ABSTRACT
        It is argued that the direct output of a contrastive
analysis should be a transfer grammar, a single set of rules which
would serve at one and the same time for transferring from language A
to language B and from B to A. It is shown that such rules can be
formulated either as equations or in the form of matrices. The
elements involved can either be specific phonological or
morphological forms, or they can be labels for one or more forms.
Using such labels has the advantage that one may deal with several
different levels of abstraction simultaneously. (Author)

TRANSFER GRAMMAR AS THE END PRODUCT OF CONTRASTIVE ANALYSIS

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Most of the contrastive analyses that have been made in recent
years have been done for purely pedagogical purposes. As a result,
although some of the phonological studies have been fairly complete,
the syntactic studies usually do not pretend to cover all the grammatical
features of the languages involved. Their primary aim is to point out
areas where the two languages are "most different", and a prior knowledge
of the structures of the two languages is often assumed.

It is not my intention to deny the need for, or the helpfulness
of, such studies. On the contrary, they can be of great service to
the language teacher or the textbook writer; but they usually are not
intended to be used as textbooks in language classes, and thus would be
of little use to the average language student. Also, the approach is
often strictly one-sided. That is, the study, for example, points out
the problems an English speaker would have in learning German, but not
vice versa. And obviously the two sets of problems would be quite
different. Thus, the usefulness of such studies is somewhat limited
in scope.

But more importantly, contrastive studies of the type just mentioned
should be, although they usually have not been, based on a thorough
and complete description of the structures of each language, and a
systematic contrast of all aspects of both structures, whether similar
or different. From a descriptive point of view, and in my opinion,
from a pedagogical point of view as well, it is just as important to
understand the ways in which the languages are similar as it is to know
their differences. Only then can one see the full picture and have a
true "contrastive analysis".

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One could perhaps draw an analogy from the history of the dictionary. Early dictionaries were merely lists of the "hard" words that one was apt not to know. Today, while such a list might be interesting or helpful in certain circumstances, we would not think of calling it a dictionary. We expect even a monolingual dictionary to be complete in every respect, and to tell us the meanings (and all the meanings) of even the commonest words. We would be quite appalled if we came across a dictionary today which left out, say, the word dog because, after all, everyone knows what a dog is. We expect the dictionary to present us with a complete picture of the lexicon of the language, and the fact that we already know some of the information it contains is beside the point. So it should be with contrastive analysis.

It is my contention that a true contrastive analysis should result in a so-called "transfer grammar", which consists of a set of specific rules for transferring from one language to the other, covering all aspects of the structures of the languages involved. More pedagogically oriented contrastive studies could then be based on the findings of the transfer grammar.

Zellig Harris, in his classic article, "Transfer Grammar",[1] suggested the possibility of constructing a set of instructions which, added to the grammar of language A, would yield the grammar of language B, and another set of instructions (not necessarily the reverse of the first) which, added to the grammar of language B, would yield the grammar of language A. While a number of the specific suggestions Harris makes appear to be impracticable, the basic principle remains valid. The contrastive analysis of two languages should result in such a set of instructions. In the time remaining I shall outline briefly my views on the shape a transfer grammar should take.

First, it has been my experience that one does not need to have two sets of transfer rules as Harris suggests, but that in fact one set, which can operate in either direction, is the most practical arrangement. This is true no matter whether one is operating on the phonological, syntactic, or semantic level. Thus, for example, Spanish has two verbs meaning "to be", ser and estar, which have specific semo-grammatical conditions of occurrence. If one were constructing rules for transfer from Spanish to English, one could simply say that both verbs transfer to the English verb to be. Going the other direction, one would have to say that to be transfers to estar under certain specified conditions, to ser under certain other conditions. But there is no need to have uni-directional rules. Rather, one can construct an equation, which in this case would be roughly as follows:
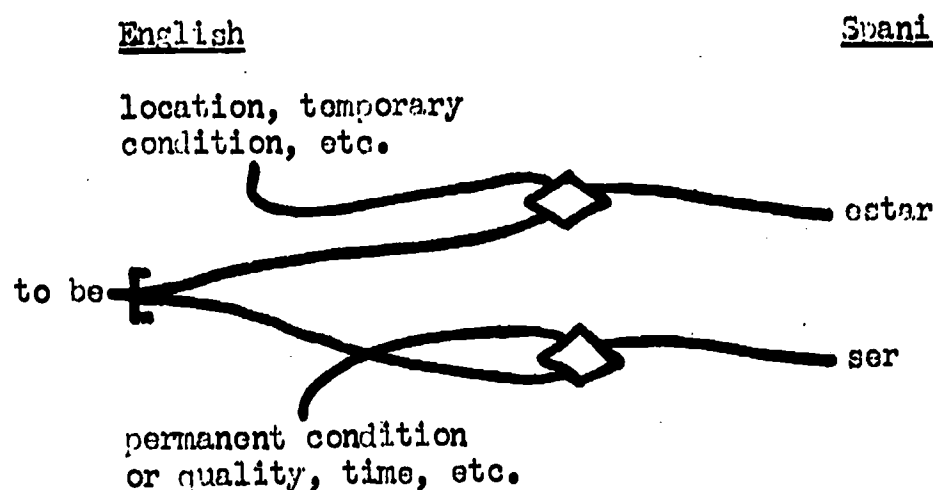
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[1]International Journal of American Linguistics 20.259-70 (1954).

	English		Spanish
to be,	if indicating location, a temporary condition, etc. (with the etc. to be specified)	::	estar
to be,	if indicating a permanent condition or quality, in an expression of time, etc. (with the etc. to be specified)	::	ser

The equation can be read with equal accuracy either from left to right or from right to left, and eliminates a great deal of needless repetition. All contrasts can be handled in this way, with conditions of transfer stated, when necessary, either in the right or the left half of the equation, or sometimes both. For a more complex set of equations, along with corresponding graphic representations, see the appendix.

The transfer rules can be represented graphically in either of two ways, either as relational networks or in the form of matrices. The relational network is a device created by Sydney M. Lamb and is used in stratificational grammar to represent the inter-relations among units and levels of linguistic structure in a single language. Stratificational grammar views language, not so much as a set of linguistic entities (phones, morphs, etc.) but as a set of relationships among these entities. Thus, a graphic representation in terms of relational networks is essential to the system. But this same relational network notation can be used in a transfer grammar to represent graphically the transfers which have been listed in equational form. The to be example could be represented as follows:

English   Spanish

location, temporary
condition, etc.

to be

permanent condition
or quality, time, etc.

The diamonds allow the conditions for the occurrence of ser and estar to be specified. The fourth side of the diamond could be used if it were necessary to specify conditions for the transfer from Spanish to English. When one has a long list of complicated transfer rules,

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such a representation could be especially useful in illustrating the complex relationships involved.

Matrices can also be used to advantage to represent rules graphically. Along the horizontal axis are represented the forms of the one language, while the vertical axis represents the forms of the other language. X's in the various boxes of the matrix indicate the possibility of transfer at that point, assuming that the conditions of occurrence have been satisfied. Thus **to be** would be quite simply represented as:

Eng.	ser	estar
to be	X	X

(Sp.)

It is important to note that the elements involved in the transfer rules, however they are represented, can be taken from any level of the linguistic structure. One can construct transfer rules for individual forms (phonological, morphological, and so on), as we have seen in the case of **to be**. But one can also transfer between labels for one or more forms, such as 1st-sg.-pres.-indic., or acc.-sg.-masc., where the label may cover a number of different morphological forms in both languages. The labels may or may not signify recognized morpheme classes. Using such labels has the advantage that one may deal with any number of different levels of abstraction. That is, for example, the use of the various tenses in language A may be contrasted with their use in language B, then the use of the various moods of each tense, then the various persons and/ or numbers in each mood, and so on. At each level the transfer rules may be given in equation form and also represented graphically as networks or matrices. What particular levels are chosen to be represented in any one transfer grammar depends on the structures of the languages involved.

The importance of basing the transfer rules on a complete structural description of both languages should now be evident. If I have an acc.-sg.-masc. form in one language, and I want to reproduce this in another language, the transfer rules need only tell me that in the second language I need an acc.-sg.-masc. form; or perhaps they will tell me that I need an objective-sg. form, or perhaps just singular, depending on the structure of the language. But the transfer rules do **not** need to tell me the specific phonological shape of the form transferred to. This is derived from the structural description of the language itself and does not necessarily need to be incorporated into the transfer rules at all.

It is also possible that, on a certain level, something in one language does not transfer to the other language. This is not to say

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that it is not translatable in one way or another, but rather that
it does not transfer directly to an entity of the same sort and on
the same level in the other language. Thus in transferring from
languages which have a passive voice to those which do not, one must
say that the passive simply does not transfer, even though the _meaning_
of a passive sentence could, no doubt, be expressed in the target
language in one way or another.

Even distributions of specific phonological or morphological
forms can be represented in this way. If the differences of distri-
bution are such, for example, that a morpheme class in language A
transfers to either of two or more classes in language B, then the
transfer rules specify which portions of the distribution of the
class in language A correspond to the distributions of each of the
two classes in language B. For example, in Literary Arabic the jussive
mood is used both in negative commands and in conditional sentences.
But Lebanese Arabic expresses a negative command with the subjunctive,
while the perfect or the imperfect indicative is used in conditional
sentences. The transfer rules, then, would include two rules for
transfer from the Literary Arabic jussive——one for its use in negative
commands, and another for its use in conditional sentences.[2]

While on the subject of morpheme classes, it should be noted that
most languages do not have special morpheme classes to denote every
structural distinction, but depend on the presence or absence of
other morphemes or morpheme classes in an utterance to mark some
distinctions. For example English has no "singular" morpheme for
nouns, but the singular is expressed in most words by the absence of
a plural morpheme. The transfer grammar must include rules for
transfers involving such unmarked forms.

The rules in a transfer grammar do not follow any progression,
but rather deal with numerous levels of the structure simultaneously.
One could, in fact, use the equations and their graphic representa-
tions as handy look-ups for information on specific points of phonology,
grammar, or semantics, as the need arises, and with no need for a
prior knowledge of the rules that have gone before in the list. Thus,
the outpu; of a contrastive analysis, as I see it, is not a random
list of the "most difficult" transfer points, nor a set of ordered
mutation rules, but rather a hierarchically organized static structure
which covers both languages in their entirety, and which may be
entered or left at any point.

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[2]The Arabic examples here and in the appendix are taken from Valerie
Becker, _A Transfer Grammar of the Verb Structures of Modern Literary
Arabic and Lebanese Colloquial Arabic_, a Yale University doctoral
dissertation, 1964. A revised version is currently in press with
Mouton, The Hague.

APPENDIX

This appendix illustrates more complex transfer rules, using verbs in Modern Literary Arabic and Lebanese Colloquial Arabic as examples. The principles demonstrated work equally well with more distantly related or unrelated languages. The following list gives the transfer rules for each tense, aspect, and mood in the two languages. The morphemic and phonemic make-up of these would be given in the structural sketch of each language. Transfers between specific morphemes and morpheme combinations would also be needed but are not shown here. Transfer rules are listed here for the active voice of Literary Arabic. Since Lebanese Arabic has no passive voice, the Literary passive "does not transfer".

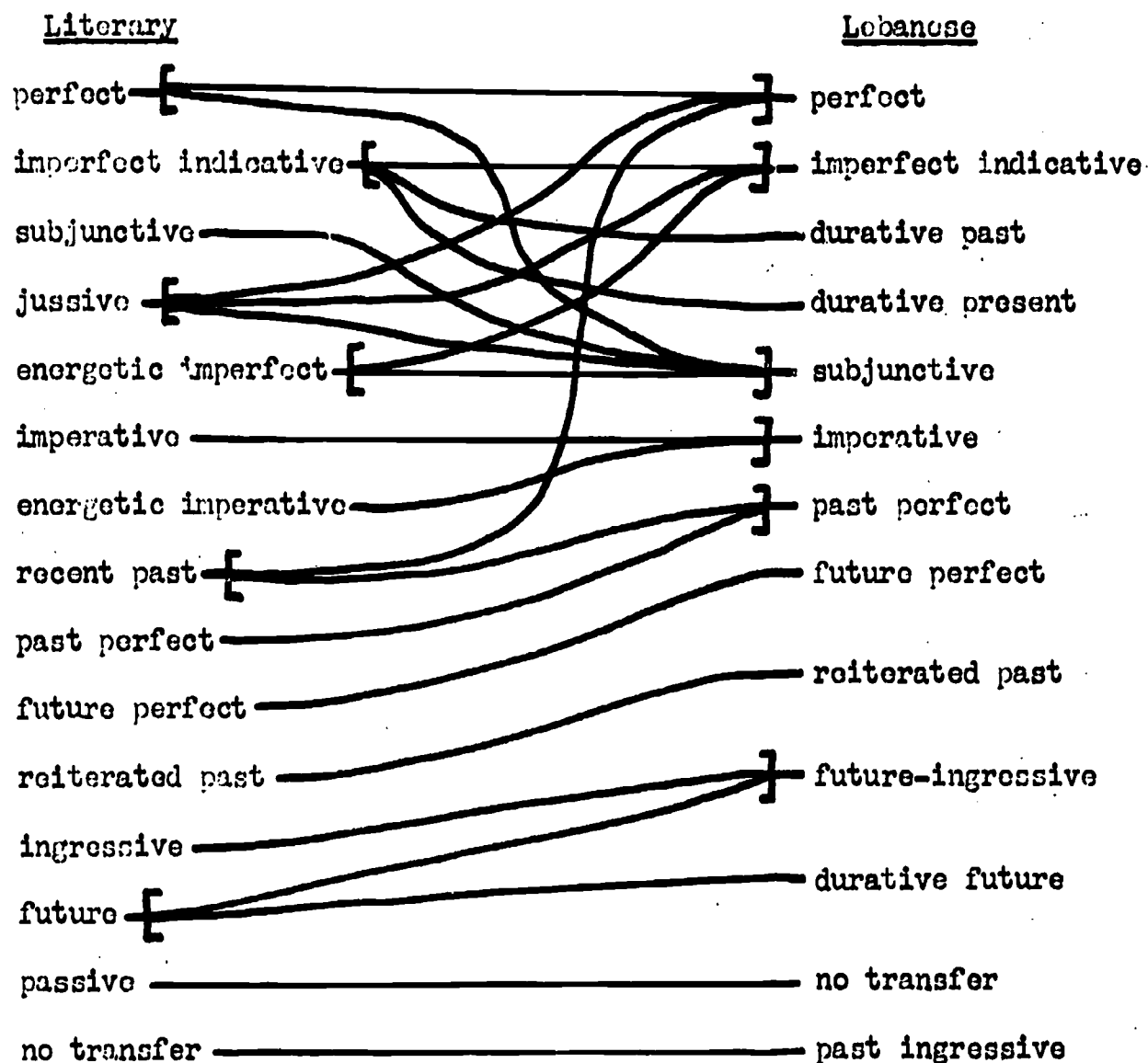| Literary	Lebanese
perfect active if it does not express a wish, prayer, or curse	:: perfect if it does not express an action completed in the recent past
perfect active if it expresses a wish, prayer, or curse	:: subjunctive if it expresses a wish, prayer, or curse
imperfect indicative active if it does not express a durative action	:: imperfect indicative if it is not in a conditional sentence and is not emphatic
imperfect indicative active if it expresses a durative action in the past	:: durative past
imperfect indicative active if it expresses a durative action in the present	:: durative present
subjunctive active	:: subjunctive if it is in a subordinate clause or after another verb, and is not emphatic
jussive active if it is in a conditional sentence	:: imperfect indicative or perfect if it is in a conditional sentence[3]
jussive active if it is a negative or indirect command	:: subjunctive if it is a negative or indirect command and is not emphatic
energetic imperfect active if it is not in a subordinate clause or a conditional sentence and does not express a negative or indirect command	:: imperfect indicative if it is emphatic
energetic imperfect active if	:: subjunctive if it is emphatic and

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[3]The choice between imperfect indicative and perfect here involves syntactic and stylistic considerations which are too lengthy to detail here.

it is in a subordinate
clause or a conditional
sentence, or expresses a
negative or indirect command
:: does not express a wish,
prayer, or curse

imperative
:: imperative if it is not emphatic
energetic imperative
:: imperative if it is emphatic
recent past active if it does
not express a past perfect
:: perfect if it expresses an action
completed in the recent past
recent past active if it
expresses a past perfect
:: past perfect if it expresses a
recent past perfect
past perfect active
:: past perfect if it does not ex-
press a recent past perfect

future perfect active
:: future perfect
reiterated past active
:: reiterated past
ingressive active
:: future-ingressive if it expresses
an ingressive

future active if it does not
express a durative
:: future-ingressive if it expresses
a future
future active if it expresses
a durative
:: durative future
passive
:: no transfer
no transfer
:: past ingressive

Lebanese
Literary

	perfect	imperfect indicative	subjunctive	imperative	past perfect	future perfect	reiterated past	future-ingressive	durative past	durative present	durative future	no transfer	past ingressive
perfect active	X		X										
imperfect indicative act.		X							X	X			
subjunctive active			X										
jussive active	X	X	X										
energetic imperfect act.		X	X										
imperative				X									
energetic imperative				X									
recent past active	X				X								
past perfect active					X								
future perfect active						X							
reiterated past active							X						
ingressive active								X					
future active								X			X		
passive												X	
no transfer													X

Literary   **Lebanese**

perfect ⊏   ⊐ perfect

imperfect indicative ⊏   ⊐ imperfect indicative

subjunctive   durative past

jussive ⊏   durative present

energetic imperfect ⊏   ⊐ subjunctive

imperative   ⊐ imperative

energetic imperative   ⊐ past perfect

recent past ⊏   future perfect

past perfect   reiterated past

future perfect   ⊐ future-ingressive

reiterated past   durative future

ingressive

future ⊏   no transfer

passive   past ingressive

no transfer

In the above relational network the diamonds, which allow the con-
ditions of occurrence of each form to be tied in, have been omitted
for ease of reading.

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