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Article

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CERTAIN ISSUES WITH THE COMMUTATIVITY OF THE CONNECTIVE "I"[1]

Summary: The conjunctive "i" is one of the four interpretations of the Polish connective "i" ("and" in English), along with the accessory, sequential and explicatory ones, which are distinguished by Olgierd Wojtasiewicz. Its characteristic feature, as in the case of the functor of conjunction in logic, is commutativity. However, this property is associated with certain problems of a stylistic or phonetic nature, problems related to building an open series of compound sentences or the occurrence of the component expressing the attitude of the speaker.

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Searching for natural language equivalents of logical functors remains a very topical problem. In Polish, the most commonly accepted equivalent of the functor of conjunction is the connective "i". We might, however,

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encounter a problem here: commutativity, which is characteristic of the functor of conjunction, is not so clear in the case of the connective "i", not even for the conjunctive connective "i".

In standard university textbooks of logic, reflections concerning problems with the commutativity of the "i" connective—which is undoubtedly the basic Polish equivalent of the functor of conjunction—are often missing altogether. However, here I would like to focus on some titles which do acknowledge these problems. Wojciech Patryas observes that "the word 'i' is not a perfect equivalent of the functor of conjunction" for at least three reasons (Patryas, 1996, p.15). The first reason is that, usually, the connective "i" joins together sentences which are close in meaning. Secondly, it is considered incorrect to connect by means of the word "i" sentences which imply some type of contrast in their meaning (the connective "a" should be used in such cases in Polish). The third reason is the order of events described by the conjoined sentences and imposed by the connective, i.e. the question of sequentiality (idem.), Zygmunt Ziembiński also draws attention to the issue of sequentiality of "i": "In spoken colloquial language, the order of sentences joined with the connective 'i' may determine the temporal order of events described in these sentences [...] while the order of arguments in the truth-functor conjunction is of no importance" (Ziembiński, 2001, p. 86). According to Barbara Stanosz, the connective "i" is an equivalent of the functor of conjunction only in one of its possible meanings, the conjunctive meaning (Stanosz, 2000, p. 27). To illustrate her point the author observes that the expression "a następnie" (and then) can be the synonym of the connective "i", but that meaning automatically eliminates it from the list of the functor-of-conjunction equivalents of the factor of conjunction in logic (idem.). This line of reasoning excludes not only the sequential connective "i" from the set of the functor-of-conjunction equivalents, but also the explicatory connective "i" (linking an action which is a cause with an action which is its consequence), as well as the accessory connective "i" (linking the principal action and an accompanying action). The following question arises here: do issues concerning commutativity of the conjunctive "i" exclude some types of the conjunctive "i" from the set of the functor-of-conjunction equivalents?

The conjunctive "i" is one of the four types of "i"—together with the explicatory, sequential and accessory ones—as distinguished by Olgierd

Wojtasiewicz (1972, pp. 109–144).[2] It is characterized by the commutativity of the parts it links, by a lack of temporal or causal factors and by a balance in weight of the connected elements: one cannot distinguish between the main and the accessory ones. Because of these characteristics, the conjunctive connective "i" best resembles the functor of conjunction in logic, which is also commutative. Linguists, however, have noticed, and described, a number of problems the conjunctive connective "i" poses. The list of issues examined in this article should not be viewed as exhaustive nor should the order in which they have been presented be seen as an indication of their importance.

Testing the Conjunctive Interpretation of the "I"

Before describing problems with the commutativity of the conjunctive "i", I would like to propose a test which will allow me to identify statements in which "i" is actually conjunctive. This test will be based on the classification proposed by Wojtasiewicz.[3] Thus, in order to identify the conjunctive "i", the sequential, explicatory and accessory interpretations must be eliminated. In my opinion, the best way of eliminating these interpretations will be to replace the "i" in question with synonymous expressions that best characterize each of the three interpretations we are trying to eliminate. Expressions characteristic for each interpretation are expressions which can be used in the same context to replace the "i" without modifying the meaning of the sentence. I assume that for the explica-

[2] Some linguists make finer distinctions than the one I presented here, but I have chosen it because it distinguishes the conjunctive "i" and its commutativity characteristic. For example, Jadwiga Wajszczuk writes about the following functions/relationships in which the "i" connective can be used: conjoining, proceeding/resulting from, cause-effect, opposition/contrast, permission, time relation. She also notices that "next to the possibility of expressing a conjoining relation there is also a possibility of expressing an adjoining relation" (Wajszczuk, 1986, pp. 123–124) and that the connective "i" may also be an indicator of a disjoining relation (idem, p. 124) This classification is equivalent to the classification of Wojtasiewicz only in two cases: the temporal function equals Wojtasiewicz's sequential interpretation and function and the cause-effect relation equals his explicative interpretation.

[3] There have been some attempts of reducing all the types of "i" distinguished by Wojtasiewicz to the conjunctive "i" alone (*vide* Magner, 2005).

tory "i" the word "dlatego" (meaning roughly the same as "that's why" or "so") would be the best choice, for the sequential "i", it would be the phrase "a potem" (and then) and as for the accessory "i", the expression "a przy tym" (and at the same time).

Let us look at some examples:

a) Artur kieruje autobusem i słucha radia [Arthur is driving the bus and listening to the radio].

In this case, without modifying the meaning of the whole sentence, we can replace "i" with "a przy tym". We are dealing here with two actions which are happening simultaneously and moreover, one of the two actions is the main action (driving the bus) while the other one is secondary, in other words, accessory (listening to the radio). Replacing the "i" with "a przy tym" emphasizes its accessory character.

a') Artur kieruje autobusem, a przy tym słucha radia [Arthur is driving the bus, and at the same time (he is) listening to the radio].

In the example a) the "i" is not conjunctive. Let us look at another sentence:

b) Artur wszedł do pociągu i odjechał [Arthur got on the train and left].

In this case, the action described by the verb to the left of the connective happened earlier than the one described by the verb to the right of the connective. A temporal element is clearly present. Arthur got on the train first and he left afterwards. That is why we can use "a potem"[4] in place of "i" thus emphasizing the sequential character of the connective.

b') Artur wszedł do pociągu, a potem odjechał [Arthur got on a train and then left].

The possibility of replacing the "i" with "a potem" defines the "i" as sequential. Only the impossibility of this replacement would allow us to

[4] Sometimes, the expression "a następnie" (and afterwards) is used to emphasize the sequential character of the connective "i", as proposed by Barbara Stanosz (2000, p.27).

determine that we are dealing with the conjunctive "i". Let us look at another example:

c) Kózka skakała i złamała nóżkę [A goat was jumping around, and (it) broke (its) leg].

In this case, the emphasis is on the cause, the effect of which is described by the verb to the right of the "i" connective. For this reason, the best expression to replace the "i" connective here is "dlatego" (that's why).

c') Kózka skakała, dlatego złamała nóżkę [The goat was jumping around, that's why (it) broke (its) leg].

The possibility of replacing "i" with "dlatego" eliminates the conjunctive interpretation.[5]

One might ask why I do not use commutativity as a criterion to determine the conjunctive character of a given "i". After all, commutativity is characteristic only of the conjunctive "i". It is very clear that we cannot talk of commutativity in the case of the sequential, the explicatory or the accessory "i". The answer is provided in the discussion to come: in certain expressions, even though the "i" appears to be conjunctive, its commutativity is problematic.

[5] However, while trying to apply this test, we might encounter some difficulties. In the examples below, I mentioned, in the brackets, the expressions characteristic for the given type of "i". No brackets or the inclusion of "i" in the brackets indicates that we are dealing with the conjunctive "i". Problematic examples have more than one element in the brackets. Examples are mainly from www.biblioteka.kijowski.pl: Modlimy się i (a przy tym, dlatego, a potem, i) śpiewamy [We pray and (at the same time, that's why, and then, and) we sing]; Tezeusz zabił go (Minotaura) i (a potem) wyszedł... po czym wsiadł na okręt i (a potem) odpłynął [Theseus killed him (the Minotaur) and (and then) went out... then embarked on a ship and (and then) sailed away]; Apollo [...] uczył strzelać z łuku i grać na cytrze [Apollo taugth how to use a bow and how to play the cithar]; (posąg Heliosa) uległ trzęsieniu ziemi i (dlatego) rozbił się na kawałki [(the statue of Helios) was brought down by an earthquake and (so) it broke into pieces); z oczu ich bił ogień i (a przy tym, i) z paszcz ciekła jadowita ślina [Fire beamed from their eyes and (while, and) poisonous saliva dripped from their mouth]; Augiasz był królem Elidy i (dlatego) miał nieprzebrane stada bydła [Augeas was the king of Elis and (that's why) he owned countless herds of cattle].

Problems

In his discussion of the conjunctive "i", Wojtasiewicz mentions that it is the only one among all the types of "i" he distinguished which actually fulfills the condition of commutativity (1972, pp. 135–137). He also draws attention to the fact that for this reason, it is similar to the functor of conjunction in logic: "in this case, 'i' is commutative, just as in the propositional calculus" (idem, p. 135).

Let us consider an example, in which actions performed by Jan are to him of equal importance, and he applies himself to both with identical passion.

> d) Jan gra na akordeonie i wykłada w Akademii Wychowania Fizycznego ($p \wedge q$) [Jan plays the accordion and teaches at the Academy of Physical Education].

Let us ask firstly whether it is possible, with no change to the meaning of the sentence, to replace the "i" with "a potem", "a przy tym" or "dlatego". If not, the sequential, accessory and explicatory interpretations are thus eliminated.

> d?) Jan gra na akordeonie a potem / a przy tym / dlatego wykłada w Akademii Wychowania Fizycznego [Jan plays the accordion and then / and at the same time / that is why he teaches at the Academy of Physical Education].

The activity mentioned to the left of the connective is not the main activity nor is the one to its right a secondary one. Both actions have the same level of importance, so the accessory interpretation is out of the question. There is no temporal relationship between the two activities (we cannot assume that he plays the accordion before teaching) and no causal relationship either (we cannot say that he plays the accordion and that's the reason why he teaches at the Academy). Thus, the only possible interpretation of the "i" here is the conjunctive interpretation. In the sentence d) mentioned above, the "i" is commutative and, therefore, "nothing prevents us from saying the following" (Wojtasiewicz, 1972, p. 135):

d') Jan wykłada w Akademii Wychowania Fizycznego i gra na akordeonie ($q \wedge p$) [Jan teaches at the Academy of Physical Education and plays the accordion].

After the commutation, this particular sentence did not change its meaning, so we can say that the "i" used here is commutative ($p \wedge q \leftrightarrow q \wedge p$).[6]

However, can we really be sure that nothing else prevents the "i" from being commutative? Not quite. Wojtasiewicz himself mentions two problems: phonetic reasons (concerning mainly intonation) and stylistic reasons. Let us consider the following example:

e) Grzmiało i białe płatki śniegu tańczyły z wolna na błyszczącej powierzchni góry pokrytej lodem [It thundered and white snowflakes were dancing slowly on the glittering surface of the ice-covered mountain].

The "i" used in this sentence is a conjunctive "i". Thus, it should be possible to modify the sentence to demonstrate the commutative character of the "i" connective.

e?) Białe płatki śniegu tańczyły z wolna na błyszczącej powierzchni góry pokrytej lodem i grzmiało [White snowflakes were dancing slowly on the glittering surface of the ice-covered mountain and it thundered].

The question-mark indicates a certain problematic issue: "The final position of the verb in this sentence gives the impression that the sentence is unfinished" (Wojtasiewicz, 1972, pp. 135–136). It is so because the rule of augmenting segments is not being respected here. This rule stipulates that "segments joined by the 'i' should be placed in order from the shortest to the longest" (Bednarczuk, 1972, p. 27).[7]

[6] Wojtasiewicz draws attention to the fact that examples in which sentences preceding and following the "i" have the same subject are the most common. When we are dealing with different subjects, the word "a" instead of "i" is usually used.

[7] Krystyna Kallas and Leszek Bednarczuk also draw attention to euphonic and stylistic problems with the commutativity of the connective "i". According to Bednarczuk, the order of segments is determined "by different factors, usually of

Maciej Grochowski draws attention to another problem. He distinguishes two types of relationship which the connective "i" can suggest. In the first one, the "i" can be replaced by expressions such as "a także", "jak również", "jak też", "oraz", "tudzież", "zarówno... jak i" (which all translate roughly as: "as well as", "and also") without modifying the meaning of a given statement. This "i" is commutative. However, some conditions apply. In the second type of relationship, the "i" connective can be replaced by "następnie", "potem", "po czym" (roughly translated as: "and then", "and afterwards"). This "i" is not commutative (cf. Grochowski, 1984, pp. 280–281). I will accept that the connective "i" forming relationships of the first type is conjunctive, while the one forming relationships of the second type is sequential. The question I am trying to answer here is the following: why do certain conditions apply when the commutativity of the connective "i" in the first type of relationship (in other words, with the conjunctive "i") is concerned? An answer to this question can be found when the traditional classification into compound versus complex structure types is examined.

In the traditional classification of connective-linked sentences in Polish (sentences containing clauses linked by a connective),[8] paratactic (compound) and hypotactic (complex) sentence types are usually distinguished. The criterion of this classification is based on the type of the connective word used in a given structure.[9] Connectives characterizing

stylistic nature" (Bednarczuk, 1972, p. 24) He also mentions that "the position of clauses or conjugated (tensed) verbs in a coordinate structure can be changed without modifying the overall meaning of the sentence [...] but [...] it cannot be done in a random way" (idem, pp. 23–30). He mentions and analyses three factors which influence the order of the coordinate structure's clauses or predicates: phonetic form, rhythmical structure and semantic value. However, he makes the following remark: "From a grammatical point of view, the order of elements in a coordinate expression is irrelevant" (idem, p. 29). According to Kallas, "a close analysis shows that there are some grammatical limits as to the commutativity of these elements" (Kallas, 1993, p. 128). She adds however that "constructions in which a change in the order of elements leads to incorrectness can be seen as non-standard" (idem, p. 128).

[8] There is no term in English grammar equivalent to "zdania złożone" in Polish. This expression includes sentences which would be classified in English as compound or complex depending on the case.

[9] The terms "parataksa" and "współrzędność" are used interchangeably in Polish syntactical terminology. Stanislaw Karolak draws attention to the degree of

the first type are, for example, "i" [and], "lub" [or], "albo" [or else]; those defining the second type are "ponieważ" [because], "chociaż" [even though], "zatem" [so]. [10] Independently of this traditional classification, we also distinguish sentences containing clauses which are syntactically equivalent ("równoważne syntaktycznie" in Polish[11]), for example, two or more main clauses in a compound sentence and sentences containing clauses which are not syntactically equivalent (for example, a combination of main and subordinate clauses).

Hypotactic sentences belong to the group of sentences whose clauses are not syntactically equivalent while paratactic sentences can belong to either of the two groups. The classification is based on the analysis of a given sentence's structure. The following question arises: what are the conditions which have to be met by a connective-linked sentence ("zdanie

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generality of these terms: "parataksa" has a more restrained meaning than "współrzędność", because it applies only to coordinate clauses (Karolak, 2003d, p. 642). Similarly, the term "hipotaksa" in Polish terminology is used interchangeably with the term "podrzędność". The difference between the two words is that "hipotaksa" usually applies to complex-compound sentence structures (Karolak, 2003c, p. 443). There are also some combinations without any connecting word, but I have consciously left them out of the present reflection.

[10] Kazimierz Polański mentions that there have been some attempts "to search for structural differences between parataxis and hypotaxis. A. M. Peskovskij proposed the criterion of commutativity here. Commutativity is possible in paratactic constructions (compound sentences—"zdania złożone parataktycznie", in Polish), but it is supposed to be impossible in cases of hypotaxis" (Polański, 1967, p. 26). This criterion, however, is not quite reliable, for, as Polański also observes "Generally speaking, parataxis allows commutativity of segments [...]. But this commutativity of segments is usually limited by some additional features of each segment" (idem, p. 29).

[11] Grochowski mentions that this expression was originally used by Andrzej Bogusławski who introduced it in his book *Semantyczne pojęcie liczebnika i jego morfologia w języku rosyjskim* [The Semantic Concept of Numerals and Their Morphology in Russian] (Grochowski, 1974, p. 241). According to Bogusławski, "Between phrases, as well as between a phrase clause and parts of another phrase clause (a word, a combination of words or a part of a word, which might be a word itself), a particular relationship can sometimes be observed, as they can freely change places if a specific intonation line is applied in the enumerated sequence. We shall name this relation a relation of syntactic equivalence" ("stosunek równoważności syntaktycznej" in Polish; see Bogusławski, 1966, p. 40).

złożone" in Polish) for its elements to be syntactically equivalent ("równoważne syntaktycznie" in Polish)?

The main criterion for the analysis of a compound sentence stipulates that clauses ("zdania składowe" in Polish) can be added one to another freely and their combination is not limited to a pair of clauses but constitutes an open series. (Grochowski, 1984, p. 240). That means that the syntactic relationship among the connective-linked elements (the constituent clauses) is based solely on enumeration. In such cases, "from the point of view of the syntactical structure of the whole sentence, the order of the enumerated simple clauses ("zdania proste" in Polish) is not relevant, and they can freely exchange their places; in other words, they are commutative" (idem, p. 241). However, a specific intonation contour is observed in the enumeration process, a fact noticed by Bogusławski as well as by Grochowski (Bogusławski, 1966, p. 40; Grochowski, 1984, p. 241).

The connective "i" which is the object of this study is a paratactic connective. As such, it can connect both syntactically equivalent ("równoważne syntaktycznie" in Polish) and syntactically non-equivalent elements. Although we do encounter certain problems, the "i" in its conjunctive interpretation is essentially commutative. That means that the segments it connects can freely exchange places. The unconstrained ordering of clauses in a compound sentence is characteristic of syntactically equivalent components. Therefore we can say that the conjunctive "i" is commutative when it connects syntactically equivalent components ("independent clauses" in the English grammar terminology).

The following question arises, however: can we assume that the connective "i" of the first relationship type (in which the "i" is, on certain conditions, commutative and can be replaced by the phrases "a także", "jak również", "jak też", "oraz", "tudzież", "zarówno... jak i" (they all roughly translate as "also" or "as well as") with no meaning change to the expression as a whole) is really conjunctive? Let us recall that Grochowski does not mention either the "i" which could be defined as accessory nor the "i" we could classify as explicatory. If these two types were included in the relationship of the first type, they would not form an open series and they would not be commutative. However, this observation seems irrelevant at this point because expressions characteristic of the accessory "i" (a przy tym) and of the explicatory "i" (dlatego) are not included in his list of phrases that can substitute the connective "i" in his first type of conjunctive relationship. It appears, then, that the conjunctive "i" can also produce combinations that will not be syntactically equivalent, a situa-

tion which could, for instance, be attributed to the absence of a specific enumeration intonation contour in a given case. Thus, to ensure the commutativity of the "i", a test excluding the explicatory and the accessory interpretations must be applied, with due consideration of the specific intonation contour in the case of an open-series enumeration (by means of the connective "i").

Syntactic equivalence of independent clauses allows us to freely add new ones to the ones already there so that the connective-linked segments constitute an open series which is not limited to just one a pair of clauses.[12] Let us consider the following example:[13]

f) Śpiewam w operze i gram na giełdzie [I sing in the opera and (I) gamble on the Stock Exchange].

f+) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears].

f++) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie, i kibicuję Monice Soćko [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears, and (I) am a fan of Monika Soćko].

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[12] Paratactical combinations combine clauses which are syntactically non-equivalent as well as clauses which are syntactically equivalent, while hypotactical combinations contain only syntactically non-equivalent segments/clauses. Polański remarks that one of the criteria distinguishing parataxis from hypotaxis is the maximum possible number of combined segments. "According to some authors, a parataxis relationship allows for more segments to be linked together, while hypotaxis permits only two segments" (Polański, 1967, p. 28). In the present analysis, this limitation is irrelevant.

[13] Among the basic combinations of a growing enumerative series, Jadwiga Wajszczuk lists the following possibilities of compound sentences with the connective "i": "(i) the connective occurring before the last segment, (ii) the connective before each segment except for the first one, (iii) the connective occurring once before any of the segments except for the first and the last one (iv) the connective before each segment, including the first one" (Wajszczuk, 1997, p. 91).The author observes that "the type (i) is characteristic of an enumerative series" (idem, p. 92). My example belongs to her type (ii). The first type gives the impression of the enumeration being finished (closed) while the second type suggests an unfinished series. Type (ii) illustrates the case of an open series better.

f+++) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie i kibicuję Monice Soćko, i... [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears, and (I) am a fan of Monika Soćko, and...[14]]

The question of whether this open series is somehow limited remains unanswered. Grochowski suggests certain limits following from "the limits of human perception and our ability to memorize" (Grochowski, 1984, p. 244).

Considering the possibility of an open series, we should distinguish between the connective "i" and the connective "I... i" (which roughly translates as "both... and also").[15] The "I... i" connective is not, contrary to what we might suppose, just a stylistic variant of the "*p* i *q*" because it excludes the explicatory interpretation (Wojtasiewicz, 1972, p. 137). Typically, it will be interpreted as the conjunctive or the sequential connective. This applies not only to the doubled "i" ("I... i") but also to the structure "I... i" followed by one or more "i". Thus, we have here a connective which can be used to start a series of enumerated segments/clauses and which, through repetition, emphasizes the enumerative character of a given expression. In the example (g) below, the connective "i" (of examples f, f+, f++, f+++) has been replaced by "I...i".[16]

[14] It has to be remarked that conjunctive-connective enumeration in English requires an overt presence of the subject in each of the independent clauses that are being conjoined, even if all of these clauses have the same subject. Polish, which is a no-overt-subject language, prefers and sometimes requires an overt conjunctive connective in a series of enumerated events expressed by conjugated verbs alone. In English, it is possible (and often preferred) to link a series of independent events in enumeration clauses (i.e. conjugated verbs expressing events of equal importance) in a series by means of a comma (instead of e.g. the connective "and"). That's why English translations of the Polish examples might have to be analysed syntactically using different grammatical classifications and terminology.

[15] Treating the "I...i" connective as distinct from the "i" connective has the advantage of eliminating a theoretical difficulty noticed by Jadwiga Wajszczuk, which is that, as a matter of fact, the "i" before the first segment is not a connective and not even a particle (Wajszczuk, 1997, p. 93).

[16] In English, the connective "and" before the first segment of a series is impossible. The phrase "Both... and... and..." can be used, but the open-series compound sentences are grammatical only when the subject remains the same. However, it is not a perfect equivalent of the "I... i... i..." connective in Polish because

g) I śpiewam w operze, i gram na giełdzie [I both sing in the opera and gamble on the Stock Exchange / I sing in the opera, and (I) also gamble on the Stock Exchange].

g+) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears].

g++) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie, i kibicuję Monice Soćko [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears, and (I) am a fan of Monika Soćko].

g+++) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie i kibicuję Monice Soćko, i... [I sing in the opera and (I) gamble on the Stock Exchange and (I) feed polar bears and (I) am a fan of Monika Soćko, and...].

In examples f–f+++ and g–g+++, the connective "i" as well as the connective "I...i" are conjunctive. It seems, however, that the connective "I...i" emphasizes the open character of the series more clearly.

The conjunctive interpretation, both for the connective "i" and the connective "I...i", and independently from the number of repetitions, allows for a combination of syntactically equivalent clauses, and, consequently, it guarantees the possibility of a free exchange of the position of each segment in the sequence, regardless of their number. Let us consider the following example:

f+) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears].

g+) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera and (I) gamble on the Stock Exchange and (I) feed polar bears].

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the first two elements seem to be more closely linked to one another than the following elements of the series.

Let p stand for the first clause, q for the second and r for the third one. Sentences represented by p, q and r are syntactically equivalent, so we can freely exchange their positions in the sequence. The following combinations are thus possible: p i q i r, p i r i q, q i p i r, q i r i p, r i p i q, r i q i p (and for the "I...i" connective: I p i q i r, I p i r i q, I q i p i r, I q i r i p, I r i p i q, I r i q i p). Since the relationship between p, q and r is based on enumeration only, each of these combinations retains the original meaning of the first combination p i q i r (I p i q i r).

Another problem arises concerning the occurrence, in a given sentence, of an element expressing the attitude of the speaker as to the truth or falsehood (fallacy) of a given statement. This element expresses assertoric modality or assertion-suspending modality (non-assertoric modality). "Suspending assertion means that the speaker is not expressing his opinion as to the truthfulness of a predicative-argumentative statement, but is talking about its greater or lesser probability" (Karolak, 1984, p. 27). Jerzy Bralczyk remarks that between a complete assertion and a negation of a given statement, one can distinguish three basic "degrees of probability" (Bralczyk, 1978, p. 31).[17] The highest level will be characterized by such expressions as: "na pewno" (for sure), "jestem pewien" (I am sure), "z pewnością" (surely), "niezawodnie" (certainly), "niewątpliwie" (undoubtedly), "bez wątpienia" (without any doubt), "z całą pewnością" (with certainty) (cf. Bralczyk, 1978, pp. 31–32). The second degree is characterized

[17]A similar remark can be found in a book by Jerzy Bartmiński and Stanislawa Niebrzegowska-Bartmińska, *Tekstologia*, in which the authors write that between assertion ("it is true that...") and negation ("it is false that...") we have a whole range of possibilities which weaken the assertion or even suspend it. All these expressions from assertive to negative ones can be named "operators" (cf. Bartmiński, Niebrzegowska-Bartmińska, 2009, pp. 172–173). According to Kazimierz Ajdukiewicz in *Logika pragmatyczna* [Pragmatic Logic], "When someone expresses his conviction by means of a sentence, we can say that he accepts this sentence as true" (Ajdukiewicz, 1974, p. 105). We can "accept a sentence with more or less certainty" (idem, p. 105). Thus, there is a whole range of possibilities, where the highest degree of acceptance will be expressions like "z całą pewnością" or "z całą stanowczością" (both roughly mean "with utmost certainty"; idem, pp. 113–119). Let me add as well that Ajdukiewicz distinguished between logical and psychological probability. "The psychological probability is the degree of certainty with which we actually accept the truthfulness of a given sentence. The logical probability of a given sentence is the degree of certainty with which we have the right to accept it as true" (idem. p.119).

by expressions such as "chyba" (possibly), "przypuszczam" (I suppose), "sądzę" (I consider), "myślę" (I think), "wierzę" (I believe), "spodziewam się" (I expect), "pewnie", "pewno", "zapewne" (all three mean, roughly speaking, probably), "raczej" (rather), "przypuszczalnie" (possibly), "prawdopodobnie" (probably) (idem, pp. 31, 35). Expressions such as "może" (maybe), "możliwe" (it's possible), "jest prawdopodobne" (it's probable), "istnieje prawdopodobienstwo" (there is a probability), "istnieje możliwość" (there is a possibility), "móc", "może", "mógł" (can / could), "być może" (maybe) (idem, pp. 31, 36) are characteristic of the lowest degree of probability.[18] All these modal operators introduce the *dictum.*[19]

Let me start my reflections with the following sentence:

d) Jan gra na akordeonie i wykłada w Akademii Wychowania Fizycznego [Jan plays the accordion and teaches at the Academy of Physical Education].

The attitude of the speaker concerning this whole compound sentence is assertive. "Assertoric modality does not have a specific verbal representation (a word or a phrase that expresses it overtly), but is implicit in the sentence (we say that it has a zero factor)" (Karolak, 1984, p. 27). How-

[18] It is difficult, with no context provided, to translate accurately all these expressions into English while taking into account the degree of assertiveness of the speaker.

[19] In the *Encyklopedia językoznastwa ogólnego* [Encyclopedia of General Linguistics], we read the following "According to the logico-semantic analysis, a sentence is divided into two basic components: the representation component, ("składnik przedstawieniowy" in Polish) or *dictum,* and the modality component ("składnik modalny" in Polish) or *modus*. The representation component presents the state of things while the modality component expresses the speaker's attitude of the speaker to this state of things". (Karolak, 2003b, p. 121). This situation can be illustrated by the formula $M(D)$, where M stands for *modus* and D stands for *dictum* (idem.) Let us consider an example of two different attitudes towards the same dictum: "*Prawdopodobnie* dzisiaj są urodziny babci Gertrudy" [Probably today is Grandmother Gertrude's birthday]; "*Zapewne* dzisiaj są urodziny babci Gertrudy" [Most probably today is Grandmother Gertrude's birthday]; "*Z pewnością* dzisiaj są urodziny babci Gertrudy" [Surely today is Grandmother Gertrude's birthday].

ever, it can also be expressed explicitly[20] and then, the statement would read as follows:

> d1) Prawdą jest, że Jan gra na akordeonie i prawdą jest, że wykłada w Akademii Wychowania Fizycznego [It is true that Jan plays the accordion and it is true that [he] teaches at the Academy of Physical Education].

Sentences d) and d1) have the same meaning, and so they are semantically equivalent. What differentiates them is the way they are formulated: by revealing assertion, we do not act without a goal, but in order to put emphasis on the truthfulness of the *dictum*. Let me also add that "the semantic structure of basic sentences that are represented on the surface by affirmative sentential expressions ('wyrażenia zdaniowe' in Polish), is such that the predicative-argumentative content is combined with the modal assertoric content and is subordinated to it" (Karolak, 1984, p. 27).

Let us now add to our example d) an overt expression of non-assertoric modality, the word "prawdopodobnie" (probably). "Modal non-assertoric predicates contain specific overt factors (non-zero verbal segments) in their linguistic expressions, so they are expressed explicitly through them" (idem, p. 27). In example d2), each basic sentence (i.e.

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[20] Stanisław Karolak writes that "the assertoric element [...] could be expressed explicitly by means of the expression 'prawdą jest, że...'" (it is true that....) (Karolak, 2002, p. 225). He also adds that there are other possibilities of expressing assertoric modality: "jestem pewien, że..." or "jestem przekonany, że..." [I am sure, I am convinced that...]. (idem.) In *Podstawowe struktury składniowe języka polskiego* [Basic Syntactic Structures in Polish], he mentions the expression "jestem przekonany, że prawdą jest to, iż *p*" [I am convinced that it's true that *p*] (Karolak, 2002, p. 225). However, Jerzy Bralczyk considers that expressions "jestem pewien, że..." or "jestem przekonany, że..." [I am sure, I am certain, I am convinced that...] actually weaken assertiveness and he places them in a group of operators which have the highest degree of probability but are not assertoric. "We are more likely to acknowledge that the equivalent of considering something as true is not so much certainty but rather knowledge" and then the author argues that "certain expressions, such as "Nie wiem, ale jestem pewien" [I don't know but I am sure] as in the sentence : "Wprawdzie nie wiem, ale jestem pewien, że tak" [Though I don't know, I am sure that yes] (Bralczyk, 1978, p. 11). Taking into account the above remarks, I shall limit myself to the expression which I find incontestably linked to assertiveness, that is "prawdą jest, że..." [it is true that...].

each independent clause, which is an affirmative assertion), is preceded with the same modal operator, the word "prawdopodobnie" (probably):

d2) Prawdopodobnie Jan gra na akordeonie i prawdopodobnie wykłada w Akademii Wychowania Fizycznego [Probably Jan plays the accordion and probably (he) teaches at the Academy of Physical Education].

It seems that a single occurrence of the modal operator is sufficient enough to convey the same meaning:

d3) Prawdopodobnie Jan gra na akordeonie i wykłada w Akademii Wychowania Fizycznego [Probably Jan plays the accordion and teaches at the Academy of Physical Education].

Both in the case of sentence d) and in sentence d1) where assertion has an explicit overt expression we can talk about commutativity:

d') Jan wykłada w Akademii Wychowania Fizycznego i gra na akordeonie [Jan teaches at the Academy of Physical Education and (he) plays the accordion].

d1') Prawdą jest, że Jan wykłada w Akademii Wychowania Fizycznego i prawdą jest, że gra na akordeonie [It is true that Jan teaches at the Academy of Physical Education and it is true that (he) plays the accordion].

Similarly commutative will be example d2), in which non-assertoric modality is expressed explicitly before each segment of the compound sentence:

d2') Prawdopodobnie Jan wykłada w Akademii Wychowania Fizycznego i prawdopodobnie gra na akordeonie [Probably Jan teaches at the Academy of Physical Education and probably (he) plays the accordion].

The sentence will still be commutative when the modality operator is placed in front of the whole compound sentence:

d3') Prawdopodobnie: Jan wykłada w Akademii Wychowania Fizycznego i gra na akordeonie [Probably: Jan teaches at the Academy of Physical Education and (he) plays the accordion].

However, we encounter a problem when the modal operator is different in each of the two clauses making up the compound sentence:

d4) Jan gra na akordeonie i prawdopodobnie wykłada w Akademii Wychowania Fizycznego [Jan plays the accordion and probably (he) teaches at the Academy of Physical Education].

In d4), the first segment is assertive, but the second one is not. Therefore, is this compound expression commutative? Since we have assumed that the modal operator placed in the sentence-opening position applies to the whole compound sentence or expression, we have a problem here: after the commutative transformation, the modality operator will apply to the whole sentence while in the original, pre-commutated sentence (see (d4)) it has applied only to the sentence which it directly preceded. A good solution would be to place a comma before the connective "i". Then, the operator would apply only to the sentence it applied to originally.

d4') Prawdopodobnie Jan wykłada w Akademii Wychowania Fizycznego, i gra na akordeonie [Probably Jan teaches at the Academy of Physical Education, and (he) plays the accordion].

We can also express assertive modality explicitly in this example:

d4'*) Prawdopodobnie Jan wykłada w Akademii Wychowania Fizycznego i prawdą jest, że gra na akordeonie [Probably Jan teaches at the Academy of Physical Education, and it is true that (he) plays the accordion].

We see a problem of a different kind here, however. This problem is caused by the conventional way of ordering segments. "The order of segments reflects, above all, the hierarchy of importance of the segment contents" (Kallas, 1993, p. 133).

The first segment is normally reserved for expressing content that is considered more important, the first position is more prestigious, sometimes the first position is chosen for reasons of courtesy. It seems, then, that, if different degrees of assertiveness occur in a compound sentence (as in example d4), the first segment should be the one with the higher

assertiveness or higher probability. A certain hierarchy should be communicated by the ordering of the "i"-connected components: from the segment characterized by the highest probability to the one whose probability (degree of acceptance as true) is the lowest, so the operator of assertoric modality comes first and is followed by a non-asertoric operator. Of course, predicates in question should also be sensitive to this hierarchy. For this reason, I conclude that sentences d4') or d4'*) do not have the same meaning as sentence d4). Consequently, with different degrees of assertiveness in place commutativity of the conjunctive "i" has been, in a certain sense, cancelled.

Conclusion

The connective "i" in its conjunctive interpretation is most closely related to the functor of conjunction in logic because of the commutativity feature of arguments (in a logical conjunction). However, in natural-language conjunctive expressions certain problems with the commutativity of "i" connected clauses do occur in the areas of sentence intonation (sentence's intonation contour), style, rule of augmenting segments, and because of the existence of phrases expressing the speaker's attitude as to the truth or falsehood of a given statement.

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