What is the Right Binding Theory?

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1 Reflexivity: Co-Argumenthood, or a Local Antecedent?

The "traditional" Binding Theory of Chomsky (1981):

- Anaphors (reflexives and reciprocals) need a local c-commanding antecedent.

- Pronouns may not have a local c-commanding antecedent.

Reinhart and Reuland's (1993) *predicate-based* theory:

- Predicates must be marked as reflexive if two (or more) of their arguments are co-indexed.

- SELF anaphors reflexive-mark predicates.

(1) a. **Condition A:** A reflexive-marked predicate is reflexive.

  b. **Condition B:** A reflexive predicate is reflexive-marked.

(2) a. A predicate is **reflexive** iff (at least) two of its arguments are co-indexed.

  b. A predicate P is **reflexive-marked** iff either:
  (i) P is lexically reflexive;
  (ii) one of P's coindexed arguments is a SELF anaphor.

1.1 Advantages of the Predicate-Based Theory

1. Locality conditions on pronouns and anaphors are derived.

2. Predicts that the Binding Conditions govern only anaphors and pronouns in argument positions.

(3) a. Alicia$_1$ insulted herself$_1$.

  b. * Alicia$_1$ insulted her$_1$.

(4) a. Lucie counted five tourists in the room apart from herself/her. (RR7)

  b. There were five tourists in the room apart from myself. (RR22)

- The predicate-based theory appears to account for the fact that certain occurrences of anaphors are exempt from the Binding Conditions (Pollard and Sag 1992).

- Not easy to do in the traditional theory.

3. Posits a wider range of anaphoric elements than just the two-way split between anaphors and pronouns:

  (a) Reflexivizers: SELF anaphors

  (b) Referentially dependent elements: SELF anaphors, SE anaphors

  (c) Referentially independent elements: pronouns, R-expressions

1.2 Point of this Talk

1. The predicate-based theory cannot account for a large class of facts:

   (a) Some trouble with reciprocals;

   (b) Anaphors as embedded subjects;

   (c) Delimiting the class of exempt anaphors (logophors).

2. Revise the traditional Binding Theory.

2 The Trouble with Reciprocals

Commonly given semantics for reciprocals (e.g., Fiengo and Lasnik 1973, Langendoen 1978, Heim, Lasnik, and May 1991, Dalrymple *et al.* 1998, Beck 2001, Schein 2001):

(5) Strong Reciprocity
     $\forall x, y \in A\ (x \neq y\ \rightarrow Rxy)$

(6) Frank and Martha detest each other.

- Not reflexive: x is not equal to y.

- Reciprocals pattern with reflexives in needing a local antecedent:

(7) a. * I said that John insulted myself.
     b. * We thought that John insulted each other.

On strict locality with reciprocals cross-linguistically, see Belletti (1983), Yang (1983), Manzini and Wexler (1987), Sung (1990), Everaert (1991).

- Predicate-based theory: reciprocals mark predicates as reciprocal.

- But consider long-distance readings of reciprocals (Higginbotham 1980):

(8) John and Bill think that they defeated each other.

     a. John and Bill think: John defeated Bill and Bill defeated John.
     b. John thinks John defeated Bill and Bill thinks Bill defeated John.

- Heim, Lasnik, and May (1991): scope ambiguity derived by LF movement of *each*.

- The semantics of the high-scope reading has to be something like this:

(9) $\forall x, y \in \{J, B\}\ (x \neq y\ \rightarrow \text{think}(x, p(p =\text{defeat}(x, y))))$

- Problem: neither predicate is reciprocal.

- Might define reciprocity so that every member of the subject is also an object, and vice versa, so that lower predicate counts as reciprocal.

- But contrast *each … the other*, which can have identical semantics:

(10) Each one thinks that he defeated the other.

(11) Each one asked me to visit the other.

- If the high-scope reading of (8) counts as reciprocal, requiring reciprocal-marking, so should (10).

- But *each . . . the other* isn't a reciprocalizer, given (11).

- Difficult if not impossible to define "reciprocal predicate" and what it means to be marked as reciprocal in order to include *each other* and exclude *each . . . the other*.

- Note that reciprocal still needs a local antecedent even in high-scope reading; high scope only allowed in cases of dependent plural pronouns (Dimitriadis 1999):

(12)   John and Mary think that the boys like each other.
       (≠John thinks the boys like Mary and Mary thinks the boys like John.)

- Heim, Lasnik, and May: reciprocal consists of two pieces, one a distributive quantifier, the other an anaphor.

- Only makes sense where the defining property of an anaphor is the need for a local antecedent.

- Locality restrictions must be separate from marking a predicate as reciprocal.

3   Anaphors as Subjects of Lower Clauses

3.1   ECM and Raising Predicates

(13)   a.   Lucie expects herself to charm Bill.
       b.   * Lucie expects her to charm Bill.

(14)   (RR42)
       a.   Lucie seems to herself/*her [t to be beyond suspicion] .
       b.   Max strikes himself/*him [t as clever] .

- The lower subject in the ECM case, and the raised subject in the raising case, are not semantic arguments of the higher verb.

(15)   a.   The *syntactic predicate* formed of (a head) P is P, all its syntactic arguments, and an external argument of P (subject).
       b.   The *syntactic arguments* of P are the projections assigned a theta-role or Case by P.
       c.   The *semantic predicate* formed of P is P and all its arguments at the relevant semantic level.

(16)   a.   **Condition A:** A reflexive-marked syntactic predicate is reflexive.
       b.   **Condition B:** A reflexive semantic predicate is reflexive-marked.

(Note that it's actually the Chain Condition that rules out pronouns here.)

3.2   Other Non-Finite Clauses

3.2.1   Gerunds

(17)   a.   Billy remembers bringing the wine coolers.
       b.   Billy remembers himself bringing the wine coolers.
       c.   * Billy$_1$ remembers him$_1$ bringing the wine coolers.

(18)   a.   Having brought the wine coolers, Billy proceeded to mingle.
       b.   Himself having brought the wine coolers, Billy proceeded to mingle.
       c.   * Him$_1$ having brought the wine coolers, Billy$_1$ proceeded to mingle.

- The anaphor is not a syntactic or semantic argument of the same predicate as its antecedent.

- In addition, the SELF anaphor should incorrectly reflexive-mark the gerund.

3.2.2 *For-To* Infinitives

(19) (RR112)

    a. Max_1 would like very much $[_{CP}$ for $himself_1$ to win] .

    b.   * $John_1$ would like very much $[_{CP}$ for him_1 to leave] .

(20) (Huang 1982)

    a. $They_1$ prefer for each $other_1$ to come.

    b.   * $They_1$ prefer for $them_1$ to come.

- Subject of the infinitive is not a semantic or a syntactic argument of the matrix predicate, and the use of a SELF anaphor in the embedded clause should violate Condition A, because the embedded predicate is reflexive-marked but is not reflexive.

- Reinhart and Reuland: These are focus logophors, not anaphors.

- Evidence: reflexive is marked (relative to Control), and the judgements are fragile and change with context (the single question mark is their judgement):

(21)   ? She_1 has recently requested for her_1 to be allowed to attend the meeting.

- I find (21) to be sharply ungrammatical in a neutral context; so do other speakers I have consulted.

- The *pronoun* is what requires special focus, not the anaphor.

- But special focus makes illegitimate pronouns okay in general:

(22)   Everyone hates Mary. I hate her, her boss hates her, Sue hates her, even **she**$_1$ hates her_1.

- Reflexive is marked compared to control, but so is a finite clause:

(23) $They_1$ would prefer that $they_1$ come.

- Markedness is therefore control vs. non-control, not PRO vs. reflexive.

- In addition, true focus logophors, as Reinhart and Reuland show, do not need a c-commanding antecedent:

(24) (RR27)

    a.   This letter was addressed only to myself.

    b.   Why should the state always take precedence over myself?

    c.   Bismarck's impulsiveness has, as so often, rebounded against himself.

- In a *for-to* infinitive, they require the same kind of focus tricks that they do in any argument position:

(25)   a.   The mob's backing makes it better only for MYSELF to win.

    b.   Why should it be better for the state to take precedence than for MYSELF to take precedence?

    c.   ? Bismarck's impulsiveness makes it tough for HIMSELF to recover, let alone his enemies.

- Sharp contrast between real focus logophors in the subject position of a *for-to* infinitive, which need special focus, and an anaphor bound by a higher argument, which does not.

- *For-to* infinitives, ECM, and gerund cases: Chomsky (1981) was correct to define the binding domain for a subject of a nonfinite clause as the next clause up.

3.3 Finite Clauses

(26) a. * He said that himself wanted a hamburger.

b. * We thought that ourselves were drunk.

(27) a. We didn't know what each other wanted.

b. The children thought that each other were helpful. (given as ungrammatical in Sung 1990, 73).

- Controversy over the status of these; see Lebeaux 1983, Chomsky 1986b, Woolford 1999.

- It is true that there is significant speaker variation, and variation by choice of lexical items:

(28) ?? The ushers whispered that each other should leave.

- *Self* anaphors: are morphologically non-nominative in English (Brame 1977, Koster 1978, Anderson 1982, Maling 1984);

- or, they cannot control agreement (Picallo 1985, Rizzi 1990, Woolford 1999).

- Conclude with Lebeaux (1983) that it is not the Binding Theory that rules out anaphors as subjects of embedded finite clauses (see also next section).

Important: *each other* is not in complementary distribution with a pronoun in this position:

(29) We didn't know what we wanted.

But it doesn't have any of the other properties of a logophor:

(30) *No long-distance antecedent:*

a. * Max and Sophie had thought that *The Times* had said that each other were guilty.

b. * We knew he would understand what each other wanted.

(31) a. Each had thought that *The Times* had said that the other was guilty.

b. Each of us knew he would understand what the other wanted.

(32) *No non-c-commanding or discourse antecedent:*

a. * The suspects' contradictory stories proved that each other were guilty.

b. * (Two conspirators plotting:) The police might think that each other are guilty.

Important Point: Non-complementarity between an anaphor and a pronoun is not sufficient to identify a logophor.

- Strategy 1: Only positions of complementary distribution should be covered by the Binding Theory.

- Strategy 2: Only anaphors that do not need local c-commanding antecedents should be excluded from coverage by the Binding Theory.

- Problem with strategy 1: non-uniform characterization of exceptional cases.

3.4 Finite Clauses in Other Languages

Large literature showing that numerous languages permit a local reflexive in embedded subject position; see in particular Yang 1983, Dalrymple 1993, Huang 2000.

(33) Mandarin Chinese

a. Xiaoming xiangxin ta ziji   neng kaoguo.
   Xiaoming believe   himself can   pass the exam
   'Xiaoming believes that he himself can pass the exam.' (Sung 1990, 73)

b. Zhangsan$_1$ shuo Xiaoming$_2$ xiangxin ta ziji$_{*1/2}$ neng kaoguo.

Zhangsan say Xiaoming believe himself can pass the exam

'Zhangsan said that Xiaoming believes that he himself (Xiaoming only) can pass the exam.' (Y. Tsai, p.c.)

(34) Korean

a. John$_i$-un [Mary$_j$-ka [caki-casin$_{*i/j}$-i ttokttokha-ta]-ko sayngkakha-n-ta]-ko

John-TOP Mary-NOM self-NOM be.smart-DECL-COMP think-PRES-DECL-COMP

malha-ess-ta.

tell-PAST-DECL

'John told that Mary thinks that she is smart.' (Sung 1990, 74)

b. Kutul$_i$-i [selo$_i$-ka ttokttokha-ta]-ko sayngkakha-n-ta.

they each.other-NOM be.smart-DECL-COMP think-PRES-DECL

'They think that each other are smart.' (Sung 1990, 74)

- Cross-linguistic generalization: anaphors can appear as embedded subjects.

- In that position they are still subject to a locality restriction.

- Locality cannot follow from co-argumenthood.

Important Point: Anaphors are not in complementary distribution with pronouns in embedded subject position:

(35) Xiaoming$_1$ xiangxin ta$_1$ neng kaoguo.

Xiaoming believe he can pass the exam

'Xiaoming$_1$ believes that he$_1$ can pass the exam.' (Chinese; Y. Tsai, p.c.)

But anaphors here are not logophors: still need local c-commanding antecedent.

- Note also that embedded subject position shows that conditions on anaphora are distinct from conditions on A-movement (and on Agree; see recent proposals of Chomsky's).

4 Contexts of Non-Complementarity

- According to the predicate-based theory, only arguments of predicates are true anaphors;

- Others do not fall under the Binding Conditions, and obey other constraints (constraints on logophoricity).

- Two of the contexts discussed by Reinhart and Reuland fit this characterization perfectly, as was shown by Pollard and Sag (1992):

(36) **Picture NPs** (RR8)

a. Lucie saw a picture of herself/her.

b. Max likes jokes about himself/him.

c. Spider-Man and Daredevil thought each other's/their pictures were too cheesy.

(37) a. Lucie told me to look at a picture of herself/her.

b. Max thinks that we like jokes about ?himself/him.

(38) **Coordinations**

a. Max boasted that the queen invited Lucie and himself/him for a drink. (RR26)

b. Each student$_1$ was confident that the teacher would criticize everyone but himself$_1$. (Pollard and Sag 1992, (8d))

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- The other context does not: prepositional phrases.

- No complementary distribution, but long-distance and non-c-commanding antecedents are not allowed (this was noted by Hestvik and Philip 2001; note also that this context was not included in the list of exempt anaphors in Pollard and Sag 1992):

(39) **Adjunct PPs** (RR7)
    a.   Max saw a gun near himself/him.
    b.   Lucie counted five tourists in the room apart from herself/her.

(40)   a.   Max thinks that you saw a gun near *himself/him.
    b.   Lucie said that Bill counted five tourists in the room apart from *herself/her. (unless herself is focused)

(41)   (RR59)
    a. Max_1 saw a ghost next to him_1/$himself_1$.
    b. Max_1 put the book next to him_1/$himself_1$.
    c. Max_1 pulled the cart toward him_1/$himself_1$.

(42)   a. Max_1 said that Mary saw a ghost next to him_1/*$himself_1$.
    b. Max_1 said that I put the book next to him_1/*$himself_1$.
    c. Max_1 told me to pull the cart toward him_1/*$himself_1$.

(43)   (Hestvik and Philip 2001, (2a–b))
    a.   Clinton's car carried a picture of himself on the roof.
    b. * Clinton's car backfired/collapsed/exploded behind himself.

- The predicate-based theory has the converse problem as well: contexts where logophors are allowed, but anaphors and pronouns *are* in complementary distribution:

(44)   a. Max_1 said that the Queen invited both Lucie and $himself_1$ for tea. (RR29c)
    b.   The Queen invited Lucie and myself to tea.
    c.   The $Queen_1$ invited both Max and $herself_1$ to our party. (RR30a)
    d. * The $Queen_1$ invited both Max and her_1 to our party. (RR30b)

- Coordinated NPs must be a context for logophors, because of (44a–b).

- But anaphors and pronouns are still in complementary distribution with a local antecedent (44c–d).

Complementary distribution and the need for or prohibition against a local c-commanding antecedent are distinct.

- Some occurrences of anaphors still need a local antecedent, even though they are not in complementary distribution with pronouns.

- The Binding Theory must be formulated in such a way that the distributions of anaphors and pronouns partially overlap.

5 A New and (Hopefully) Improved Binding Theory

- Predicate-based theory cannot deal with the above problems.

- However, the traditional theory also has problems:

1. Non-complementary distribution of pronouns and anaphors;

2. Exempt anaphors (logophors);

3. SE anaphors;

4. (Possibly) Verbal reflexives/reciprocals.

5.1 The Distribution of Pronouns and Anaphors

Complementary distribution:

1. Argument position within the same clause as the antecedent;

2. Subject of embedded non-finite clause;

3. Within an NP, where the noun has thematic arguments (even if not realized syntactically; see below):

(45)   a.   * Lucie$_1$ performed an operation on her$_1$. (RR55)
       b.   * Max$_1$ told a story about him$_1$. (RR54b)
       c.   Max$_1$ heard a story about him$_1$. (RR54a)

(46)   a.   The doctors performed yesterday's operations on each other.
       b.   Yesterday's operation on myself was a great success. (I must have been the surgeon)
       c.   * The patients applauded the operations on each other. (OK if they also performed the operations)
       d.   A show on childbirth showed one, very bloody, operation on Martha. Another show on tumors showed an even bloodier operation on her. Martha was relieved to find, though, that the tumor show's operation on her/*herself did not reveal her face.

Not in complementary distribution, but not a context for exempt anaphors:

1. Subject of embedded finite clause;

2. Within certain PPs.

Pronouns are not allowed, but anaphors are exempt:

1. Within a conjoined NP (where antecedent for pronoun is within the same clause).

5.1.1 Condition on Anaphors

(47)   **Binding Condition A:**
       An anaphor α must be bound within the minimal XP that dominates both α and a subject that is distinct from α. If there is no such XP, α must be bound within the matrix clause.

(48)   Subject =
       a.   Spec-IP, or
       b.   Subject of small clause or gerund.

How it works in the clausal domain:

(49) Arguments

    a.   [$_{IP}$ Lucie criticized herself] .

    b.   * Lucie said that [$_{IP}$ Max criticized herself] .

(50) PPs

    a.   [$_{IP}$ Max$_1$ saw a ghost next to himself$_1$] .

    b.   * Max$_1$ said that [$_{IP}$ Mary saw a ghost next to himself$_1$] .

(51) ECM

    a.   [$_{IP}$ Lucie expects herself to charm Bill] .

    b.   Lucie expects [$_{IP}$ Bill to charm himself/*herself] .

(52) Raising

    a.   [$_{IP}$ Lucie seems to herself *t* to be beyond suspicion] .

    b.   Lucie seems to me [$_{IP}$ *t* to have betrayed herself/*myself] .

(53) Gerunds

    a.   [$_{IP}$ Billy remembers himself bringing the wine coolers] .

    b.   [$_{IP}$ Himself having brought the wine coolers, Billy proceeded to mingle] .

(54) *For-to* infinitives

    a.   [$_{IP}$ Max would like very much for himself to win] .

    b.   Max would like very much for [$_{IP}$ Mary to embarrass herself/*himself] .

(55) Embedded finite clauses

    a.   [$_{IP}$ We didn't know what each other wanted] .

    b.   * We didn't know what [$_{IP}$ Mary gave each other] .

Matrix clause as default:

(56)   a.   * For each other to leave would bother Frank and Martha.

    b.   * What each other want is a mystery to Frank and Martha.

    c.   * What do each other want?

    d.   * There arrived himself.

    e.   * What?! Myself worry?!

5.1.2 Condition on Pronouns

Condition on processing of discourse anaphora (cf. Branco 2001):

(57) Discourse sets:
    In addition to the total set U of referents in the discourse model, keep track of sentential discourse sets as follows:

    a.   The local set A consisting of the referents in the phrase currently being processed;

    b.   The non-local set B;

    c.   The non-local set C.

(58) A referent R is moved from the local set A to:

    a.   the non-local set B, at a finite clause boundary;

    b.   the non-local set B, at a predicate that does not assign a theta role to R;

    c.   the non-local set C, at the right edge of an XP (e.g., NP) that contains R.

(59) **Condition on Coreference B:**
A pronoun must be distinct in reference from all referents in the local discourse set A.
(The *anaphoric potential* of a pronoun is U–A.)

Point at which *Frank* is moved to non-local set B or C indicated by "[B]" or "[C]":

(60) Arguments
    a.   * Frank criticized him. (never)
    b.   Frank said <u>that</u> [B] Max criticized him.

(61) PPs
    a.   Frank saw a ghost <u>next to</u> [B] him.
    b.   * Mary saw Frank next to him. (never)
    c.   * Frank introduced Mary to him. (never)

(62) ECM
    a.   * Frank expects him to <u>charm</u> [B] Lucie.
    b.   Frank expects Lucie to <u>charm</u> [B] him.

(63) Raising
    a.   * Frank seems to him *t* to be beyond suspicion. (never)
    b.   * Frank seems to me *t* to have betrayed him. (never)
    c.   I seem to Frank *t* to have <u>betrayed</u> [B] him.

(64) Gerunds
    a.   * Frank remembers him <u>bringing</u> [B] the wine coolers.
    b.   * Him having brought the wine coolers, Frank proceeded to mingle. (never)
    c.   Bill having <u>seen</u> [B] him enter, Frank ducked into the kitchen.
    d.   [Frank having brought the wine coolers] [C], he proceeded to mingle.

(65) *For-to* infinitives
    a.   * Frank would like very much for him to <u>win</u> [B].
    b.   Frank would like very much for Mary to <u>embarrass</u> [B] him.

(66) Embedded finite clauses
    a.   Frank didn't know <u>what</u> [B] he wanted.
    b.   Frank said <u>that</u> [B] him, Mary likes.

(67) Conjoined NPs
    a.   * Frank invited the Queen and him to tea. (never)
    b.   [_{NP} Frank and the Queen] [C] both promoted him for the job.

(68) Inside NPs
    a.   [_{NP} Frank's mother] [C] loves him.
    b.   Frank loves [B][_{NP} his <u>mother</u>] .
    c.   [_{NP} Yesterday's operation on him] was a big success. (* if Frank is the surgeon; implicit arguments are activated in the discourse set)
    d.   * Frank performed yesterday's operation on him. (never; Frank is assigned theta-role by *operation*)
    e.   Frank finally found out about tomorrow's <u>operation</u> [B] on him.

- Do not need c-command.

- Places where anaphors and pronouns overlap:

1. inside certain PPs (ones that do not assign theta role to subject);

2. subject of embedded finite clause.

(69) **Condition on Coreference C** (tentative):
An R-expression must be distinct in reference from all referents in discourse sets A and B.
(The *anaphoric potential* of an R-expression is U–[A+B]; in the sentential domain, only those in set C.)

- We can't do Condition A in the same way (requiring coreference in set A), or we would still predict complete complementarity (embedded subject of finite clause, object of preposition).

- In addition, treating B and C as discourse/processing constraints, but A as a grammatical condition, predicts that A might diverge from B and C in acquisition and processing.

- Seems to be true for Condition B: children have trouble with pronouns, but not with reflexives (see Grodzinsky and Reinhart 1993 and references there.)

- However, it looks like children have no problem with Condition C (see Stephen Crain and Rosalind Thornton, *Investigations in Universal Grammar*); perhaps it is best to formulate it as an innate grammatical principle, like Condition A:

(70) **Binding Condition C:**
An R-expression may not be bound.

- Then we can simplify the definitions above; only need local set A and one non-local set.

5.1.3 Against the Accessible Subject Alternative

E.g., Huang 1982, ch.5:

(71) Governing Category (H337)
α is a governing category for β iff α is the minimal category containing β[, a governor of β,] and a SUBJECT which, if β is an anaphor, is accessible to β.

- Agr counts as accessible subject for a pronoun but not for an anaphor;

- So governing category for anaphor expands to next higher clause, but GC for pronoun does not.

- Permits overlap in embedded subject position (and in NPs, given some other hypotheses).

- Does not account for subjects of non-finite clauses (pronoun should be allowed);

- Does not account for PPs:

(72) a. Frank$_1$ saw a snake beside him$_1$.
b. * Frank saw a snake$_1$ beside it$_1$.

5.1.4 Against the Two-Tiered Alternative

Sturgeon 2003 (incorporating ideas of Dalrymple 1993):

(73) Binding Domain (Sturgeon (22)):
A (sic) binding domain for α is the most deeply embedded Complete Functional Complex containing α if the binding requirements of α can be met within that domain. Otherwise, the binding domain of α is the most deeply embedded IP containing α.

(74) Complete Functional Complex (Sturgeon (23), modified from Chomsky 1986a, 1986b):
An XP in which all the theta-roles compatible with a lexical head are assigned in A-positions.

- Pronouns just need to be free within minimal CFC (co-arguments, basically);

- Anaphors have to be bound within the minimal CFC, *unless* they're the highest argument within the CFC;

- Then they have to be bound within the next IP.

Comes very close to getting the facts right, but stumbles with subjects of nonfinite clauses:

(75)   * Frank$_1$ would like very much for [$_{\text{CFC}}$ him$_1$ to win] .

- If we included finite T in the definition of CFC, we would lose the account of the PP contrast:

(76)   a.   Frank$_1$ saw a snake beside him$_1$/himself$_1$.
        b.   * Frank saw a snake$_1$ beside it$_1$.

- Also doesn't account for why *him* cannot corefer with the surgeon in *yesterday's operation on him*.

- More promising to separate Conditions A and B, and have Condition B be about processing and discourse.

5.2   Exempt Anaphors

Pollard and Sag (1992): an anaphor that is an argument of an NP is exempt from the Binding Conditions when it is Spec-NP or when there is no possessor in Spec-NP:

(77)   a.   [Kim and Sandy]$_1$ knew that *Computational Ichthyology* had rejected each other$_1$'s papers. (Pollard and Sag 1992, (7i))
        b.   John$_1$'s campaign requires that pictures of himself$_1$ be placed all over town. (Pollard and Sag 1992, (7g))

Pollard and Sag say that if there is a distinct possessor as Spec-NP, an anaphor is subject to the Binding Conditions:

(78)   (Pollard and Sag 1992, (12a–b))
        a.   Their$_1$ agreement with each other$_1$ was celebrated by all.
        b.   * Italy's agreements with each other$_1$ angered [Iraq and Iran]$_1$.

Contra Pollard and Sag, a large experimental literature shows that such anaphors can take an NP besides the possessor as antecedent (see Runner and Kaiser 2005 and the references there); these are my judgments:

(79)   a.   Iraq and Iran were angry at Italy's agreements with each other.
        b.   John's campaign requires that the newspaper's pictures of himself be placed all over town.

So anaphors inside picture NPs are just exempt, period.

- Anaphors are also exempt inside a coordinated NP, as was shown above; this seems to fall under the same generalization (inside NP).

- Anaphors are also exempt as hanging topics:

(i)   John$_1$ had worked hard to make sure that the twins would be well taken care of. As for himself$_1$, it was relatively unlikely that anyone would be interested in hiring an ex-convict who had little in the way of professional skills. (Pollard and Sag 1992, (8a))

- Anaphors in the clausal domain are never exempt (unless they are focused, or in particular literary styles; see Pollard and Sag 1992):

(80)   a.   * For each other to leave would bother Frank and Martha.

         b.   * What each other want is a mystery to Frank and Martha.

         c.   * What do each other want?

- Spec-NP is exempt, but Spec-IP is not.

- (Note that the embedded subject data are problematic for Pollard and Sag's own account of exempt anaphors.)

- An anaphor in IP expands its domain to the next higher IP if there is no possibility of binding in the local IP, but an anaphor in NP does not expand its domain, it is simply exempt:

(81)   a.   John was distressed to find a photograph of a sculpture of himself in the Times.

         b.   John was distressed to find Mary's photograph of a sculpture of himself in the Times.

- What about certain nouns with argument structure, from above?

(82)   a.   The doctors performed yesterday's operations on each other.

         b.   Yesterday's operation on myself was a great success. (I must have been the surgeon)

         c.   * The patients applauded the operations on each other. (OK if they also performed the operations)

         d.   A show on childbirth showed one, very bloody, operation on Martha. Another show on tumors showed an even bloodier operation on her. Martha was relieved to find, though, that the tumor show's operation on her/*herself did not reveal her face.

Difference seems to be:

1. NPs that do not have an external argument (picture-NPs, conjoined NPs), versus

2. NPs that do, even if that external argument is not realized syntactically.

(83)   **The Anaphor Exemption Condition:**
      Anaphors are exempt from Binding Condition A when:
      a.   They appear within NP;
      b.   They serve only a discourse function (hanging topics).

(84)   Principle for interpreting exempt anaphors:
      a.   If the anaphor is unambiguously an argument of an N that has a distinct thematic external argument, interpret the anaphor as referring to that external argument;
      b.   Otherwise, interpret the anaphor as a logophor (point of view, etc.).

Anaphors as possessors are ambiguous between different thematic (or non-thematic) roles:

(85)   a.   The patients were relieved that each other's operations had gone so well.

         b.   The surgeons were relieved that each other's operations had gone so well.

         c.   The patients were quite relieved when I informed them that each other's operations had gone so well.

- Remaining problem: cross-linguistic variation (Czech apparently lacks exempt anaphors; Sturgeon 2003);

- Languages with reflexive possessive pronouns.

6 SE Anaphors

- Veraart (1996) shows that Dutch *zich* and *zichzelf* do not actually fit Reinhart and Reuland's characterization.

- See in particular ditransitives, which were crucial evidence for the predicate-based theory:

(86) (RR21)

    a. * Henk_1 wees mij aan zich_1 toe.
          Henk assigned me to SE

    b. Henk_1 wees zichzelf_1 aan zich_1 toe.
          Henk assigned himself to SE

    c. * Henk_1 wees zich_1 aan mij toe.
          Henk assigned SE to me

    d. Henk_1 wees zich_1 aan zichzelf_1 toe.
          Henk assigned SE to himself

    e. ? Henk_1 wees zichzelf_1 aan zichzelf_1 toe.
          Henk assigned himself to himself

Veraart shows that (86a,c) are grammatical if something other than *zich* is contrastively focused:

(87) Veraart (3a,c)

    a. HENK_1 wees mij aan zich_1 toe, niet PAUL.
          Henk assigned me to SE not Paul

    b. Henk_1 wees zich_1 aan MIJ toe, niet aan PAUL.
          Henk assigned SE to me , not to Paul

- Relevant factors: whether reflexivity is presupposed or asserted; where focus is in the sentence; phonological factors, ...

- Cole, Hermon, and Huang (2001): Long-distance reflexives (SE anaphors) divide into three types:

1. Ones that have the distribution of pronouns when used long-distance;

2. Ones that act like bound variables (require c-commanding antecedent, require sloppy readings in ellipsis);

3. Ones that are primarily bound variables, but can be used as free pronouns in certain conditions (Icelandic *sig*, Chinese *ziji*).

- If this is what SE anaphors are, no problem capturing it in the traditional binding theory.

- (Devil is in the details, of course; have to specify that some forms need to be bound, but can't be bound locally.)

- I conclude that SE anaphors do not support the predicate-based theory against the traditional theory.

7 Verbal Reflexives and Reciprocals

Might think that morphological reflexives/reciprocals fit more naturally into the predicate-based theory:

(88) N-komuton-**asi**-n nt-ahsusuwon.
     1-rob.of-Refl-N   1-hat
     'I stole my hat from myself.' (Passamaquoddy; Leavitt 1996)

- The restriction to reflexivizing or reciprocalizing co-arguments would follow just from the local, cyclic nature of verbal morphology; don't need a special restriction on reflexivizing morphology.

- Locality restrictions are even *stricter* than what the predicate-based theory predicts:

(89) Japanese

    a.   Taroo-ga Sachie-ni hon-o   age-ta.
            T.-Nom S.-Dat   book-Acc give-Past
            'Taroo gave Sachie a book.'

    b.   Taroo-to Sachie-ga hon-o   age-**at**-ta.
            T.-and   S.-Nom   book-Acc give-Recip-Past
            'Taroo and Sachie gave each other books.'

    c.   * Taroo-ga dorei-ni/o   age-**at**-ta.
            T.-Nom   slave-Dat/Acc give-Recip-Past
            'Taroo gave the slaves to each other.'

    d.   * Dorei-ga   Taroo-ni age-**at**-ta.
            slave-Nom T.-Dat   give-Recip-Past
            'The slaves gave each other to Taroo.'

- No such restriction on the nominal reciprocal (Ishii 1989);

- Numerous other languages behave the same; see Keenan and Razafimamonjy (2004) on Malagasy and Bruening (2004) on several other languages.

- Restriction does not follow from the predicate-based theory, but it does follow from a syntactic approach to verbal word formation (Bruening 2004).

8 Conclusion

- Insurmountable problems with the predicate-based theory;

- Seems to be correct that the defining property of an anaphor is the need for a local antecedent.

- Proposed a reworking of the traditional theory that puts Condition B in a different module of grammar.

- Further implication: Obligatorily controlled PRO is a null anaphor?

References

Anderson, Stephen R. (1982), "Types of Dependency in Anaphors: Icelandic (and Other) Reflexives." *Journal of Linguistic Research* 2: 1–22.

Beck, Sigrid (2001), "Reciprocals are Definites." *Natural Language Semantics* 9: 69–138.

Belletti, Adriana (1983), "On the Anaphoric Status of the Reciprocal Construction in Italian." *The Linguistic Review* 2: 101–138.

Brame, Michael (1977), "Alternatives to the Tensed S and Specified Subject Conditions." *Linguistics and Philosophy* 1: 381–411.

Branco, António (2001), "Without an Index: A Lexicalist Account of Binding Theory." In Frank van Eynde, Lars Hellan, and Dorothee Beermann, eds., *Proceedings of the 8th International HPSG Conference*, Stanford: CSLI.

Bruening, Benjamin (2004), "Verbal Reciprocals." Ms., University of Delaware.

Chomsky, Noam (1981), *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam (1986a), *Barriers*. Cambridge, MA: MIT Press.

Chomsky, Noam (1986b), *Knowledge of Language: Its Nature, Origin, and Use*. New York: Praeger.

Cole, Peter, Gabriella Hermon, and C.-T. James Huang (2001), "Long-Distance Reflexives: The State of the Art." In Peter Cole, Gabriella Hermon, and C.-T. James Huang, eds., *Long-Distance Reflexives*, San Diego: Academic Press, vol. 33 of *Syntax and Semantics*, pp. xiii–xlvii.

Dalrymple, Mary (1993), *The Syntax of Anaphoric Binding*. Stanford: CSLI.

Dalrymple, Mary, Makoto Kanazawa, Yookyung Kim, Sam Mchombo, and Stanley Peters (1998), "Reciprocal Expressions and the Concept of Reciprocity." *Linguistics and Philosophy* 21: 159–210.

Dimitriadis, Alexis (1999), "Reconciling Dependent Plurals with *Each Other*." In Tanya Matthews and Devon Strolovitch, eds., *Proceedings of Semantics and Linguistic Theory IX*, Ithaca: CLC Publications.

Everaert, Martin (1991), "Contextual Determination of the Anaphor/Pronominal Distinction." In Jan Koster and Eric Reuland, eds., *Long Distance Anaphora*, Cambridge: Cambridge University Press, pp. xx–yy.

Fiengo, Robert, and Howard Lasnik (1973), "The Logical Structure of Reciprocal Sentences in English." *Foundations of Language* 9: 447–468.

Grodzinsky, Yosef, and Tanya Reinhart (1993), "The Innateness of Binding and Coreference." *Linguistic Inquiry* 24: 69–101.

Heim, Irene, Howard Lasnik, and Robert May (1991), "Reciprocity and Plurality." *Linguistic Inquiry* 22: 63–101.

Hestvik, Arild, and William Philip (2001), "Syntactic Vs. Logophoric Binding: Evidence from Norwegian Child Language." In Peter Cole, Gabriella Hermon, and C.-T. James Huang, eds., *Long-Distance Reflexives*, San Diego: Academic Press, vol. 33 of *Syntax and Semantics*, pp. 119–139.

Higginbotham, James (1980), "Reciprocal Interpretaton." *Journal of Linguistic Research* 1: 97–117.

Huang, C.-T. James (1982), *Logical Relations in Chinese and the Theory of Grammar*. Ph.D. thesis, Massachusetts Institute of Technology. Distributed by MIT Working Papers in Linguistics, Cambridge, Mass.

Huang, Yan (2000), *Anaphora*. New York: Oxford University Press.

Ishii, Yasuo (1989), "Reciprocal Predicates in Japanese." In *Proceedings of ESCOL '89*, pp. 150–161.

Keenan, Edward L., and Jean-Paulin Razafimamonjy (2004), "Reciprocals in Malagasy." *Oceanic Linguistics* 43: xx–yy.

Koster, Jan (1978), *Locality Principles in Syntax*. Dordrecht: Foris.

Langendoen, D. Terence (1978), "The Logic of Reciprocity." *Linguistic Inquiry* 9: 177–197.

Leavitt, Robert M. (1996), *Passamaquoddy-Maliseet*. München: Lincom Europa.

Lebeaux, David (1983), "A Distributional Difference between Reciprocals and Reflexives." *Linguistic Inquiry* 14: 723–730.

Maling, Joan (1984), "Non-Clause-Bounded Reflexives in Modern Icelandic." *Linguistics and Philosophy* 7: 211–241.

Manzini, Rita, and Kenneth Wexler (1987), "Parameters, Binding Theory, and Learnability." *Linguistic Inquiry* 18: 413–444.

Picallo, M. Carme (1985), *Opaque Domains*. Ph.D. thesis, The Graduate Center, City University of New York.

Pollard, Carl, and Ivan Sag (1992), "Anaphors in English and the Scope of the Binding Theory." *Linguistic Inquiry* 23: 261–303.

Reinhart, Tanya, and Eric Reuland (1993), "Reflexivity." *Linguistic Inquiry* 24: 657–720.

Rizzi, Luigi (1990), "On the Anaphor-Agreement Effect." *Rivista di Linguistica* 2: 27–42.

Runner, Jeffrey T., and Elsi Kaiser (2005), "Binding in Picture Noun Phrases: Implications for Binding Theory." In Stefan Müller, ed., *Proceedings of the HPSG05 Conference*, Stanford: CSLI, pp. 594–613.

Schein, Barry (2001), "Adverbial, Descriptive Reciprocals." In Rachel Hastings, Brendan Jackson, and Zsofia Zvolenszky, eds., *Proceedings of Semantics and Linguistic Theory XI*, Ithaca: CLC Publications.

Sturgeon, Anne (2003), "Two-Tiered Binding Domain Formation: Evidence from Czech." In ??, ed., *Proceedings of the 11th Annual Formal Approaches to Slavic Linguistics*, Michigan Slavic Publications, pp. 495–514.

Sung, Li-May (1990), *Universals of Reflexives*. Ph.D. thesis, University of Illinois at Urbana-Champaign.

Veraart, Fleur (1996), *On the Distribution of Dutch Reflexives*. Master's thesis, Massachusetts Institute of Technology.

Woolford, Ellen (1999), "More on the Anaphor Agreement Effect." *Linguistic Inquiry* 30: 257–287.

Yang, Dong-Whee (1983), "The Extended Binding Theory of Anaphors." *Language Research* 19: 169–192.