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## Unnaturalness of Negation – an Old Wives’ Tale Retold

### Summary

Negation has a very long history of study. In the realm of logic, negation is seen as a simple operation that turns an affirmative to a negative. This assumption strongly affected the linguistic study of negation, and led to some misconceptions. For example, negation in natural languages is seen as something unnatural, artificial and syntactically as well as semantically dependant on affirmation. It is perceived as a logical/mathematical operation that turns affirmatives into negatives by way of syntactic transformation and semantic cancellation of multiple negatives. To refute some of these misconceptions, the paper investigates the nature of negation as a linguistic phenomenon, and shows that negation in logic and linguistics should not and cannot be treated in the same fashion. Special attention is paid to the problems of structural complexity, the syntactic notion of multiple negation and its different semantic interpretations. With regard to the semantic interpretation of multiple negation, languages, by and large, allow for two possibilities: negative concord and double negation. Negative concord, which interprets two negatives as a single negation, seems to represent the natural course of language development, while double negation, which allows the cancellation of two negatives resulting in affirmation, was introduced into languages under the influence of logic in the 17<sup>th</sup> and 18<sup>th</sup> centuries.

**Key words:** negation, multiple negation, double negation, negative concord, psycholinguistics

## Nenaravnost zanikanja – napačne predstave?

### Povzetek

Proučevanje zanikanja ima dolgo tradicijo. Logika obravnava zanikanje kot operacijo, ki zanika trdilno propozicijo. To spoznanje je služilo kot izhodišče za jezikovno proučevanje zanikanja in je vodilo nekatere zmotne predstave o zanikanju. Zanikanje v naravnih jezikih se, na primer, pogosto obravnava kot pojav, ki je skladnjsko in pomensko odvisen od trdilsti. Pričujoči članek se osredinja na nekatere najbolj pogoste napačne predstave, kot so problemi skladske kompleksnosti, večkratnega zanikanja in njegove pomenske razčlenitve. Naravni jeziki praviloma omogočajo dve interpretaciji večkratnega zanikanja: nikalno ujemanje in dvojno zanikanje. Večina naravnih jezikov razume večkratno zanikanje kot enkratno zanikanje in tako ne sledi poimovanju zanikanja v logiki, kjer se večkratno zanikanje med seboj izniči. Ta mehanizem, imenovan dvojno zanikanje, je bil umetno vpeljan v nekatere jezike, na primer angleščino, pod vplivom preskriptivne slovnice 17. in 18. stoletja.

**Ključne besede:** zanikanje, večkratno zanikanje, dvojno zanikanje, nikalno ujemanje, psiholingvistika

# Unnaturalness of Negation – an Old Wives’ Tale Retold

## 1. Introduction

The study of negation has a very long history that was primarily dominated by (onto)logical research. Seminal works of philosophers from Aristotle to Russell have left indelible marks on our perception of negation and it can even be claimed that they have changed the natural course of language development. Recent linguistic accounts (e.g. Klima 1964, Dahl 1979, Haegeman 1995 a.o.), however, have shown that negation in natural languages and logic do not share the same properties, and should not, therefore, be treated in the same fashion. The present paper discusses some of the differences and focusses on some popular misconceptions that have roots in ontological tradition but do not reflect the situation in natural languages.

The paper is organised as follows. Section 2 offers a brief outline of the differences between the negation in logic and natural languages. It particularly focusses on the problems of structural complexity (2.1), multiple negation, negative concord and double negation (2.2). Section 3 shows how the ontological treatment of negation has affected the study of negation in psycholinguistics and led to some highly questionable conclusions that are still argued for by some psycholinguists. Section 4 sums up the paper.

## 2. Negation and ontological legacy

To form negation in logic, the external negative operator  $\neg$  is added to the proposition  $p$ , resulting in  $\neg p$ . The fact that this operation requires an affirmative preposition has led logicians to conclude that affirmation has a primary and negation a secondary status. As such, negation has often been seen as redundant and dispensable. This stance is perhaps best summarised by Russell (1948, 530), who claims that “[t]he world can be described without the use of the word ‘not’”.

Turning now to the linguistic definitions of negation in (1) – (3), we can see that they reflect the ontological treatment of negation, since all three assume that negative sentences are formed from the affirmatives by inserting a morpho-syntactic operator (hence the morpho-syntactic complexity of negation), and implicitly suggest that negation in natural languages also has a secondary status.

- (1) A simple positive sentence [...] is negated by inserting the clause negator *not* between the operator and the predication[.] Quirk et al. (1999, 776)
- (2) Clausal negation is used to deny or reject a proposition. Clauses are negated by the insertion of the negator *not* or by some other negative word [.] Biber et al. (1999, 158)
- (3) Although the semantics of Neg is connected with quite a few intricate problems, it still seems possible to give a relatively uncontroversial characterization of Neg in semantic terms. We thus formulate as a necessary condition for something to be called Neg that it

be a means for converting a sentence  $S_1$  into  $S_2$  such that  $S_2$  is true whenever  $S_1$  is false,<sup>[1]</sup> and vice versa. Dahl (1979, 80)

Generalisations such as (1) – (3) may be practical when it comes to teaching languages, yet they do not really capture the linguistic properties of negation. In what follows we will try to address some of these properties from a cross-linguistic perspective, and show that negation is far more complex in natural languages than in logic.

## 2.1 Complexity of negation

We will start by examining the morpho-syntactic complexity of negative sentences. In his typological study of negation that includes data from approximately 300 languages, (Dahl 1979) points out that the majority of the languages investigated form negation by using different morphological (e.g. affixation and stem modification) or syntactic means (e.g. negative particles and auxiliaries). The presence of various markers of negation in negative sentences and their absence in affirmatives could be used to support the claim that negation is morpho-syntactically more complex than affirmation. It is questionable, however, whether this conclusion really encompasses all languages, and thus belongs to the universal property of negation. Dahl (op. cit., 82) also reports of languages in which negation does not seem to trigger morpho-syntactic complexity, at least not the one associated with the presence of an overt marker of negation that expands the affirmative structure. Examples of such languages are Mano and Kwaa, both belonging to the Niger-Congo language group. While in Mano negatives differ from the affirmatives only prosodically (4), in Kwaa negation involves prosodic modification and word order change (5).

(4) a) `n yídò (Dahl 1979, 82)  
 'I know.'

b) ^ n yídò  
 'I do not know.'

(5) a) mà tè màna (Dahl 1979, 82)  
 'I bought bananas.'

b) /mà maná tè  
 'I didn't buy bananas.'

The next issue to address is the question of forming negation by way of transformation. One cannot fail to notice that while in logic there is a clear-cut boundary between  $p$  and  $\neg p$ , in natural languages the boundaries are much more blurred. For example, sentences (7a,b) should be treated as negative counterparts of (6), since they display a high level of synonymy with the syntactically negated sentences (7a',b'). Even though they are affirmative in form (i.e. with

no overt marker of negation) they are semantically negative. Their negative status can be easily proven by using the diagnostic ‘*much less*’ test: only two negative sentences can be coordinated by the quasi-coordinator *much less* (as shown in (8) and (9)).

- (6) a) *John succeeded in finishing the paper in time.*  
 b) *They have a lot of water to drink.*
- (7) a) *John failed to finish the paper in time.*  
 a') *John didn't succeed in finishing the paper in time.*  
 b) *They are short of water to drink.*  
 b') *They don't have a lot of water to drink.*
- (8) a) \**John succeeded in finishing the paper in time much less type it correctly.*  
 b) \**They have a lot of water to drink much less to bathe in.*
- (9) a) *John failed to finish the paper in time much less type it correctly.*  
 b) *They are short of water to drink much less to bathe in.*  
 c) *John didn't succeed in finishing the paper in time much less type it correctly.*  
 d) *They don't have a lot of water to drink much less to bathe in.*

It should also be noted that in natural languages, it is also possible to express negation implicitly, i.e. without using morpho-syntactic markers of negation. This can be mainly achieved by two different strategies: (i) by using lexical items that negative semantically and not syntactically<sup>1</sup> (e.g. the verbs *to fail*, *to doubt*, *to deny*); or (ii) by using affirmative sentences whose negative interpretation is triggered by the context, as in (10):

- (10) a) *You are such a hero. Even a girl can beat you up!*  
 b) *How should I know how to spell 'Liebowitzmeyer'!*  
 c) *Fred, a priest! Never.*  
 d) *Hercule Poirot to sleep while murder is committed! What a preposterous idea!*

The last problem we would like to present in this section is the ontological claim that negation always presupposes affirmation. To exemplify, the sentence *The car is not blue* states that the car is not of a blue colour but, more importantly, it presupposes at the same time that the car has a colour; it may be green, yellow, pink, etc.<sup>2</sup> It is not difficult, however, to find sentences for which it is impossible to find the presupposed affirmatives. Do the negative sentences in (11) – (13) really presuppose their affirmative counterparts? Obviously not, so it is safe to conclude

1 The semantically negative status of a lexical item LI may affect the syntactic behaviour of a clause containing the LI – see examples in (6) – (9).

2 For a detailed analysis of the issue in question see Horn (2001, 63-73).

that the negative examples in (11) – (13) describe events on their own, and they do so without presupposing the affirmatives.

- (11) a) *Peter hasn't read the book yet.*  
       b) ?*Peter has read something else.*
  
- (12) a) *Peter doesn't pay taxes.*  
       b) ?*Peter pays something else.*
  
- (13) a) *Thou shalt not covet thy neighbour's wife.*  
       b) ?*Thou shalt covet thy (friend's/enemy's) wife.*

## 2.2 Multiple negation, negative concord and double negation

The present section focusses on some misconceptions regarding semantic implications of the negatives. To start with, it is necessary to address the question of frequently-misused terminology. Multiple negation is used by syntacticians as a cover term to refer to any co-occurrence of two or more negative elements within the same syntactic structure, in most cases the clause (14).

- (14) a) *Nobody saw nothing.*
  
- b) *Personne n'a rien dit.* French  
           nobody *ne* has nothing said  
           'Nobody said anything.'
  
- c) *Nihče ni videl ničesar.* Slovenian  
           Nobody not+is seen nothing  
           'Nobody saw anything'

Negative concord and double negation, on the other hand, pertain to semantics: they refer to two different interpretations of multiple negation. Negative concord languages interpret multiple negation occurrences as a single negation: two or more co-occurring negative elements within the same clause are always interpreted as a single negation (15). Negative concord comes in two forms (van der Wouden 1997, 182): (i) negative spread, and (ii) negative doubling. In the case of the latter a special marker of negation appears in all sentences that contain a negative expression, whereas in the case of the former the negative meaning is shared by any number of indefinite expressions within the negative scope.

Taking Slovenian as an example, we can observe that it displays the negative doubling but not the negative spread, since the wellformedness of negative sentences depends on the presence of the marker of negation *ne*:

- (15) *Nihče \*(ne) bo odšel nikamor.*  
 nobody not will gone nowhere  
 ‘Nobody will go nowhere.’

Italian, on the other hand, allows both the negative spread (16a) and negative doubling (16b), depending on the position of the indefinite pronouns such as *nessuno* and *niente*:

- (16) a) *Nessuno ha detto niente.* (Zanuttini 1997, 8)  
 nobody has said nothing  
 ‘Nobody said anything.’
- b) *Gianni \*(non) legge niente.* (Haegeman 1995, 196)  
 John not reads nothing  
 ‘John doesn’t read anything.’

The second possible interpretation of multiple negation – double negation – follows the ontological principle of *Duplex negation affirmat* according to which one negation explicitly cancels the other, giving rise to an affirmative interpretation. A language that follows this principle is standard present-day English:

- (17) a) *Nobody said nothing.*  
 ‘Everybody said something.’
- b) *You simply cannot not adore her.*  
 ‘You simply must adore her.’

Perhaps the best piece of evidence that double negation and negative concord are only two different semantic interpretations comes from the fact that double negation languages allow negative concord interpretation and vice versa. For example, some varieties of vernacular English allow negative concord interpretation (18a). Likewise, negative concord languages, such as Italian (18b) and Slovenian (18c-d), allow double negation readings:

- (18) a) *You ain’t got no money.*  
 ‘You have no money.’
- b) *Nessuno non ha fatto niente.* Guglielmo Cinque p.c.  
 nobody not have done nothing  
 ‘Everybody did something.’
- c) *NIHČE ni rekel ničesar.*  
 NOBODY not-is said nothing  
 ‘Everybody said something.’

- d) *Ti ne moreš kar ne poslušati.*  
 you not can just not listen  
 ‘You cannot just not listen.’

Natural languages go even beyond the bipartite division into negative concord and double negation. There are at least two more interpretations of multiple negation namely, litotes, and emphatic negation. In the case of the latter, two negations strengthen each other, the result being a stronger negation than the same construction with only one negation (19a). In the case of the former, two negatives weaken each other, the result is less negative meaning that would be if there were only one negation present (19b). To acquire the meaning of litotes, one of the negatives need not be negative in form<sup>3</sup> as in (19c) where the adjective *bad* is negative only in meaning.

- (19) a) *Can linguists study negation? **Not** and stay sane, I **don't** think.*  
 b) *Negation is **not** an **unimportant** issue. ≠ Negation is an important issue.*  
 c) *He **doesn't** look too **bad**. ≠ He looks *dishy*.*

## 2.2.1 Double negation in English

It is a well-known fact that double negation was forcefully introduced into natural languages by prescriptive grammarians who wanted to follow the principles of logic and not the (non)-logic of languages. It was believed that negative concord is an anomaly and should be expelled from natural languages. This standpoint is best described by Jespersen (1922, 352), who argues that “[o]ne of the most characteristic traits of the history of English is thus seen to be the gradual getting rid of [negative] concord as of something superfluous. Where concord is found in our family of languages, it certainly is an heirloom from a primitive age[.]”

At the beginning, English was a negative concord language (see Blake 1996), expressing single negation by using multiple negation constructions (like present-day Italian and Slovenian). The rise of prescriptive grammar in the 18<sup>th</sup> century gave birth to more philosophical approaches to the study of English. The most influential prescriptivist of the period, Bishop Robert Lowth, observes in his *Short Introduction to English Grammar*, published in 1762, that “[t]wo negatives in English destroy one another, or are equivalent to affirmative”. Decades later, in his publication *English Grammar* (1795), his follower, Lindley Murray, used the same explanation for the interpretation of multiple negation in English. Crystal (1999, 78-9) reports that both grammars were well-received and extensively used in education. They were later on also used as foundation stones for modern traditional grammars, so it is not surprising that double negation is now the only grammatically acceptable interpretation of multiple negation in present-day English.

3 Strictly speaking, UN- adjectival prefixes are not negative prefixes but antonymic prefixes. Therefore, adjectives with the UN- prefix are only semantically (i.e. not syntactically) negative. For details, see Ilc (2005).

Table 1 closes section 2 and sums up the differences between the negation in logic and negation in natural languages discussed so far.

negation in logic	Negation in natural languages
external operator	internal operator
tied to a symbol $\neg$	floating signifié/signifiant relation (cf. e.g. (6) – (10))
negation is more complex than affirmation	negation is usually more complex structurally but not always (cf. e.g. (4) – (5))
symmetry between negative/positive proposition	asymmetry between negative/positive proposition (cf. e.g. (6) – (10))
negation presupposes affirmation	negation does not necessarily presuppose affirmation (cf. e.g. (11) – (12))
multiple negation:	multiple negation:
(i) double negation principle	(i) negative concord (cf. e.g. (15) and (16))
	(ii) double negation (cf. e.g. (17))
	(iii) emphatic negation (cf. e.g. (19a,b))
	(iv) litotes (cf. e.g. (19c))

Table 1: Differences between negation in logic and natural languages.

### 3. Negation in psycholinguistics

The development of psycholinguistics in the 20<sup>th</sup> century enabled scholars to investigate the effect of negation on language acquisition and language processing. Building on the ontological principles that negation has a secondary status, psycholinguists of the 1960's and 1970's (e.g. Wason 1961, Cornish and Wason 1970 a.o.) conducted numerous empirical studies whose fundamental findings are that negation is: (i) more difficult to process and understand than affirmation, (ii) more difficult to produce than affirmation, (iii) prohibitive while affirmation is permissive.

These conclusions were later on proven by the theory to be invalid,<sup>4</sup> so, it is disappointing to see that some of these misconceptions should still persist in the academic circles. Andrej Marušič (2002), a Slovenian psychologist, claims that there is a strong link between a high suicide rate and the use of negation. Marušič (ibid.) believes that the extensive use of negation triggers off negative thinking which may cause psychological damage. To avoid the potential damage, the author suggests the use of non-restrictive affirmatives (20b) instead of restrictive negatives (20a):

- (20) a) *Ne plezaj!*  
 'Do not climb.'

4 For a concise insight into the psycholinguistic theory regarding negation see Horn (2001, 168-203).

- b) *Noge na tla!*  
 ‘Put your feet down.’

Semantically and pragmatically, it is highly questionable whether the negatives are really more restrictive. As argued by Marušič, Marvin and Žaucer (2002) in their reply to Marušič (2002), (20a) is far less restrictive since it allows jumping, tumbling, etc., all of which are prohibited by (20b). Hence, (20b) can cause more psychological damage to a child than (20a).

As his theory develops, Marušič (ibid.) finds it interesting that “[n]ations with high suicide rates, such as Slovenians and Hungarians, have more negations than others. While Slovenians negate twice, in English we negate once[.]”<sup>5</sup> Building on this assumption, the author concludes that there is a strong link between the high suicide rates and the multiple occurrence of negative elements (i.e. multiple negation) in negative structures. This claim faces a basic problem, since multiple negation in Slovenian and Hungarian gives rise to a single negative interpretation (the s.c. negative concord languages). Slovenian/Hungarian negative sentences with one, two or more negative elements receive exactly the same interpretation as English negative sentences with one negative element, namely, single negation reading.<sup>6</sup>

As pointed out by Marušič, Marvin and Žaucer (ibid.), speakers of Slovenian and Hungarian have only one syntactic possibility of expressing negation, and that is multiple negation, which receives the semantic interpretation of negative concord. Hence, the only possible translation of English (21a) is (21b).

- (21) a) *I haven't got any.*

- b) *Nimam nobenega.*  
 not-have none  
 ‘I haven't got any.’

To avoid the negative influence of negation on psychological development, Marušič (ibid.) proposes that Slovenian grammar should be less prescriptive. At this point, it seems that Marušič (ibid.) contradicts himself: on one hand he criticises the natural (and the only possible) way of expressing negation syntactically, while on the other he wants to prescribe newspeech. This viewpoint elevates the author to the status of the 17<sup>th</sup>/18<sup>th</sup>-century English prescriptivists.

To end this section and to show that there is no, at least clear, co-relation between the type of a language and the suicide rate, we re-examine the suicide rate data. Table 2 shows the suicide rates for some of the Spanish-speaking countries (a negative concord language)<sup>7</sup> and English-

5 In the original: “[N]arodi z visokim samomorilnim količnikom, denimo Slovenci in Madžari, [imajo] več negacij kot drugi. Slovenci ob negiranju zanikamo dvojno, medtem ko se v angleščini zanika le enkrat[.]”

6 It should be noted that Marušič (ibid.) is not to be blamed exclusively for the wrong use of terminology since even the most widely used grammar of Slovenian uses the term double negation as a synonym for multiple negation and states that the abundance of negation is a feature common to all Slavic languages. Toporišič (2000, 498)

7 For a detailed analysis of negation in Spanish and its negative concord status see: Laka (1990), Su er (1995) and Espinal (2000) a.o.

speaking countries (a double negation language). The reasons for choosing Spanish and English are straightforward – they belong to two different language groups with regard to negation and they are both widely spoken.

Only 4 out of 16 Spanish-speaking countries have a higher suicide rate than the UK, and only 1 Spanish-speaking country has a higher suicide rate than the USA. If Marušič (ibid.) were correct, the data would be different.

country	year	males	females	total
Argentina	96	9.9	3.0	12.9
Chile	94	10.2	1.4	11.6
Colombia	94	5.5	1.5	7.0
Costa Rica	95	9.7	2.1	11.8
Cuba	96	24.5	12.0	36.5
Dominican Republic	94	0.0	0.0	0.0
Ecuador	95	6.4	3.2	9.6
El Salvador	93	10.4	5.5	15.9
Guatemala	84	0.9	0.1	1.0
Mexico	95	5.4	1.0	6.4
Panama	87	5.6	1.9	7.5
Paraguay	94	3.4	1.2	4.6
Peru	89	0.6	0.4	1.0
Spain	99	12.4	4.0	16.4
Uruguay	90	16.6	4.2	20.6
Venezuela	94	8.3	1.9	10.2
United Kingdom	99	11.8	3.3	15.1
United States of America	99	17.6	4.1	21.7

Table 2: Suicide rates per 100,000, by country, year and gender.

Source: [http://www.who.int/mental\\_health/prevention/suicide/suiciderates/en/print.html](http://www.who.int/mental_health/prevention/suicide/suiciderates/en/print.html)

## 4. Conclusion

The present paper examines some common misconceptions regarding negation that are still present in our understanding of negation. By using relevant examples from sundry languages, it has been shown that negation as a linguistic phenomenon should not and cannot receive the same treatment as negation in logic.

We have tried to refute the belief that negation depends syntactically as well as semantically on affirmation. Firstly, negation in natural languages does not (universally) display the morpho-

syntactic complexity by way of transforming affirmative to negatives. Secondly, there are no clear-cut boundaries between the affirmation and negation, making it impossible to argue that negation presupposes or implies affirmation.

Special attention has also been paid to the syntactic notion of multiple negation and its different semantic interpretations: (i) negative concord, (ii) double negation, (iii) emphatic negation and (iv) litotes. All of the four semantic interpretations can be found within the same language, regardless of whether the language belongs to what has traditionally been classified as negative concord languages (e.g. Romance and Slavic languages) or double negation languages (e.g. English).

Finally, we have also provided an insight into the treatment of negation within psycholinguistics. It has been pointed out that any psycholinguistic study should not build on oversimplified understandings of negation.

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