EQUIVALENCE AND CONGRUENCE IN TRANSFORMATIONAL CONTRASTIVE STUDIES

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With the development of scientific descriptions of particular natural languages based on the transformational approach and their application to contrastive studies, a need has arisen for a more precise definition of some notions essential for these studies. It is necessary to know precisely what we mean by such terms as *the same* or *similar*, when referring to a comparison drawn between two structures or two transformational rules in two different languages. This article will propose such definitions as have been found useful by the author in his work on a contrastive study of English and Polish carried out on the basis of the transformational approach. It is not claimed, however, that these suggestions will necessarily be of universal value for contrastive studies of other languages or for other contrastive analyses of English and Polish based on different assumptions. Yet even if they evoke general disagreement, it is hoped that they may stimulate discussion leading to better and more precise definitions. This article will then have served its purpose.

1. An obviously important notion which intrudes into any contrastive analysis is that of *equivalence* holding between two sentences or parts of sentences in two languages which are being compared. We shall be concerned here mostly with sentences or phrases, because this article deals only with syntactic problems and in the transformational theory of syntax the sentence is the centre of interest. Definitions of equivalence were given by some linguists, but, in the author's opinion, those formulated by Catford (1965 : 28) and Krzeszowski (1967 : 33—9) are the most precise because they utilize the idea of translation from one language into another. The popular notion of sameness of meaning holding between a sentence in one language and a corresponding sentence in a different language is vague and also misleading from the linguistic point of view, as it has already been pointed out elsewhere (Catford 1965). Taking Krzeszowski's definition as our basis then, we

may consider that the relation of equivalence holds between a sentence in one language and a sentence in another language if and only if each of them is an optimal translation of the other in a given context.

The judgment as to the optimal translation and its correctness is left ultimately to the authority of a competent bilingual speaker. Catford (1965 : 28) also suggests a formal procedure by which we may discover an equivalent of a given portion of a text, or, in our case, of a part of a sentence. This procedure consists in substitution and Catford assumes that we may consider equivalent that portion of a text in one language which is changed when and only when a given portion of the equivalent text in the other language is changed.

Yet such procedure does not seem to be precise enough, especially when we are concerned with equivalence on the sentence level. We may easily demonstrate this inadequacy by considering the following two equivalent sentences, one in Polish and the other in English.

On pojechał tam autobusem. (1)
He went there by bus. (2)

Now let us try to find out the equivalent of the Polish item *autobusem*, which is a noun in the Instrumental case, by the substitution technique. By using it, we can obtain the following sentence:

On pojechał tam pociągiem. (3)

Its English equivalent will be:

He went there by train. (4)

According to Catford's suggestion, we should conclude that the English item *bus* is the equivalent of the Polish item *autobusem*, since only these two items were exchanged in Eq-s (4) and (3), respectively. Yet any educated bilingual speaker would tell us that whenever we speak of going by bus, the prepositional group *by bus* is the equivalent of the Polish noun in the Instrumental case, *autobusem*. This can be proved by the following two pairs of equivalent questions and answers:

Jak on tam pojechał? (5a)
Autobusem. (5b)
How did he go there? (6a)
By bus. (6b)

We would have to push our subtitution technique down to the morphophonemic level in order to discover the presence of the same inflectional suffix *-em* in both the Polish words used in the substitution or to extend the class of the substitutable items so that it would include word classes different from that of the word whose equivalent we are looking for. The latter solution seems to be much simpler and it might work. For instance, taking again Eq. (1) into consideration, we

could substitute the noun *autobusem* by the adverb *wczoraj* 'yesterday'. Thus from Eq-s (1) and (2) we would obtain the following equivalent sentences:

On pojechał tam wczoraj. (7)
He went there yesterday. (8)

Comparing Eq-s (1) and (2) on the one hand and (7) and (8) on the other, we easily arrive at the right conclusion that the item *autobusem* in our example has as its equivalent the item *by bus*. Yet, although this kind of substitution can bring good results, it is rather difficult to formulate a consistent and generally applicable procedure for discovering equivalents of parts of the sentence by this method. This difficulty lies in the fact that for any particular case it is not easy to predict in a general statement what grammatical category should be substituted. Therefore we must rely on somewhat tiresome and tentative substituting to arrive at the desirable results. Taking all of this into consideration, it seems that a simpler solution would be to base the selection of the equivalent of a given part of a sentence on the grammatical relations within that sentence and its equivalent. Namely, the equivalent of a given word or phrase in a sentence will be that word or phrase in the equivalent sentence in a different language which has the same syntactic function within the sentence structure.

A generative transformational grammar of a language provides each of the sentences generated in accordance with its rules with a detailed description of syntactic relations entered into by each of the sentence constituents.

This description may be represented in the form of a generalized phrase marker (Chomsky 1965). If we have phrase markers or derivations of a pair of equivalent sentences within which we are looking for equivalents of words or phrases, we know instantly what these equivalents are by comparing syntactic relations in these sentences. Of course, this procedure involves an assumption that there is a great deal of similarity in the syntactic structures of the two languages which are being compared and that each language utilizes essentially the same set of grammatical relations. It seems that at least for two languages belonging to the same family this assumption can be safely made. It is also clear that this procedure will not apply to highly idiomatic phrases or sentences, because in such cases equivalence exists only between whole units and there is no correspondence between their parts.

2. Another notion which is essential and indispensable for contrastive studies is that of formal correspondence holding between sentences or phrases in two languages which are being compared. This term usually

means identity of structure between the two languages, and this identity may exist on various levels and be marked in various ways. A useful idea is to combine this notion with that of equivalence. Krzeszowski (1967 : 33—9) introduced the term *congruence* to denote both these relations holding simultaneously between sentences or their parts in two different languages. Adopting this term, we shall restrict it and make it more precise in the following definition which specifically has Polish and English in view:

If a Polish sentence or phrase consists of A, B, C in this order and the English equivalent sentence or phrase consists of A', B', C' in this order, then they are congruent if each of the pairs A : A', B : B', C : C' consists of equivalent items belonging to the same word class and having the same syntactic function in each of the sentences. To make this definition workable for Polish and English we shall have to make some small amendments, namely, we must not take into consideration the English articles and the verbs *be* and *have*, used as parts of Auxiliary (in terms of phrase structure rules). These items most often have no equivalents in the form of independent words in Polish sentences, so without the above amendment our definition would not be of much use.

Accordingly, Eq-s (1) and (2) cannot be considered congruent because the noun in the Instrumental case *autobusem* in the Polish sentence is matched by the prepositional phrase *by bus* in the English one. The following two sentences are examples of congruence as understood by the above definition:

Jan kupił | Marii | pierścionek | z | diamentem. (9)
John | bought | Mary | a ring | with | a diamond. (10)

3. Now the question of justification for this particular definition arises. It ought to be clear from our preceding considerations that the identity of syntactic function stipulated by the definition for each pair of equivalent items in two sentences under investigation is closely related to our notion of equivalence, and, from this point of view, its incorporation in the definition is fairly obvious. A perhaps more striking condition is the demand for the identity of word order in both the sentences, which involves for each sentence the necessity of containing the same number of words, taking here the above suggested amendments into consideration. We are concerned here with relations of order on the level of sentence and phrase construction only, because our contrastive studies are restricted to syntax, and that is why our definition takes only words and their arrangements into consideration. Polish is generally assumed to be a language in which the order of words is free or

nearly free, as it has some phrasal sequences, such as the prepositional phrase, in which the word order is internally fixed. In contrast with Polish, English might be considered a partially fixed language, especially in its phrasal structures, which are internally more or less fixed (Bach 1964 : 109). So it might follow that the order of words is not a distinctive feature for the syntax of Polish. Yet although this assumption could be taken for a description of the language in terms of its own structure only, it seems to be less useful for the purposes of a contrastive study. It seems closer to the truth to say that in a certain style which may be called *neutral* and which is used when we want to state something as a plain fact without any stylistic or emotional overtones, there is some fixed order of words in the Polish sentence, especially when we consider not a sequence sentence but a sentence which may occur at the beginning of a conversation as a situation utterance. It follows that we might posit some fixed word order for the Polish sentence and represent it in phrase structure rules, with optional transformational rules accounting for various divergences caused by demands of style, emphasis, or situation. This assumption would be based on the linguistic fact that native speakers of Polish usually construct their sentences in a certain fixed way, although, in most cases, no ungrammaticalness would result from a rearrangement of the posited order. Although this basing of an important syntactic relation on the notion of acceptability in a somewhat statistical sense appears not to be in accord with the principles of the theory of transformational grammar, it is, in my opinion, very useful for contrastive studies. We must not forget that these studies also have some practical applications in view, one of them being the preparation of teaching materials based on a scientific linguistic analysis. It will be easier to predict an interference with the native language on the part of a Polish student of English if a contrastive study clearly shows what Polish structures differ from the corresponding English structures as concerns word order and how they differ. For these reasons the strict demand for identical word order has been incorporated into our definition of congruence. It is also worth noticing that this condition will most probably be easier to meet in the kernels of the two languages than in their transforms of a more complex kind.

4. Having thus defined the basic notions of equivalence and congruence, we may develop from them other concepts directly concerning the transformational model of language description. In this model the basic strings seem to play a distinctive and crucial role (Chomsky 1965) and that is why it would be useful to see if the notion of congruence can be applied to them. It is obvious that it would be rather impossible to conceive of congruence in terms of corresponding strings of mor-

phemes or formatives in two languages, especially in our case of Polish and English, as Polish, for instance, has very rich flection in nouns, pronouns, and adjectives, which is almost absent from English word construction. Accordingly, we must again refer our idea of congruence holding between a pair of basic strings to sentence level. We do it by stating that two basic strings, each of them being in a different language, are considered congruent if they may (in case of equivalence holding between the lexical morphemes in the strings) result in kernel sentences congruent with each other. By virtue of this definition, we may consider the following two strings congruent [1]:

$$\# \text{ dziecko} + \text{Neut} + \text{Sing} - \text{3rd Pers} + \text{Past} + \text{Perf} + \text{iść} - \text{do} - \text{kino} + \text{Neut} + \text{Sing} + \text{Genit} \# \quad (11)$$

$$\# \text{ the} - \text{child} + O_2 - \text{Past} + \text{go} - \text{to} - \text{the} - \text{cinema} + O_2 \# \quad (12)$$

These strings will lead to the following kernel sentences:

| Dziecko | poszło | do | kina | (13) |
| The child | went | to | the cinema | (14) |

5. Most probably in any two languages belonging to the same family, and certainly in Polish and English, there are some transformational operations which are common for the two languages and therefore comparable. Our next problem will be to define what conditions must be fulfilled to consider two such corresponding transformations essentially identical or similar. It seems natural to compare transformations in terms of their two characteristics, that is, the structural description and the structural change. As transformational rules operate not only on basic strings but also on transforms, it is necessary to extend our definition concerning basic strings to cover all other strings which may be sources for transformations.

Let us call all those strings on which transformations operate *base strings* and define two such strings, each of them being in a different language, as congruent, if, after applying a minimum of transformational apparatus and relevant morphographemic rules, they may result in mutually congruent sentences or phrases. After these explanations we

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[1] Notation used in these and all other subsequent examples is based on Thomas' (1966) model of English transformational grammar and, for Polish, on the author's model of Polish grammar utilized in his doctoral dissertation. The enumeration of even the most essential rules contained in both these models would be beyond the scope of this article.

are ready to consider our next definition. It states that two transformations, each of them proper for a different language, can be regarded as essentially identical if they fulfil the following conditions:

(a) they operate on congruent base strings
(b) they affect the corresponding parts of the strings subsequently contained within a pair of the word boundary symbols
(c) they are of identical nature (e.g. deletion, permutation, addition)
(d) they result in mutually congruent structures.

To boil this longish definition down to a simple, although less precise, statement, we might say that two essentially identical transformations operate on two congruent structures in the same way and consequently result in congruent transforms. This definition seems to be self-evident enough not to call for any special justification. One may only wonder if there are any transformational rules that would meet its strict requirements in any two languages that are so different in their surface structure as Polish and English. Yet the author's research in English and Polish noun modification has shown that there are many very productive transformational rules in these two languages which may be considered identical in terms of the above definition. As an example we shall give here two variants of the English and Polish adjectivalizing transformation deriving attributive adjectives from nouns. This transformation operates in both the languages in such a way that it adds the attributivizing morpheme *Att* to the proper noun thus making it, through the appropriate morphographemic rules, into a derived adjective. This one transformation has been classified into a number of variants according to the various base strings on which it operates. Let us consider such a variant characterized by the string *N has N'* in English and the equivalent string *N ma N'* in Polish where *N* denotes an animate object and *N'* a part of the body [2].

$$\text{Det} - N_{matr} - No/\text{Det} - N_{const} + No - \text{HAVE} - \text{Det} - N' + No/ \Rightarrow \text{Det} - N' + \\ + \text{Att} - N_{matr} + No$$

where $N_{matr} + No = N_{const} + No$ \quad (15a)

E.g.

the peasant (the peasant has a beard) $\Rightarrow$ the bearded peasant (15b)

The corresponding T-rule for Polish may be represented in the following way:

$$N_{matr} - \text{Gend} + No /N_{const} + \text{Gend} + No - \text{MIEĆ} - N' + \text{Gend}' + No' + \text{Acc}/ \\ \Rightarrow N' + \text{Att} + \text{Gend} + No - N_{matr} + \text{Gend} + No$$

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[2] These and all the other transformational rules in this article are formulized in a somewhat simplified way for the sake of clarity.

where $N_{matr}+Gend+No=N_{const}+Gend+No$ (16a)

E.g.

chłop (chłop ma brodę) $\Rightarrow$ brodaty chłop (16b)

In the above rule we see that the newly derived attributive adjective takes the flectional suffixes of gender and number, and in certain positions of case[3], from the matrix noun. This is natural development for the Polish adjective, which is completely dependent for its full realization upon the noun with which it enters into the relations of predication and modification.

Coming back to our definition, we can consider the T-rules represented by Eq-s (15a) and (16a) essentially identical, as meeting all the conditions stated above. The nominal phrases resulting from them and yielded by Eq-s (15b) and (16b) are also congruent with each other.

6. Having defined the notion of identity of two corresponding transformations in two different languages, we might consider now a somewhat related notion of similarity holding between two such transformations. Unless this term is more precisely defined, we always mean it as similar from some point of view, and as in our case of comparing transformations this point may be quite different in each pair of transformations under comparison, the term itself may lead to a great deal of confusion. And, again, the author has found it useful and workable to assume that two transformational rules, one for Polish and the other for English, may be said to be similar if they meet the following conditions:

(a) they operate on congruent base strings

(b) they affect the corresponding parts of both the strings subsequently contained within a pair of the word boundary symbols

(c) they are of the same nature (e.g. deletion, permutation, addition), but they are different in details of performance, e.g. they may involve the addition of different (although somewhat similar) formatives to the corresponding elements

(d) they do not result in mutually congruent structures.

Perhaps Condition (d) need not be specifically mentioned, as it is a result of the transformation and may be inferred from (c). As an example illustrating the above defined concept, we shall consider a pair of T-rules, one for English and the other for Polish, deriving com-

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[3] It has been assumed by the author in his contrastive study that the Polish noun does not contain a case formative in its structural rules when it functions as subject. Accordingly, Eq. (16a) would have to be slightly modified if the matrix noun was used in the function of, let us say, the object of a verb or a preposition.

pound adjectives of a certain kind. These two adjectivalizations are different from other transformations of this sort in that they usually operate not on basic strings but on strings already containing some transformationally derived elements. These elements are base adjectives used attributively as noun modifiers. But these two transformations may also operate on basic strings containing cardinal numerals in prenominal positions. In each case they amalgate the source noun with its preceding adjectival modifier or cardinal numeral and add the adjectivalizing morpheme to the whole, thus making a compound derived adjective. In English, the transformation being discussed operates on the strings of the form

$$N-HAVE-\begin{Bmatrix} Card \\ Adj \end{Bmatrix}-N'$$ (17)

where N' is part of N, most often being a part of a body or of some machine or construction. The following are examples of phrases derived from strings of this kind:

a blue-eyed girl (18a)
a white-haired man (18b)
a one-eyed beggar (18c)
a four-engined aircraft (18d)

The transformation itself can be formulized in the following way:

Det$-N_{matr}-$No /Det$-N_{const}+$No HAVE Det Adj N'+No/$\Rightarrow$ Det $-$Adj | $-$. N' ed$-N_{matr}-$No

where $N_{matr}-$No $N_{const}-$No (19a)

E.g.

the girl (the girl has blue eyes) $\Rightarrow$ the blue-eyed girl (19b)

The formative ed used in the above rule is an allomorph of the adjectivalizing morpheme Att. The Polish corresponding transformation operates on the strings of the following form:

$$N-MIEĆ-\begin{Bmatrix} Card \\ Adjective \end{Bmatrix}-N'$$ (20)

The strings represented by Eq-s (17) and (20) are congruent with each other. Here are examples of phrases derived from this structure which are congruent with the phrases in Eq-s (18a—d), respectively:

niebieskooka dziewczyna (21a)
siwowłosy mężczyzna (21b)
jednooki żebrak (21c)
czteromotorowy samolot (21d)

The transformation deriving such phrases might be represented in the following way:

$$N_{matr} + Gend_m + No_m \: / \: N_{const} + Gend + No - \text{MIEĆ} - Adj \: b + Gend' + No'$$
$$+ Acc - N' + Gend' + No' + Acc/ \: \Rightarrow \: Adj \: b \quad + o + N' + ki + Gend_m + No_m$$
$$- N_{matr} + Gend_m + No_m$$

where $\: N_{matr} + Gend_m + No_m = N_{const} + Gend + No$ (22a)

E.g.

    dziewczyna (dziewczyna ma niebieskie oczy) ⇒ niebieskooka dziew-

                               czyna   (22b)

According to our definition, the two transformations, as shown in Eq-s (19a) and (22a), are similar to each other. They cannot be considered identical owing to some slight differences in details of performance, namely, the Polish transformation adds the formative o (which is a neutralizing element, since it deletes all inflectional suffixes of the base adjective and introduces the actual phoneme o in their place through morphographemic rules) to the adjective base, while the English rule puts the hyphen immediately after the adjective. The resulting compound in Polish, with one primary stress, is more uniform than its English equivalent with two stresses. The formative *ki* in the above rule corresponds to the *ed* in the English transformation and has the same function, although it does not represent one particular derivational suffix, as is the case in English, but a variety of such suffixes.

7. Concluding our discussion of equivalence, congruence, identity, and similarity in contrastive transformational studies, we must say that the conditions necessary for recognizing these relations as holding between two structures in two different languages are very strict and not easily fulfilled. Yet, when they are fulfilled, the resulting assertions are very powerful indeed. It must also be remembered that the above suggestions have been worked out for a contrastive study of Polish and English and have been based on certain specific assumptions, such as that concerning the word order in the Polish sentence. Not all relations essential for contrastive studies have been defined, as there still remain problems of similarity or identity holding not between particular transformations, but between longer transformational derivations. But these problems remain as material for another article.

<div align="center">REFERENCES</div>

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