d. *John was talking to someone, but I don’t know who to. (complement)
   e. *John was with someone, but I don’t know who with. (predicate)

(69) a. Sprouting is sensitive to PIs, unlike swiping with an antecedent. (cf. (35)b)
   b. ??John wants to hire [someone who fixes cars], but I don’t know what with.
Appendix B: PP sluicing from inside an NP

(70) Pied-piped sluicing that extracts out of an NP is unacceptable.

(71) a. Argument sluicing
   ?I saw [NP a present for someone] on John’s desk, but I don’t know who₁.

   b. Pied-piped sluicing
   *I saw [NP a present for someone] on John’s desk,
   but I don’t know [for whom].

   c. Swiping
   (??)I saw [NP a present for someone] on John’s desk,
   but I don’t know who for.

(72) How to explain the data
   a. Extraction from NP goes through the NP-joined position (Takahashi 1994), in order to be antecedent-governed.
   b. If there is an intermediate trace ((73)a), Parallelism is violated.
   c. If there is no intermediate trace ((73)b), ECP is violated. (t₁ = adjunct)

(73) a. [CP [for who]₁ [IP I saw [NP t₁ [NP a present t₁]]]]?
   b. [CP [for who]₁ [IP I saw [NP a present for t₁]]]

(74) Sprouting contrasts with swiping with an antecedent also in extraction out of an NP. (Appendix A)

(75) *?I saw [NP a present] on John’s desk, but I don’t know who for.
References
Bresnan, Joan (1971) Contraction and the transformational cycle, Ms., MIT: Cambridge, MA.
Lasnik, Howard (2005) How to Evade Moving Violations, a lecture at LSA Summer Institute, MIT, Cambridge, MA.

Chizuru Nakao
cnakao@umd.edu
http://www.ling.umd.edu/~cnakao/