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**The Semantics of ‘Cases’**

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**1. Case constructions**

Clausal *case*-terms

(1) a. the case in which it might rain

 b. the case in which a student fails the exam

*Case*-anaphora

(2) John might go to the party. In that case, I will go too.

The predicate *is the case*

(3) It is sometimes the case that S.

Nominal *case*-terms

Generally restricted to medical and legal cases:

(4) a. the case of the stolen statue

 b. a case of flu

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**2. Clausal *Case*-Constructions**

Clausal *case*-constructions quantify over worldly facts / situations or refer to kinds of worldly facts / situations.

Quantification over worldly facts / situations:

 (5) a. every case in which a student passed an exam

 b. several cases in which a student passed an exam

 c. only one case in which a student passed an exam

Reference to kinds of cases

(6) a. the case in which John will return

 b. the case in which it might rain

 c. the case in which a student passes an exam

Kind predicates:

(7) a. The case in which a student failed the exam has never occurred before.

 b. The case in which someone passes an exam is rare / unusual.

 c. The case in which someone passes an exam does not occur often.

 d. I have never encountered the case in which a candidate was unable to speak during

 the oral exam.

Two notions of fact (Fine 1982)

Austin (1950, 1961b): facts as worldly facts, are part of or ‘in’ the world

Strawson (1949) facts as non-worldly, are ‘at’ the world

*The fact that S* as a term stands for a nonworldly fact:

(8) a. ??? The fact that a student fails an exam has occurred twice.

 b. ??? The fact that someone passes an exam is rare.

 c. ??? I have never encountered the fact a student fails the exam

‘the fact that S’: an entity abstracted from a true sentence / proposition (Moltmann 2013)

By contrast: *the facts* as a term standing for the relevant plurality of worldy facts (Austin 1961).

Truthmakers:

Worldly facts, possible situations, actions

 Truthmaking: minimal truth maker (Kratzer) vs exact truth maker (Fine):

Two reasons for using the notion of an exact truthmaker rather that of a minimal truth maker:

1. There are sentences that have exact verifiers, but lack minimal verifiers (e.g. *there are infinitely many natural numbers*)

2. a sentence such as *it is windy or it is rainy and windy* has two exact verifiers, a situation in which it is (just) windy and a situation in which it is (just) windy and rainy, but it would have only one minimal verifier (a situation in which it is windy)

*Case*-constructions support exact truthmaking:

(9) a. *the case in which there infinitely many prime numbers*

 b. *the two cases in which it is windy or it is rainy and windy*

Exact truthmaking (Fine 2012, 2014, 2017, Rodriguez-Pereyra2005, Moltmann 1997):

For a situation s and a sentence S, s ╟ S iff s is wholly relevant for the truth of S.

Standard truthmaking conditions:

(10) a. s ╟ P *and* Q iff for some s’ and s’’, s = sum(s’, s’’) and s’ ╟ P and s’’ ╟ Q.

 b. s ╟ P *or* Q iff s ╟ P, s ╟ Q, or s ╟ P *and* Q

 c. s ╟ ∃x S iff s ╟ S [x/t] for some term / object t

Situation-based analyses of conditionals (Fine 2012) (see also(Kratzer online) :

 (10) d. s ╟ *If P, then Q* iff s is a situation in virtue of which every situation s’, s’ ╟ P, has a

 possible outcome containing a part s’’ such that s’’╟ Q

Conditionals in clausal *case*-terms:

(11) The case in which John is disappointed if Mary loses the race is unlikely.)

(10) e. simplified:

 s ╟ *If P, then Q* iff s is a situation in virtue of which for every situation s’, s’ ╟ P, there

 is a situation s’’, R(s’’, s’), s’’╟ Q

Negation:

(11) a. the case in which John fails to show up

 b. the case in which noone is satisfied

 c. the cases in which either John did not show up or he did not pay attention

Make use of falsemaking for the truthmaking conditions on negative sentences (Fine 2017):

(10) f. s ╟ *not* S iff s ╢ S.

s ╢ S: S is false in virtue of s

(12) The denotation of sentences (Fine 2017)

 [S] = <pos(S), neg(S)>,

 pos(S) = the set of truthmakers of S, neg(S) = the set of falsemakers of S

(13) a. [*case in which* S] = [*case*](pos(S )) = pos(S ))

 b. [*the case in which* S] = the kind k whose instances are the situations in pos(S )

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**2. Statements of truthmaking: *It is the case that* S**

(14) a. It is not the case that a student failed an exam.

 b. If it is the case that a student fails an exam, then (s)he should repeat it.

 c. John feared that it might rain. That was in fact the case.

*Is the case* is not a truth predicate:

(15) a. In our firm, it is not the case that employees get fired without explanation.

 b. ??? In our firm, it is not true that employees get fired without explanation.

(16) a. It was twice the case that a student failed an exam

 b. ??? It was twice true that a student failed an exam

(17) a. Es ist kaum der Fall, dass Hans Kaffee trinkt.

 ‘It is hardly the case that John drinks coffee.’

 b. ? Es ist kaum wahr, dass Hans Kaffee trinkt.

 ‘It is hardly true that John drinks coffee.’

 (18) a. It was twice the case that John made a mistake.

 b. It was three times the case that John or Mary received a gift.

 (19) Truthmaker semantics for *is the case*

 a. s ╟ *It is the case that* S iff s ∈ pos(S).

 b. For a location modifier X, s ╟ X *it is the case that* S iff X(s) and s ∈ pos([S]).

 c. For an adverb of quantification S, s ╟ Q *it is the case that* S iff s is a situation in

 virtue of which for Q-many s’, s’ ∈ pos(S).

*The case* is not referential in *is the case*:

 (20) a. \* It is not that / a case that S,

 b. \* It is the unfortunate case that S.

 c. \* That S is not the case that we expected.

 d. That no one came was recently the case. ?? We did not like that case.

Related locutions, also expressing truth-making:

(21) a. That a student failed an exam has never occurred.

 b. That is not so.

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**3. *Case*-Anaphora with Conditionals, Disjunctions, and Questions**

**3.1. Conditionals**

(22) a. If it rains, we won’t go.

 b. In that case / In such a case, we will stay home.

 c. Let’s better not think about that case.

‘In view of’-quasi-conditionals:

(23) We will take an umbrella in case it rains.

(24) The semantics of *case*-anaphora:

 [*In that case*, S] = if-then([*that case*], [S]) = if then({s | s I [*that case*], [S])

**3.2. Disjunctions**

(25) a. John or Mary will do the interview. In either case, we should be well-prepared.

 b. The exam will be about Goethe, Schiller, or Kleist. In all three cases, there will be the

 same sorts of questions.

Puzzle:

Why in (25a) *in all three cases* and in (25b) *in all six cases* ?

Reason: truthmaking condition on disjunctions!

**3.3. Questions**

(26) a. ??? John will come. In that case, we will come too.

 b. A: John will come.

 B: In that case, we will come too.

 c. Will John come? In that case we will come too.

Difference between simple yes/no questions and disjunctive questions:

(27) a. Will you come? In that case, I would come too

 b. Will you come or not? In both cases / In either case / ??? In that case, I will come too.

*Case*-anaphora are subject to the same constraints as pronouns:

(28) *Case*-Anaphora Condition

 *Case*-anaphora prefer antecedent to be explicitly introduced in the preceding discourse.

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**4. *Case*-anaphora with deontic and with epistemic modals**

No case anaphora with deontic modals:

(30) a. John may / is allowed to enter the room. ?? In that case, we should stop talking.

 b. John might enter the room. In that case, we should stop talking.

*Case*-anaphora resist modals of necessity:

(31) a. John might go to the party. In that case, I will go too.

 b. ??? John must be at home. In that case, Mary is at home too.

 c. ? John should be at home. In that case, Mary is at home too.

‘Case distinction’ as a precondition on the applicability of *case*-anaphora

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**5. The Case-Space Requirement**

The noun *case* does not just take a particular situation or kind of situation as argument, but also a set of alternative situations or kinds of situations, a case space.

The case space must include the situation argument and have at least two elements.

One sort of case space: determined by the sentence, possibly together with its focused structure: it is the set of truthmakers or kinds of truthmakers of the sentence (sentential case space)

Another sort of case space: epistemic case space

Thus the Case-Space Requirementiss part of the lexical meaning of the noun *case*,

- Case-Space requirement connects truthmaker semantics to alternative semantics.

- Case-Space Requirement is reflected in the semantics of all types of *case*-constructions: *case*-NPs with clausal modifiers, *case*-anaphora, and the predicate *is the case*,

**5.1. Sentential case spaces**

(32) a. ??? We discussed the case in which John returned yesterday.

 b. ??? The case in which I have solved the problem was unexpected.

 c. ??? The case in which it is raining outside bothers us.

 d. ??? The case in which 3 is a prime number is wellknown.

Contrasts with fact descriptions: descriptions:

 (34) a. the fact that 3 is a prime number

 b. the fact that John wo the race

Cases are not just isolated actual situations, but rather situations within a space of alternative situations

Other ways in which the Case-Space Requirement may be satisfied

- Using a sentence that is true at different times and thus has different time-related truthmakers:

(35) the cases in which John won the race

- Definite NP that has different referents at different times at which the sentence is true:

(36) a. the cases in which the president was a democrat

 b. the cases in which the number of students was less than 1000

- Mathematical case distinction, involving variables in a mathematical extension of English:

(37) the cases in which n is a prime number

- Different truthmaking situations in the semantics of cardinal and superlative adjectival modifiers of *case*-NPs:

(38) a. the first case in which Gereon won the race

 b. the worst case in which the two people had a dispute

- Contrastive focusing:

(39) The case in which Géreon won the race was totally unexpected.

Contrastive focusing of the NP sets up a range of alternative situations in which someone other than the semantic value of the focused constituent satisfies the predicate (Roots 1992),

Rooth (1992)

Assigns a focused sentence a focus-semantic value, the set of propositions that are the meanings of the sentence obtained by replacing the focused constituent by other (contextually relevant) expressions. 🡪 alternative semantics

Other applications of alternative semantics

Questions (semantic value the set of true and false answers, Hamblin 1973), disjunctions (Aloni 2007), indefinites (Kratzer/Shimoyama 2002).

Truthmaker semantics

alternatives are not propositions, but truthmaking situations

Truthmaker semantics can be reformulated so as to assign **kinds** or sets of truth makers to disjuncts, the correlates of propositions

For certain purposes it needs to be so reformulated (such as the semantics of *case*-NPs standing for pluralities of kinds of cases).

Reformulating the semantics of focus in terms of truthmaker semanics:

(40) For a situation s, s ╟ S[Yfocus] iff ∃X (X∈ CATY & s ╟ S[X/Y])

**Epistemic case spaces**

Modals:

(41) a. The case in which John might have returned yesterday could not be ruled out.

 b. The case in which it is raining outside needs to be taken into consideration.

(42) a. ??? The case in which John returned yesterday could not be ruled out.

 b. ??? The case in which it is raining outside needs to be taken into consideration

Adverbials:

(43) The case in which John has perhaps / possibly already returned

Modifiers:

(44) a. in the unlikely / improbable / unforeseeable case in which the treasure is returned

 b. ??? in the likely / probable / foreseeable case in which the treasure is returned

(45) ??? the fortunate / regrettable case in which Mary returns

Future:

(46) a. The case in which John returns tomorrow cannot be ruled out.

 b. The case in which I will solve the problem is very unlikely.

 c. The case that it will rain tomorrow cannot be excluded.

Mathematical uncertainties:

(47) a. The case in which there is a solution to the equation is would be very interesting.

 b. The case in which there might a largest prime number has long been ruled out.

By contrast, known mathematical facts:

(48) a. ??? The case in which 2 is a prime number

 b. ??? The case in which there is no largest prime number is wellknown.

If the *case*-clause is not disjunctive or existentially quantified and thus generates a case space itself, a state of uncertaintly, indicated by modals, modifiers, or future tense or understood implicitly may set up a case space, that is, a doxastic attitudinal object that has other truthmakers than that of the *case*-clause itself.

(49) a. Sentential case space

 For a context c, [*case in which* S]c = {s | <s, CS(S)> ∈ [*case*]c & s ∈ [S]c}

 b. Epistemic case space

 For a context c, [*case in which might* S]c = {s| <s, CS(emight)> ∈ [*case*]cmight &

 s ∈ [S]cmight}

(50) Lexical condition on the noun *case*

 For a context c, a situation s and a non-empty set X, if <s, X> ∈ [*case*]c, then for the

 doxastic attitudinal object or sentence d that is part of c dc, X = CS(dc) and s ∈ CS(dc).

(51) Definition of a case space

 For an object d (a sentence or doxastic attitudinal object),

 CS(d) = {s | s╞ d & ∃s’(s’╞ d & s≠ s’)}.

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**6. Attitude reports**

Case anaphora and attitude verbs

(52) a. John fears that he forgot to close the door. In that case we need to go back.

 b. John claims that Mary won the election. In that case we have reason to celebrate.

 c. Mary hopes that she will win the election. In that case, we will celebrate

(53) a. John intends to leave the party. ??? In that case, Mary will leave too.

 b. John decided to come to the party. ??? In that case, we will be happy.

 c. John plans to come to the party / ??? In that case we will be happy.

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**References**

Aloni, M. (2007): ‘Free choice, modals and imperatives’. *Natural Language Semantics* 15

 65-94.

Austin, J. L. (1950): ‘Truth’. *Aristotelian Society Supplement Vol.* 24, 111-129. Reprinted in

 Austin (1961a).

------------- (1961a): *Philosophical Papers.* Ed. By J. O. Urmson / G. J. Warnock,

 Clarendon Press, Oxford.

-------------- (1961b): ‘Unfair to Facts’. In Austin (1961a), 102-222.

Carlson, G. (1977): ‘A Unified Analysis of the English Bare Plural’. *Linguistics and*

 *Philosophy* 1, 413-457.

Fine, K. (1982): ‘First-Order Modal Theories III-Facts’. *Synthese* 53, 43-112.

---------- (2012): ‘Counterfactuals without Possible Worlds’. *Journal of Philosophy* 109

 (3), 221-246

---------- (2014): ‘Truth-Maker Semantics for Intuitionistic Logic’. *Journal of Philosophical*

 *Logic* 43, 2-3, pp 549-577

--------- (2017): ‘Truthmaker Semantics’. B. Hale / C. Wright (eds.): *Blackwell*

 *Philosophy of Language Handbook*.

Hamblin, C. L. (1973): ‘Questions in Montague English’. *Foundations of Language* 10(1),

 41–53.

Kratzer, A. (2014): ‘Situations in Natural Language Semantics’. *Stanford Encyclopedia of*

 *Philosophy*, online.

Kratzer, A. / J. Shimoyama (2002): ‘Indeterminate pronouns: The view from Japanese’. In

 Y. Otsu (ed.): *Proceedings of the Third Tokyo Conference on Psycholinguistics*. Hituzi

 Syobo, Tokyo, 1–25.

Lewis, D. (1975): ‘Adverbs of Quantification’. In E. Keenan (ed.): *Formal Semantics of*

 *Natural Language*. Cambridge UP, Cambride.

Moltmann, F. (2007): ‘Events, Tropes and Truthmaking’. *Philosophical Studies* 134,

 363-403.

---------------- (2013): *Abstract Objects and the Semantics of Natural Language*. Oxford UP,

 Oxford.

Rooth, M. (1992): ‘A Theory of Focus Interpretation’. *Natural Language Semantics* 1.1., pp.

 75-116

Strawson, P. F. (1949): ‘Truth’. *Analysis* 9.6.