Negating sentences in english

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Abstract

I invent and explore a terminology about degrees of sentences, I explore how to negate sentences and sentence parts in english, I distinguish between verbs that can be used in sup-sentence parts and verbs that cannot, I discuss some problems with the verb "ought", and lastly I explore the relationship between this terminology and predicate logic.

Shorthands

"En" designates example number n. "Tn" designates thesis number n. "Fn" designates form number n. "Wn" means wff (well-formed formula) number n. "s. verb" means sentence verb. A sub-sub-sub-sentence part can be referred to as the 3rd sub-sentence part. Similarly with sup-sentence parts. SST means sentence separating "that". "D" means declarative, and "A" means active, and "DA" means declarative and active.

Degrees of sentences

D sentences come in different degrees.[I] I will treat this first as an intuitive notion and try to find a clarifying definition of it. Here are some example sentences:

E1. God exists.

E2. I believe that God exists.

E3. He believes that I believe that God exists.

E1 is a first degree sentence, E2 is a second degree sentence and E3 is a third degree sentence. How might we determine which degree a sentence is? Here is one thesis:

I   Declarative sentences are those sentences that assert something. (There is a moon.) These are to be contrasted with interrogative sentences which are question sentences (Is there a moon?) and imperative sentences which order things (Believe that there is a moon!)

T1. The degree of a sentence is equal to the number of "that"'s + 1 in that sentence.

(T1) will not do because "that" also has other usages. The above sentence, that is (T1), functions as a counter-example. It is first degree sentence and has a "that" in it. Thus, according to itself, it is a second degree sentence. Therefore, (T1) is false. Here is another thesis:

T2. The degree of a sentence is equal to the number of sentence separating "that"'s + 1 in that sentence.

By "sentence separating "that"'s" (SST's) I mean a "that" which, if one removed the part of the sentence left to it and the "that" itself, then the rest of the sentence would be grammatically correct. We will see some examples of this soon.

We need to analyze the form(s) of (E1) though (E3) to see if (T2) is correct. Here are some of their forms[II]:

Form 1. [Subject] [sentence verb]

F2. [Subject 1] [s. verb] that [subject 2] [s. verb 2]

F3. [Subject 1] [s. verb] that [subject 2] [s. verb 2] that [subject 3] [s. verb 3]

According to (T2), (E1) is a first degree sentence, (E2) is a second degree sentence and (E3) is third degree sentence. This is exactly what we find. Therefore, our examples confirm (T2). The best way to further justify (T2) is to actively look for counter-examples. I have found none so far.

II Some people wrongly believe that a sentence has but one grammatical form. But some sentences have multiple grammatical forms. Similarly with logic, some people believe that a sentence has only one logical form, but some sentences have multiple logical forms. For instance, the sentence "If the moon is red, then I am dead." has both the form P and the form P→Q. Some forms are more specific than other forms, but this is too far from the topic at hand to discuss.

Sentence parts

A sentence part is whatever that either has no SST's on either side, has one on the one side but none on the other or one on each side. Sentence parts are numbered as in "the first sentence part", "the second sentence part", etc. SST's are counted similarly. Parts are counted from the left towards the right. Sentence parts are marked by special underlining in all examples. Here are three examples. The first with no sentence separating "that"'s on each side:

      E1. God exists.

The second with one on the one side but none on the other side:

      E2. I believe that God exists.

Note that both sentence parts here count as examples. For first sentence part has no SST on the left side but has one on the right side. The second sentence part has a SST on the left side but has no on the right side.

The third with one on each side:

      E3. He believes that I believe that God exists.

The second sentence part, that is, the one in the middle, is the example as it has one on each side. The other two sentence parts, the first and the third are examples of the second type.

Sub-sentence parts and sup-sentence parts

The sup-sentence part of a sentence is whatever is before the *last* SST. The sub-sentence part of a sentence is whatever is after the *first* SST. Consider an example:

      E2. I believe that God exists.

The sub-sentence part of (E2) is:

> E1. <u>God exists</u>.

The sup-sentence part of (E2) is:

> E4. <u>I believe</u>.

One can stretch this terminology into many degrees if needed. Consider:

> E3. <u>He believes</u> that <u>I believe</u> that <u>God exists</u>.

The sub-sub-sentence part of (E3) is (E1). The sub-sentence part of (E3) is (E2).

Sentence verbs and subjects

Technically there is always precisely one sentence verb in a sentence.[III] When I write "s. verb 2" I mean that if one removed the first sentence part and the SST, then what is referred to as the s. verb 2 would be the s. verb in the remaining sentence. For s. verb 3 then one needs to remove the first and second sentence parts and the SST's. Etc.

Similarly there is always one subject in a D sentence.[IV] When I write "subject 2" I mean that if one removed the first sentence part and the SST, then what is referred to by "subject 2" would be the subject in the remaining sentence. For subject 3 one needs to remove the first and second sentence part and the SST's. Etc.

III Some imperative sentences consist entirely of one verb. E.g. "Work!". It is a convention to mark imperative sentences with an exclamation mark at the end.

IV Imperative sentences may contain zero subjects.

First degree sentences

Form

The form of all first degree DA sentences is:

> F4. [Subject] [s. verb] [object] [indirect object]

The subject and sentence verb is always present but the object and indirect object are not. Moreover, the indirect object and the object are sometimes switched around. Here is a sentence where there is an indirect object:

> E6. He believes that God exists for me.

"He" is the subject. "believes" is the sentence verb. "God exists" is the object. "me" is the indirect object.

Here is a sentence where the object and the indirect object are switched around:

> E7. He gives her the present.

"He" is the subject. "gives" is the sentence verb. "the present" is the object. "her" is the indirect object.

Active and passive sentences

The form of a passive sentence is not the same as that of an active. Here a sentence and its passive version:

> E2. I believe that God exists.

E5. <u>God is believed to exist by me</u>.

"is believed" is the s. verb. The subject is "me". The object is "God exists".

Note that (E2) is a second degree sentence but (E5) is a first degree sentence, according to (T2). Instead of looking for a way to create a thesis that captures passive sentences too, I will just exclude passive sentences from my terminology.

Negation

There are at least two ways to negate DA sentences in english. Here are their two forms:

F5. [Subject] do not [s. verb] [object] [indirect object][V]

F6. It is not the case that [subject] [s. verb] [object] [indirect object]

Consider an example of these forms used to negate a DA sentence:

E1. <u>God exists</u>.

E8. <u>God does not exist</u>.

E9. <u>It is not the case</u> that <u>God exists</u>.[VI]

Both (E8) and (E9) are negations of (E1). Note that the second negation form constructs a sentence that is a degree higher than the sentence that it uses; (E9) is a degree higher than (E1). The first negation form does create a higher degree sentence; (E8) and (E1) are of the same degree.

I call the first negation form for the *simple negation* and the second for the *complex negation*.

V   The "do not" part becomes "does not" when the subject is singular third person and the tense remains the present. It becomes "did not" in the past tense and "will not" in the future tense. Etc.

VI Preferred by logicians but a rarely used form. The opposite is almost never used, that is, "it is the case that" because it is redundant. The rarely used negation form is sometimes useful to express something clearly that is hard to express clearly using the normal negation form. The "it is the case that" is used sometimes to avoid talking about truth and falseness, for instance when discussing bivalance.

It is curious to note that two DA sentences may have different degrees but have the same meaning e.g. (E8) and (E9). This implies that there is no necessary connection between the degree of a DA sentence and it's meaning. However I think it is clear that there is generally a connection between them.[VII]

Second degree sentences

Form

Second degree DA sentences also have the form:

>   F4. [Subject] [s. verb] [object] [indirect object]

But a *deeper* or more *specific* form of second degree DA sentences is:

>   F7. [Subject 1] [s. verb 1] that [subject 2] [verb 2.] [indirect object]

The space between the subject, s. verb etc. can be filled out by adverbs, adverbials and maybe other words. Here is an example without and with other words filling in:

>   E2. I believe that God exists.
>   E9. I strongly believe that a red God exists.

Again it is the case that the indirect object can move around. Here is (E9) with an added indirect object:

>   E10. I strongly believe that a red God exists for him.

VIIThanks to Laird Shaw for pointing this out to me.

"him" is the indirect object. The indirect object can be between the subject 2 and the s. verb 2, just like when it is between the subject and the s. verb in first degree DA sentences. Here is an example where (E10) is modified to change the position of an indirect object:

> E11. I strongly believe that for him a red God exists.

Negation

Negating second degree DA sentences

There at least two ways to negate second degree DA sentences:

> F8. [Subject 1] do not [s. verb 1] that [subject 2] [s. verb 2]
>
> F9. It is not the case that [subject 1] [s. verb 1] that [subject 2] [s. verb 2]

We ignore indirect objects here.

Two examples:

> E12. I do not believe that God exists.
>
> E13. It is not the case that I believe that God exists.

(E12) is the simple negation of (E2), and (E13) is the complex negation of (E2).

Negating other sentence parts

Similarly to negating DA sentences, one may wish to negate some other sentence part than the first. Here are the two forms for negating the second sentence part of a second degree DA sentence:

F10. [Subject 1] [s. verb 1] that [subject 2] do not [s. verb 2]

F11. [Subject 1] [s. verb 1] that it is not the case that [subject 2] [s. verb 2]

An example of each form used:

E2. I believe that God exists.

E14. I believe that God does not exist.

E15. I believe that it is not the case that God exists.

(E14) and (E15) are both negations of the second sentence part of (E2).

Third degree DA sentences

Form

The (specific) form of third degree DA sentences is:

F12. [Subject 1] [s. verb 1] that [subject 2] [s. verb 2.] that [subject 3] [s. verb. 3]

We also ignore indirect objects here.

Example of this form:

E3. He believes that I believe that God exists.

"He" is subject 1. "believes" is s. verb 1. "I" is subject 2. "believe" is s. verb 2. "God" is subject 3. "exists" is the s. verb 3.

As the degree of DA sentences increase, then there are increasingly many forms for negating some sentence part.

Negating the second sentence part

The forms for negating the first sentence part are not worth mentioning again. The two forms for negating the second sentence part are:

> F13. [Subject 1] [s. verb 1] that [subject 2] do not [s. verb 2.] that [subject 3] [s. verb. 3]
>
> F14. [Subject 1] [s. verb 1] that it is not the case that [subject 2] [s. verb 2.] that [subject 3] [s. verb. 3]

Two examples of these:

> E16. He believes that I do not believe that God exists.
>
> E17. He believes that it is not the case that I believe that God exists.

(E16) is the simple negation of the second sentence part of (E3) and (E17) the complex negation of the second sentence part of (E3).

Negating the third sentence part

The forms for negating the sub-sub-sentence are:

> F15. [Subject 1] [s. verb 1] that [subject 2] [s. verb 2.] that [subject 3] do not [s. verb. 3]
>
> F16. [Subject 1] [s. verb 1] that [subject 2] [s. verb 2.] that it is not the case that [subject 3] [s. verb. 3]

Two examples:

E18. He believes that I believe that God does not exist.

E19. He believes that I believe that it is not the case that God exists.

(E18) is the simple negation of the third sentence part of (E3) and (E19) is the complex negation of the third sentence part of (E3).

Universal principles of negation for DA sentences

Universally, if one wants to use simple negation, then insert "do not" (or the conjugated form "does not") between the subject n and the s. verb n to negative the nth sentence part. If n=1, then the entire sentence is negated.

Universally, if one wants to use complex negation, then insert "it is not the case that" before the subject n to negate the nth sentence part. If n=1, then the entire sentence is negated.

Verbs that can be used in the non-last sentence part and verbs that cannot

Verbs that can

I do not know how many of these verbs there are, or if they have any special identifying properties.

To love

In the first part of a second degree DA sentence:

E18. I love that he loves her.

In a first degree DA sentence:

E19. I love her.

It is noteworthy that all verbs that can be used in a first degree sentence can be used in the last sentence part of a higher degree sentence. Here is an example of "to love" being used in the second sentence part:

E20. It is not the case that I love her.

Verbs that cannot

I do not know how many of these verbs there are, but it seems that all intransitive verbs cannot be used meaningfully with an SST since an STT implies that an object is being used, and all intransitive verbs cannot be used meaningfully with objects.

To be

It is a highly ambiguous verb but some of its meanings are intransitive. For instance:

1. (intransitive) To occupy a place.[VIII]

It is easy to construct a first degree sentence:

E21. I am.

I can't find any usage of "to be" in this sense that uses an SST.

Problems with "ought"

Consider the DA sentence:

VIIIhttp://en.wiktionary.org/wiki/be#Verb

E22. He ought to kill her.

How might we negate this sentence? Here are some possibilities:

E23. He ought not to kill her.

E24. He ought to not kill her.

E25. He does not ought to kill her.

E26. It is not the case that he ought to kill her.

Not all of these attempts are equally good. Some people probably believe that some of them are grammatically incorrect. If we were to interpreted them in predicate logic with a deontic extension, we could do it like this:

W1. O¬Kh

W2. ¬OKh

Taking "O" to mean "It ought to be the case that", "Kx" to mean x kills her, "h" means he.

Now, which sentences are to be interpreted as what? It seems to me that (E24) is best interpreted as (W1). (E25) and (E26) are best interpreted as (W2). (E23) however is ambiguous between (W1) and (W2).

(E22) is a first degree DA sentence in the terminology that I have been advancing. However it has some similarities with second degree DA sentences. It just uses a different preposition; "to" instead of "that". Perhaps one could expand the terminology to include sentences such as (E22) into the category of second degree DA sentences. One idea is to include a wider variety of prepositions. Clearly (E22) features two independent meanings that can be negated.

However, it is possible to express the meaning of (E22) in a sentence that is a second degree DA sentence in the terminology proposed :

E27. It ought to be the case that he kills her.

(E27) can be negated in two places: The first and second sentence part. Using the simple negation forms we get these two sentences:

E28. It does not ought to be the case that he kills her.

E29. It ought to be the case that he does not kill her.

These sentences are non-ambiguous and are best interpreted as (W2) and (W1) respectively. So it is possible to express the meaning of (E22)-like sentences in the proposed terminology. It is unclear whether there are any DA sentences that cannot be expressed in (or translated to) the proposed terminology but that require an expansion to include other prepositions than "that".

The proposed terminology and predicate logic

It is perhaps clear from the previous chapter that the proposed terminology does well with predicate logic. A single further example will suffice:

E3. He believes that I believe that God exists.

This sentence contains three sentence parts that may be negated. In predicate logic with a doxastic extension we may formalize (E3) as:

W3. Bh(Bi[Eg])

Where "Bx(p)" means x believes that p, "Ex" means x exists, "h" means he, "i" means I and "g" means God.

Here are three simple negation sentences constructed from (E3). The first one denies the first sentence part, the second the second sentence part, the third the third sentence part. They are first written in english and then in predicate logic:

E30. He does not believe that I believe that God exists.

W4. ¬Bh(Bi[Eg])

E31. He believes that I do not believe that God exists.

W5. Bh(¬Bi[Eg])

E32. He believes that I believe that God does not exist.

W6. Bh(Bi[¬Eg])