On the Semantics of Domain Adjectives in English

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Introduction

As Bolinger (1967) observed, certain adjectives that are ambiguous in prenominal position, are *disambiguated* when they appear in postnominal position:

(1) Suppose that Capella is usually visible, but tonight is obscured by clouds:
   a. The stars *visible* include Capella ⇒ False
   (Postnominal : Temporal)
   b. The *visible* stars include Capella ⇒ True
   (Prenominal: Ambiguous)

Let us call these adjectives *Domain Adjectives* (DAs).

Research questions

Q1: What restrictions are there on DAs in English?
   a. Which adjectives define the class of DAs, and why?
   b. What determiners can co-occur with prenominal and postnominal DAs, and why?

Q2: How can we provide an explicit compositional semantics for DAs in prenominal and postnominal positions that captures the restrictions in Q1?

Reduced relative clause analysis

The RRCA is an elegant and intuitive approach to the Bolinger contrast (Larson 1998, 2000; Larson & Marusic 2004; Larson & Takahasi 2007; Cinque, 2010)

Syntax: DAs merged *postnominally* as elided RRCs

(2) a. John met every candidate *possible*
   b. * John met every candidate that was *possible*
   c. John met every candidate ~~that it was~~ *possible* ~~for him to meet~~

(3) $[_{DP}\ [_{D'}$ every $[_{DP}\ [_{NP}$ candidate $]\ [_{D'}\ t\ [_{CP}$ . . . possible . . . $]]]]]$

Stipulate that *prenominal* DAs are derived by movement above NP; committed to a non-standard analysis of RCs.

Semantics: DP vs. NP modification

(4) $[_{\text{DP}}\ D\ \alpha\ [_{\text{NP}}\ \Gamma e.\ \beta\ N\ ]\ \alpha\ ]$, where
α = DP modifier and β = NP modifier

While NP modifiers are interpreted as *individual-level* via the Generic operator Γ, DP modifiers escape Γ and are interpreted as *stage level*. DAs are claimed to be DP modifiers.

Issues: Not only are the questions in Q1 and Q2 are still open, but the RRCA makes several predictions, some of which may be falsified.

Adjectival restrictions

Fact 1: Restriction. The class of DAs is highly restricted.

John bought every book . . .
I. {*possible, visible, conceivable, imaginable, accessible* }
II. {~~*readable, sellable, presentable, desirable, burnable*~~ }

Pilot study: 8 items; 24 subjects on Amazon's Mechanical Turk (AMT); 7-point acceptability (7 = highest).

(5) Carla went on the worst . . .

a.	date possible	6.19 (.19)	} $d = .43$
b.	possible date	6.62 (.11)	
c.	date comprehensible	4.88 (.30)	} $d = 1.02$
d.	comprehensible date	5.90 (.19)	

Crucial interaction: Effect of position weaker for items from Class I (.42) than Class II (1.02), $t = 2.72, p < 0.05$; while this difference between *a*/*b* conditions not significant, *c* was rated worse than every other condition.
Issue: DAS cannot be uniformly paraphrased as elided RRCs, cf. B. Schwarz (2005); Blöhdorn (2009).

(6) The captain sailed every passage possible | navigable
   a. it was possible for him to sail |
   * it was navigable for him to sail
   b. * that was possible | that was navigable

Fact 2: Complexity. Postnominal DAs are intolerant to morphological complexity beyond the apparent *-able* affixation without additional clausal material.

(7) The astronomer noted every
   a. *invisible* visible star
   b. visible star *invisible* *(without a telescope)

Determiner restrictions

Fact 3: Strong determiners. DAs only licensed by strong determiners.
Pilot study: 66 subjects on AMT; task as before.

(8) The committee interviewed

*few	1.71	(.42)
*the	2.33	(.53)
*a few	2.57	(.78)
*a	2.62	(.46)
*many	2.78	(.64)
each	5.17	(.65)
best	6.40	(.31)
every	6.75	(.25)

} candidate(s) possible.

(9) DAs are banned from existential-*there* contexts
   a. * There was {each | every | the best | the only} (possible) candidate(s) (possible) . . .
   b. There was {a | the | some | few} (possible) candidate(s) (*possible) . . .

Lexical semantics

Exhaustification: DAs *exhaustify* the domain of objects for all accessible situations to the domain that is given by the resource situation s_r. DAs non-compositional and listed separately in lexicon (Aronoff, 1976; Dowty, 1979)

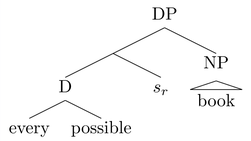
Let $\textsc{acc}^{\alpha}(s)(s')$ be an accessibility relation of type α between situations s and s'.

$$[\![EXH(P)(s)]\!] = \lambda P_{\langle e,\langle s,t\rangle\rangle}.\lambda s.\forall s'.\textsc{acc}^{\alpha}(s)(s'): \neg\exists y.P(y)(s') \wedge \neg P(y)(s)$$

☞ $[\![EXH(book)(s_r)]\!]$ means that every situation s' accessible from the resource situation s_r has same book-objects as s_r.
☞ Different adjectives specify different accessibility relations α on ACC e.g., *visibility, imaginability, etc.*

Syntactic licensing

DAs are licensed by determiners with a resource situation pronoun in the sense of F. Schwarz (2009), a.o.



- Akin to particles like *up* as in Keysar & Roeper's (1992) treatment of particle verb constructions.
- Adjoin directly to D
- Bare, acategorical elements
- Presumed to lack the phrase structure for morphological or clausal complexity
- Congruent with B. Schwarz's (2005) proposal for modal superlatives

Compositional semantics

Step 1: Generalize Chung & Ladusaw's mode of composition *Restrict* and intensionalize the first argument to $\mathfrak{R}_s$.

(10) $\text{Restrict}(\lambda y.\lambda x.\lambda e.[feed(y)(x)(e)], dog)$
$= \lambda y.\lambda x.\lambda e.[feed(y)(x)(e) \wedge dog(y)]$

$\mathfrak{R}_s : \langle s,\langle\alpha,\langle\beta,\tau\rangle\rangle\rangle \oplus \langle\beta,\tau\rangle \mapsto \langle s,\langle\alpha,\langle\beta,\tau\rangle\rangle\rangle$,
for $\alpha,\beta \in TT$; $\tau \in \{t,\langle s,t\rangle\}$

Step 2: Combine the strong determiner with the DA possible. Let types $\alpha = \beta = \langle e,\langle s,t\rangle\rangle$ and $\tau = \langle s,t\rangle$.
$[\![every \oplus possible]\!] = \mathfrak{R}_s(\lambda s.\lambda P_\alpha.\lambda Q_\beta.\lambda s''.\forall x : [P(x)(s)](\exists s' \leq s'' : Q(x)(s')),\ \lambda P_\beta.\lambda s.EXH(P)(s))$
$= \lambda s.\lambda P_\alpha.\lambda Q_\beta.\lambda s''.\forall x : EXH(P)(s) \wedge [P(x)(s)](\exists s' \leq s'' : Q(x)(s'))$

Step 3: Feed the resource situation s_r to the complex D.
$[\![every\ possible\ s_r]\!] = [\lambda s.\lambda P_\alpha.\lambda Q_\beta.\lambda s''.\forall x : EXH(P)(s) \wedge [P(x)(s)](\exists s' \leq s'' : Q(x)(s'))](s_r)$
$= \lambda P_\alpha.\lambda Q_\beta.\lambda s''.\forall x : EXH(P)(s_r) \wedge [P(x)(s_r)](\exists s' \leq s'' : Q(x)(s'))$

Step 4: Saturate the restrictor with the NP book.
$[\![ev.\ poss.\ s_r\ book]\!] = [\lambda P_\alpha.\lambda Q_\beta.\lambda s''.\forall x : EXH(P)(s_r) \wedge [P(x)(s_r)](\exists s' \leq s'' : Q(x)(s'))](\lambda x.\lambda s.book(x)(s))$
$= \lambda Q_\beta.\lambda s''.\forall x : EXH(book)(s_r) \wedge [book(x)(s_r)](\exists s' \leq s'' : Q(x)(s'))$
$\rightsquigarrow$ restriction to books that are accessible from the resource situation s_r; cannot consider books outside of the specific domain provided by the actual situation.

Linear order

Option 1: Movement. Cf. Larson (2000)
- Merge DAs as adjuncts to NP, but must adjoin to D for composition
- Movement may be
  - Covert movement: postnominal
  - Overt movement: prenominal

☞ Movement no longer stipulated

Option 2: Linearization. Cf. Bobaljik (2002)
- Merge DAs as adjuncts to D
- Acategorical elements may exploit gap in linearization algorithm
  - Immediate linearization: prenominal
  - Postponed linearization: postnominal - at end of DP phase boundary.

☞ Natural relation between DA and D licenser

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