"I'll wake Perec up now."

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

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

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

Perec 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 fuctioning 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, otstaval, *ott)agivaja* (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 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 ot- 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 a 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, ot- 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', skočit' 'jump'), <reach>, and <away> when combined with za-, pere-, do-, and ot-, 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 1 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 *zaglušit' 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 splintering of submeanings is strongly discouraged. Recall the verbs *zaest' za-*'eat' 'chase' and *zapit' 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

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

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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 *otvetit'* *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-*'asfalt' '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.

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 za-, 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, invariantly 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 notably Jakobson'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 vaguely 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.
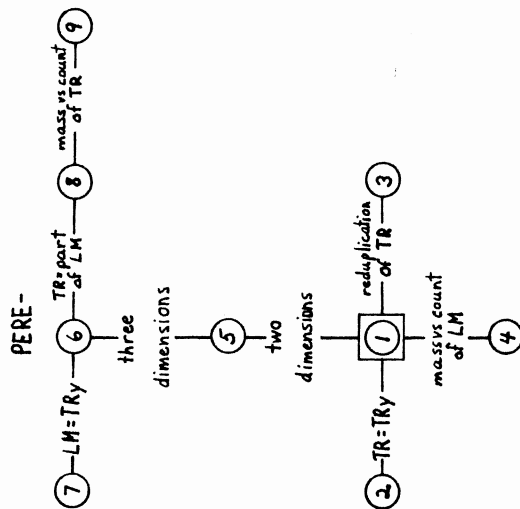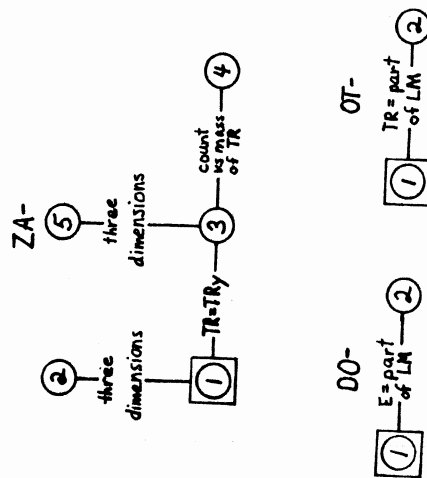

Figure 17: The Networks

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Table 11

Quantification

dimensionality

--1 > 2 dimensions   pere- 1/5

--2 > 3 dimensions   za- 1/2, 3/5; pere- 5/6

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reduplication

  --of trajector pere- 1/3

mass versus count

  --of trajector za- 3/4; pere- 8/9

  --of landmark pere- 1/4

Identity

whole = whole

  --trajector = trajectory za- 1/3; pere- 1/2

  --landmark = trajectory pere- 6/7

whole = part

  --trajector = part of landmark ot- 1/2; pere- 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 tranformations 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.