"I'll wake Perek up now."

"Don't step away from the ladder," said Alevtina.

"I am not sleeping," said Perek. "I have been watching you for a while now."

"You cannot see anything from there," said Tuzik. "Come here, Mr. Perek. We have everything here: women, wine, and fruit..."

Perek got up, limping on his leg which had fallen asleep (lit. his sat off leg), walked up to the ladder and poured himself (some wine) from the bottle.

If one sits in the wrong position, one's leg (trajector) can become numb and stop functioning in harmony with the rest of the body (landmark). An arm can also serve as the trajector of an ot-<excess> verb, as in the example below.

174) Mal'čik, kotorogo vela Ženščina, ostavil otjagivaje (ot-"pull") ej ruku.

The boy whom the woman was leading lagged behind and made her arm sore (lit. pulled off her arm).

This is the most peripheral submeaning of ot-; fewer than fifteen base verbs participate in producing ot- prefixed perfectives in <excess>.

Chapter IX
SUMMARY

Now that the application of cognitive categorization to the semantics of four Russian verbal prefixes has been demonstrated, a discussion of the present model in general terms can be undertaken. I will compare the relative advantages and disadvantages of the traditional, structuralist, and the present, or "modified structuralist," approaches and then comment on the nature and variety of links connecting configurations in cognitive networks.

9.1 A COMPARISON OF THE THREE APPROACHES

Chapter 2 contains a list of seven questions which are unanswerable in the traditional framework. These questions were used as criteria for judging the validity of both the traditional and structuralist approaches, and the present approach will likewise be subjected to this test.

1) Identity of submeanings -- what distinguishes seemingly identical submeanings of different prefixes?

Each of the four prefixes examined in the chapter has an <excess> submeaning. Although the question of how they differ will be taken up in some detail in the following chapter, here it will suffice to note
that the difference between the configurations of za-, pere-, do-, and or- accounts for the differences between their respective expressions of <excess>.

2) System of combination -- what is the system for combining verbs with prefixes?

To restate the question, given a base verb (and usually a context as well), which prefix will be used? Because at this point only four out of the system of twenty-one prefixes have been analyzed, a complete set of predictions cannot be made, but we have analyzed each of the four to a significant enough degree to permit reasoned speculation. The unidirectionality of the change of state signalled by za- predicts that base verbs denoting changes in this direction (or the resultant state) will combine with za- in this submeaning, but verbs denoting an opposite change resist combination with za-. This prediction was shown to hold for newly borrowed verbs as well. The association of certain semantic groups of verbs with certain submeanings of given prefixes strengthens our predictive powers. If we take a base verb which denotes some sort of cutting, for example, we can, given some information about the context, predict which prefix it will take: if an object is cut in two, pere- will be used; if part of the object is cut off, or- will be used; and if the cutting is superficial, za- will be used.

3) Prediction -- given a base verb and a prefix, which submeaning(s) will be instantiated?

The association of groups of verbs with certain submeanings improves our ability to make predictions in this direction as well. Given a base verb that denotes food preparation of some kind and a singular object (baking, boiling, frying) and the prefix pere-, we can be quite certain that <excess> will be instantiated. Verbs that describe the traveling of physical objects through space (run, walk, throw) will evoke the submeanings <deflection>, <transfer>/<over> (depending upon whether a vertical component is involved, as with the verbs brosit' 'throw', skoziit' 'jump'), <reach>, and <away> when combined with za-, pere-, do-, and or-, respectively. Further research on the types of verbs that are associated with the submeanings of prefixes could potentially produce predictions valid for most, if not all, of the verbal lexicon.

4) Coherence of submeanings -- is there any relationship between the submeanings of a given prefix?

The unity of submeanings of a prefix, which is intuitively sensed by native speakers, finds full expression in the present model. If a configuration has two submeanings, they are linked by metaphorical extension, accomplished by various identifications of the elements of the configuration. For instance, the submeanings <transfer> and <duration> of pere-’s configuration differ in the referent of the landmark: for <transfer> the landmark is a physical space, whereas for <duration> it is identified with a period of time. The configurations are in turn linked by minimal transformations in their
shape and composition, and form a tight network in which each
configuration is related to a prototype. Not only is the unity of
submeanings asserted in this model, but the internal semantic
structure of the prefix and the relationships that unite the
submeanings are described in detail as well.

5) Number of submeanings -- how many submeanings does a given
prefix have?

Although there is still room to quibble over exactly how many
submeanings are present in the semantic make-up of a given prefix,
the present model does contain some safeguards against the arbitrary
expansion or contraction of a list of submeanings. The recognition of
metaphorical uses removes the need to set up new "submeanings" for
verbs whenever they can be identified as metaphorical applications of
a pervasive submeaning. Recall, for example, the case of *zagildit*
za-'deafen' 'drown out', which is a metaphorical example of <cover>.

Given the constraint that every submeaning of a prefix must be
related (through the prototype) to every other submeaning,
unnecessary splitting of submeanings is strongly discouraged.
Recall the verbs *zaest* za-'eat' 'chase' and *zopit* za-'drink' 'wash
down', which were traditionally given a separate submeaning
described as "to perform the action named by the motivating verb
immediately after another action." Such a submeaning would be
avoided; instead these verbs would be incorporated in a submeaning
which is clearly systematic in the za- network. Conversely, the
present model guards against excessive collapsing of submeanings
since the association of every submeaning with its configuration must
be immediately and easily perceived; if not, another configuration
bearing a more transparent relationship to the submeaning is called
for. These "safeguards" are admittedly rather subjective and do not
guarantee an exact number of submeanings for each prefix, but they
do make a step toward curtailing the wide variation evident in
previous descriptions.

6) Classification -- can every instantiation of a prefix be
identified with a single submeaning?

In the traditional description, certain prefixed verbs are problematic
because they either cannot be classified as examples of a single
submeaning (they seem to belong to more than one of what are
distinct, unrelated and non-overlapping submeanings) or because they
appear to be unrelated to all of the submeanings (as in the case of
the "fused" forms). Since in the present model all of the
submeanings of a prefix are interrelated, the observation that some
verbs draw on more than one submeaning is not problematic.
Examples of this phenomenon, referred to as "multiple motivation,"
are given in the discussion of <inchoative> in the section on za-
above. Verbs with fused prefixes, such as *zabyt* za-'be' 'forget' and
*otvetit* ot-'say' 'answer', appear stranded and unsystematic in
traditional descriptions because the contribution of the base verb
(traditionally taken to be the dominant member of the prefix-verb
union) is unclear, and the role of metaphor in prefixal semantics is not fully recognized. In the present model, these verbs are regular examples of well-established submeanings. Zabyt' za-be 'forget' is a metaphorical use of <deflection> and otvetst' ot-'say' 'answer' is a straightforward example of <retribution>.

7) Empty prefixes -- are there empty prefixes?

Against the background of the present model, it is obvious that the idea of empty prefixation is a product of excessive emphasis on the semantics of base verbs as opposed to prefixes. According to traditional reasoning, if the meaning of the prefixed verb is determined to be entirely predictable from the semantics of the base verb alone, the prefix is declared to be empty, signaling merely perfectivity. According to Tixonov, for example, the verb zaasfal'tirovat' za-'asphalt' 'asphalt' is simply the perfective of asfal'tirovat' 'asphalt', and the prefix za-is empty. In the present framework our analysis suggests that the meaning of the verb in these cases is very similar to a given submeaning of the prefix, resulting in semantic overlap or redundancy. This type of redundancy is not only acceptable, but even expected, since base verbs whose meanings reflect the pattern of a configuration are naturally compatible with that configuration. Since the present modified structuralist model effectively does away with empty prefixes, it also spares us having to answer the corollary questions associated with them, given in Chapter 2.

In the present model the problems inherent in traditional descriptions, many of which were identified by structuralists, are further corrected or diminished. What remains is to point out the differences between this approach and the standard structuralist approach. Standard structuralist descriptions are aimed primarily at the coherence of submeanings (question 4, above) and incidentally at empty prefixes (7), but although they may recognize the remaining issues, they do not deal with them directly. Structuralists have up to this point had no apparatus to account for the internal structure of the semantic make-up of the prefix, an aspect of the present description which is quite explicit. Structuralists have consequently overemphasized the unity of the submeanings without paying sufficient attention to their diversity. The feature specifications produced according to the standard structuralist model are very abstract and do not provide enough specific information to describe the semantics of individual instantiations of a prefix. The present approach attempts to strike a balance between unity and diversity in semantic description. The network illustrates the tight unity of the submeanings of a prefix: each configuration is only at most a few links removed from the prototype. Both the diversity of the members of a semantic category and the system that holds them together are manifest.

Another advantage to the present model is the fact that it is consistent with what we know about natural human categorization. Both the traditional and standard structuralist descriptions assume
that semantic categorization is best captured by grouping items in
classical sets. According to Rosch's findings, semantic information is
not stored and accessed in the brain in categories with the properties
of sets, but rather in family-style groupings. The present model is
based on her findings and therefore has a stronger claim to
psychological reality than other models.

In spite of the differences between the standard structuralist and
present approaches, it is conceivable that a description of the type
given here for zo-, pere-, do-, andot-might be plausible within the
framework of structuralism, given some minor adjustments in the
concept of the invariant. Here, the prototype organizes the
category, all the members of which must make reference to it. The
function of the invariant (or set of invariant features) of a
structuralist category can be characterized in similar terms, but to do
so would mean overlooking significant differences between invariants
and prototypes. It would be misleading to call the prototype of a
cognitive category an invariant because there is no single attribute of
the prototype that must mandatorily be present in order to guarantee
the membership of each instantiation. The prototype is, however,
variably present in the sense that every member of the category
must make reference to it, and herein lies the conceptual bridge
between the modified structuralist and standard structuralist
approaches. If structuralism can accept the substitution of
prototypes for invariants, then the cognitive approach, rather than
being at odds with the structuralist approach, is consistent with it.

There are some indications that this is indeed possible, most
notablyJakobson's qualification of invariance as "relative." Adopting
the concept of the prototype to replace the concept of the invariant
would encumber structuralist descriptions because a category based
on a prototype has internal structure and is therefore inherently more
complex than a category defined by an invariant. This initial
hardship may in reality be a boon because it would give structuralists
an apparatus for organizing and describing the internal complexity of
semantic categories, a task which has thus far been largely out of
their reach. The present and standard structuralist approaches could
be felicitously wedded, producing rich semantic descriptions that
solve the problems that were troublesome in the traditional framework.

9.2 ON LINKAGE

Structuralism may be amenable to the introduction of prototype-based
categories, but certain aspects of cognitive categories still require
more precise specification. Eliminating the invariant effectively erases
the boundaries of a classical set theory category; cognitive categories
have no boundaries at all. The only limiting characteristic of a
cognitive category is the link, which has until now been only very
guanly defined as "a minor transformation of the configuration." If
the structure of the cognitive category is indeed valid and not merely
an artifact of the linguist's imagination, it should be possible to draw
up a short list of these transformations and in so doing to
demonstrate that the links are not random and arbitrary, but rather
form a small, closed system. This could be done to satisfaction only
given a thorough cognitive analysis of the entire system of Russian
verbal prefixes and of similar systems in other languages for
comparison. The fourteen links present in the four networks given
in this dissertation are sufficient, however, to allow at least some
preliminary comments on the nature and system of links. Exploded
diagrams of the networks are reproduced below for reference and
Table 11 outlines the types of links in the networks. Each type of
link is given a name and the links of that type are listed. "Za-
1/2," for example, refers to the link between configurations 1 and 2
in the za- network.

Figure 17: The Networks

```
ZA-

three dimensions

1-TR=TRy

three dimensions

5

count

No.

of TR

4

DO-

1

Exp. part

of LM

2

OT-

1

TR = part

of LM

2

PERE-

7-LM=TRy

6

TR = part

of LM

8

mass = count

9

dimensions

3

two dimensions

5

reduplication

of TR

3

mass = count

LM

4
```

Table 11

<table>
<thead>
<tr>
<th>Quantification</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimensionality</td>
</tr>
<tr>
<td>-1 &gt; 2 dimensions pere- 1/5</td>
</tr>
<tr>
<td>-2 &gt; 3 dimensions za- 1/2, 3/5; pere- 5/6</td>
</tr>
</tbody>
</table>
reduplication
--of trajectory per- 1/3
mass versus count
--of trajectory za- 3/4; per- 8/9
--of landmark per- 1/4

Identity
whole = whole
- --trajectory = trajectory za- 1/3; per- 1/2
- --landmark = trajectory per- 6/7
whole = part
- --trajectory = part of landmark os- 1/2; per- 6/8
--point E = part of the landmark do- 1/2

As shown in Table 11, the fourteen links that compose the networks of the four given prefixes fall into two groups. Links in the first group operate on the quantity of dimensions or configurational elements in the configuration. In the second group, one element of the configuration is identified with another or with part of another element. Thus the links form a coherent group which acts on two of the basic characteristics of the configuration, and each subtype of transformation is roughly equally represented.

Although it would be premature to rank order the transformations given only these four networks, a few comments can be made to this effect. Obviously, the dimensionality transformations can be applied only where appropriate (i.e., 1 > 2 dimensions can be performed only on unidimensional configurations) and are ordered (1 > 2 before 2 > 3). It appears that the reduplication and mass vs. count transformations come last, i.e., that the resultant configurations do not spawn any further configurations. Since the quantification transformations always decompose an element of the configuration into two or more units, thereby destroying the integrity of that element, it stands to reason that such configurations would consequently resist further mutation. Given the systematicity of the links studied in this dissertation, it appears that they form a circumscribed group which may be specific enough to satisfy the rigors of a basically structuralist framework. Like distinctive semantic features, links form a small, circumscribed group and they appear in various combinations in the semantic description of prefixes. Although parallel in function, links differ from features in focus, since they serve to restrict the internal structure of a semantic category, rather than to establish external boundaries. Limitation is present in both the structuralist and modified structuralist models. In addition to the limits placed on the present description by the system of links, the prototype restricts the network to configurations which are related to it. The restrictions on the present model are internal and therefore less salient than those on descriptions using feature specifications, but their essential function is in some ways similar.