3 . . . to sense

UNIT 9 SENSE PROPERTIES AND STEREOTYPES

Entry requirements ONE-, TWO-, and THREE-PLACE PREDICATES (Unit 5), EXTENSION and PROTOTYPE (Unit 8). If you feel unfamiliar with any of these ideas, review the appropriate unit. Otherwise, take the entry test below.

Entry test

(1) Which of the following are two-place predicates? Circle your answer.
below, *smother*, *sleep*, *come*, *annihilate*, *vanish*, *afraid (of)*

(2) Write the terms 'referent', 'extension', and 'prototype' in the appropriate boxes in the chart below:

(Thing referred to on a particular occasion of utterance)	(Set of things that could be referred to using a particular predicate) ..... (Thing typically referred to using a particular predicate) .....

Feedback

(1) *below*, *smother*, *annihilate*, *afraid of*

(2) Referent | Extension / Prototype

If you have answered both questions correctly, continue to the introduction. Otherwise, review the relevant unit.

Introduction It is sometimes hard to distinguish a factual (or 'ontological') question from a semantic one.

Practice

(1) Have you ever been asked an apparently factual question about something (call it 'X'), and found it necessary to say to your questioner 'Well, it depends on what you mean by X'? *Yes / No*

(2) Have you ever been involved in an argument with someone over an apparently factual matter, only to discover that some particularly crucial word in the argument had a different meaning for the other person? *Yes / No*

(3) In a case where someone says, 'Well, it depends what you mean by X', is it often possible, once the meaning of X has been agreed by both parties, for the original factual question to be answered straightforwardly? *Yes / No*

(4) If two people can be said to agree on the meanings of all the words they use, must any remaining disagreements between them be regarded as disagreements about matters of fact? *Yes / No*

(5) If we could not agree about the meanings of any of the words we use, could any disagreement about matters of fact even be formulated, let alone resolved? *Yes / No*

Feedback (1) Probably, almost everyone has been in this situation. (2) again, probably Yes (3) Yes (4) Yes (5) No

Comment In order to be able to talk meaningfully about anything, it is necessary to agree on the meanings of the words involved. This is a truism. In everyday life, people reach practical agreement on the meanings of almost all the words they use, and effective and successful communication takes place as a result. If a person wants to hinder or obstruct communication, he can begin to quibble over the meanings of everyday words. Although there may be disagreement about the fine details of the meanings of words 'around the edges', we find in the everyday use of language that all words are understood by speakers as having an indispensable hard core of meaning.

Practice Given below are three conversations which get stuck. In each one, speaker B seems to ignore some particular convention about the meaning of one of the words involved, a convention universally accepted in everyday English. For each conversation, write out a statement about the meaning of the word concerned, a statement that speaker B seems not to accept.

(1) A: 'I saw something strange in the garden this morning.'
B: 'Oh! What was it?'
A: 'An animal perched on top of the clothes pole.'
B: 'How do you know it was an animal?'
A: 'I saw it. It was a cat.'
B: 'You might have seen a cat, but how can you be sure it was an animal?'
A: 'Well, of course it was an animal, if it was a cat.'
B: 'I don't see how that follows.'

.....

(2) B: 'My neighbour's child is an adult.'
A: 'You mean he was a child and is now grown up?'
B: 'No. He is still a child, even though he's an adult.'
A: 'You mean that he's a child who acts in a very grown up way?'
B: 'No. He's just an adult child, that's all.'

.....

(3) B: 'I finally killed Ben's parrot.'
A: 'So it's dead, then?'
B: 'No, I didn't say that. Just that I killed it.'
A: 'But if you killed it, it must be dead.'
B: 'No. I was quite careful about it. I killed it very carefully so it's not dead.'

.....

Feedback (1) The meaning of *cat* includes that of *animal*. (2) The meaning of *adult* excludes the meaning of *child*. (3) The meaning of *kill* is related to that of *dead* in such a way that anything killed is necessarily dead.

Comment The kind of meaning we are talking about here is obviously the kind associated with words and sentences by the language system, and not the speaker meaning (see Unit 1) specifically associated with utterances made by speakers on particular occasions. This kind of meaning we call sense.

Definition (partial: see also Unit 3) The SENSE of an expression is its indispensable hard core of meaning.

Comment This definition deliberately excludes any influence of context or situation of utterance on the senses of expressions. (Thus it is problematic to talk of the senses of deictic words (Unit 7), but we will not go into that problem here.)

The sense of an expression can be thought of as the sum of its sense properties and sense relations with other expressions. For the moment, we will concentrate on three important sense properties of sentences, the properties of being analytic, of being synthetic, and of being contradictory.

Definition An ANALYTIC sentence is one that is necessarily TRUE, as a result of the senses of the words in it. An analytic sentence, therefore, reflects a tacit (unspoken) agreement by speakers of the language about the senses of the words in it.

A SYNTHETIC sentence is one which is NOT analytic, but may be either true or false, depending on the way the world is.

Example Analytic: *All elephants are animals*
The truth of the sentence follows from the senses of *elephant* and *animal*.
Synthetic: *John is from Ireland*
There is nothing in the senses of *John* or *Ireland* or *from* which makes this necessarily true or false.

Practice (1) Label the following sentences either *T* for true, *F* for false, or *D* for don't know, as appropriate.

(a) *Cats are animals* *T / F / D*

(b) *Bachelors are unmarried* *T / F / D*

(c) *Cats never live more than 20 years* *T / F / D*

(d) *Bachelors cannot form lasting relationships* *T / F / D*

(e) *Cats are not vegetables* *T / F / D*

(f) *Bachelors are male* *T / F / D*

(g) *No cat likes to bathe* *T / F / D*

(h) *Bachelors are lonely* *T / F / D*

(2) Were you able to assign *T* or *F* to all the above sentences? *Yes / No*

(3) Which of the above sentences do you think ANY speaker of English could assign *T* or *F* to?

.....

(4) Which of the sentences in (a)–(h) above would you say are true by virtue of the senses of the words in them?

.....

(5) Which of the sentences above would you say might be true or false as a matter of fact about the world?

.....

Feedback (1) (a) T (b) T (c)–(d) Actually we, the authors, don't know the answers for these sentences. (e) T (f) T (g)–(h) We don't know the answers for these, either. (2) Perhaps you were; we weren't. (3) (a),(b),(e),(f) (4) (a),(b),(e),(f) (5) (c),(d),(g),(h)

Comment Sentences (a),(b),(e),(f) are analytic. Sentences (c),(d),(g),(h) are synthetic.

Practice Here are some more sentences. Circle *A* for analytic, or *S* for synthetic, as appropriate. For some, you will have to imagine relevant situations.

(1) *John's brother is nine years old* *A / S*

(2) *John's nine-year-old brother is a boy* *A / S*

(3) *Sam's wife is married* *A / S*

(4) *Sam's wife is not German* *A / S*

(5) *My watch is slow* *A / S*

(6) *My watch is a device for telling the time* *A / S*

Feedback (1) S (2) A (3) A (4) S (5) S (6) A

Comment Analytic sentences are always true (necessarily so, by virtue of the senses of the words in them), whereas synthetic sentences can be sometimes true, sometimes false, depending on the circumstances. We now come to contradiction.

Definition A CONTRADICTION is a sentence that is necessarily FALSE, as a result of the senses of the words in it. Thus a contradiction is in a way the opposite of an analytic sentence.

Example *This animal is a vegetable* is a contradiction.
This must be false because of the senses of *animal* and *vegetable*.
Both of John's parents are married to aunts of mine is a contradiction.
This must be false because of the senses of *both parents*, *married*, and *aunt*.

Practice Circle the following sentences *A* for analytic, *S* for synthetic or *C* for contradiction, as appropriate. For some you will have to imagine relevant situations.

(1) *That girl is her own mother's mother* — *A / S / C*

(2) *The boy is his own father's son* — *A / S / C*

(3) *Alice is Ken's sister* — *A / S / C*

(4) *Some typewriters are dusty* — *A / S / C*

(5) *If it breaks, it breaks* — *A / S / C*

(6) *John killed Bill, who remained alive for many years after* — *A / S / C*

Feedback (1) C (2) A (3) S (4) S (5) A (6) C

Comment Analytic sentences can be formed from contradictions, and vice versa, by the insertion or removal, as appropriate, of the negative particle word *not*.

We pay no attention here to the figurative use of both analytic sentences and contradictions. Taken literally, the sentence *That man is not a human being* is a contradiction. This very fact is what gives it its power to communicate a strong emotional judgement in a figurative use (stronger than, say, the synthetic *That man is very cruel*).

We will now mention a limitation of the notions analytic, synthetic, and contradiction. Remember that these notions are defined in terms of truth. Imperative and interrogative sentences cannot be true or false, and so they cannot be analytic (because they cannot be true), or synthetic, because 'synthetic' only makes sense in contrast to the notion 'analytic'.

You will have noticed that synthetic sentences are potentially informative in real-world situations, whereas analytic sentences and contradictions are not informative to anyone who already knows the meaning of the words in them. It might be thought that the fact that semanticists concentrate attention on unusual sentences, such as analytic ones and contradictions, reflects a lack of interest in ordinary, everyday language. Quite the contrary! Semanticists are interested in the foundations of everyday communication. People can only communicate meaningfully about everyday matters, using informative synthetic sentences, because (or to the extent that) they agree on the meanings

of the words in them. This basic agreement on meaning is reflected in analytic sentences, which is what makes them of great interest to semanticists.

The notions analytic, synthetic, and contradiction each apply to individual sentences. Analyticity, syntheticity, and contradiction are, then, sense properties of sentences.

Example *That man is human* has the sense property of analyticity (or of being analytic). *That man is tall* has the sense property of syntheticity (or of being synthetic). *That man is a woman* has the sense property of being a contradiction.

Practice (1) Does the analyticity of *That man is human* depend in some crucial way on a semantic relationship between the sense of *man* and that of *human*? *Yes / No*

(2) Which of the following statements seems to express this semantic relationship between *man* and *human* correctly? Circle your choice.

(a) The sense of *man* includes the sense of *human*.
(b) The sense of *human* includes the sense of *man*.
(c) The sense of *man* is identical to the sense of *human*.

(3) Does the semantic relationship that exists between *man* and *human* also exist between *man* and *tall*? *Yes / No*

(4) Does the absence of this semantic relationship between *man* and *tall* account for the fact that *This man is tall* is not analytic, like *This man is human*? *Yes / No*

Feedback (1) Yes (2) (a) (3) No (4) Yes

Comment Note the interdependence of sense relations and sense properties. Sense properties of sentences (e.g. analyticity) depend on the sense properties of, and the sense relations between, the words they contain. The sense relation between the predicates *man* and *human* is known as hyponymy, a kind of sense inclusion relationship between predicates which we will explore further in Unit 10. The sense relation between the predicates *man* and *woman* is a kind of antonymy, or oppositeness, which we will explore further in Unit 11. The sense structure of a language is like a network, in which the senses of all elements are, directly or indirectly, related to the senses of all other elements in these and other kinds of ways.

For the rest of this unit, we will explore a limitation in the idea of sense, a limitation which is quite parallel to a limitation in the idea of extension, pointed out in the previous unit (Unit 8). For convenience, we repeat below our statement of the relationship usually envisaged between sense and extension.

A speaker's knowledge of the sense of a predicate provides him with an idea of its extension. We said earlier that another way of talking about this relationship is that the sense of a predicate determines or 'fixes' the extension

of that predicate. For example, the 'dictionary definition' which the speaker accepts for *cat* can be used to decide what is a cat, and what is not, thus defining, implicitly, the set of all cats.

Now we'll consider the implications of this envisaged relationship more closely. We need to recognize the concepts of necessary and sufficient conditions.

Definition A NECESSARY CONDITION on the sense of a predicate is a condition (or criterion) which a thing MUST meet in order to qualify as being correctly described by that predicate.

A SUFFICIENT SET OF CONDITIONS on the sense of a predicate is a set of conditions (or criteria) which, if they are met by a thing, are enough in themselves to GUARANTEE that the predicate correctly describes that thing.

Example Take the predicate *square*, as usually understood in geometry. 'Four-sided' is a necessary condition for this predicate, since for anything to be a square, it must be four-sided.

'Plane figure, four-sided, equal-sided, and containing right angles' is a sufficient set of conditions for the predicate *square*, since if anything meets all of these conditions, it is guaranteed to be a square.

'Four-sided and containing right angles' is not a sufficient set of conditions for *square*. Many non-square shapes, such as rectangles and trapezoids, meet these conditions.

'Three-sided' is not a necessary condition for *square*.

Practice

(1) Is 'three-dimensional object' a necessary condition for the predicate *sphere*? *Yes / No*

(2) Is 'three-dimensional object' a necessary condition for the predicate *circle*? *Yes / No*

(3) Is 'three-dimensional object and circular in cross-section' a sufficient set of conditions for *sphere*? *Yes / No*

(4) Is 'three-dimensional object and with all points on surface equidistant from a single point' a sufficient set of conditions for *sphere*? *Yes / No*

(5) Is 'male' a necessary condition for *bachelor*? *Yes / No*

(6) Is 'adult, male, human, and unmarried' a sufficient set of conditions for *bachelor*? *Yes / No*

Feedback (1) Yes (2) No (3) No (e.g. a cylinder) (4) Yes (5) Yes (6) Yes, for us, though some would debate the point, arguing, for example, that a monk or a Catholic priest meets these conditions but could not correctly be called a bachelor. For us, monks and priests are bachelors.

Comment Obviously, we are stating conditions on predicates in terms of other predicates in the language. Henceforth, we will drop the quotation marks, and envisage necessary and sufficient conditions as relationships between predicates. Thus we shall say, for example, that *animal* and *cat* are semantically related in such a way that the applicability of the former is a necessary condition for the applicability of the latter. (Nothing can be a cat without being an animal.) In fact it is possible to give complete definitions of some predicates in the form of a 'necessary and sufficient list' of other predicates. Kinship predicates and shape predicates are well-known examples.

Practice

(1) Is *father* adequately defined as male parent? *Yes / No*

(2) Is *female spouse* an adequate definition of *wife*? *Yes / No*

(3) Is *parent's father* an adequate definition of *grandfather*? *Yes / No*

(4) Is *hexagon* adequately defined as *five-sided plane figure*? *Yes / No*

Feedback (1) Yes (2) Yes (3) Yes (4) No

Comment The idea of defining predicates by sets of necessary and sufficient conditions can be evaluated from a practical point of view. The parallel with the undecidability of extensions is very close. Just as in a large number of cases it is implausible to postulate the existence of perfectly clearly defined sets of things, such as the set of all cats, the set of all tables, etc., so too the idea that there could be satisfactory definitions in the form of sets of necessary and sufficient conditions for such predicates as *cat*, *table*, etc. is clearly misguided.

One of the best-known arguments (by the philosopher Ludwig Wittgenstein) against the idea that definitions of the meanings of words can be given in the form of sets of necessary and sufficient conditions involves the word *game*.

Practice Given below are two definitions of the word *game*, taken from dictionaries of modern English. For each definition, give, if possible, (a) the name of at least one game (e.g. *football*, *chess*) not covered by the definition, and (b) at least one thing that is not a game (e.g. piano-playing, watching television) but which falls within the given definition.

(1) An amusement or diversion

(a) ..... (b) .....

(2) A contest, physical or mental, according to set rules, undertaken for amusement or for a stake

(a) ..... (b) .....

Feedback (1) (a) We can think of no examples of games which are not amusements or diversions. (b) piano-playing, watching television, fishing, embroidery (2) (a) cat's-cradle (not a contest), patience or solitaire (also not contests, except in a vacuous sense) (b) a 100-metre footrace, high-jump, pole-vault (such events are not normally called 'games' but rather 'races', 'contests', or 'competitions'), musical competitions

Comment Wittgenstein's example of *game* cuts both ways. On the one hand, one must admit that a set of necessary and sufficient conditions for *game* to cover all eventualities (including games played in the past and games yet to be invented) cannot be given. On the other hand, one has to admit that some of the definitions offered by dictionaries, while imperfect, do cover a large number of cases, and are in fact helpful.

It is possible to give at least some necessary and/or sufficient conditions for all predicates in a language. If there were a predicate for which we could give no necessary or sufficient condition, we would have to admit that we literally had no idea what it meant.

Practice

(1) Is the sense of *activity* a necessary part of the sense of *game* (i.e. must something be an activity to be a game)? *Yes / No*

(2) Is the sense of *game* a necessary part of the sense of *tennis* (i.e. must some activity be a game to be tennis)? *Yes / No*

(3) Is the sense of *chess* a sufficient part of the sense of *game* (i.e. is the fact that something is chess sufficient evidence to call it a game)? *Yes / No*

(4) A witty literary lady coined the memorable sentence, *A rose is a rose is a rose*, implying that definition could go no further. One can actually go at least a little further. Is the sense of *flower* a necessary part of the sense of *rose*? *Yes / No*

Feedback (1) Yes (2) Yes (3) Yes (4) Yes

Comment Except in a few cases, complete definitions of the meanings of predicates cannot be given, but nevertheless it is possible to give, for every predicate in a language, at least some necessary and/or sufficient ingredients in its meaning. Later units (10–11, and the whole chapter on word meaning, Units 16–20) will explore in more detail just how far one can go in giving definitions of the meanings of words, but it is clear in advance that definitions of many terms will be quite sketchy indeed. It seems reasonable to suppose that speakers of a language have in their heads not only an idea of the bare sense of any given predicate, but also a stereotype of it.

Definition The STEREOTYPE of a predicate is a list of the TYPICAL characteristics or features of things to which the predicate may be applied.

Example The stereotype of *cat* would be something like:

Quadruped, domesticated, either black, or white, or grey, or tortoise-shell, or marmalade in colour, or some combination of these colours, adult specimens about 50 cm long from nose to tip of tail, furry, with sharp retractable claws, etc., etc.

Practice (1) Suggest four characteristics which should be included in the stereotype of the predicate *elephant*. (Be sure not to include any more basic term, properly belonging to the SENSE of *elephant*.)

.....

.....

(2) Give two characteristics which should be included in the stereotype of *mother*.

.....

.....

(3) Give four characteristics which should be included in the stereotype of *cup*.

.....

.....

(4) Give four characteristics which should be included in the stereotype of *building*.

.....

.....

Feedback (1) e.g. grey, very thick-skinned, virtually hairless, with a trunk and two tusks, adult specimens weighing several tons, etc. (2) e.g. caring for her young, living with their father, etc. (3) e.g. between 3 and 6 cm high, round in cross-section, wider at the top than at the bottom, of china, with a handle, made to fit a saucer, etc. (4) e.g. containing upward of three or four rooms, built of a durable material, such as concrete, wood, stone, with a roof, doors, and windows, used regularly by human beings, etc.

Comment A stereotype is related to a prototype (see previous unit) but is not the same thing. A prototype of *elephant* is some actual elephant, whereas the stereotype of *elephant* is a list of characteristics which describes the prototype. The stereotype of a predicate may often specify a range of possibilities (e.g. the range of colours of typical cats), but an individual prototype of this predicate will necessarily take some particular place within this range (e.g. black).

Another important difference between prototype and stereotype is that a speaker may well know a stereotype for some predicate, such as *ghost*,

witchdoctor, *flying saucer*, but not actually be acquainted with any prototypes of it. Stereotypes of expressions for things learnt about at second hand, through descriptions rather than direct experience, are generally known in this way.

The relationships between stereotype, prototype, sense, and extension are summarized very briefly in the chart. The notions of prototype

	Thing (or set of things) specified	Abstract specification
Pertaining to all examples	EXTENSION	SENSE
Pertaining to typical examples	PROTOTYPE	STEREOTYPE

and stereotype are relatively recent in semantics. We have in fact given definitions which sharpen up the difference between the two terms, which are sometimes used vaguely or even interchangeably. Important though the notion of stereotype is in everyday language, it is obviously not so basic to meaning as the idea of sense, which we have defined as an indispensable hard core of meaning. In this book we will deal no further with the notions of prototype and stereotype, but we will give a lot of attention to sense.

Summary The sense of an expression can be thought of as the sum of its sense properties and sense relations. Sense properties of sentences include those of being analytic, synthetic, and a contradiction.

With the exception of a few predicates such as *bachelor*, *father*, *square*, *sphere*, etc. it is not possible to give complete definitions of the sense of most predicates by sets of necessary and sufficient conditions. Stereotypes defined in terms of typical characteristics account for the fact that people usually agree on the meanings of the words they use.

Unit 9 Study Guide and Exercises

Directions After you have read Unit 9 you should be able to tackle the following questions to test your understanding of the main ideas raised in the unit.

1 You should understand these terms and concepts from this unit:

sense	synthetic sentences
analytic sentences	contradiction
set of sufficient conditions	necessary condition
sense properties of sentences	stereotype (feature)

2 Assume that John is the same person in each of the following sentences. Now, if the sentence *John is a bachelor* is true, then is it true or false that:

a John is male
b John is unmarried
c John is human
d John is adult

We can say that the sentence *John is a bachelor* entails (a–d) if the truth of (a–d) necessarily follows from the proposition contained in the sentence

John is a bachelor. The notion of entailment will be explored in greater detail in Unit 10.

For questions 3–7 indicate whether each sentence is **analytic**, **synthetic**, or a **contradiction**. If you are not sure about a sentence, try to explain why it is not a clear-cut case.

3 a All bachelors are unmarried
c All bachelors are married
b All bachelors are happy

4 a All misers are stingy
c All misers waste money
b All misers are rich
d All misers are miserable

5 a All carnivores eat meat
b All mammals produce live young

6 a My unmarried sister is married to a bachelor
b This stool has a broken back

7 a Kings are monarchs
b Kings are male
c Kings are fathers
d George Washington was the first president
e Witches are wicked
f My brother is an only child
g Puppies are human

8 Explain why synthetic sentences are potentially informative whereas analytic sentences and contradictions are not.

9 Give some necessary conditions for the following lexical items.
a table
c sister
b car
d teacher

10 Is it possible to list a set of necessary and sufficient conditions to fully and adequately characterize the lexical item *mother*? Try to come up with a couple of such sets of conditions and then explain why they are insufficient. (Hint: think of all the current terms which contain the word *mother*, including *birth mother, surrogate mother, stepmother, biological mother, adoptive mother, natural mother, foster mother, unwed mother, genetic mother*, etc.)

11 What is the difference between **prototype** and **stereotype** (or semantic feature) as set forth in this unit?