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Philosophy, Mathematics, Linguistics: Aspects of Interactions

Tutorial Graham Priest / Friederike Moltmann :

Existence, Nonexistence, and Numbers

Handout 1:

Linguistic Observations and Generalizations about the Verb *Exist*

1. Statements about ‘existence’

There-sentences:

- (1) a. There is a king of France. (definite description)
- b. There are electrons. (bare plural)
- c. There is justice. (bare mass noun)
- d. There are at least three people that can solve the problem.
(quantificational noun phrase)

no existential, but only presentational reading:

- (2) a. There is the golden mountain.
- b. There is Sherlock Holmes.

There-sentences with exist:

- (3) There exists a king of France.

Quantification:

- (4) a. A king arrived.
- b. Several kings arrived.

Existence statements:

exist occurs as a predicate

- (5) a. The successor of 23 exists.
- b. The golden mountain does not exist.

c. Sherlock Holmes does not exist.

(6) a. Electrons exist. (bare plural)

b. These objects exist. (definite plural)

with singular indefinites less good:

(7) a. An electron exists.

with quantificational NPs

(7) b. At least two solutions exists.

2. *Exist* in existence statements occurs as predicate

Linguistic evidence:

- occurs in predicate position

- coordination with other predicates:

(8) The chairman exists and does not live far from here.

- VP deletion, predicate anaphora

(9) a. John arrived and Mary did too.

a'. The chairman exists and the secretary does too.

b. The chairman exists, but the secretary does not.

c. John arrived and so did Mary.

c'. The chairman exists and so does the secretary.

3. The case of bare plurals (and mass nouns) with *exist*

The common view:

Exist does not act as predicate. Rather *exist* merges with existential quantification associated with the bare plural.

Bare plurals (and mass nouns) in other contexts:

Reference to kinds (on at least one interpretation)

instance-distribution predicates:

(10) a. Giraffes are rare.

b. Dinosaurs are extinct.

episodic predicates ('stage-level predicates'):

- (11) a. John bought apples.
 b. John drank water.

characterizing predicates ('individual-level predicates'):

- (12) a. Apples are healthy.
 b. Water is transparent.

Greg Carlson:

bare plurals (and mass nouns) always (almost always) stand for kinds, it is a matter of a lexical condition in the predicate to have the predicate apply to some instance (episodic predicates) or all instances (the instances in general)

- (13) a. the kind-related meaning P' of an episodic predicate P :

$$[P'] = \lambda k[\exists x (x I k \ \& \ P(x))]$$

- b. the kind-related meaning P' of a characterizing predicate P :

$$[P'] = \lambda k[Gn \ x \ (x I k \ \rightarrow \ P(x))], \text{ for the generic quantifier } Gn$$

Evidence for kind reference, in the case of bare plural subjects of *exist*:

1. definite anaphora:

- (14) a. Dinosaurs do not exist. But they once did exist.
 b. Three dinosaurs do not exist. * But they (three dinosaurs or other) once did exist.

2. bare plurals and mass nouns in *exist*-sentences do not take wide scope over negation or other quantifiers:

- (15) a. Dinosaurs do not exist anymore. (* for some dinosaurs x , x does not exist anymore)
 b. Two dinosaurs do not exist anymore. (ok: for two dinosaurs x , x does not exist anymore)

3. co-predication with instance-distribution predicates:

- (16) Dinosaurs which used to be widespread in Europe do not exist anymore.

4. temporal modifiers affecting the entire kind:

- (17) a. Dolphins still exist.
 b. Dinosaurs no longer exist.

5. Aspectual kind predicates with *exist*:

(18) a. Dinosaurs continued to exist.

b. Dinosaurs ceased to exist.

The reading of bare plurals with *exist*:

Existential quantification is clearly involved in cases like the following:

(19) a. Electrons exist.

b. Unicorns exist.

c. Prime numbers exist.

d. White gold exists.

e. True justice exists.

Fine's observation:

(20) a. Integers exist.

b. Natural numbers exist.

(20a) makes a stronger statement than (20b) unlike what the existential quantification view would predict

Fine: The logical form of (74a), is as in (75a), or equivalently in (75b):

(21) a. For every x ($\text{integer}(x) \rightarrow x \text{ exist}$)

b. For every x ($\text{integer}(x) \rightarrow \text{real}(x)$)

alternative 'pragmatic' explanation:

commitment to one instance of the integers / natural numbers implies commitment to all.

same effect: ?

(22) a. There are integers.

b. There are natural numbers.

Other cases:

(23) a. Geometrical figures exist.

b. Triangles exist.

c. Equilateral triangles exist.

Conclusion: *exist* qualifies as an episodic predicate

Problem:

Episodic predicates are supposed to hold of entities in a way perceived as temporary.

Abstract objects generally exist necessarily, thus essentially

Compare other predicates that with some objects attribute essential properties and with other don't:

(24) a. The paint is red. (essential)

b. The table is red. (accidental)

(25) a. Paint is red. (generic reading)

b. Tables are red. (generic reading)

episodic – characterizing classification is decided on the basis of some objects, not all

real vs exist:

pace Fine: *real* is linguistically fundamentally different from *exist*:

real classifies as a characterizing predicate:

real allows only generic reading:

(26) a. Electrons are real.

b. Prime numbers are real.

c. White gold is real.

Why would *real* be characterizing:

Real as an essential quality of objects that are not possible or intentional

But: past objects seem to be 'real'

Also: would imply serious metaphysical decisions on the part of language

Alternative explanation:

Real as a predicate functor:

(27) a. A is a real object.

b. B is a real person.

c. C is a real witch.

Other predicate functors / modifiers of sortal nouns:

- (28) a. A is a fictional person.
 b. B is a mythical dragon.
 c. C is an intentional object.
 d. D is a possible house.

Another manifestation of the difference between real and exist:

- (29) a. John denies the reality of a witch. (only wide scope of a witch)
 b. John denies the existence of a witch. (narrow scope of a witch)

compare:

- (30) a. John denies the qualification of a candidate.
 b. John denies the existence of a candidate.

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