

NPI licensing in English and Vietnamese: A comparative analysis

Tue Trinh

Leibniz-ZAS Berlin

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Grammar and Logic

Grammar separates well-formed from ill-formed sentences.

- (1) a. I know what John said before he departed
- b. #I know what John departed after he said

Logic separates valid from invalid inferences.

- (2) a. every student smokes and every student drinks
 every student smokes and drinks
- b. some student smokes and some student drinks
 ✗ some student smokes and drinks

The Logic–Grammar Interface

A plausible working hypothesis is that logic is encapsulated from grammar as a separate module (Chomsky 1957).

- (3) a. colorless green ideas sleep furiously
b. #furiously sleep ideas green colorless

The Logic–Grammar Interface

But there are grammatical phenomena which seem to be explainable in terms of logical properties of the expressions involved.

- (4) a. Every student except John came to the party
- b. #Some student except John came to the party

- (5) a. at least two students came to the party
- b. #at least zero students came to the party

cf. von Stechow (1993), Gajewski (2008, 2013), Hirsch (2016), Haida and Trinh (2020)

Distribution of NPIs

NPIs in English: **any NP**, **ever**,...

- (6) a. no one is writing any book on Vietnamese
b. #John is writing any book on Vietnamese

- (7) a. few people ever visited Iceland
b. #many people ever visited Iceland

Distribution of NPIs

NPIs in Vietnamese: **NP nào, bao giờ**,...

- (8) a. không ai đọc quyển sách nào
no one read any book
b. #Nam đọc quyển sách nào
Nam read any book
- (9) a. ít sinh viên nào đọc sách bao giờ
few students read books ever
b. #nhiều sinh viên đọc sách bao giờ
many students read books ever

First attempt: DE functions

- (10) DE-ness Condition
NPIs must be inside the argument of a **downward entailing** (DE) function
- (11) A function f is DE iff
for all x, y such that $x \Rightarrow y$, $f(y) \Rightarrow f(x)$

$$\frac{x \Rightarrow y}{f(y) \Rightarrow f(x)}$$

cf. Fauconnier (1975), Ladusaw (1979)

Cross-categorial \Rightarrow

- (12) a. If x, y are sets, then $x \Rightarrow y$ iff $x \subseteq y$
b. If x, y are truth values, then $x \Rightarrow y$ iff $x = 0$ or $y = 1$
- (13) a. run fast \Rightarrow run
b. John talked to Mary and Sue \Rightarrow John talked to Mary

stronger meaning \Rightarrow weaker meaning

Sentences as function–argument structures

(14) John read a book

- | | | |
|----|---------------------------|------------------------------|
| a. | [John _____](read a book) | = [John <u>read a book</u>] |
| b. | [_____ read a book](John) | = [<u>John</u> read a book] |
| c. | [John read _____](a book) | = [John read <u>a book</u>] |
| d. | [John _____ a book](read) | = [John <u>read</u> a book] |

cf. Frege (1879, 1884, 1923)

many vs. few

- (15) run fast \Rightarrow run
~~X~~ many students run \Rightarrow many students run fast
- (16) run fast \Rightarrow run
few students run \Rightarrow few students run fast
- (17) a. #many students ever run
b. few students ever run
- (18) a. #nhiều sinh viên chạy bao giờ
many students run ever
b. ít sinh viên nào chạy bao giờ
few students run ever

Exception to DE-ness Condition: ONLY

(19) only John ever reads books

(20) DE-ness Condition

NPIs must be in the scope (i.e. the argument) of a DE function

[ONLY NP ___] is not DE

(21) drinks espresso \Rightarrow drinks coffee

~~X~~ only John drinks coffee \Rightarrow only John drinks espresso

Presupposition of ONLY

- (22) [ONLY NP VP] is defined only if [NP VP] is true
when defined, [ONLY NP VP] is true iff $\neg\exists A: A \neq \text{NP} \ \& \ A \ \text{VP is true}$
- (23) [only John drinks espresso] is defined only if John drinks espresso
when defined, [only John drinks espresso] is true iff no one else drinks espresso

cf. Horn (1969)

DE vs Strawson-DE

- (24) A function f is DE iff
for all x, y such that $x \Rightarrow y$, $f(y) \Rightarrow f(x)$

$$\frac{x \Rightarrow y}{f(y) \Rightarrow f(x)}$$

- (25) A function f is Strawson-DE iff
for all x, y such that $x \Rightarrow y$ and $f(x)$ is defined, $f(y) \Rightarrow f(x)$

$$\frac{x \Rightarrow y \quad f(x) \text{ is defined}}{f(y) \Rightarrow f(x)}$$

Note that if f is DE then f is Strawson-DE but not vice versa!

Asher (1987), Linebarger (1987)

Second attempt: Strawson-DEness

(26) Strawson-DEness Condition

NPIs must be inside the argument of a Strawson-DE function

(27) drinks espresso \Rightarrow drinks coffee

John drinks espresso

only John drinks coffee \Rightarrow only John drinks espresso

Since [only John ___] is Strawson-DE, NPIs can occur in its scope.

(28) only John ever reads books

cf. von Stechow (1999)

ONLY: English vs Vietnamese

ONLY does not license NPIs in Vietnamese!

- (29) a. only John ever reads books
b. #mỗi John đọc sách bao giờ
only John read books ever

- (30) Hypothesis
- a. NPIs in Vietnamese must be inside the argument of a DE function
 - b. NPIs in English must be inside the argument of a Strawson-DE function

EVERY

(31) [EVERY NP VP] is defined only if there are NPs
when defined, [every NP VP] is true iff $NP \subseteq VP$

(32) student who doesn't run \Rightarrow student
~~X~~ every student runs \Rightarrow every student with wings run runs

(33) student who doesn't run \Rightarrow student
there is a student with wings
every student runs \Rightarrow every student with wings runs

[EVERY _____ VP] is not DE but is Strawson-DE

Strawson (1952), Diesing (1990, 1992)

EVERY: English vs Vietnamese

Prediction: EVERY licenses NPIs in its NP argument in English but not in Vietnamese

- (34) a. every student who ever reads books passed the exam
b. #tất cả những sinh viên đọc sách bao giờ đều qua được
every student who read books ever passed
bài thi
the exam
c. tất cả những sinh viên đọc sách tuần trước đều qua được
every student who read books last week passed
bài thi
the exam

Adversatives

(35) John regrets ever drinking espresso

(36) [x regret p] is defined only if p is true
when defined, [x regret p] is true iff x wants $\neg p$

(37) drinking espresso \Rightarrow drinking coffee

John drank espresso

John regrets drinking coffee \Rightarrow John regrets drinking espresso

[NP regrets ___] is not DE, but is Strawson-DE

Ladusaw (1980)

Adversatives: English vs Vietnamese

Prediction: Adversatives license NPIs in English but not in Vietnamese

- (38) a. John regrets ever drinking coffee
b. #John hồi hận là đã uống cà-phê bao giờ
John regrets drinking coffee ever

Antecedent of conditionals

[if ___ then q] is not DE, but Strawson-DE

- (39) I win the lottery and break my leg \Rightarrow I win the lottery
~~X~~ if I win the lottery, i will be happy \Rightarrow if I win the lottery and break my leg, I will be happy
- (40) I win the lottery and break my leg \Rightarrow I win the lottery
If I win the lottery, I will be happy
winning the lottery may come with me breaking my leg
if I win the lottery, i will be happy \Rightarrow if I win the lottery and break my leg, I will be happy

Stalnaker (1975), Lewis (1981), Katz (1991), von Stechow (1999)

Antecedents of conditionals: English vs Vietnamese

Predictions: NPIs are licensed in antecedents of conditionals in English but not in Vietnamese

- (41) a. if John ever reads Mary's tweets, he will be very surprised
b. #nếu John đọc tweets của Mary bao giờ, nó sẽ rất ngạc nhiên
if John reads tweets of Mary ever he will be very surprised
c. nếu John đọc tweets của Mary hằng ngày, nó sẽ rất ngạc nhiên
if John reads tweets of Mary every day he will be very surprised

(42) Hypothesis

- a. NPIs in Vietnamese must be inside the argument of a DE function
- b. NPIs in English must be inside the argument of a Strawson-DE function

FEW vs AT MOST

Puzzle: both [few NP ___] and [at most n NP ___] are DE, but only the former licenses NPIs in Vietnamese

- (43) a. few students ever read Quine
b. ít sinh viên nào đọc Quine bao giờ
few students read Quine ever
- (44) a. at most three students ever read Quine
b. #nhiều nhất là ba sinh viên đọc Quine bao giờ
at most three student read Quine ever

Intolerance

(45) Revised Hypothesis

- a. NPIs in Vietnamese must be inside the argument of a DE **and intolerant** function
- b. NPIs in English must be inside the argument of a Strawson-DE function

(46) Intolerance

A function f is intolerant iff

for any x, y such that $x = \neg y$, either $\neg f(x)$ or $\neg f(y)$

Horn (1989), Löbner (1985), Gajewski (2005)

Resolution of the puzzle

Puzzle: both [few NP ___] and [at most n NP ___] are DE, but only the former licenses NPIs in Vietnamese

- (47) a. few \approx less than half
b. at most three \approx three or less than three
- (48) [few students passed the exam] and [few students failed the exam]
= contradiction
 \rightsquigarrow [few NP ___] is intolerant
- (49) [at most three students passed the exam] and [at most three students failed the exam]
= not a contradiction
 \rightsquigarrow [at most n NP ___] is not intolerant

Many thanks!

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