TARTU SEMIOTICS

Walter Rewar

Ohio State University

Since the first conferences on structuralism and structural poetics were held at Gorkij (Soveščanie 1961) and Moscow (Simpozium 1962), Soviet production of structural and semiotic texts has been massive, regular, and concentrated in a relatively limited number of specialized journals and university presses. Notable among the contributors are the Section for the Structural Study of Slavic Languages of the Institute of Slavic and Balkan Studies, the Institute for Oriental Studies, the Section for the Structural Typology of Slavic Languages, and the Linguistics Section for Cybernetics. With the publication of the first volume of Trudy po Znakovym sistemam (Works on Signifying Systems) under the general editorship of Ju. M. Lotman, we now have available a journal, which in view of its comprehensive rather than exclusive character, has emerged as a most useful reference allowing us to trace the development of such studies in the U.S.S.R. Individuals contributing to the Trudy and participating in the presentation of the study programs produced at the Summer Schools being held periodically at Tartu (Programma 1964; Tezisy 1966; Letnaja 1968; Tezisy 1970; Revzina 1973) have certain preferential subjects, methods, and interests. Most are literary critics and linguists. They share the ideologies commonly found in these disciplines. The ever increasing scope of their research, however, has come to display a significantly more nuanced stance toward principles of structural and semiotic analyses that were considered sacrosanct as early as a few years ago.

In the Soviet Union as elsewhere, what lies behind the upsurge in interest toward new methods is the prestige of structural linguistics, complemented by Peirce's semiotics. Linguistics has afforded a series of methodological assumptions that has helped to rationalize the use of a set of procedures for the description and the explanation of individual sign phenomena and of semiotic practices taken as a whole. Thus, contributors to the Trudy are engaged in the study of gesture, games, rituals, religion, sacred and secular texts, prose, poetry, music, textual and cultural typologies.

The transposition of the linguistic model to such varied subjects was accompanied by a reassessment and a reinterpretation of its theoretical possibilities. Several alternate models have been proposed whose general usefulness resides in the fact that they are able to account for phenomena that were labeled random in analyses of language. The characteristics of this change of focus are not surprising when one considers that, historically, what has motivated structuralism and semiotics in the Soviet Union was not only a rediscovery of linguistic structuralism and the implications of the synchronic and diachronic poetics of the Russian Formalists of the Opojaz whose work had fallen into disfavor for a period of about twenty years, but also research in machine translation whose success depended on a systematization

of cybernetic processes in their relation to sign behavior.
Reading through the texts of Trudy, one is just as likely to
encounter essays that rely on mathematical models, models of
play, communication, information, systems and cybernetic
theories, as on the better-known but more narrowly bound analyses
that follow the Lévi-Strauss approaches.

While linguistic models have not been displaced from their
dominant position, they have not had a chance to become a fetish
in the analyses. They tend to be considered simply as models
among other models. This readjustment in metatheoretical
perception is being followed by a reorientation in the pragmatics
of the analyses which convey to Tartu semiotics certain distinc-
tive attributes. Besides affecting the definitions of sign,
text, intertextuality and literary/non-literary language
distinctions, the orientation has helped to break down the
barriers of closed system analyses associated with the efforts of
the Russian Formalists. Writers have also substituted for
Jakobson's homeostatic model of language and communication models
of a more dynamic type, which they use to resolve problems of
text history, the history of cultures identified with special
textual organizations, and to describe the relations among texts
as well as those that arise among texts and their relevant
systems.

The object of the Tartu researchers is the secondary
modeling system which is said to be organized on the basis of the
primary system of natural languages. A secondary modeling
system, however, does not result from a linear transformation of
the primary one. It incorporates specific features, and it
reflects additional, complementary structures. Although a
secondary modeling system is based on the system of a natural
language, it contains relations of a secondary order (ethical,
philosophical, etc.) that conveys to it a greater complexity or a
higher order of organization depending on the point of view that
the researcher adopts on the studied object. One of the problems
associated with this hypothesis has been how to describe the
relations that secondary modeling systems assume in relation to
the primary ones. Although each of them can be considered as a
language where one needs to determine the minimal units of
articulation in order to describe the rules operating in the
system, models of natural languages cannot be directly transposed
to any secondary system without generating a series of difficulties.
When the difference between the primary and the secondary system
is a difference in level in the typological sense, the concept
of the type reveals that genetic origin does not regulate typo-
logical parentage. Conversely, typological parentage may include
different genetic origins. When the level is treated in the
system theoretical sense, the concept of "higher level" may imply
a higher order of organization (lower complexity), while a lower
level implies greater complexity (a more diffuse organization).

The means of contrasting natural languages and the languages
of secondary modeling systems have been the subject of several
studies which have addressed the differences between the spoken

and the written word, the literary/non-literary language
distinctions and, at the level of the literary text, the differ-
ences between prose and poetry. Independently of the Tartu
group, the information theorist Piotrovskij distinguished between
the written and the spoken word in Russian, English, German,
Italian and Rumanian with the use of the Weaver-Shannon formula
which may be applied in calculating the information content and
the entropy of languages. He showed that the distribution of
information changes as one passes from the spoken to the written
word. In the spoken word, information is commonly concentrated
in the intense syllable. In the written word, it is the initial
part that carries most of the information (1962). Lesskis
examines the differences between scientific and literary languages
from a different point of view. Using large textual segments
taken from a mass of experimental data he sets out to distinguish
literary and scientific languages according to the statistical
incidence of relational elements that occur in well defined
phrase groups (1965). Although a nonlinguistic situation can be
expressed in several ways in a natural language ("the boy reads
the book," "the book is read by the boy," "the book is being
read by the boy," etc.), it is an illusion to think that the
realization of an expression involves only the process of selection
from a repertoire. Speech and written expressions alike are
constrained in their syntagmatic organization. As a first test
of the hypothesis, Lesskis asked informants to classify random
sentences taken from Dostoyevsky, Tolstoy, Turgenev, Ključev, and
Senečov into scientific and literary language categories. The
sentences had been altered, and they revealed only the indices of
their original syntagmatic organization (connectives, case
endings). The percentage of correct identifications (87%) was
high enough to suggest that the results were not accidental and
sufficient for postulating that, at an intuitive level,
individuals perceive certain types of syntagms as literary and
others as scientific. Further tests were made on segments that
isolated special grammatical rules, main and subordinate clause
constructions, etc. Differences in the rate of incidence
resulted for most features (ibid., 76-82). In one instance, for
example, Lesskis found that words suggesting connections among
textual segments (because, thus, etc.) were far lower in Turgenev
(8.2%) than they were in a scientific writer of about the same
period (26.6%) (ibid., 83). One of the better known methods of
contrasting natural and literary languages, and subsequently prose
and poetry, has been provided by Kolmogorov and his followers
(Moscow ANSSR). Kolmogorov relied on a slightly modified version
of the Weaver-Shannon formula in order to measure the entropy of
poetic languages. He depicts entropy quantitatively, as a measure
of unpredictability in a textual sequence (Revzin 1962). The
easier the prediction among words or sequences, the lower the
entropy; entropy can also be taken as a measure of information:
the more difficult it is to predict the appearance of a word or
of a textual segment, the more information the text will provide.
Kolmogorov adopts the hypothesis that entropy (H) is a function
of three conditions: the capacity of a text of a given length
to convey meaningful messages (h_1); the capacity of language to
convey the same message in different ways (h_2); the constraints

internal to a language that control the possibilities of
information transfer within it (β). In natural languages, entropy
(H) may be represented as $H=h_1 + h_2 - \beta$. Kolmogorov supposes that
variations in h_2 (flexibility or synonym) is most likely to
provide some quantitative measure of poetic entropy (ibid., 288).
Languages where $h_2=0$, a situation that occurs in artificial
languages and in some scientific languages that admit of no
synonymy, are considered poor materials for poetry. Poetic
language imposes a series of constraints that affect the infor-
mation in the system. Having measured what part of the potential
to carry information is spent by the constraints (β), Kolmogorov
indicates that a poetic work is possible as long as the quantity
of information spent by the constraints does not equal language
flexibility, i.e. $\beta<h_2$. In a language where $\beta\geq h_2$, poetry is not
possible (Lotman 1970:38).

The work of Kolmogorov and of his followers at the Moscow
School in linguistic, statistical, and information theoretical
poetics affords the possibility of measuring the information of
various patterns in poetic languages. Kolmogorov's stress on the
three conditions contributing to the entropy of poetic texts,
namely, language flexibility, the capacity of a language to carry
information, the formal constraints acting on language flexibility,
as well as his descriptions of the minimal vocabularies required
for writing certain types of poetry using particular overall forms
or rythmic patterns represent a significant attempt to apply exact
scientific procedures in one of the branches of the notoriously
inexact human sciences. Lotman has commented in a nonmathematical
manner on several of Kolmogorov's assumptions, and he has
endeavored to make the relationships among the three functions
controlling entropy more dialectical. With this in mind, he has
reintroduced the notion of the quality of information, and
attempted to have Kolmogorov's model apply to particular instances
of artistic creation and public reception (1970:36-37). He notes
for example, that it is an oversimplication to hold that a text
results from a selection from a given, preestablished range of
possibilities. Even if we assume that an artist creates this way,
which is far from being the case, what may strike the writer as
h_2 (flexibility) may be received by a reader as h_1 (capacity).
As Barthes and others have pointed out, the writer knows that he
could have written a text otherwise. But the reader must suppose,
Lotman adds, that a work contains information that he cannot find
in any other form of expression. For the reader, language
flexibility (h_2) emerges under the form of a language content
capacity (h_1). Lotman thus renders Kolmogorov's formula
$H=h_1+h_2-\beta$, as $H=h_1+h_1'$, where $h_1'=h_1+h_2$. The value β has
disappeared from the representation. Lotman observes that in
poetry formal elements carry information; they are semanticized by
authors and in some cases by the readers themselves, and thus, the
distinction between β and h_1 becomes redundant. By interpreting
Kolmogorov in the context of historically discernible and
historically preferred sender-receiver patterns, he imposes on an
information theoretical model, which does not account and does
not need a sender and a receiver, a communicational one that does
need a sender and a receiver. Lotman maintains that even if we

believe that a writer selects from a repertoire, chooses a
language of a given meaning capacity (this amounts to choosing
whether to express oneself in painting, prose, poetry etc.),
and decides from a range of synonyms the elements that can best
express a thought, the situation is different for the reader.
Synonyms (h_2) are not necessarily important because he may accept
a text as given. While in quantitative information theory,
redundancy adds nothing to information and merely ensures its
transfer, Lotman finds that in poetry, the repetition of a word
renders an expression unequal rather than equal to itself.
Linguistic flexibility (h_2) is transformed into a kind of
supplementary meaning capacity. It creates a particular kind of
poetic entropy that Kolmogorov's formula misses. Conversely, when
the poet reads his poetry back to himself, he applies the grammar
of the reader rather than the grammar of a sender. Textual
variants cease to be important. The writer semanticizes rhythm
and phonology. At the same time, certain compositional features
of the work escape him. When the reader adopts the writer's point
of view and begins to evaluate the latter's style, he tends
toward $h_1 \rightarrow h'_2$ (ibid., 41).

The question of redundancy and repetition is quite complex in
the literary text. One can find, on the one hand, phrase segments
which are not synonyms but antonyms of themselves in spite of
their phonological similarities. On the other hand, one can also
find cases such as in Voznesenskij, where spasibo (thank you) and
spasite (save us) are considered synonyms. In longer segments,
Lotman writes, the artist does not merely describe an episode;
the episode may become a model. Elements that seem to fall
outside of it do not necessarily point to some obscure feature of
the model; they refer to partial models of the primary one being
developed in the text or in the episode. They are "plot" (sjužet)
synonyms of the episode that is realized in the text. Under
these circumstances, Kolmogorov's $H=h_1+h_2-\beta$, is transformed into
$H=h_2+h'_2$. The latter integrates the knowledge we have of the
speaker's grammar, of the grammar of the receiver, the point of
view of an author who comes to share the audience's point of view,
and the point of view of an audience that adopts the author's
point of view. When the writer exchanges positions with the
audience, the sender/receiver interactions may create four
different responses instead of Kolmogorov's single one. When the
writer, Lotman observes, is in position $H=h_2+h'_2$ and the reader in
$H=h_1+h'_1$, we have a situation where the writer values an aesthetic
activity while the reader dwells on the nonaesthetic information
included in the text: he reads the work for its content. This is
characteristic, Lotman suggests, of Dobroljubov's realist
criticism. Periods of cultural refinement, when almost anyone
can consider himself a poet, find the writer in the relation
$H=h_2+h'_2$ and the reader in $H=h_2+h'_2$. When the writer sees himself
in the relationship $H=h_1+h'_1$ and the reader in $H=h_1+h'_1$, we find
relationships of sender and receiver typical of periods promoting
factual literature, where documentaries are an accepted form of
art. Writers are likely to disdain salon culture and the literary
dev ice. Finally, the writer may assume $H=h_1+h'_1$ while the reader
tends toward $H=h_2+h'_2$. Here, writer and reader have exchanged

positions. Although the writer looks upon his work as a positions.
Although the writer looks upon his work as a documentary, the
reader is aesthetically inclined, he becomes interested in what he
perceives as the more purely "literary" aspects of the work (ibid.,
42-43).

Thus, Lotman's reinterpretation responds to historical condi-
tions by contextualizing the applications of Kolmogorov's formula.
The reading of a cultural text from the changing viewpoints of
audiences and authors finds a message carrying different informa-
tion in each case, and changing its entropy at given periods of
history. Lotman's rendering of Kolmogorov's $H=h_1+h_2-\beta$ as
$H=H_1+H_2$, where $H_1=h_1+h'_1$ and $H_2=h_2+h'_2$ reflects the conviction
that it is possible to integrate into H_1 and H_2 and lexical content
of language (ibid.). The formula suggests the superior informa-
tion carrying capacity of poetic languages in comparison with
natural languages; it also agrees in principle with Kolmogorov's
demonstration that poetry has a greater information carrying
capacity than prose.

Although Tartu semioticians are likely to study language-
based and language-mediated phenomena with procedures only
indirectly related to narrowly defined structural and semiotic
procedures, they appear to rely to a greater extent on system,
communication, and cybernetic theories for the discovery of field
theoretical principles. They identify systems of the simple and
complex type as examples of supracomplex cybernetic structures,
and they analyze semiotic systems in their hierarchical disposi-
tion. They assume that systems are composed of different elements
tied together by a complex set of relationships. Art emerges in
this instance as the realization of several semiotic systems
(Lotman 1970:49). It is the result of an artist's translation of
his perceptions of systems into the language of a particular art
form (ibid. 358). Yet, while the sign no longer follows the
accepted Saussurian patterns, writers are not willing to brush
aside the knowledge that we have of its structure. Lotman's
attitude is typical: he refuses to define the sign in an auto-
nomous manner; he explores it in relationship to meaning and he
continues to stress the transcoding process:

> Meaning arises when we have at least two distinct
> string structures. In ordinary terms, we can define
> the first as the level of expression and the second
> as the plane of content. In transcoding between
> two given pairs of elements that are different in
> nature, correspondances are established whereby one
> element within its own system will be perceived as
> equivalent to another within its system. Such
> intersections of two string structures in a kind of
> dual point we shall call a sign, where the second
> string will be content and the first the expression.
> The problem of content, therefore, is always a
> problem of transcoding. (1965:23)

One can assume that the sign is not limited to the covergence of
two string structures alone. This is the minimum condition for
its existence. Lotman believes that in secondary modeling

systems the number of convergences increases dramatically.
Transcoding may be multiple internal, multiple external, or a
combination of both. It becomes possible to conceive of signs
as composed of bundles of equivalent elements originating from
single systems or from different systems altogether. It follows
that the meaning of signs cannot be determined on the basis of
natural languages alone. Meaning may arise from the properties of
language and from the specific properties of other sign systems.
Insofar as the literary text partakes of different languages, and
insofar as the structuring idea is expressed by the whole
structure of a text, the work of art builds its own system of
denotations for which no equivalent can be found in any other
form of expression (1970:61).

Semioticians have also emphasized the philosophical importance
of the text as a unit of analysis. In France, Kristeva has
interpreted the text as a framework in which constituent units
are disposed (1968:92), and as a field in which elements drawn
from other texts intersect and neutralize each other (1969:113).
Barthes has put forth the notion that a text is an abstraction
which cannot be compared to the traditional definition of the
"work of art" which contains certain questionable substantialist
assumptions (1971: 225). Lotman and Pjatigorskij insist on
different features; they stress the problems that arise when the
reader confronts a culturally given text. These problems
materialize

> ... at the moment when the simple fact of linguistic
> expression ceases to be perceived as sufficient for
> a linguistic message to become a text. As a conse-
> quence of this, the whole mass of linguistic messages
> which circulate in a collective is perceived as a
> non-text. It is on this background that there emerges
> a group of texts which present the indices of expression
> complementary and meaningful in the context of a
> given culture (1968:75-76).

The definition does not dissipate the information obtainable from
systems of values applied to distinctions between text and non-
text. Nor does it exclude oral expressions considered textual by
certain societies. It also does not require that expressions be
inscribed in artificial channels since certain texts figure only
in a society's memory. Finally, it gives more explicit statement
to the process of translation from the continuous to the discrete
series which have appeared historically or have been conceived by
authors and researchers alike. It follows that the relationship
of the text to the non-text is only superficially related to the
concept of intertextuality mentioned by Kristeva and Barthes. In
an important sense, it does not deal with one but two related
issues which Lotman feels need to be distinguished: the first
has to do with the crossing of boundaries likely to occur among
discourses belonging to either similar or dissimilar categories;
the second implies more forcefully the relationship text/system.
It draws attention to the processes of emergence, translation, and
on the various ways in which they occur. Taken together, the
two sets of relationships lay great stress on the fact that trans-
textual structures are not simply "there." They are complex,

hierarchical, and undergo transformations (as does the text itself) which are related to historical processes.

The fact that the definitions of sign, text, and text/non-text relations can be "fitted" or "matched" to communicational and cybernetic models is not an accidental feature. The definitions sharpen the realization that cybernetic models are capable of unveiling certain regularities functioning in the evolution of complex systems as well as the gaps that researchers have perceived. Complex and supracomplex systems are confirmed by their reliance on information which plays a determining role in them (as distinct from elementary systems where energy is dominant). They have a mechanism or a disposition capable of receiving information; they are able to store it for later retrieval, i.e., they are endowed with either a biological or an artificial memory; they are also capable of transforming information in order to have it perform some work in the system. When the need arises, they can transmit it both to themselves and to the outside. A common assumption is that they are equipped with more than one channel. Supracomplex systems are composed of a series of sub-systems, some of which are fairly independent and obey constraints of their own. The latter are hierarchically disposed; they inter-act among themselves; they contribute to an overall structure; they maintain relations with an environment, which, in some cases, turns out to be the system itself.

Such a description invites two distinct although closely related approaches. The macroanalytic approach is likely to study input and output conditions and, the means in which information is conveyed and transformed at the entry and at the exit points. This approach favors descriptions of the behavior of a system within its environment, and it is generally complemented by the micro-analytic approach where one is likely to describe the structure of each subsystem, and the manner in which connections perform work. When the two approaches are combined in a single study, it becomes possible to construct models of the system's behavior in the context of its constraints, and of its internal and external information exchange.

One can speculate on the extent to which this scheme has permeated the particularized analyses in the Trudy. System analysts have of course distinguished between elementary, complex, and supracomplex systems. Each type is said to possess special characteristics not necessarily duplicated by the others. The editorial board of Trudy has proposed several justifications for considering biological systems as examples of complex systems. They have categorized systems simpler than the biological at the elementary level. Systems dependent on either language or culture are believed to exhibit characteristics of supracomplexity. The second volume of Trudy takes these distinctions into account in the presentation of the materials (1965:5-8). The first part deals mainly with problems of the significance of the sign and of sign systems. But the second begins with the description of simpler systems such as character typology (Uspenskij 1965), cartomancy (Lekomceva, Uspenskij 1965), and topics typology

(Egorov 1965). These are followed by more complex forms such as
the visual arts (Toporov 1965), poetry (Levin 1965), and literary
texts (Minc 1965). The distinctions surface once again in the
fourth volume of the series (1969:5). The latter contain an
important development which consists in an attempt to classify
several semiotic practices. It is interesting to note, that
the classification is not genetic, and instead, derives from an
acknowledged perception of the complexity of signs systems. A
part of the volume is thus devoted to what the editors agree are
systems simpler than natural languages, another to systems based
on natural languages (secondary modeling systems which do serve
essential artistic functions such as myth and religion), still
another to systems performing artistic functions (literature, the
arts, etc.). Folklore is classified between the last two
categories because it serves both artistic and nonartistic
functions (ibid., 6). The categories specify further the
tripartite distinction among types of systems that were proposed
in the second volume; the cybernetics models seem to intersect
communicational ones, and they confirm at the same time some of
the limitations accepted by sign-bound studies when they are
applied to semiotic practices of various types.

The communicational models used by Tartu semioticians recall
Jakobson's prototype (1960:353):

CONTEXT

MESSAGE

ADDRESSER------------------------------ADDRESSEE
CONTACT

CODE

Although geared to stability rather than types of transformations,
Jakobson's scheme still serves as a major reference point. Never-
theless, while it has not been recast anew, it has been profoundly
modified. Adapted to flexible analytic contexts, it breaks
through some of the major mystifications which have surrounded it
for some time. One such misinterpretation consists in thinking
that communication requires only a passive transfer of information
between a sender and a receiver. Lotman declares that in the
abstract, one may suppose that in order for communication to occur,
both the sender and the receiver must have a code in common (1970:
20). But this is a minimal condition which guarantees the transfer
of information but says nothing about the fact that at the moment
of its reception (when information is received as information
rather than noise), it falls into a hierarchy. Besides a common
code, a sender and a receiver must also possess an abstract
system of invariants that will help them correlate the information
and make it significant (ibid., 21) Lack of understanding is
often attributed to noise which is thought to be an incidental
boundary condition in the communicational process as such. In a
real situation, it is more reasonable to assume, Lotman believes,
that senders and receivers do not use a common code, but two

different ones which intersect in some way. Communication, he
hastens to explain, is not an unproblematical transfer of either
a sign, a signal, or a content between a sender and a receiver,
it is instead a translation. The message is not only received
but encoded once again at the moment of reception. Far from being
an external characteristic to communication, lack of understanding
is one of its central features (1974:301-302). No communication
is possible in the absence of noise because a noiseless channel
does not exist. In psychoanalytic terms, a fully realized
communication would probably result in the death of the subject.
In culture, Lotman writes, we find mechanisms whose function is
to multiply the means to impede information transfer. They are
complex and have significant results. They reduce the possibility
of interpreting a text in a single way. In addition, some of
them induce the creation of single codes, while others lead to the
decay, and to the fragmentation of single codes. Both the process
toward code unity and the process toward the fragmentation of the
single code are important mechanisms in culture. Should one of
them come to completely dominate the other, communication would
become either unnecessary or impossible (ibid., 303). Neverthe-
less, texts of different types and of different levels are not
antithetical to one another; the mechanism striving to increase
variety needs another mechanism assuring their translation into
noncontradictory single code texts of a higher level. The
translation of texts to metalevels and into texts of a higher
order generates information loss. But the degradation of
information does not necessarily imply that texts be replaced,
forgotten, destroyed, or otherwise erased from social memory. The
interaction between the tendencies identifies the need to account
for information that can be derived from the disturbances that
arise among misaligned, conflicting, or unmatched channels.
Theoretical and practical descriptions of these processes are
extremely difficult because even as texts gravitate toward the
areas of the non-text and back again, they tend to alter their
hierarchical disposition. They also tend, says Lotman, at various
periods even within a single culture to move either toward
universality or else toward the restricted codifications of
more purely personal expressions, which decreases their comprehen-
sibility (ibid., 304). Lotman's discussion of Jakobson's model
in the context of cultural mechanisms affecting the code, serves
the essential need of dynamizing individual and cultural communi-
cation. His arguments make sense on the background of specific
interpretations of texts and of cultures conceived as an
organization of texts. B.L. Ogibenin suggests that if man can be
viewed as a "mechanism" capable of performing operations on
various sign systems and texts which are generated by them, there
is an obvious need to deal with codes that may contain not only
elements such as signs, but also information about their relation-
ships which may be used to generate new texts. The code may be
treated as a system which concentrates the information needed to
activate a cultural complex (1965: 49). It can also be described
as representing the collective memory of the system. Yet while
a collectivity has at its disposal programs capable of creating
messages infinitely, certain myths and rituals function as
truncated, abbreviated, and partial programs which can only

become meaningful within the whole continuum in which information
is being processed (ibid.). The matching of certain channels
is produced when a rite achieves a content only when correlated
with a myth. The translation between rite and myth semanticizes
the rite, and it makes it carry information (ibid., 54). The
structural organization of meaning in systems such as dance or
games must be distinguished from ways in which meaning is retained
in natural languages. The transcoding processes may be subordi-
nated to the demands of the system which has a tendency to act on
its base. Ogibenin's examples point to areas of intersection
where noise is generated. They also suggest plausible reasons
for concluding that Jakobson's model cannot be transferred from
one system to another without major readjustments.

One such readjustment has not been limited to an increase in
the model's flexibility within its own limits, it has dealt with
it from the typological viewpoint. At this level, Lotman rein-
troduces the notions of the grammar of the sender and of the
grammar of the receiver, the dynamics of their interactions, and
he applies to it the hypothesis that a cultural complex must
possess at least two different channels of communication (1973:227).
When two "types" of channels are involved, to transpose one of
them to serve the purposes of another leads to a serious conceptual
error (ibid., 228). The most typical channel includes a sender
and a receiver. The other one, however, is of the type "I--I" where
the subject, instead of transmitting information to another
subject, retransmits it to himself. At the formal level, Lotman
finds that the distinguishing features between the two types of
communication is that in the first case, information is likely
to be affected by space; in cases of autocommunication, it is
likely to be affected by time. He is not interested in the
second model for the mnemonic functions it might serve (ibid.).
Following a line of reasoning that recalls his reevaluation of
Kolmogorov, Lotman maintains that if in the system (sender --
message -- receiver) the sender were substituted by the receiver,
one could assume that the message and the information it contained
would remain stable. In cases of autocommunication, when the
sender and the receiver are assumed to remain the same, the
message itself receives an additional code because it is reencoded
at the moment of its reception particularly at the level of its
units of structure. It receives in this manner certain character-
istics of a new message. What differentiates the system (sender --
message -- receiver) from the system of autocommunication is
that in the first case, the words of the language tend toward
becoming signs and indices of signs, while in the second case,
words tend toward a reduction. They become indices whose meaning
is discernible only when the receiver knows already what has been
written (ibid., 233). The mechanism of information transfer in
a system of autocommunication may follow several steps: a
message is introduced in a natural language; an additional code
is applied to the formal level of the message; tension is
generated between the natural language code and the new code.
This results in semantic elements being included in the additional
syntagmatic construction. Even though the primary semantic
content remains, it is constrained by features of a secondary type.

The new message builds a new system of denotations, different from that found at the level of natural languages. In this manner, a text acquires several significations. The general linguistic one, the secondary significations derived from the application of the secondary code, the signification resulting from a syntagmatic restructuration as correlated to the structures of the primary one, the significations that arise from associations with structures and transtextual structures of different types but different from the individual's (ibid., 236-37). In cases of autocommunication, the text traverses the subject and the latter comes to be included in the process. Lotman observes however, that the system (sender -- message --receiver) and the system of autocommunication is of a different type, and it raises a series of special problems. He illustrates later, on varied samples of literary and poetic materials, how authors and readers have interacted with messages they perceived as falling into either of these categories; he mentions how historical societies have favored one of the models over the other; finally, he describes how such a feature can become part of the mythologized image societies create for themselves (ibid., 243).

While Ogibenin retains, with only slight reservations, language as a most useful étalon in his own study, Lotman is clearly tempted to explore the consequences that distinctions between levels, between systems, and systems of different types might produce. Different levels must be distinguished from each other; they must also be distinguished from other systems and other classes of systems. Researchers must be conscious, in other words, of the fact that different levels may require the constructions of metasystems of description that would themselves be different. Speaking from the macroanalytic point of view, and from the point of view of a totalizing definition of systems and groups of systems that make up a cultural complex, Lotman calls explicitly for a critical examination of overly narrow structural principles that were fashioned to describe the "language" of a system. In this, he is undoubtedly correct. While in simpler systems, there is a predominance of structure, in the more complex ones, it is the notion of the system that is significant. Such a view offers the possibility of treating signs systems of various types not from the viewpoint of their semiotic processes, but as subsystems of the more varied processes manifest in complex systems. When analyses proceed from the point of view of language alone, there appear elements that must be classified as random. Features of several "abbreviated programs" fall under this category. The random elements cannot be ignored, and they are not irrelevant to a given object of study when one takes seriously the concept of the relationship. Partial, incomplete and null relationships are a form of relationship which may function among systems in as efficacious a way as, at another level, the "minus device" functions in the literary text. It appears, Lotman writes, that ways must be sought to describe them and to integrate them as working mechanisms of culture (1974:304). Besides a critical attitude to structural models that create such randomness as a matter of course, there also emerges a need to analyze the conditions of untranslatability, and the areas of

culturally created noise which result from interference, non-
intersection, partial duplication of channels disposed in
cultural systems (ibid.).

The composite analytic framework which emerges from the
Trudy and comprises linguistic, information theoretical, and
general cybernetic models, subsumes the idea that the subject
matter of linguistics, semiotics, and cybernetics are different
from each other. A transposition of models from one discipline
to another requires a reinterpretation of principles whose
explanatory power varies in each area of application. The incur-
sion of the Tartu semioticians into mathematical theory,
communicational and system theoretical principles, has br004ht
semiotic research to a fascinating stage, where a scheme capable
of classifying dynamic systems of both the linguistic and the
nonlinguistic type must be found. By uniting communicaitonal,
cybernetic, and semiotic insights Kagan (Leningrad State Univer-
sity) has formulated in a more inclusive way the classifications
tried by the editorial board of Trudy. His global view of systems
favors the human ones (no mention is made of animal communication)
but it is helpful nevertheless if one is to answer the questions
raised by the random events that arise from an exclusive use of
language-orientated methodologies. Kagan's conceptualization is
suggestive of a framework in which further work could be done.
It incorporates but features that arise from distinctions of
degree, level, extension, complexity and organization from both
the macroanalytic and the microanalytic standpoints. He readily
agrees that art from its simplest to its more evolved forms
constitutes what Tartu semioticians have called a supracomplex
cybernetic structure. He also concedes that supracomplexity
must remain a function of a system's capabilities of autoregula-
tion. But instead of studying, verbal expressions in their
autonomy, or stressing the interrelations among language based
processes, he posits art, first of all, as a subsystem of the
more complex information communicational art system which is
made up of the following relations: creation (artist)--work of
art (art)--perception (public). But this totality is in turn
a subsystem within the more complex social relations. Kagan
distinguishes in this manner, perhaps more adequately than does
Lotman, between the scope and the extension of systems. The
model suggests that whatever level happens to be identified,
distinctions must be drawn between levels of system and between
different systems, any one of which can become an object of
analysis for a researcher (1972), and it draws attention to the
implications of the principles of emergence which apply to the
passage from the continuous to the discrete series. Emergence
may, on the one hand, restructure the code; it may establish new
equations between organization and complexity as a system
establishes relations with another; it raises the fundamental
question of boundary, boundary conditions, of the manner in which
the latter acts as a translating mechanism which affects both
internal and external information transfers. This latter issue
does not only have pragmatic effects, but also other profoundly
significant epistemological ones: an interpretation of boundary
as barrier impeding the flow of information, may limit the

usefulness of an analysis: its results merely reflect a
researcher's a priori convictions rather than his general
scientific orientation.

The call to a typology of sign systems and of systems in
general, whether voiced by Kristeva or Todorov, has been a
commonplace in semiotic studies for a number of years (1974:11-12;
1971: 18-19). It has been echoed in the cybernetico-semiotic
publications in England, the United States, and the Soviet
Union. The program for the IV Summer School (Tezisy 1970)
projected investigations of both primary and secondary modeling
systems. The studies were to encompass the channels of
inscription (typically ranging from artificial channels to memory
inscriptions), their mode of development, the hierarchies they
adopt throughout, the system of relations that bind them together.
Despite the continuing efforts of several of the contributors
to Trudy, such a classification has remained elusive. While
Kagan's merger of semiotic and cybernetic principles can deal
with both representational and non-representational materials, it
can be fruitfully intersected with Foucault's concept of the
episteme (1966, 1969), in spite of the latter's overanxious
dismissal of transformations. In system theoretical publications
such a typology is being held back by an altogether negligible
knowledge of history, historical development, and dynamism in
history. The classifications tend not to consider the conditions
that lead systems to modify themselves in form; they do not
engage in investigations of the relations among systems at a
level sophisticated enough to make these models usefully applica-
ble to concerete analyses. There are, however, several signifi-
cant indications of means that might be employed to undertake
such studies. Wilden's System and Structure provides several
far-reaching principles by which systems might be distinguished
from each other. He argues that open (supracomplex) systems
might be contrasted in several ways: 1) types of differentiation
or growth; 2) types of responses and ability to modify them;
3) synchronic stability of systems within their own limits; 4) the
ability to achieve first order stability within limits; 5) the
capacity to protect organization from random disturbances; 6) the
system's memory capacity and its functions; 7) the potential for
simulating an environment; 8) the capacity to reproduce responses
(1972: 374). Thus, the fundamental role in supracomplex
systems is not played by relatively simple connections but by
sets of interdependencies superimposed upon one another. Regard-
less of the level to which an analysis addresses itself, there is
a need to distinguish between systems, levels, and classes of
systems. The selection of level is a step that carries informa-
tion in itself. It is part of a process that may be incorporated
as a fundamental component in the activation of the cultural
process where the metalinguistic activity is one of the ways in
which particular texts take effect.

BIBLIOGRAPHY

Barthes, Roland, 1966. Critique et vérité. Paris: Seuil.

---. 1971. De l'oeuvre au texte. Revue d'esthétique 3.
    225-32.

Egorov, B. F. 1965. Prostejšije semiotičeskie sistemy i
    tipologija sjužetov. Trudy po znakovym sistemam 2. 106-15.

Foucault, Michel. 1966. Les Mots et les choses. Paris:
    Gallimard.

---. 1969. L'Archéologie du savoir. Paris: Gallimard.

Jakobson, Roman. 1960. Closing Statement: Linguistics and
    Poetics. Language and Style. T A. Sebeok ed. pp. 350-77.

Kagan, M. S. 1972. Morfologija iskusstva. Leningrad: Iskusstvo.

Kristeva, Julia. 1968. La sémiologie: science critique et/ou
    critique de la science. Théorie d'ensemble. Paris: Seuil.
    pp. 80-93.

---. 1969. Semeiotikè: Recherches pour une sémanalyse. Paris:
    Seuil.

---. 1970. La Révolution du langage poétique. Paris: Seuil.

Lekomceva, M. I., and B. A. Uspenskij. Opisanie odnoj
    semiotičeskoj sistemy s prostym sintaksisom. Trudy po
    znakovym sistemam 2. 94-105.

Lesskis, G. S. 1965. K voprosu o grammatičeskix različijax
    naučnoj i xudožestvennoj prosy. Trudy po znakovym sistemam
    2. 76-83.

Letnaja škola po vtoričnym modelirujuščim sistemam, III. (10-20
    maja 1968). 1968. Tartu: Tartuskij Gos. Universitet.

Levin, Ju. I. 1965. Struktura russkoj metafory. Trudy po
    znakovym sistemam 2. 293-99.

Lotman, Ju. M. 1965. O probleme značenij vo vtoričnyx
    modelirujuščix sistemax. Trudy po znakovym sistemam 2.
    22-37.

---. 1970. Struktura xudožestvennogo teksta. Moscow: Iskusstvo.

---. 1973. O dvux modeljax kommunikacii v sisteme kul'tury.
    Trudy po znakovym csistemam 6. 227-43.

---. 1974. The Sign Mechanism of Culture. <u>Semiotica</u> 12:4.
    301-05.

---, Pjatigorskij, A. M. 1968. Tekst i funkcia. <u>Letnaja</u>
    <u>škola po vtoričnym modelirujuščim sistemam III</u>. Tartu:
    Tartuskij Gos. Universitet. pp. 74-88.

Minc, Z. G. 1965. Ob odnom sposobe obrazovanija novyx
    značenij slov v proizvedenii iskusstva (ironičeskoe i
    poètičeskoe v stixotvorenii Al. Bloka "Neznakomna").
    <u>Trudy po znakovym sistemam 2</u>. 303-38.

Ogibenin, B. L. 1965. K voprosu o značenii v jazyke i
    nekotoryx drugix modelirujuščix sistemax. <u>Trudy po znakovym</u>
    <u>sistemam 2</u>. 49-59.

Piotrovskij, P. G. 1962. O teoriko-informacionnyx parametrax
    ustnoj i pis'mennoj form jazyka. <u>Problemy strukturnoj</u>
    <u>lingvistiki</u>. Moscow: Izd. ANSSR. pp. 43-58.

<u>Programma i tezisy dokladov v letnej škole po voričnym modeliruj-</u>
    <u>uščim sistemam</u>. 1964. Tartu: Tartuskij Gos. Universitet.

Revzin, I. I. 1962. Soveščanie v g. Gor'kom, posvjaščennoe
    primeneniju matematičeskix metodov k izučeniju jazyka
    xudožestvennoj literatury. <u>Stukturno-tipologičeskie</u>
    <u>issledovanija</u>. Moscow: Izd. ANSSR. pp. 285-93.

Revzina, O. G. 1973. IV Letnaja škola po vtoričnym modelirujuščim
    sistemam (Tartu, 17-24 avgusta 1970 g.). <u>Trudy po znakovym</u>
    <u>sistemam 6</u>. 553-66.

<u>Simpozium po strukturnomu izučeniju znakovyx sistem</u>. 1962.
    Moscow: Izd. ANSSR.

<u>Soveščanie po izučeniju poètičeskogo jazyka</u>. 1961. Gorkij: GGU.

<u>Tezisy dokladov vo vtoroj letnej škole po vtoričnym modelirujuščim</u>
    <u>sistemam (16-26 avgusta 1966)</u>. 1966. Tartu: Tartuskij
    <u>Gos. Universitet</u>.

<u>Tezisy dokladov IV Letnej školy po vtoričnym modelirujuščim</u>
    <u>sistemam (17-24 avgusta 1970 g.)</u>. 1970. Tartu: Tartuskij
    <u>Gos. Universitet</u>.

Toporov, V. N. 1965. K opisaniju nekotoryx struktur,
    xarakterizujuščix preimuščestvenno nizšie urovni, v nekotoryx
    poètičeskix tekstax. <u>Trudy po znakovym sistemam 2</u>. 306-19.

Wilden, Anthony. 1972. <u>System and Structure: Essays in</u>
    <u>Communication and Exchange</u>. London: Tavistock.