MEANING-TEXT MODELS:
A Recent Trend in Soviet Linguistics

♦9670

Igor A. Mel'čuk

Département de linguistique, Université de Montréal, Montréal H3C 3J7, Québec, Canada

SOME HISTORY AND GENERAL REMARKS

The Meaning-Text Theory (henceforth MTT) was put forward by Alexander K. Zholkovsky[1] and the present writer in 1965 (86); 2 years later, a major presentation of the theory appeared (87) and was soon translated into English and then into French. Shortly afterwards, Jurij D. Apresjan joined us, and thus was formed the nucleus of what was called the Moscow Semantic Circle. Over a 10-year period, some 20 people contributed to the work on a Meaning-Text Model of Russian. Basic general readings, in addition to the two titles just mentioned, include (45, 47, 50–52, 56, 67, 88). A number of papers and books dealing with more specific topics will be indicated later.
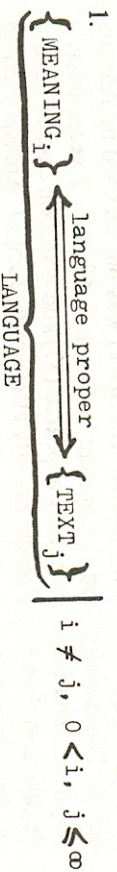
MTT did not flourish officially in the USSR. Its adherents were only rarely and reluctantly admitted to conferences and colloquia; it was never taught at any of the major universities; and the leading professional journals did not accept papers on MTT for publication. The main reasons were that it was so un-Marxist, with its stress on establishing formal correspondences

---

---

[1] There are problems in transcribing Russian names into English. For example, Zholkovsky's name will be written *Žolkovskij* when it is transliterated directly from Cyrillic type; moreover, various erratic spellings are found in American publications, e.g. *Zholkovskii*, or *Žolkovsky*, which had to be adopted in the literature cited. The same applies to Apresjan (sometimes spelled *Apresyan*), and my own name (*Mel'čuk–Melchuk–Mel'chuk*, etc).

between meaning and sound (thus separating both), its extensive use of mathematical and quasi-mathematical apparatus, its heavy reliance on Western linguistics, and so on. Later, the situation deteriorated sharply when the founders of the trend participated in a letter campaign protesting the Sinyavsky-Daniel trial and then failed to take the "right" stand toward the Soviet invasion of Czekoslovakia. Eventually I was forced to leave the USSR forever (the interested reader can find more details in the British review *Survey*, 1977–78, 23:2, 126–40; 1979, 24:2, 213–14). Two years later, Zholkovsky followed me. At present, there remain a few supporters of the Meaning-Text theory grouped around Apresjan in Moscow. My personal hope is that the theory will recover from its transplantation to North America and perhaps be enriched through direct contact with American linguistics.

Conceived and developed as a general theory of human language, Meaning-Text Theory is based on the following two postulates:

Postulate 1. Every speech event presupposes three main components: (a) content or pieces of information to be communicated, which are called *meaning(s)*; (b) certain forms or physical phenomena to be perceived, which are called *text(s)*; (c) a many-to-many correspondence between an infinite set of meanings and an infinite set of texts, which constitutes *language proper* (or "language in the narrow sense of the term"). This postulate can be diagrammed as follows:

$$1. \quad \left\{ \text{MEANING}_i \right\} \xleftrightarrow{\text{language proper}} \left\{ \text{TEXT}_j \right\} \Big|\ i \neq j,\ 0 < i,\ j \leq \infty$$
$$\underbrace{}_{\text{LANGUAGE}}$$

A natural language is thus viewed as a logical device which establishes the correspondence between the infinite set of all possible meanings and the infinite set of all possible texts and vice versa. This device ensures the construction of linguistic utterances which express a given meaning, i.e. speaking, and the comprehension of possible meanings expressed by a given utterance, i.e. the understanding of speech.
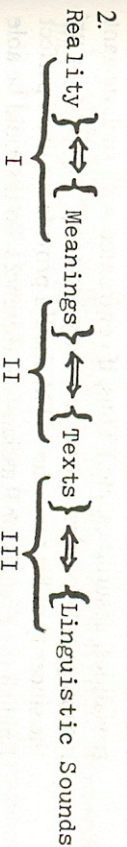
Postulate 2. Hypotheses about devices of the type illustrated in Postulate 1 can be formulated as functional[2] or cybernetic models, with the actual

---

[2] The term *functional*, which is now a buzz word in linguistics, as used here has nothing to do with functional sentence perspective (topic-comment problems) nor with grammatical functions (such as "subject of," "object of," etc). We say that X is a functional or cybernetic model of an object Y if and only if X is a system of rules simulating the functioning, the "work," or the behavior of Y, with no claims as to its observable structure.

language considered a "black box" where only the inputs and outputs can be observed but not the internal structure. Such models (called MTM) are systems of rules approximating the Meaning ⟺ Text correspondence. This chapter will discuss only one specific class of MTMs.

Proceeding from Postulates 1 and 2, the MTM can be characterized by the following important properties.

First, the MTM is not a generative but rather a translative or purely transformational system. It does not seek to generate (enumerate, specify) all and only grammatically correct or meaningful texts, but merely to match any given meaning with all texts having this meaning (synonymy) and, conversely, any given text with all meanings the text can have (homonymy). Second, the MTM is no more than a fragment of the full-fledged model of human linguistic behavior:

$$2. \quad \text{Reality} \left\{ \underbrace{\text{Meanings}}_{I} \right\} \Longleftrightarrow \left\{ \underbrace{\text{Texts}}_{II} \right\} \Longleftrightarrow \left\{ \underbrace{\text{Linguistic Sounds}}_{III} \right\}$$

Only Fragment II, i.e. Language, is deemed to be the subject of linguistics proper and should be represented as an MTM. Fragment I is the subject of various fields such as philosophy and psychology, including what is called artificial intelligence. Fragment III is the subject of acoustic and articulatory phonetics. However, even Fragment II is not represented by MTM in full. To simplify our task, we made abstraction from a number of relevant aspects, properties, and phenomena of natural language—in the hope that we will obtain a clearer and more insightful picture of what remains under our lenses. This is the only justification for many deliberate omissions. In their actual form, MTMs observe the following six limitations:

(i) Functions of natural language other than the communicative one are not considered at all. Language is treated exclusively as a communication system.

(ii) The extremely important problem of language acquisition and development is deliberately ignored.

(iii) No attempts have been made so far to relate the MTM experimentally with psychological or neurological reality. An MTM is no more than a model, or a handy logical means for describing observable correspondences.

(iv) The correspondence between meanings and texts is presented statically, i.e. as a correspondence between some elementary fragments

of meaning and equally elementary fragments of text. The procedures for actually moving from complex meanings to texts and vice versa, or the operations that have to put together those elementary fragments to produce actual life-size representations, are left out of consideration because they are believed to lie outside the domain of linguistics.[3] For this reason, within the MTM the problem of rule ordering does not arise.

(v) The possible feedback between meanings and texts in the actual process of speaking or listening (changes in the original message under the influence of the text already constructed and put out, etc) is not taken into account.

(vi) The analysis of the meaning itself goes beyond the scope of an MTM; a different type of device is needed for this purpose. (By this I mean the detection of semantic anomalies such as contradictions, trivialities, absurdities, etc.) Thus, if confronted with such deviant meanings as "Colorless green ideas sleep furiously" or "John ate up the sincerity of his car," the MTM should provide for them perfect English (or French, or Russian ...) sentences. So it should be able to detect the formal, or grammatical, anomalies of a text but it does not deal with the semantic ones. (This is done on purpose in order to reflect the essential asymmetry of meanings and texts.)

Only a very sketchy description of the MTM can be given. I do not mention any other feasible solutions and draw no parallels with the closely related models proposed by transformational grammar, generative semantics, stratificational linguistics, case grammar, and other more recent developments, including relational grammar. Suffice it to state that all these have significantly influenced the author; a qualified reader will easily recognize some common points and perceive the differences.

UTTERANCE REPRESENTATION LEVELS IN THE MEANING-TEXT MODEL

I assume that both meanings and texts can be represented in an explicit, discrete manner, using formal languages devised specially for this purpose. As for texts, this is more or less obvious: phonetic transcriptions—or, for that matter, conventional spelling systems—have existed for a long time. The approximation they ensure for the continuous acoustic flow of speech is generally deemed satisfactory. Though no semantic transcription exists for meanings, nothing should prevent us from believing that such a transcription exists for meanings, nothing should prevent us from believing that such a tran-

[3] But a MT model does of course enumerate the possible kinds of changes between adjacent levels.

scription is possible and from trying to construct one, if only as a working hypothesis. A version of semantic transcription, or, as we call it, semantic language, is proposed within the framework of MTT and is used herein. Thus MTM deals with formal representations of meanings and texts rather than with "genuine," "real" meanings and texts. Therefore, Formula I can be rewritten as 3:

3.
$$\left\{ \text{Sem(antic) R(epresentation)}_i \right\} \xleftrightarrow{\text{MTM}} \left\{ \begin{array}{l} \text{Phon(etic)} \\ \text{or} \\ \text{Graph(ic)} \end{array} \text{R(epresentation)}_j \right\}$$

From now on, I speak only of representations. One of the most basic facts about natural language is the following:

4. A given meaning of sufficient complexity can normally be expressed by an astronomically large number of texts.

Consider sentence 5, quoted (with slight modifications) from *Newsweek* magazine (Sept. 15, 1980):

5. *The Food and Drug Administration has seriously cautioned expectant mothers to avoid one of life's simple pleasures: a cup of coffee.*

The meaning of that sentence can be expressed by 6 as well:

6. *Pregnant women have been earnestly warned by the FDA against drinking coffee, one of the small pleasures of life.*

Except for the function words (articles, auxiliaries ...) and such technical terms as *FDA, coffee,* and *pleasures of life,* all the other words have been changed, as has the overall structure. Yet the meaning is preserved intact. With additional variations, the number of English sentences synonymous with 5 and 6 runs into thousands.[4]

[4] To see how thousands of paraphrases for 5 and 6 can be produced, consider the following. Sentence 5 can be broken into roughly eight semantic fragments, each of which will be represented by one column in the chart, page 32; each column contains some (nearly) synonymous variants that express the fragment in question (the figure in boldface under a column represents the number of variants in it):

Any variant from one column combines with nearly any other variant from another column:

(i) The FDA has addressed a stern caution to ladies to the effect that while expecting a baby they should abstain from coffee, that belongs to life's small joys.

(ii) The FDA made public a strong warning addressed to mothers-to-be: they should not indulge in consuming coffee, one of the simple pleasures of life, etc.

This allows us simply to multiply the number of variants in each column: $1 \times 4 \times 9 \times 7 \times 6 \times 6 \times 3 \times 8 = 217,728$.

True, some of the paraphrases will be sifted out by selectional restrictions and other constraints; however, a native speaker can easily think of new variants, so it becomes evident that synonymy is really rich.

Natural language is a system capable of producing a great many synonymous texts for a given meaning; the mastery of a language boils down to the control of its synonymic means.

The MTM has to match a given meaning with many different texts, and a great many different texts have to be reduced to the same meaning representation. This makes it almost impossible to establish a direct correspondence between semantic and phonological representation, and so two intermediary levels of utterance representation have to be introduced—syntactic and morphological—the former aimed at the sentence as a structural object and the latter dealing with the word. All levels—with the exception of the semantic one—are split into two sublevels: a deep one, geared to meaning, and a surface one, determined by physical form. This gives a total of seven representation levels:

1. Semantic Representation (SemR), or the meaning;
2. Deep-Syntactic Representation (DSyntR);
3. Surface-Syntactic Representation (SSyntR);
4. Deep-Morphological Representation (DMorphR);
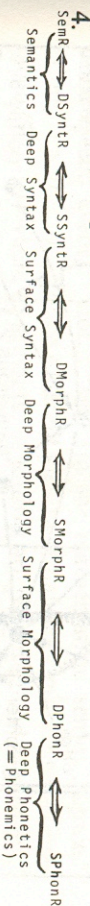5. Surface-Morphological Representation (SMorphR);

⁴Continued from page 31

1	2	3	4	5	6	7	8
FDA	seriously earnestly sternly strongly	caution warn forewarn counsel put on guard issue a warning address a caution make public {a caution, a warning}	pregnant women expectant mothers mothers-to-be {during pregnancy, while expecting} {women/ ladies} a baby	to avoid {should, should not} {to abstain from, avoid, abstain, not to, should not}	coffee (indulge in) {drink(ing), consum(ing)} coffee cup of coffee	one of that belongs to that constitutes	small simple {pleasures, joys} of life/ life's
1	4	9	7	6	6	3	8

6. Deep-Phonetic Representation (DPhonR, or what is commonly called "phonemic representation");
7. Surface-Phonetic Representation (SPhonR, which is called in the literature simply "phonetic representation"), or the text.

A representation is a set of formal objects called STRUCTURES, one of which is distinguished as the *main* one, with all the others specifying some of its characteristics. Each structure depicts a certain aspect of the item considered at a given level. Utterance representations are written in formalized languages defined by the researcher.

We can now present Formula 3 in full:

4.
$$\text{SemR} \Longleftrightarrow \text{DSyntR} \Longleftrightarrow \text{SSyntR} \Longleftrightarrow \text{DMorphR} \Longleftrightarrow \text{SMorphR} \Longleftrightarrow \text{DPhonR} \Longleftrightarrow \text{SPhonR}$$

Semantics   Deep Syntax   Surface Syntax   Deep Morphology   Surface Morphology   Deep Phonetics (= Phonemics)

The top line in 7 is a sequence of the utterance representations of all seven levels, with the correspondences between any two adjacent levels shown by two-headed arrows. The bottom line shows the components of the MTM and their functions. Thus semantics provides for the correspondence between the semantic representation of an utterance and all the sequences of deep-syntactic representations carrying the same meaning, etc. (See section on Design of the MTM.)

Following are examples of successive representations for sentence 5 and some synonymous sentences, starting from the meaning and working upward toward the text.

Semantic Representation

A sample Sem(antic) R(epresentation) simplified for illustrative purposes is given in Figure 1. Notice that the letters A, B, C and the numbers 1, 2, 3 that appear at the left side and top of the diagram are not part of the representation: they are used merely for referring to locations in the diagram. The shaggy lines mark the boundaries of theme and rheme (cf below). This SemR can be worded approximately as follows:

8. The FDA has intensively attempted to communicate [A1-2] to all pregnant women [B2] that they should not [A2] drink coffee, one of the simple pleasures of life for them [A2-3, C2-3]; the FDA believes that drinking coffee is dangerous for pregnant women [B2]. This attempt took place before the moment of speech yet its results persist until this moment [A2-3; in this way the English present perfect is represented].

Let it be emphasized that Figure 1 does not lay claim to absolute semantic precision. Many flaws exist in the semantic language used, but hopefully it serves the purposes of illustration.
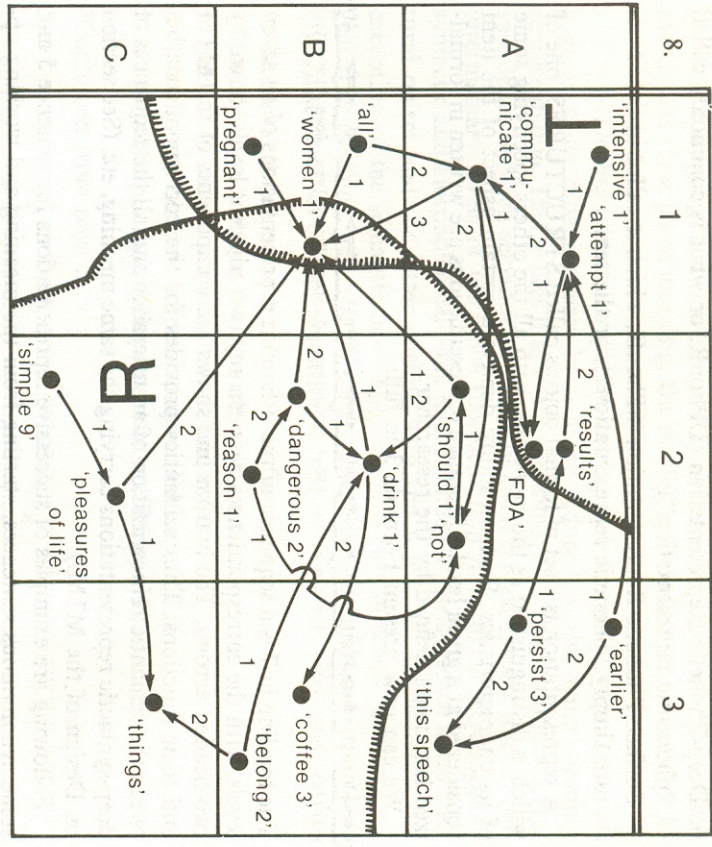
8.   8 is the SemR of 5 and 6 as well as of all the other sentences (or sequences of sentences) synonymous with them.

Figure 1

The SemR of an utterance consists of two structures: the semantic structure and the semantico-communicative structure.

The Sem(antic) S(tructure) specifies the meaning of the utterance independent of its linguistic form. The distribution of meaning among the words, clauses, or sentences is ignored; so are such linguistic features as the selection of specific syntactic constructions and so on. At the same time, the SemS tries to depict the meaning objectively—leaving out the speaker and his intentions, which are taken into account in the second structure of the SemR. Formally, a SemS is a connected graph or a network.

The *vertices or nodes* of a SemS are labeled with semantic units, or SEMANTEMES: meanings which can be either elementary (SEMES) or complex; complex meanings consist of semes or less complex semantemes. A complex semanteme can be represented by a semantic network, which specifies its semantic decomposition. For example, the semanteme 'earlier' found in 8, A3, can be decomposed as follows:
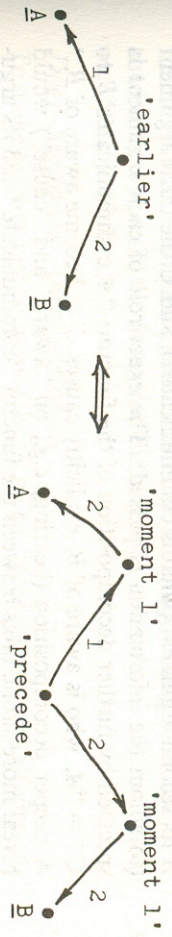
Semantic decomposition can go on, as deep as we need or want it, until semes are reached. A definitive list of semes, or semantic primitives, is not available, but some likely candidates are "(some)thing," "more," "say," "this speech event," "not," "set" (in the mathematical sense), "space," "time," "and," "or." [For a different view of semantic primitives see Wierzbicka (79, 79a) where 13 semantic primitives are proposed and argued for.] Since a complete analysis into semes would make the semantic network unreadable, complex semantemes are used for the most part. The names of the semantemes are word senses picked from a good dictionary. For the illustration here I have taken English word senses from *The American Heritage Illustrated Dictionary of the English Language;* thus "persist 3" in A3 is "continue in existence until ..." rather than "to be obstinately insistent in ..." or "hold steadfastly to ... despite obstacles."

Two major classes of semantemes are distinguished:

1. FUNCTORS, further subdivided into PREDICATES (relations, properties, actions, states, events, etc); LOGICAL CONNECTIVES ("if", "and", "or", "not"); and QUANTIFIERS ("all", "there exist", plus all numbers);

2. NAMES (OF CLASSES) OF OBJECTS, including proper names. Both types of semantemes can receive arcs or arrows, but only a functor can head an arrow. The arrows on the arcs point from functors to their arguments.

The arcs or arrows of a SemS are labeled with numbers which have no meaning of their own but only serve to differentiate the various arguments of the same functor. For instance,
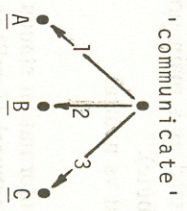
means that *A* is the first argument of "communicate" (who communicates),

B its second argument (what is communicated), and *C* the third argument (to whom the information is passed). The exact role of each argument is specified by further decomposition of the functor: "*A* communicates *B* to *C*" = "*A*, who is aware of *B*, explicitly causes *C* to become aware of *B*." A deeper decomposition (bearing, e.g., on "aware" and "cause") would reveal more subtle links between the functor "communicate" and its arguments.

The *Sem(antico)-Comm(unicative)S(tructure)* specifies the intentions of the speaker with respect to the organization of the message. The same meaning reflecting a given situation can be encoded in different messages according to what the speaker wants. So the Sem CommS must show at least the following contrasts:

(*a*) Theme (topic, designated $\perp$) vs rheme (comment, designated Λ), i.e. the starting point of the utterance, its source, as opposed to what is communicated about the topic. In 8, $\perp$ is "the caution given by the FDA and aimed at pregnant women," and Λ is that "pregnant women should not drink coffee since that is dangerous for them." If we interchange the symbols $\perp$ and Λ, the message becomes different:

9. *Mothers-to-be had better keep clear of coffee, which can be harmful to them—that is the stern warning issued by the FDA.*

$\perp$ and Λ indicate the itinerary through the situation, which is up to the speaker to choose. Note that there can be different layers of topic vs comment division. For example, within $\perp$ in 8, $\perp$ and Λ of second order can be indicated:

$\perp_2$ = "the FDA," Λ_2 = "seriously cautioned pregnant women."

(*b*) Old, or given (known to both interlocutors), vs new, i.e. communicated by the speaker.

(*c*) Foregrounded (expressed as a main predication) vs backgrounded (relegated to an attribute).

(*d*) Emphatically stressed vs neutral.

Semantico-communicative information stands in approximately the same relationship to the semantic network (SemS) as do suprasegmental prosodic phenomena to the segmental phonemic string that makes up a sentence. In

the simplified examples given here only the topic-comment contrast is shown, and that on the first stratum only. For more details on the SemR see (52, pp. 53–77; 56).

Deep-Syntactic Representation

To make the contrast between a SemR and a D(eep)-Synt(actic) R(epresentation) more vivid, I will give two different DSyntRs for two different but fully synonymous sentences, 5 and 10:

10. *The FDA has issued a stern warning to pregnant women: they should not drink coffee, which is one of life's small pleasures.*

Both sentences have of course the same SemR, namely, the one shown in Figure 1. Their DSyntRs appear as Figures 2 and 3, respectively. A D(eep)-Synt(actic)R(epresentation) [of a sentence] consists of four structures: the deep-syntactic structure, the deep-syntactico-communica-
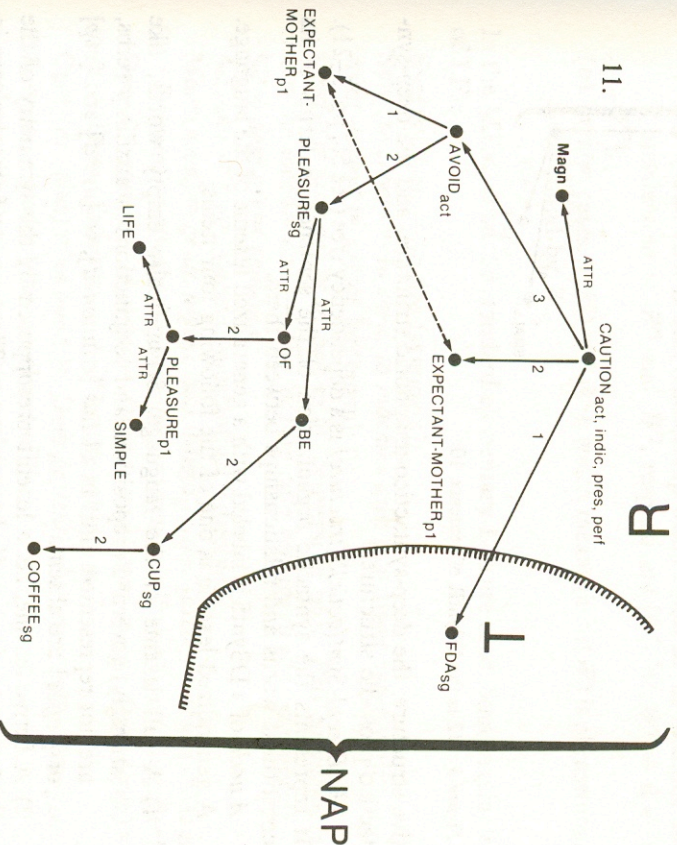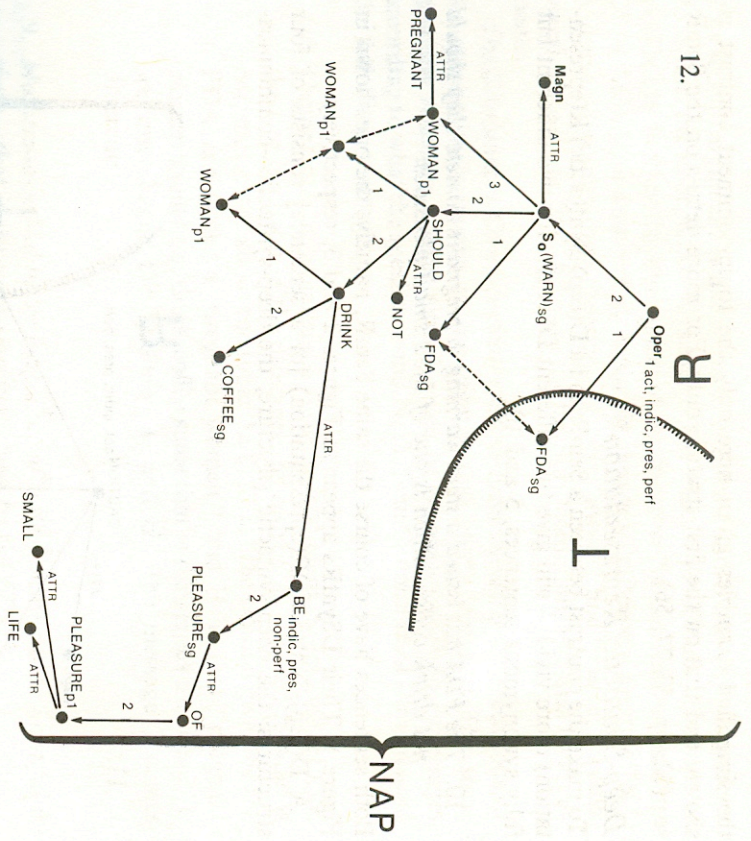
11.

Figure 2   11 is the DSyntR of sentence 5.

12.

Figure 3 12 is the DSyntR of sentence 10.

The *D(eep)-Synt(actic)S(tructure)* is a dependency tree (see 58, pp. 3–21). It represents the syntactic organization of the sentence in terms of its constituent words and relationships between them.

A node of a DSyntS is labeled with a generalized lexeme of the language. A generalized lexeme is one of the following four items:

1) A full lexeme of the language. Semantically empty words, like (strongly) governed prepositions and conjunctions or auxiliary verbs, are not represented: thus in 11 **has** [*cautioned*], **to** [*avoid*] and [*cup*] **of** [*coffee*] are absent.

2) A fictive lexeme, i.e. a lexeme presupposed by the symmetry of the derivational system, yet nonexistent. (There are no fictive lexemes in my examples, but this kind of unit has been widely discussed in American linguistics.)

---

3) A multilexemic idiom, e.g. *hit if off* "have good rapport" or *pull a fast one on someone* "gain an advantage over an unsuspecting person by subterfuge." In 11 and 12 we find two examples of idioms: one is *The Food and Drug Administration*, shortened to *FDA* and represented by a single node; the other example is *expectant mother*.

4) A lexical function: see below.

The symbol of a generalized lexeme must be subscripted for all the meaning-bearing morphological values, such as number in nouns or mood, tense, and aspect in verbs. (Syntactically conditioned morphological values, such as person and number in verbs, are not shown in a DSyntS.)

A (standard elementary) LEXICAL FUNCTION (LF) f is, roughly speaking, a relation which connects a word or phrase W—the argument of f—with a set $f(W)$ of other words or phrases—the value of f—in such a way that:

(*a*) for any W^1 and W^2, if $f(W^1)$ and $f(W^2)$ exist, both $f(W^1)$ and $f(W^2)$ bear an identical relationship with respect to the meaning and syntactic role to W^1 and W^2, respectively [$f(W^1)$: $W^1 = f(W^2)$: W^2];

(*b*) in most cases, $f(W^1) \neq f(W^2)$, which means that $f(W)$ is phraseologically bound by W.

In the MTM, about 50 standard elementary LFs are used. Some examples of LFs:

Syn(*to shoot*) = *to fire* [synonym];
Syn⊂(*to shoot*) = *to shell, to machine-gun* [narrower synonym];
Anti(*victory*) = *defeat* [antonym];
Conv21(*to include*) = *to belong to* [conversive; as in *This paradigm includes the locative case* = *The locative case belongs to this paradigm*];
S0(*to despise*) = *contempt*;
A0(*sun*) = *solar* [derived substantival/adjectival];
Magn(*need*) = *great, urgent, bad*, **Magn**(*settled* [*area*]) = *thickly*, **Magn** (*to illustrate*) = *vividly*, **Magn**(*belief*) = *staunch* ["very"; an intensifier];
Oper1(*analysis*) = *to perform*, **Oper**1(*attention* = *to pay*, **Oper**1(*step*) = *to take*, **Oper**1(*favor*) = *to do* ["be the subject of"];
Oper2(*analysis*) = *to undergo*, **Oper**2(*attention*) = *to receive*, **Oper**2(*control*) = *to be under* ["be the object of"];
Real1(*promise*) = *to keep, to make good*, **Real**2(*attack*) = *to fall to* ["fulfill the requirements of X, which is the argument, being respectively the subject (for Real1) or the object (Real2)" of X;
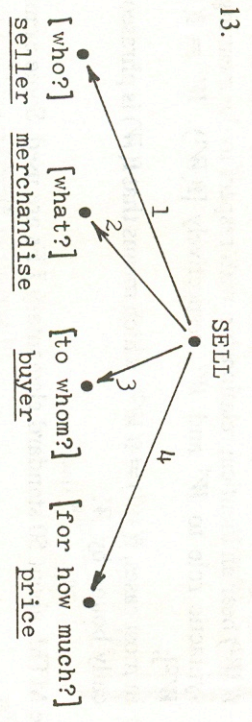
Son(*cow*) = *to low, to moo*, **Son**(*windowpanes*) = *to jingle, to rattle* [typical sound].

Furthermore, there are COMPLEX LFs, e.g. **AntiReal**$_1$(*promise*) = *to renege on*, **AntiReal**$_2$(*attack*) = *to beat back*, **IncepOper**$_1$(*fire*) = *to open*, **FinOper**$_2$(*control*) = *to get out of*, etc. To avoid overburdening the exposition, I will not touch on so-called NON-STANDARD LFs.

LFs play a crucial role in covering restricted lexical cooccurrence. In 11 we see a **Magn**(*to caution*), i.e. *seriously*; in 12 there are three LFs: S$_0$(*to warn*) = *warning*, **Oper**$_1$(*warning*) = *to issue*, and **Magn**(*warning*) = *stern*. For more details about LFs see (8, 42, 67; cf 38 also).

A branch of a DSyntS is labeled with the name of a DEEP-SYNTACTIC RELATION (DSyntRel). The DSyntRels are deemed to be universal. A DSyntRel is one of nine binary relations:

• 1, 2, ... 6 are *predicative* relations connecting a semantically predicative lexeme with its 1st, 2nd, ... 6th arguments, respectively; for instance:

13.

          SELL
     1 2   3   4
  [who?] [what?] [to whom?] [for how much?]
  seller merchandise buyer price

• ATTR is the *attributive* relation, which covers all kinds of modifiers and attributes (in the broadest sense of the term).

• COORD is a relation that accounts for all *coordinate* or *conjoined* constructions linking the right conjunct to the left one, which is the governor, e.g.:

    JOHN   PETER   AND   PAUL
        COORD   COORD   2
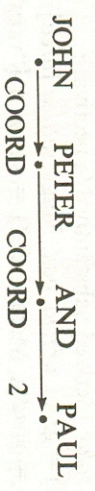
• APPEND is an "*appendancy*" relation that subsumes all parentheticals, interjections, adresses, etc, linking any one of these elements to the top node (main verb) of the corresponding clause.

Let it be emphasized that there is no linear order of nodes within the DSyntS. Word order is taken to be a means for encoding syntactic structure into speech strings and therefore it is banned from the syntactic structure. The D(eep)-Synt(actico-)Comm(unicative)S(tructure) specifies the divi-

sion of the sentence represented into topic and comment, old and new, etc. In our simplified examples the DSynt-CommS shows the information in much the same manner as within the first stratum of topic-comment division only in much the same manner as within the SemR. I will not discuss the differences between the DSynt-CommS and Sem-CommS any further.

The D(eep)-Synt(actico-)Anaph(oric)S(tructure) carries the information about coreferentiality of the broken-line arrows in 11 and 12: that is, the understood subject of *avoid* is the *expectant mothers who have been cautioned*, etc.

The D(eep)-Synt(actico-)Pros(odic)S(tructure) represents all of the meaningful, prosodies that appear at this level—intonation contours, pauses, emphatic stresses, and the like—where these are not syntactically conditioned. In 11 and 12 it is the acronym NAP, standing for N(eutral) A(sertive) P(rosody), that exemplifies the DSynt-ProsS.

Surface-Syntactic Representation

Only sentence 5 will be represented at the surface-syntactic level (see Figure 4). The S(urface)-Synt(actic)R(epresentation) of a sentence consists of four structures corresponding to those of the DSyntR but replacing D(eep) by S(urface). The SSyntS is also a dependency tree, but its composition and labeling differ sharply from those of the DSyntS.

A node of a SSyntS is labeled with an actual lexeme of the language. First, all the lexemes of the sentence are represented, including the semantically empty ones. Second, all the idioms are expanded into actual surface trees. Third, the values of all the lexical functions are computed (on the basis of a lexicon called an Explanatory Combinatorial Dictionary, see below) and spelled out in place of the LFs. Fourth, all pronominal replacements and deletions under lexical or referential identity are carried out.

A branch of a SSyntS is labeled with the name of a SURFACE-SYN-TACTIC RELATION (SSyntRel).

A SSyntRel belongs to a set of language-specific binary relations that obtain between the words of a sentence, each describing a particular syntactic construction. The inventory of SSyntRels for a language is established empirically (cf 58, pp. 91–150). In 14 the reader can see examples of English SSyntRels. Tentative lists of SSyntRels are found for Russian in (5) and (52, pp. 221–35) for English in (63), and for some other languages in references given in (58, p. 97).

As is the case with the DSyntS, the nodes of the SSyntS are not ordered linearly. This enables us to keep strictly apart two basically different "orders": syntactic hierarchy and linear ordering, which serves to express this hierarchy.
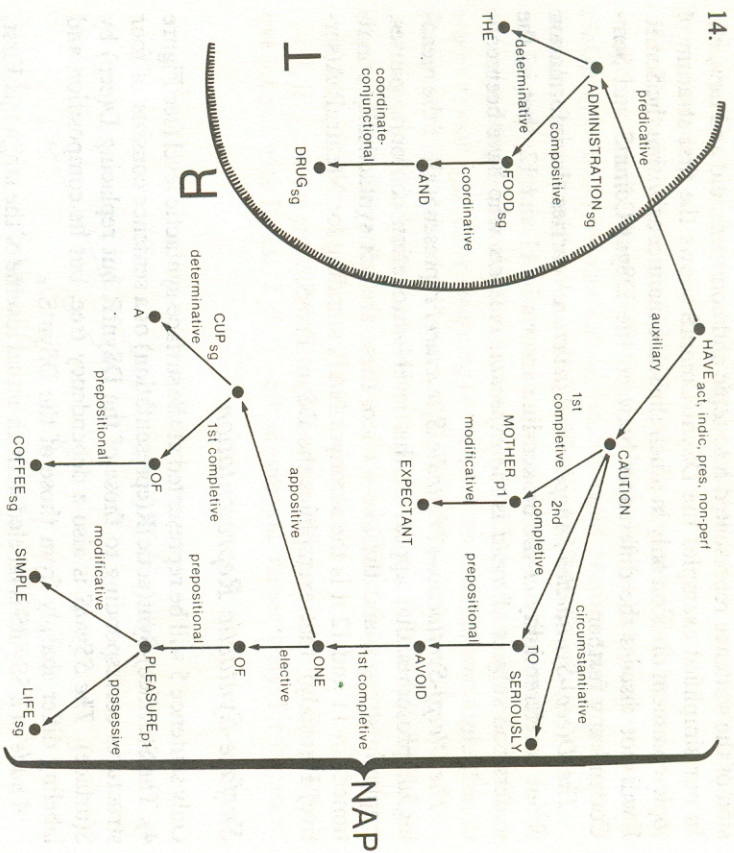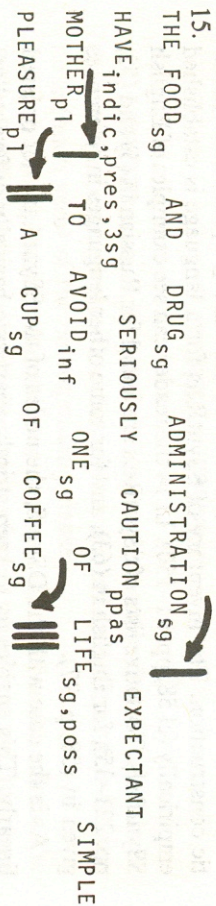
14.

Figure 4. 14 is the SSyntR of the English sentence that corresponds to the DSyntR 11, i.e. of 5.

The *SSynt-CommS, the SSynt-AnaphS, and the SSynt-ProsS* are analogous to their deep counterparts. A detailed discussion of important divergences cannot be undertaken here because of lack of space.

Deep-Morphological Representation

Only one DMorphR will be offered for sentence 5, see 15:

15.


```
THE  FOOD sg  AND  DRUG sg  ADMINISTRATION sg
HAVE indic,pres,3sg   SERIOUSLY  CAUTION ppas  EXPECTANT
MOTHER p1   TO  AVOID inf  ONE sg  OF  LIFE sg,poss  SIMPLE
PLEASURE p1  A  CUP sg  OF  COFFEE sg
```

15 is the DMorphR of the sentence which corresponds to the SSyntR 14, i.e. to the SSyntR of 5.

The D(eep)-Morph(ological)R(epresentation) of a sentence consists of two structures: the deep-morphological structure, and the deep-morphologico-prosodic structure.

The D(eep)-Morph(ological) S(tructure) is a string of D(eep)-Morph(ological) R(epresentations) of all the wordforms that compose the sentence. The DMorphR of a wordform W is the name of the lexeme to which W belongs subscribed for all its morphological values. Thus the DMorphR of W unambiguously specifies this particular W (up to wordform hom-onymy), while the DMorphS of the sentence unambiguously specifies its word order (up to free variation).

The D(eep)-Morph(ologico-)Pros(odic) S(tructure) indicates pauses, into-nation contours, and the like. In 15 the vertical bars stand for pauses of varying length, and the arrows represent the pitch contours.

Representations at Other Levels

Levels 5 through 7: the Surface-Morphological [Morphemic] Representation, the Deep-Phonetic [Phonemic] Representation, and the Surface-Phonetic [Phonetic proper] Representation, will be omitted here because they are of minor importance; but see (41, 43, 47). The aim of all these representations, with different structures within each, is to describe all the different aspects of an actual utterance as separately and autonomously as possible. That is, a MTM does not aim for a homogeneous representation; on the contrary, it explicitly keeps apart phenomena that appear to be different.

THE DESIGN OF THE MEANING-TEXT MODEL

As stated above, a MTM has the task of establishing correspondences between the semantic and the (surface-)phonetic representations of any given utterance through the five intermediate levels listed in the preceding section. Accordingly, the MTM consists of the following six basic components:

1. The Semantic Component, or semantics for short.
2. The Deep-Syntactic Component, or deep syntax.
3. The Surface-Syntactic Component, or surface syntax.
4. The Deep-Morphological Component, or deep morphology.
5. The Surface-Morphological Component, or surface morphology.
6. The Deep-Phonetic Component, or phonemics.

The Surface-Phonetic Component, which provides for the correspondence between a surface-phonetic representation and actual acoustic phenomena, falls outside the scope of the MTM model in the strict sense.

Each component of the MTM is a set of rules having the trivial form $X \Longleftrightarrow Y | C$, where X stands for a fragment of utterance representation at level n, Y for a fragment of utterance representation at level $n+1$, and C is a set of conditions (expressed by Boolean formulas) under which the correspondence $X \Longleftrightarrow Y$ holds. The two-headed arrow must be interpreted as "corresponds," not "is transformed into." Thus, when the transition from a meaning 'X' to a DSyntR Y is performed, 'X' itself is not changed: nothing happens to 'X' while Y is being constructed by semantic rules under the control of 'X.' The relation between a representation n and an "adjacent" representation $n+1$ is the same as that between the blueprint of a house and the house itself. The blueprint is by no means transformed into the house; but during construction, it is the blueprint that guides the workers.

Another important peculiarity of the rules in the MTM is that they are logically unordered. All relevant information about the language is expressed explicitly, i.e. by symbols within the rules rather than by the order of the latter. The philosophy behind this decision is that finding the best order of rule application in a specific situation goes far beyond the task of linguistics proper.

The rules themselves are conceived of not as prescriptions, or instructions of an algorithm, but rather as permissions and prohibitions, or statements in a calculus. Basically each rule is a *filter* sifting out wrong correspondences. The idea of defining the structures in the MTM in terms of sets of rules representing well-formedness conditions was introduced into the meaning-text theory by L. N. Iordanskaja (24, 25) and is now firmly embedded in the research on MTMs.

The Semantic Component of the MTM

The semantic component establishes the correspondence between the SemR of an utterance and all the synonymous sequences of DSyntR's of the sentences that make up that utterance (cf 7). To do that, it performs the following eight operations:

1) It cuts the SemR into subnetworks such that each corresponds in its semantic "size" to a sentence. (In fact, the original SemR is *not* cut; simply, the semantic component constructs alongside it another SemR, equivalent to the original one, but consisting of a sequence of smaller SemRs.)

2) It selects the corresponding lexemes by means of semantico-lexical rules of the type illustrated below:

16.
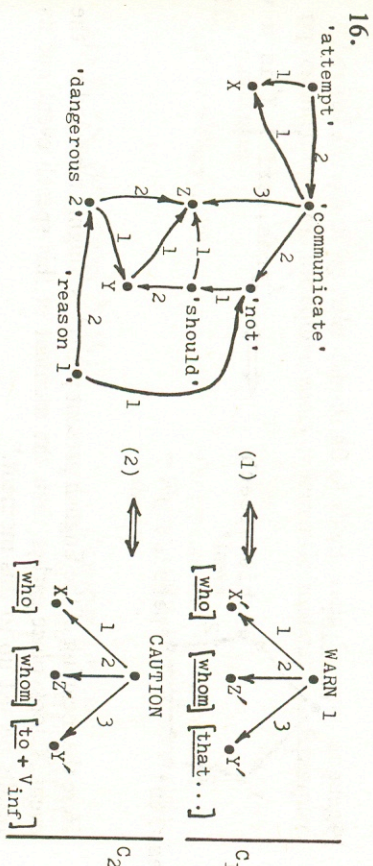
16 is a semantico-lexical rule in the strict sense (C_1 and C_2 stand for different sets of conditions that might determine the choice of the lexeme). Essentially, 16 represents two dictionary entries for two (roughly) synonymous verbs *to warn 1* and *to caution*. The variables X, Y, etc in the left-hand part of the rule represent semantic subnetworks that "hang" from the nodes labeled X, Y, ..., respectively; the variables X', Y', etc in the right-hand part of the rule stand for English lexical items that express X, Y, etc, respectively. In rules 18–20 the variables are used in the same way.

17.

(1)   EXPECTANT-MOTHER | C_3
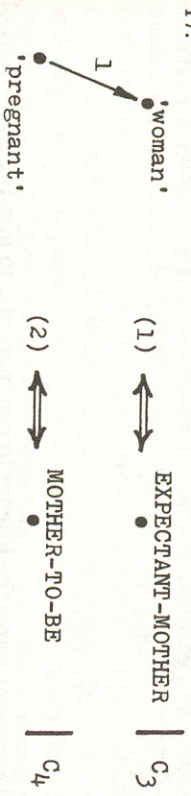
(2)   MOTHER-TO-BE | C_4

This is a semantico-idiomatic rule specifying two idioms for the meaning 'pregnant woman,' namely, *expectant mother* and *mother-to-be*. This meaning can of course be expressed also by the free phrase *pregnant woman*, which is ensured by two separate straightforward semantico-lexical rules.

18.

This is a semantico-functional rule responsible for the lexical function **Magn** in the DSyntS (cf in 11 and 12: *seriously cautioned, stern warning*).

3) It supplies meaning-bearing morphological values of lexemes by means of semantico-morphological rules like the following one:

19.

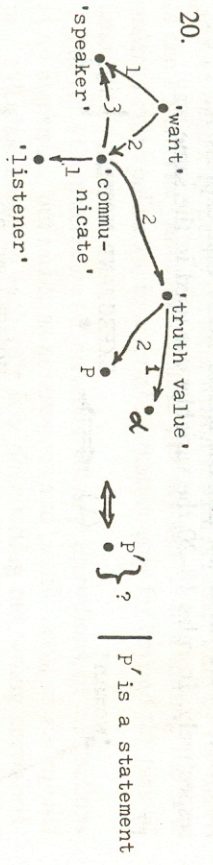'earlier'
X 'this speech event' 'persist 3' 'results'
(2, 1, 1, 2, 2)

$\Longleftrightarrow$ $X'_{pres,perf}$ | X' is a verb
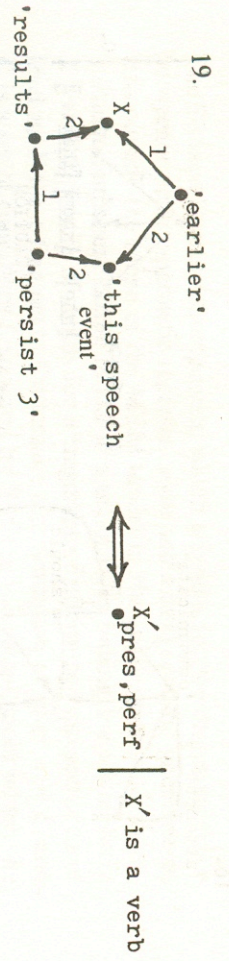
Here the meaning of the English present perfect is roughly rendered as "the event X took place earlier than the moment of this speech event but its results persist up to this moment."

4) It forms a DSyntS (a tree) out of the lexemes it has chosen.

5) It introduces the DSynt-AnaphS; that is, it indicates coreference etc for the lexical nodes that have appeared as a result of the duplication of some semantic nodes.

6) It computes the prosody of the sentence on the basis of semantico-prosodic rules, e.g.:

20.

'want' 'communicate' 'speaker' 'listener' 'truth value' P
(1, 2, 3, 1, 2, 1, α)

$\Longleftrightarrow$ • P' {} ? | P' is a statement

("The speaker wants the listener to communicate to him the truth value of the statement P' is rendered—along with other means of course—by the specific interrogative prosodies.) As we see, all the meaning-bearing prosodic phenomena are represented in the SemR in exactly the same way as any other meanings, but in the DSyntR their representation is different since prosodies and words are so different.

7) It provides the DSynt-CommS (topic-comment, etc) from the data contained in the Sem-CommS.

8) For each DSyntR produced the semantic component constructs all the synonymous DSyntRs that can be exhaustively described in terms of lexical functions. (Other types of linguistic synonymy are accounted for by semantico-lexical rules that can group bundles of sememes into lexemes in different ways.) This is achieved by means of a paraphrasing system that defines an algebra of transformations on such DSyntR's where the DSyntS contains LF symbols. The paraphrasing system, first described in (87; see also 67), includes rules of two classes:

Lexical Paraphrasing rules (about 60 of them, valid for any language) represent either semantic equivalences or semantic implications. Examples:

21. Equivalences

(a) $W \Leftrightarrow Conv_{21}(W)$

The set contains [W] the point M
$\Leftrightarrow$ The point M belongs [$Conv_{21}(W)$] to the set.

(b) $W \Leftrightarrow N_0(W) + Oper_1(N_0(W))$

He warned [W] them
$\Leftrightarrow$ He issued [$Oper_1(N_0(W))$] a warning [$N_0(W)$] to them.

(c) $Real_2(W) \Leftrightarrow Adv_{IB}(Real_2(W))$

He followed [$Real_2(W)$] her advice [W] to enroll
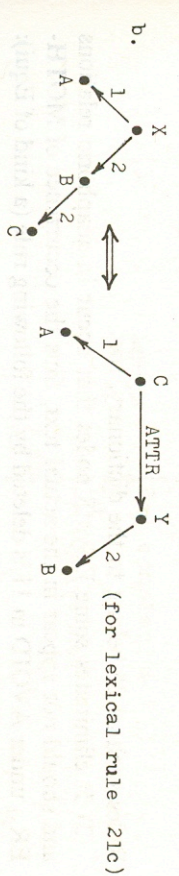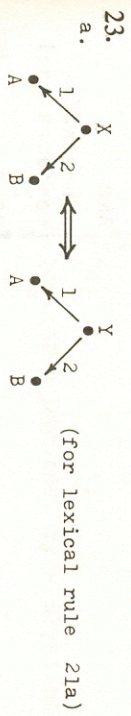$\Leftrightarrow$ He enrolled on [$Adv_{IB} Real_2(W)$] her advice [W].

Implication

22. $PerfCaus(X) \Rightarrow PerfIncep(X)$

John started [$PerfCaus(run\ II)$] the motor $\Rightarrow$ The motor started [$PerfIncep(run\ II)$].

Syntactic Paraphrasing Rules indicate what restructuring of a DSyntS is needed when a particular lexical rule is applied. Since there are only four basic syntactic operations at the deep level (merger of two nodes, splitting of a node, transfer of a node to another governor, and renaming of a branch) and only nine deep-syntactic relations, the number of elementary deep-tree transformations is finite and not very large. Any particular syntactic rule defined on DSyntSs can be represented in terms of those specific transformations.

To operate lexical paraphrasing rules (21), the following syntactic rules are needed:

23.

a. X (1 A, 2 B) $\Longleftrightarrow$ Y (1 A, 2 B)   (for lexical rule 21a)

b. X (1 A, 2 B, 2 C) $\Longleftrightarrow$ C (ATTR Y, 1 A, 2 B)   (for lexical rule 21c)
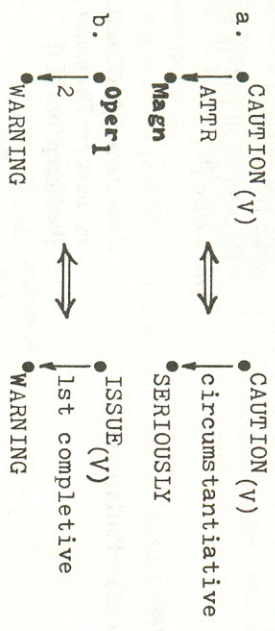
Generally speaking, a syntactic rule, due to its abstract character, may serve several different lexical rules. A formalism has been devised for describing unordered dependency tree transformations—so-called Δ-grammar (see 17–19; 52, pp. 163–66).
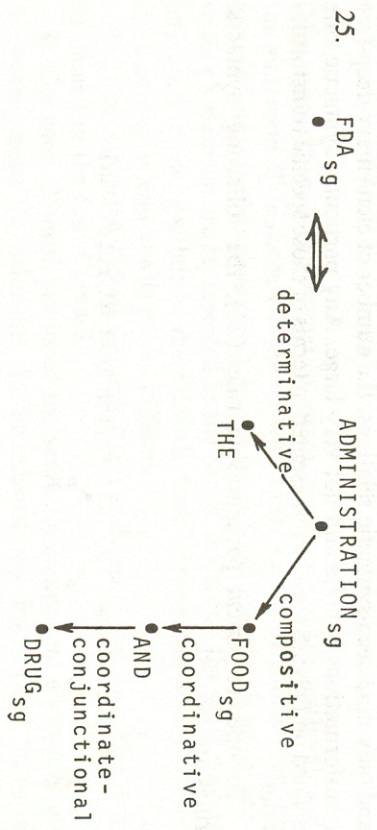
The Deep-Syntactic Component of the MTM

The deep-syntactic component establishes the correspondence between the DSyntR of a sentence and all the alternative SSyntR's which correspond to it. To do that, it performs the following five operations:

24:

1) It computes the values of all lexical functions by means of rules like

a.
```
      CAUTION(v)                      CAUTION(v)
      |ATTR            <=>            |circumstantial
    Magn                           SERIOUSLY
    Magn
    WARNING                          WARNING
```

b.
```
    Oper1                            ISSUE(v)
      |2              <=>            |1st completive
    WARNING                          WARNING
```

Such rules belong, of course, to the dictionary.

2) It expands the nodes of idioms into corresponding surface trees:

25.
```
    FDA sg                              ADMINISTRATION sg
            <=>               determinative    compositive
                           THE                       FOOD sg
                                                coordinative
                                                AND
                                                coordinate-
                                                conjunctional
                                                DRUG sg
```
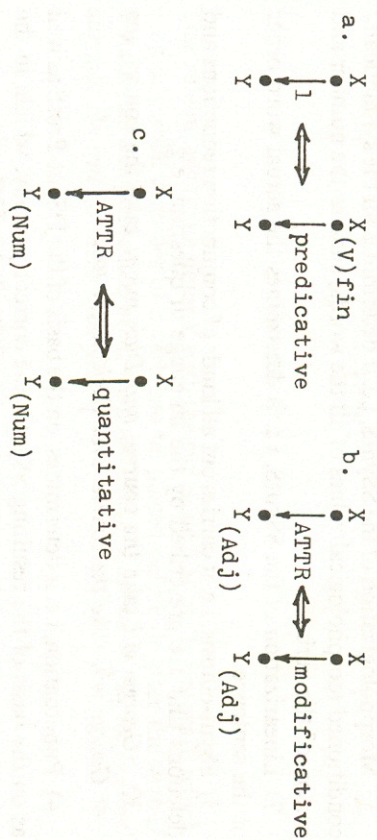
Rules such as 25 belong to the dictionary, too.

3) It eliminates some DSyntS nodes that occur in anaphoric relations and should not appear in the actual text; thus the occurrence of MOTHER_pl under AVOID in 11 is deleted by the following rule (a kind of Equi):
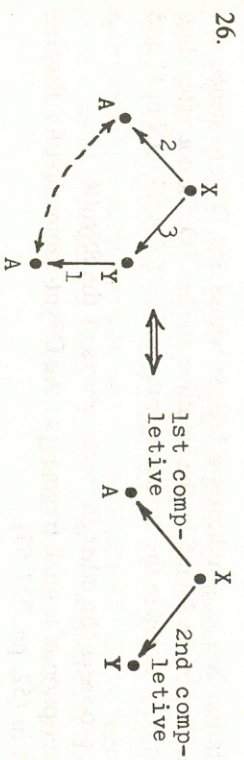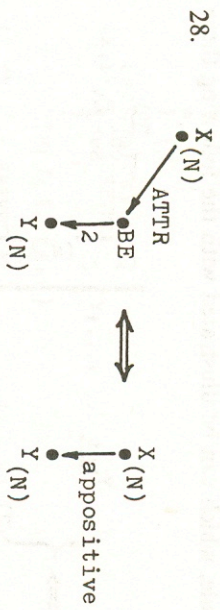
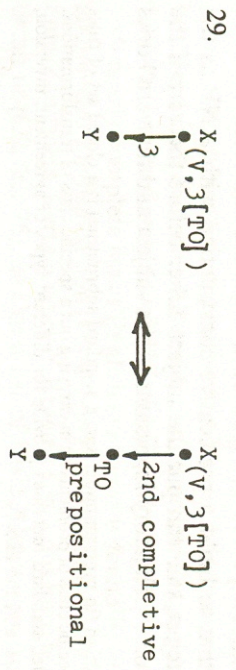4) It constructs the SSyntS by means of three types of transformations:

26.
```
            X                              X
          2/ \3                          1st comp-
          /   \         <=>             letive
         A     Y                      A       A
               |1
               A                              X
                                        2nd comp-
                                        letive
                                              Y
```

27. Replacement of a DSyntRel by a SSyntRel

a.
```
    X                    X
    |1       <=>        |X(v)fin
    Y                    Y predicative
    Y(Num)
```

b.
```
    X                    X
    |ATTR    <=>        |ATTR
    Y(Adj)               Y(Adj) modificative
```

c.
```
    X                    X
    |ATTR    <=>        |quantitative
    Y(Num)               Y(Num)
```

28. Replacement of a DSynt-node by a SSyntRel

```
    X(N)
    |ATTR  BE        <=>        X(N)
      |2                        |appositive
    Y(N)                        Y(N)
```

29. Replacement of a DSyntRel by a SSynt-node

```
    X(v,3[TO])                    X(v,3[TO])
    |3            <=>            |2nd completive
    Y                            TO
                                 |prepositional
                                 Y
```

The notation $X_{(V,3[TO])}$ indicates a lexeme whose 3rd DSynt-valence slot must be filled in the SSyntS by the infinitive marker TO; the corresponding information is stored in the dictionary entry of X (cf. CAUTION in 11 and 14).

5) It processes the other three structures of the SSyntR.

A description of a small fragment of the DSynt-component for Russian is found in (52, pp. 237–59).
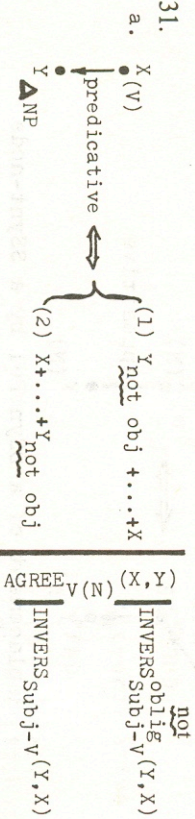
The Surface-Syntactic Component of the MTM

The surface-syntactic component establishes the correspondence between the SSyntR of a sentence and all the alternative DMorphR's that are realizations of it. It performs the following four main operations:

1) Morphologization of the SSyntS, i.e. it determines all the syntactically conditioned morphological values of all the words, such as the number and person of the verb.

2) Linearization of the SSyntS, i.e. it determines the actual word order of the sentence.

3) SSynt-ellipsis, i.e. it carries out all kinds of conjunction reductions and deletions that are prescribed by the language in question, e.g.:

30. *George will take the course, and Dick might take the course, too* ⟹ *George will take the course, and Dick might too.*

4) Punctuation, i.e. it determines, on the basis of the DSynt-ProsS as well as on the basis of the resulting SSyntS, the correct prosody, which, in the case of printed texts, is rendered by punctuation.
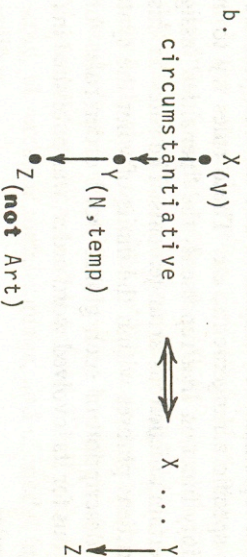
The basic tool of morphologization and linearization of the SSyntS is the syntagm, or SSynt-rule, which can be illustrated with the following three rules for English:
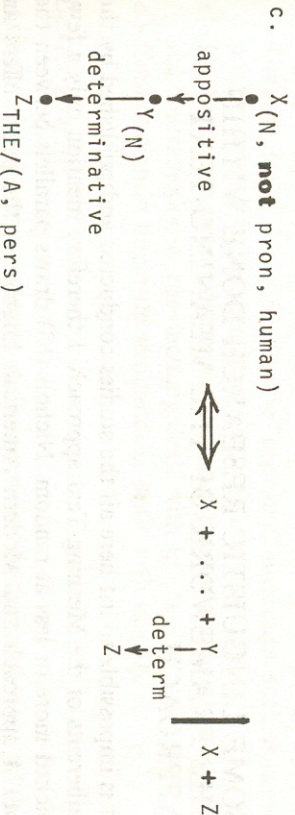
31.
a.
$$
\begin{array}{l}
X(V) \\
\quad \Big| \text{predicative} \\
\quad Y \\
\quad \blacktriangle NP
\end{array}
\quad\Longleftrightarrow\quad
\begin{array}{l}
(1)\ Y_{\text{not obj}} +\ldots+ X \\
(2)\ X+\ldots+Y_{\text{not obj}}
\end{array}
\Bigg|
\begin{array}{l}
\text{AGREE}_{V(N)}(X,Y) \\
\text{INVERS}^{\text{oblig}}_{\text{Subj-V}}(Y,X) \\
\text{INVERS}^{\text{not}}_{\text{Subj-V}}(Y,X)
\end{array}
$$

The rule says that to build a predicative construction with a **NP** as the grammatical subject, one can put the subject either before the verb if the standard function[5] "obligatory inversions of the subject and the verb" does

---

[5]A standard function (in programming, also a standard subroutine) is a closed set of rules used in solving a specific class of problems or in carrying out a specific class of transformations. In a linguistic model, standard functions provide for different types of agreement, inversion, coordination, ellipsis, and the like.

not apply, or after the verb if a similar function ("possible or obligatory inversions of the subject and the verb") applies; the subject must not be in objective form (relevant only for pronouns: *me, us,* . . .), and the verb must agree with it in accordance with yet another standard function: "agreement of the verb with the subject noun." The NP and the standard functions are defined elsewhere since they appear in many different syntagms.

b.
$$
\begin{array}{l}
X(V) \\
\quad \Big| \text{circumstantiative} \\
\quad Y(N,\text{temp}) \\
\quad \Big| \\
\quad Z\ (\mathbf{not}\ \text{Art})
\end{array}
\quad\Longleftrightarrow\quad
\begin{array}{l}
X \ldots Y \\
\qquad\quad \Big| \\
\qquad\quad Z
\end{array}
$$

This rule means that a noun Y with the syntactic feature 'temp(oral)' which is an adverbial modifier of a verb can be placed before or after the verb if Y itself has a dependent Z other than an article: *Last week* [Y] *we finished our job, He will go there next year* [Y].

c.
$$
\begin{array}{l}
X(N,\ \mathbf{not}\ \text{pron, human}) \\
\quad \Big| \text{appositive} \\
\quad Y(N) \\
\quad \Big| \text{determinative} \\
\quad Z\ \text{THE}/(A,\text{pers})
\end{array}
\quad\Longleftrightarrow\quad
\begin{array}{l}
X+\ldots+Y \\
\qquad\quad \Big| \text{determ} \\
\qquad\quad Z
\end{array}
$$

The rule states that a noun Y governing THE or a personal adjective (*my, your,* . . .) and being an appositive to a human nonpronominal noun X can be placed after X in such a manner that its article or the personal adjective follows X immediately: *Jack* [X] *the* [Z] *editor* [Y].

A nearly complete list of English syntagms is found in (64); an enlarged and revised English edition is now being prepared for publication by Benjamins Publishers. Certain types of Russian syntagms have been described in detail in [(22, 23, 76); cf also a list of basic Alutor syntagms (65)].

Besides syntagms, surface syntax uses at least four additional types of rules:

• Word order patterns for elementary phrases; e.g. *all those beautiful French magazines* vs *French those beautiful all magazines*.

• Global word order rules, which compute the best word order possible for the given SSyntS on the basis of various data: the syntactic properties of some words marked in the lexicon; the relative length of different parts of the sentence; topicalization, emphasis, and the like; possible ambiguities produced by specific arrangements, etc. These rules try to minimize the value of a utility function that represents the "penalties" assigned (by the linguist) to certain unfelicitous arrangements. The rules do this by reshuffling the constituent phrases within the limits of what the syntagms allow. A fairly full description of such global word order rules for Russian, a language famous for its involved word order, was published in (40) and (52, pp. 268–300).

• Ellipsis rules.

• Prosodic or Punctuation rules.

The SSynt-component of the MTM for Russian is characterized at some length in (5).

Other Components of the MTM

These will not be dealt with in this review. The interested reader is referred to (47, 50, 56).

SOME LINGUISTIC RESEARCH DONE WITHIN THE FRAMEWORK OF THE MEANING-TEXT APPROACH

It is impossible to list here all the studies conducted and published by the adherents of the Meaning-Text approach. I therefore mention only a few, picked more or less at random. Nichols (68) draws parallels between the MTM approach and Modern American linguistics; the paper offers an excellent perspective for a beginner.

Semantics

A new trend in modern semantics, at least in the USSR, was opened in the early 1960s by the work of the Machine Translation Laboratory of the M. Thorez Institute of Foreign Languages in Moscow. Headed by V. Ju. Rozencveig, a group of young Soviet semanticists, with A. K. Zholkovsky in the forefront, started research in this hitherto neglected field, and in 1964 published an issue of the Laboratory's bulletin *Mašinnyj perevod i prikladnaja lingvistika* devoted entirely to semantics: the now famous MPiPL 8. This modest-looking volume was to play a crucial role for the Soviet seman-

tic school. Many papers in it (77, 80–82) are still of enormous interest for semantics, but they can be summarized here only in outline. It was there that the idea of a "pure," language-independent semantic representation first emerged and brilliant examples of semantic decomposition of lexical meanings were produced. The principle of using highly involved syntax in SemR's, as opposed to lists of semantic features, was explicitly stated and applied to hundreds of semantically very difficult Russian words (with meanings such as "goal," "proceed from," "attempt," "manage," "help," etc). In a word, the semantic research of 1961–1965, spearheaded by A. Zholkovsky, laid the foundation for the MTM approach [cf (73), where most of the MPiPL 8 articles are reprinted in English].

Apresjan's book (1) sums up much of his work done in the late 60s and early 70s. Particularly important is Apresjan's treatment of synonymy and antonymy, of conversives (such as X is behind $Y = Y$ is in front of X), of regular polysemy, of semantic metalanguage, and of modal frames as part of lexical meanings.

A recent book by the same author (3) discusses nontrivial semantic features; standard lexicographic definitions of lexemes, grammemes, and syntactic constructions; syntagmatic interaction of meanings; etc. Among the minor studies are these:

(a) A careful analysis of two important semantic families (feelings and perceptions) is found in (28, 29).

(b) The problem of the scope of some "operator" meanings, such as negation or "only," is explored in depth in (12; cf also 13).

(c) The highly important distinction between linguistic anomaly and logical contradiction is convincingly dealt with in (2).

(d) Connotation in linguistic semantics is dealt with in (30).

Lexicography

Lexicography is a major concern of the meaning-text approach since all the information about the relevant properties of individual words vital for the successful functioning of an MTM must be stored in a dictionary. As soon as the work on the MTM of Russian began in 1965, much of our effort was concentrated on the so-called Explanatory Combinatorial Dictionary (ECD) of Modern Russian. During a period of about 12 years between 10 and 20 people took part in our dictionary project, and some hundred dictionary entries were published (39). (Presently, a fuller version of the Russian ECD is being prepared for publication in book form by Linguistic Research, Inc, Edmonton, Canada.)

The lexicographic theory behind the ECD proposed in (87) was further elaborated and expounded in (6–8; 52, pp. 113–33; 62).

Beginning in 1978, a Modern French ECD project was launched at the Department of Linguistics, University of Montreal (62). In addition, some pioneer work has been done on ECDs for other languages, e.g. Polish (35), Somali (83, 84), English (89), French (90), and German (71, 72). Recently, a limited dictionary of English synonyms has appeared (74), edited by Apresjan and organized following some basic principles of ECDs. Moreover, a dictionary project for Huitchol (a Uto-Aztecan language in Mexico) is being carried out by J. Grimes (Cornell University, Ithaca, NY) with extensive use of the ECD model.

Phraseology

The notion of the lexical function and the holistic concept of a lexical unit embodied in the ECD have contributed to the theory and practice of phraseology. The place of LFs in linguistics is described in (42) and (52, pp. 78–109); (27) is devoted to a specific class of idioms: denotations of emotionally conditioned physical reactions (e.g. *His eyes started from his head—astonishment, fear; His legs gave way—fear*). See also (7).

Syntax

A series of concrete syntactic descriptions was completed and published in the early 1970s bearing mostly on Russian and English; many of these have been indicated above. The following syntactic topics deserve special mention:

(a) A general characterization of the dependency system used in MTM theory can be found in (52, pp. 207–302; 58).

(b) A full-fledged description of the syntax of a particular language, namely Somali, is given in (85). This book is, in fact, an excellent illustration of how our theoretical principles can be applied to an exotic linguistic structure.

(c) For a systematic survey of the types of rules and information used in the surface-syntactic component of an MTM for Russian, see (5).

(d) Criteria for the types of SSynt-relations are proposed in (58, pp. 91–150; 60).

(e) See (75) for a discussion of complications arising when conjunction is described in the MTM framework; an ingenious solution is suggested.

(f) Problems of grammatical subjecthood and the ergative construction are analyzed in (57; 58, pp. 23–90; 61). The ergative construction is interpreted as a predicative construction where the surface-syntactic (grammatical) subject is marked by a case other than the nominative (frequently by the ergative); while the agent phrase in the ergative case in such languages as Dyirbal or Lezghian is taken to be an agentive

complement rather than the subject, so that no ergative construction is recognized in these languages.

(g) For general questions of grammatical agreement, with special reference to Russian, see (20).

To this list one could add many other topics of interest such as syntactic zero (53), syntactic ambiguity (26), the comparative construction in Russian (76), grammatical voice and diathesis (21, 36, 66), and a meaning-bearing syntactic [quotative] construction in Russian (31), among others.

Morphology

In the domain of theoretical morphology, work has been in progress for a number of years on some basic morphological notions, such as conversion [like *a footnote-to-footnote* (48)], suppletion (46), lesser or greater semantic and formal complexity of linguistic items (44), grammatical case (55), etc. Most of this work is summed up (in English or German) in (54). This author's book (59) offers a coherent system of formal morphological concepts pertaining to the expression plane of morphology (such as *linguistic sign, representability, linear segmentability; morph, morpheme, root, affix, apophony, reduplication*, etc).

As for descriptive morphology, a few formal morphological models have been produced for different languages: Spanish conjugation (41), Russian nominal inflection (15), Hungarian noun inflection (43), Tartar declension and conjugation (32–34), Alutor (Chukchee-Kamchadal stock) conjugation (49). An interesting mathematical formalization of MT morphological models is suggested in (10, 11). A detailed description of the grammatical categories of the English verb is proposed in (69, 70).

CONCLUDING REMARKS

Possible Applications of the Meaning-Text Theory

Some ideas of the MTM approach may find unexpected applications in quite different theoretical frameworks within linguistics itself. Thus in (9) the concept of LF helps to solve some specific problems of an otherwise transformational description of Russian impersonal sentences (cf also 9a).

The whole of MT theory is strongly practice-oriented, and we consider it an asset that this theory is readily applicable in various practical fields. Let me mention only four such possible applications.

LANGUAGE TEACHING AND LEARNING Linguistic descriptions based on MTT seem to be adaptable to language teaching or learning. The lexical functions and ECD-type dictionaries might be especially useful (cf 38, 78).

AUTOMATIC TEXT PROCESSING Since the MTM formalisms lend themselves easily to computer programming, it is natural that several text-processing computerized systems at various linguistic levels, including syntax, dictionary, and morphology, have been developed in the USSR within the MTT framework. As an illustration, two automatic translation systems (English- and French-to-Russian) could be mentioned (4, 14, 37). Among the more recent developments in the USA, we find the application of some MTT ideas in information retrieval [in particular, use of the lexical functions (16) and E. Fox, "Lexical relations: enhancing effectiveness of information retrieval systems" (unpublished progress report, Department of Computer Science, Cornell University, Ithaca, NY)].

TRANSLATION PRACTICE AND THEORY As MTT is primarily concerned with the translation of meanings into texts and vice versa, its relationship to translation in general is direct: from the viewpoint of MTT, the whole of linguistics is nothing more than the science of translation. Specifically, an explanatory combinatorial dictionary could be used as an effective translator's tool (see 56, 78).

ANTHROPOLOGICAL RESEARCH MTT was tested on the Alutor language (49, 65). As I discovered in the summer of 1980, some ideas and postulates of MTT are taught in the courses offered by the Summer Institute of Linguistics (University of Oklahoma, Norman). This clearly shows that specialists in field linguistics and exotic languages do find handy and helpful tools in the realm of MT theory.

Perspective and Summary
It is next to impossible to set an outline of MTT in a background readily understandable to readers in related fields. To do so, one should show how MTT compares with "traditional" linguistics, the structuralist school, and transformational grammar. However, such an analysis is precluded by considerations of space. Instead, I will indicate two sources of the MT approach and five basic methodological principles, arrived at in the course of a 15-year research effort, which constitute, in my view, the most general and cogent advances.

SOURCES OF THE MT APPROACH On the one hand, the most immediate foundations of the MTT are to be found in Chomsky's theory. I believe that the MT approach can be viewed as an outgrowth and natural continuation of the generative-transformational approach.

On the other hand, MTT has developed under the strong influence of automatic text processing. The problem of automatic translation puts the emphasis on the transfer of meaning and thus brings forth the task of representing meaning, extracting it from the input text, and expressing it

in the output text. That is, the meaning-text approach is virtually required by automatic translation.

FIVE BASIC PRINCIPLES OF THE MEANING-TEXT APPROACH The credo of a righteous practitioner of the MT approach (i.e. my own credo) can be reduced to the following five operational principles:

1. *Description of a specific language rather than the quest for its best possible grammar.* MTT concentrates on languages, not on grammars. The only legitimate question to be asked within this theory is "How do you express the meaning X in the language L?" or "What does the expression X of the language L mean?" It seems to us to be more rewarding to write a good grammar (including the lexicon) at least for a language than waste one's time discussing the properties of the best theory of Language in general.

2. *Establishing specific facts of a specific language rather than hunting for generalizations or discovering linguistic universals.* To state a generalization, one needs something to generalize from; therefore, well-organized collections of facts must perforce precede generalizations lest the latter be scientifically void. Hence the particular interest of MTT in lexical entries, i.e. in the dictionary; a grammar is considered to be nothing more than a set of generalizations over a good dictionary. MTT is thus a dictionary- rather than a grammar-oriented theory. Not only every language, but every lexeme of a language, is an entire world in itself. All this means that the primary object of MTT is particulars, not universals.

3. *Cybernetic modeling of native linguistic intuition rather than a mathematical study of formal systems representing language.* The only goal of a MTT linguist is to exteriorize his or her own intuition about language (probably checked against other speakers' intuition). Language is viewed as a "black box," not as a formal mathematical system (semi-Thue, or whatever). Hence no rigorous proofs are possible within the MTT. Good counterexamples can show that a description is not sufficient, but one can never prove—in the strict sense of the term *prove*—that a description or a solution is sufficient, let alone necessary. What a MTT linguist really does is suggest practical names, useful labels, etc to pass his own linguistic intuition on to others in a most unambiguous and graphic way. He builds a model, and if it functions correctly, there are no arguments to prove or disprove its acceptability.

4. *Formalisms serve the linguist rather than the other way around.* The formality of all representations is strongly emphasized in MTT, but no formalism is allowed to become a fetish. Nobody should be afraid of replacing 17 symbols by 439, if need be. Why should we be slaves to oversimplified and overly narrow mathematical formalisms? Formalisms are nothing more

than necessary tools, and it is up to the linguist to create tools that he feels are necessary. (Let the mathematicians accommodate *our* formalisms, if they so wish, to their theories.) As far as the technical nature of MTM formalisms is concerned, dependency systems, with their emphasis on relations rather than constituency, are preferred, for they detach linear order from structural representation. Moreover, it is believed that the relation rather than the grouping is the pivot mechanism of natural languages at all levels.

5. *Different formal languages for different levels of representation rather than the quest for a homogeneous representation.* Language is a multidimensional, multifarious, highly heterogeneous formation, and there is no point in trying to squeeze it into the strait jacket of a single formalism. Therefore, in MTM a special formal language is devised to represent differently each one of the different levels of natural languages; and at each level different formal languages are used for its different aspects and strata.

ACKNOWLEDGMENTS

The first draft of the present review was carefully read and commented upon by L. L. Elnitsky, L. N. Iordanskaja, R. I. Kittredge, J. Nichols, and P. Roberge. J. D. McCawley read the final version. Their criticisms, remarks, and suggestions have helped me considerably to improve the presentation. I wish to express my appreciation and gratitude for their efforts.

ABBREVIATIONS USED IN BIBLIOGRAPHY

AJCL   *American Journal of Computational Linguistics*
AN SSSR   Akademija Nauk SSSR
BSLP   *Bulletin de la Société de linguistique de Paris.* Paris: Klincksieck
IRJa   Institut Russkogo Jazyka
IRSL   *International Review of Slavic Linguistics.* Edmonton, Alberta: Linguistic Research, Inc.
IVSLiAP   *Informacionnye voprosy semiotiki, lingvistiki i avtomatičeskogo perevoda.* Moscow: Vses. Inst. Naučn. Texn. Info.
Izv.   Izvestija
MPiPL   *Mašinnyj Perevod i Prikladnaja Lingvistika.* Moscow: Mosk. Gos. Ped. Inst. Inostr. Jazykov im. M. Toreza
NTI   *Naučno-Texničeskaja Informacija.* Moscow: Vses. Inst. Naučn. Texn. Info.
PGÈPL   Problemnaja Gruppa po èksperimental'noj i prikladnoj lingvistike
VJa   *Voprosy Jazykoznanija.* Moscow: AN SSSR
WSA   *Wiener Slawistischer Almanach.* Vienna

Literature Cited

1. Apresjan, Ju.D. 1974. *Leksičeskaja Semantika. Sinonimičeskie Sredstva Jazyka.* Moscow: Nauka. 367 pp.

2. Apresjan, Ju.D. 1978. Jazykovaja anomalija i logičeskoe protivorečie. In *Tekst-Język-Poetyka*, pp. 129–51. Wrocław: Ossolineum

3. Apresjan, Ju.D. 1980. *Tipy Informacii Dlja Poverxnostno-semantičeskogo Komponenta Modeli "Smysl ⟺ Tekst"*. Wien: WSA (Sonderband 1). 119 pp.

4. Apresjan, Ju.D., Boguslavskij, I.M., Iomdin, L.L., Krysin, L.P., Lazurskij, A.V., Percov, N.V., Sannikov, V.Z. 1978. *Lingvističeskoe Obespečenie v Sisteme Avtomatičeskogo Perevoda Tret'ego Pokolenija.* Moscow: AN SSSR. 47 pp.

5. Apresjan, Ju.D., Iomdin, L.L., Percov, N.V. 1978. Ob''ekty i sredstva modeli poverxnostnogo sintaksisa russkogo jazyka. *IRSL* 3(3):249–312

6. Apresjan, Ju.D., Žolkovskij, A.K., Mel'čuk, I.A. 1968. O sisteme semantičeskogo sinteza. III. Obrazcy slovarnyx statej. *NTI* Ser. 2, No. 11:8–21

7. Apresjan, Ju.D., Žolkovskij, A.K., Mel'čuk, I.A. 1969. Ob odnom sposobe izučenija sočetaemosti slov. *Russkij jazyk v Škole*, No. 6:61–72

8. Apresjan, Ju.D., Mel'čuk, I.A., Žolkovskij, A.K. 1969. Semantics and lexicography: towards a new type of unilingual dictionary. In *Studies in Syntax and Semantics*, ed. F. Kiefer, pp. 1–33. Dordrecht: Reidel

9. Babby, L.H. 1978. Lexical functions and syntactic constructions: Russian existential sentences. In *CLS Parasession on the Lexicon*, pp. 26–33. Chicago: Univ. Chicago Press, 364 pp.

9a. Babby, L.H. 1980. *Existential Sentences and Negation in Russian.* Ann Arbor, Mich: KAROMA. 180 pp.

10. Bider, I.G., Bol'šakov, I.A. 1976. Formalizacija morfologičeskogo komponenta modeli "Smysl ⟺ Tekst". I. Postanovka problemy i osnovnye ponjatija. *Texn. Kibern.* No. 6:42–57

11. Bider, I.G., Bol'šakov, I.A. 1977. Formalizacija morfologičeskogo komponenta modeli "Smysl ⟺ Tekst". II. Dinamika morfologičeskix preobrazovanij. *Texn. Kibern.* No. 1:32–50

12. Boguslavskij, I.M. 1977. O semantičeskom opisanii russkix deepričastij: neopredelennost' ili mnogoznačnost'? *Izv. AN SSSR, Ser. jaz. i lit.* 36(3):270–81

13. Boguslavskij, I.M. 1978. Otricanie v russkom predloženijax s obstojatel'stvami v rus-

14. Èrastov, K.O., Kulagina, O.S., Mel'čuk, I.A. 1971. *Ob Odnoj Vozmožnoj Sisteme Mašinnogo Perevoda.* Moscow: IRJa AN SSSR (PGÈPL, vyp. 21). 72 pp.

15. Es'kova, N.A., Mel'čuk, I.A., Sannikov, V.Z. 1971. *Formal'naja Model' Russkoj Morfologii. I. Formoobrazovanie Suščestvitel'nyx i Prilagatel'nyx.* Moscow: IRJa AN SSSR (PGÈPL, vyp. 15). 71 pp.

16. Evens, M.W., Smith, R.N. 1979. A lexicon for a computer question-answering system. *AJCL* (microfiche 83)

17. Gladkij, A.V., Mel'čuk, I.A. 1969. *Tree Grammars.* Int. Conf. Comput. Ling. Stockholm (preprint No. 1). 7 pp.

18. Gladkij, A.V., Mel'čuk, I.A. 1971. Grammatiki derev'ev. I. Opyt formalizacii preobrazovanij sintaksičeskix struktur estestvennogo jazyka. *IVSLiAP* 1:16–41

19. Gladkij, A.V., Mel'čuk, I.A. 1974. Grammatiki derev'ev. II. K postroeniju Δ-grammatiki dlja russkogo jazyka. *IVSLiAP* 4:4–29

20. Iomdin, L.L. 1979. *Ešče Raz o Sintaksičeskom Soglasovanii v Russkom Jazyke.* Moscow: IRJa AN SSSR (PGÈPL, vyp. 122). 45 pp.

21. Iomdin, L.L. 1980. *Simmetričnye Predikaty v Russkom Jazyke i Problema Vzaimnogo Zaloga.* Moscow: IRJa AN SSSR (PGÈPL, vyp. 131). 38 pp.

22. Iomdin, L.L., Mel'čuk, I.A., Percov, N.V. 1975. Fragment modeli russkogo poverxnostnogo sintaksisa. I. Predikativnye syntagmy. *NTI* Ser. 2, No. 7:31–43. [French transl.: *Analyse et validation dans l'étude des données textuelles*, ed. M. Borillo, J. Virbel, 1977, pp. 83–122. Paris: CNRS. 289 pp.]

23. Iomdin, L.L., Percov, N.V. 1975. Fragment modeli russkogo poverxnostnogo sintaksisa. II. Kompletivnye i prisvjazočnye konstrukcii. *NTI* Ser. 2, No. 11:22–32

24. Iordanskaja, L.N. 1963. O nekotoryx svojstvax pravil'noj sintaksičeskoj struktury (na materiale russkogo jazyka). *VJa* No. 4:102–12

25. Iordanskaja, L.N. 1964. Svojstva pravil'noj sintaksičeskoj struktury i algoritm eë obnaruženija (na materiale russkogo jazyka). *Probl. kibern.* 11:215–44

26. Iordanskaja, L. N. 1967. Sintaksičeskaja omonimija v russkom jazyke (s točki zrenija avtomatičeskogo analiza i sinteza teksta). *NTI* No. 5:9–17

27. Iordanskaja, L. N. 1972. Leksikografičeskoe opisanie russkix vyraženij, oboznačajuščix fizičeskie simptomy čuvstv. *MPiPL* 16:3–30

28. Iordanskaja, L. N. 1973. Tentative lexicographic definitions for a group of Russian words denoting emotions. In *Trends in Soviet Theoretical Linguistics*, ed. F. Kiefer, pp. 389–410. Dordrecht: Reidel. 438 pp.

29. Iordanskaja, L. N. 1979. The semantics of three Russian verbs of perception: *vosprinimat'* '(to) perceive', *oščuščat'* '(to) sense' and *čuvstvovat'* '(to) feel'. *Linguistics* 17:825–42

30. Iordanskaja, L. N. Mel'čuk, I. A. 1980. Konnotacija v lingvističeskoj semantike. *WSA* 6:191–210

31. Iordanskaja, L.N., Mel'čuk, I.A. 1981. On a class of Russian verbs which can introduce direct speech (constructions of the type "Ostav'te menjat'" – is pugalsja buketčik: lexical polysemy or semantic syntax?). In *Festschrift Sørensen*, Copenhagen

32. Isxakova, X. F. 1968. *NTI* Ser. 2, No. 3:23–26

33. Isxakova, X. F. 1971. K voprosu o formal'nom opisanii morfologii tjurkskix jazykov. *Sovetskaja tjurkologija* No. 6:32–44

34. Isxakova, X. F. 1971. Model' tatarskogo sprjaženija (obrazovanie sintetičeski form glagola v sovremennom tatarskom jazyke). In *Sinxronno-sopostavitel'nyj analiz jazykov raznyx sistem*, ed. E. A. Makaev, pp. 108–26. Moscow: Nauka. 279 pp.

35. Janus, E. 1971. Pjat' pol'skix slovarnyx statej: KLĘSKA, PASAŻER, WALKA, ZWYCIĘSTWO, ZWYCIĘŻAC. *NTI* Ser. 2, No. 11:21–24

36. Korolev, E. I. 1968. O klassifikacii vozvratnyx glagolov i zapisi ix v slovare. *NTI* Ser. 2, No. 3:19–22

37. Kulagina, O. S., Mel'čuk, I. A. 1967. Automatic translation: some theoretical aspects and the design of a translation system. In *Machine Translation*, ed. A. Booth, pp. 139–71. Amsterdam: North Holland. 529 pp.

38. Leed, R. L., Nakhimovsky, A. D. 1979. Lexical functions and language learning. *Sl. and East Eur. J.* 23:104–13

39. *Materialy k Tolkovo-Kombinatornomu Slovarju Russkogo Jazyka* 1970–1976. Vypuski NN° 2, 7, 14, 16, 17, 23, 28, 29, 33, 34, 35, 37, 38, 42, 62, 63, 80, 85, 86. Moscow: IRJa AN SSSR (Predvarit. Publikacii PGEPL)

40. Mel'čuk, I. A. 1965. Porjadok slov pri avtomatičeskom sinteze russkogo teksta (predvaritel'noe soobščenie). *NTI* No. 12:36–44. French Transl: *T. A. Informations*, 1967, No. 2:65–84

41. Mel'čuk, I. A. 1967. Model' sprjaženija v ispanskom jazyke. *MPiPL* vyp. 10:21–53. English transl: see Ref. 73, 1978, pp. 224–60. Berkeley: Univ Calif.

42. Mel'čuk, I. A. 1967. O "vnešnix" različitel'nyx elementax (o semantičeskix parametrax). In *To Honor Roman Jakobson: Essays on the Occasion of his 70th Birthday*, pp. 352–63. s'Gravenhage: Mouton

43. Mel'čuk, I. A. 1968. Model' sklonenija vengerskix suščestvitel'nyx. In *Problemy Strukturnoj Lingvistiki-1967*, ed. S. K. Šaumjan, pp. 344–73. Moscow: Nauka. 411 pp.

44. Mel'čuk, I. A. 1969. Ob opredelenii bol'šej men'šej/smyslovoj složnosti pri slovoobrazovatel'nyx otnošenijax. *Izv. AN SSSR, Ser. lit. i jaz.* 28(2):126–35

45. Mel'čuk, I. A. 1970. Towards a functioning model of language. In *Progress in Linguistics*, ed. M. Bierwisch, K. E. Heidolph, pp. 198–207. The Hague-Paris: Mouton. 344 pp.

46. Mel'čuk, I. A. 1972. O suppletivizme. In *Problemy strukturnoj lingvistiki-1971*, ed. S. K. Šaumjan, pp. 396–438. Moscow: Nauka. 554 pp.

47. Mel'čuk, I. A. 1973. "Meaning ⟷ Text" model. In *Trends in Soviet Theoretical Linguistics*, ed. F. Kiefer, pp. 33–57. Dordrecht: Reidel. 438 pp.

48. Mel'čuk, I. A. 1973. Konversija kak morfologičeskoe sredstvo. *Izv. AN SSSR, Ser. lit. i jaz.* 32(1):15–28

49. Mel'čuk, I. A. 1973. *Model' Sprjaženija v Aljutorskom Jazyke*. Moscow: IRJa AN SSSR. (PGEPL), vyp. 45–46), 132 pp.

50. Mel'čuk, I. A. 1974. Esquisse d'un modèle linguistique du type "Sens ⟷ Texte". In *Problèmes actuels en psycholinguistique. Colloques internationaux du CNRS* 206:291–317. Paris: CNRS

51. Mel'čuk, I. A. 1974. Ob odnoj lingvističeskoj modeli tipa "Smysl ⟷ Tekst". Urovni predstavlenija jazykovyx vyskazyvanij. *Izv. AN SSSR, Ser. lit. i jaz.* 33(5):436–47

52. Mel'čuk, I. A. 1974. *Opyt Teorii Lingvističeskix Modelej "Smysl ⟷ Tekst". Semantika, Sintaksis.* Moscow: Nauka. 314 pp.

53. Mel'čuk, I. A. 1974. O sintaksičeskom nule. In *Tipologija passivnyx konstrukcij. Diatezy i zalogi*, ed. A. A. Xolodovič, pp. 343–61. Leningrad: Nauka. 383 pp. English version: *5th Ann. Meet. Berkeley Ling. Soc.* 1978, pp. 224–60.

54. Mel'čuk, I. A. 1976. *Das Wort.* München: Fink 461 pp.

55. Mel'čuk, I. A. 1977. Le cas. *Rev. Etudes slaves* 50:1, 5–36

56. Mel'čuk, I. A. 1978. Théorie de langage. *Meta* 23(4):

57. Mel'čuk, I. A. 1978. Toward a definition of the concept 'Ergative Construction'. *Proc. 22nd Int. Congr. Ling.* Vienna, pp. 384–87

58. Mel'čuk, I. A. 1979. *Studies in Dependency Syntax.* Ann Arbor, Mich: Karoma. 163 pp.

59. Mel'čuk, I. A. 1981. *Toward a Language of Linguistics.* München: Fink

60. Mel'čuk, I. A. 1981. Types de dépendance syntagmatique entre les mots-formes d'une phrase. *BSLP* In press

61. Mel'čuk, I. A. 1981. Grammatical subject and the problem of the ergative construction in Lezgian. In *Non-Slavic Languages of the Soviet Union*, ed. B. Comrie. Edmonton: Ling. Res. In press

62. Mel'čuk, I. A., Iordanskaja, L. N., Arbatchewsky-Jumarie, N. 1981. Un nouveau type de dictionnaire: le Dictionnaire explicatif et combinatoire du français contemporain (six entrées de dictionnaire). *Cah. lexicol.* In press

63. Mel'čuk, I. A., Percov, N. V. 1973. *Poverxnostno-syntaksičeskie Otnošenija v Anglijskom jazyke.* Moscow: IRJa AN SSSR (PGEPL, vyp. 43). 80 pp.

64. Mel'čuk, I. A., Percov, N. V. 1975. *Model' Anglijskogo Poverxnostnogo Sintaksisa.* Moscow: IRJa AN SSSR (PGEPL, vyp. 64–66), 232 pp.

65. Mel'čuk, I. A., Savvina, E. N. 1978. Toward a formal model of Alutor surface syntax: predicative and completive constructions. *Linguistics.* Spec. Issue, pp. 5–39

66. Mel'čuk, I. A., Xolodovič, A. A. 1970. Zalog (Opredelenie. Isčislenie). *Narody Azii i Afriki* No. 4:111–24

67. Mel'čuk, I. A., Žolkovskij, A. K. 1970. Towards a functioning Meaning-Text model of language. *Linguistics* 57:10–47

68. Nichols, J. 1979. The meeting of East and West: confrontation and convergence in contemporary linguistics. *Proc. 5th Ann. Meet. BLS*, pp. 261–76. Berkeley: Univ. Calif. 660 pp.

69. Percov, N. V. 1976. *O Grammatičeskix Kategorijax Anglijskogo Glagola.* Moscow: IRJa AN SSSR (PGEPL, vyp. 90). 62 pp.

70. Percov, N. V. 1977. Grammatičeskoe predstavlenie anglijskogo glagol'noj formy dlja celej avtomatičeskogo perevoda. *Linguistica Silesiana* No. 2: 139–63

71. Reuther, T. 1978. Plädoyer for das Wörterbuch. *Ling. Ber.* 57:25–48

72. Reuther, T. 1980. Nemeckie frazeologismy tipa in völliger Verzweiflung sein i ix russkie ékvivalenty. *WSA* 5:207–19

73. Rozencvejg, V.Ju., ed. 1974. *Essays on Lexical Semantics*, Vols. 1, 2. Stockholm: Skriptor. 404 pp., 282 pp.

74. Rozenman, A.I., Apresjan, Ju.D. 1979. *Anglo-Russkij Sinonimičeskij Slovar'.* Moscow: Russkij Jazyk. 543 pp.

75. Sannikov, V. Z. 1979–80. Sočinitel'nye i sravnitel'nye konstrukcii: ix blizost', ix sintaksičeskoe predstavlenie. I-II. *WSA* 4:413–32; 5:221–42

76. Savvina, E. N. 1976. Fragment modeli russkoro poverxnostnogo sintaksisa. III. Sravnitel'nye konstrukcii (sravnitel'nye otosnojunye sintagmy). *NTI* Ser. 2, No. 1:38–43

77. Ščeglov, Ju.K. 1964. Dve gruppy slov russkogo jazyka. *MPiPL* 8:30–66

78. Slodzian, M. 1979. "Paraphrase", "synonymie" et traduction. In *Ile Colloque de linguistique russe (Paris, 22–24 avril 1977)*, pp. 147–51. Paris: Institut d'études slaves

79. Wierzbicka, A. 1972. *Semantic Primitives.* Frankfurt: Athenäum. 235 pp.

79a. Wierzbicka, A. 1980. *Lingua Mentalis: The Semantics of Natural Language.* Sydney: Academic. 367 pp.

80. Žolkovskij, A. K. 1964. Predislovie. *MPiPL* 8:3–16

81. Žolkovskij, A. K. 1964. O pravilax semantičeskogo analiza. *MPiPL* 8:17–32

82. Žolkovskij, A. K. 1964. Leksika celesoobraznoj dejatel'nosti. *MPiPL* 8:67–103

83. Žolkovskij, A. K. 1967. K leksikografičeskomu opisaniju somalijskix suščestvitel'nyx. *Narody Azii i Afriki*, No. 1:93–102

84. Žolkovskij, A. K. 1970. Materialy k russko-somalijskomu slovarju. *MPiPL* 13:35–63

85. Žolkovskij, A. K. 1971. *Sintaksis Somali (Glubinnye i Poverxnostnye Struktury).* Moscow: Nauka. 265 pp.

86. Žolkovskij, A. K., Mel'čuk, I. A. 1965. O vozmožnom metode i instrumentax semantičeskogo sinteza. *NTI* No. 5:23–28

87. Žolkovskij, A. K., Mel'čuk, I. A. 1967. O semantičeskom sinteze. *Probl. kibern.* 19:177–238. English Trans: *Systems Theory Research,* Vol. 19, New York

88. Žolkovskij, A. K., Mel'čuk, I. A. 1969. K postroeniju dejstvujuščej modeli jazyka "Smysl ⟺ Tekst". *MPiPL* 11:5–35

89. Žolkovskij, A. K., Pivovarova, T. V. 1972. *Into* i *Out of* (k semantičeskomu tolkovaniju dvux anglijskix predlogov), *IVSLiAP* 3:86–96

90. Žolkovskij, A. K., Razlogova, E. E. 1974. O sisteme semantičeskogo sinteza. VI Obrazcy slovarnyx statej; *IV-SLiAP* 4:36–62

SURVEYS AND ARCHAEOLOGICAL RESEARCH

Albert J. Ammerman

Department of Anthropology, State University of New York, Binghamton,
New York 13901

> Come what come may,
>
> Time, and the Hour, runs through the roughest Day.
>
> Macbeth

INTRODUCTION

Considering the number of surveys done each year and their growing contribution to the field, it is surprising how few attempts have been made in the literature to take the measure of surveys as a means of doing archaeological research. Discussions which turn to the comparative strengths and weaknesses of surveys have usually been developed on a narrow front. Questions of a broader gauge obviously could be asked but have seldom been raised. Part of the reticence here probably stems from the awkwardness of surveys. The stock in trade of surveys is material recovered from the surface of the landscape. Surface remains can be viewed as providing at best only a fragmentary and incomplete picture of what is to be found at an archaeological site. In comparison with the heavyweight business of excavations, surveys stand as a slight enterprise. It is worth recalling that the main function of early surveys, as well as some more recent ones, was that of locating an appropriate site for excavation. In other words, the survey served as a preliminary lightweight bout which preceded and complemented the main attraction. It is not surprising then that the tone adopted in presenting survey results has often been an apologetic one. Even as late as the mid-1960s, a "defense" of surveys apparently was still thought to be necessary (112). From our current vantage point, things have changed considerably: surveys have acquired a more secure position. In some cases they may even