STRUCTURALISM*

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* Introductions to structuralism are to
be found among the books listed in the
bibliography. This first part of the
article is made of two sections. In the
beginning several major underlying themes
and strands of structuralism are
announced.The latter section is organized
in terms of the essential theoretical
concepts of structuralism. In this
organisation there are several departures
from the more "classical" presentations.

On account of the difficulties involved
in the condensation of the material from
a larger study, the illustrative
section in the beginning includes a few
comments which are too brief.

It is impossible to discuss structuralism
without reference to linguistics.
However, our intention is precisely to
evaluate structuralism in extra-
linguistic contexts. This intention, just
the same, does not compel us to include
such topics as the structuralist
attitudes and significant structures in
chemistry or engineering, and so on; .
besides it is not clear at the present
whether all structural methodologies
should be likened to each other.

Succinct presentations are followed by
succinct comments or critique. In this
manner, any presentation of structuralism
serves only to provide the frame for the
evaluations, and for the treatment of
structuralist or structural "outcomes" in
various fields, the subject of Part II to
come. The juxtapposition and sequence of
structuralist attitudes and themes not
only represent my own way of looking at
things, but also may point to alternative
assessments of the methodology. A
comparison with other approaches is
always either explicit or implicit in the
text.

I hope that my deep distrust of the
unjustified fondness for
symmetries in science and philosophy
shows not only in the comments but also
in the very organisation of the material.

If the style of exposition is in fact one
of brevity, this is what led to a wide
use of what may be called technical
terminology, which I think just the same
will be familiar and clear to a
majority of the readers.

This is a condensation and rearrangement
of a study associated with a doctoral
dissertation

A Liking for Algebraic Transformations

On a circle let us take four equidistant points, to represent
either a clock or the four main points of the compass. Start in
the north and slide to west point. Once more from west to
south. Still more from south to east. If we consider only the
start of the operation and the end, the three counterclock
moves have resulted in one clockwise shift, north to east. The
elimination of the "intermediate" steps in the rotation in
favour of the "final" situation is akin to the algebra of
transformations admired by structuralism

Someone who likes to know the history and succession of the
three moves, plus their concreteness, and prefers these
to an abrupt formalisation of initial state and end result
will have difficulty with structuralist methods. This type of
formalisation is not strange to the historical beginnings of
structuralism in linguistics, but in recent phases it has
developed and expanded.

Actually in arts or in the analysis of configurations and
human environment structuralists are not as likely to neglect
as the formalisation suggests all the finer points and
exclusively to see the coarse outlines. On the contrary
structuralism is better placed to discern the finer grain and
to allow discrete existence for these grains than either
functional or causal analysis. All this does not however,
detract structuralists from the supposed elegance of
presenting full sequences or multiple metamorphoses in the form
of one single-frame picture. This neglect of actual
transformations is obtained with the help of algebraic
transformations.

Linear Structure in Conjuction with Substitutable Elements

In orter to deal methodically with social symbols, or
configurations in space or the convolutions of phrases in the
language, these being of particular interest to structuralism,
linear sequences may be analyzed as well as the replacement of
individual cells within them. Let us consider elements in a
painting or objects on a table as a parallel to such
configurations and symbols. The elements in the painting or the
objects on the table may either have a linear relationship with
the other elements or objects, or simply we may prefer to read
such structure into them, -even though it should be possible
to impute no structure whatsoever, especially to the collection
of objects on the table.

In the linear relationship objects affect or determine each other through contiguity, though precedence or succession, and through the place occupied in the line. This structure is commonly designated as *syntagmatic*. The relationship may be changed or totally broken down by varying within the line the place occupied by any of the given elements.

In contrast any element of a given line may be taken out and replaced by another form outside the original set, while keeping the line structure and the other elements intact. Here the implication or the meaning of the structure is changed or broken down not by linear change but by the replacement. This time the structural change is called *paradigmatic* by Hjelmslev, -and associative by Saussure.

It should be easy to agree that the elaboration of paradigmatic change and the permutations associated to it are not treated best by functional or causal analysis and that therefore this should be evaluated as a major advantage of structuralism. However, instead of exploiting this advantage in full, many structuralists tend to string syntagm along one cartesian axis and paradigm along another, - in order to study both together. This tendency does not enrich structuralist methods, but creates a reductionist tool in the form of bi-axiality, and in second instance, slides into a functional or even causal analysis by subordinating paradigmatic elaboration to syntagmatic.

Are All Links Spatial ?

Individuals in a society can be seen to exist and move in space. Consequently it may be said that they are the only observable and rather spatial units of analysis. Such a view will consider a society only as the sum of individuals. When we adopt this view we have doubts about the abstractions concerning society[1]. The extreme position here would state that society cannot exist since it is not observable in "real" space.

The necessity or need of abstraction (as against spatial concreteness, or conversely, concerning space itself) comes as much of course to the mind as the perception of objects. It is felt however, that abstractions need more anchoring than the objects. There is always the choice to regard abstractions as loose or independent from what they are supposed to represent, -in other words to accept the diagnosis that the *signified* things do not determine their abstractions in a precise way. The need for anchoring leads to a neglect of this choice by pretending that abstractions are unwaveringly determined: consequently theories go astray in their formalism, overzealous in deducing and in proving.

Our knowledge of space comes from objects, but "space" which provides this experience is one of our thinner abstractions. Appearing like one main foundation of empiricism, space is equally basic to rationalist positions. It is of great concern to structuralists, who associate the concepts of space to the more serious defects of causal analysis. The more theoretical structuralists prefer to abandon space "paradigms" altogether, they substitute "logical" relations in their place, and finally apply such logical structures to the very extension of space itself.

As we shall see with de Saussure, at the outset the structuralist school chose to eliminate the time "dimension"

1. Each theoretical school is forced to take position on this view. An emphatic counter-statement, leading to a structuralist conclusion, is to be found in Hillier and Leaman.

through its insistence on *synchrony*. As space is also eliminated, there is nothing left from *space-time*. As it is, there is not much to bewail about this, as space-time has become a commonplace, beyond the insights of people who have seriously contributed to and elaborated the concept, -it is nearly nauseating.

Structuralist critique is thus a significant alternative. However, rather than cultivate this alternative, methods of structuralism only lapse into quite familiar rationalist positions.

Is all existence spatial? A child learns a language which already exists. We may ask: exist where?[2] The answer to the question will be "nowhere as a total structure". An existence may therefore be non-spatial. Absurd results with respect to location in space come from the received notions concerning the subject-and-environment formulation and from mechanical causality *in* space, these results are "not ... scientific conclusion(s)"[2].

2. B.HILLIER, and A.LEAMAN, the Man-Environment Paradigm and its Paradoxes, AD, n.8, 1973.

In the terms of the structuralist position the symbolic systems of society should be more intelligible than the causal and spatial organism-environment paradigm[2]. In this way structuralisr remains closely tied to language not only in its historical origins but also in the methods it continues to use.

In turning often to language structuralism is comparable to several of the main currents in the present century, british analytical and logical empiricist schools among others. Structuralism differs from these schools on the issue of atomism, an attitude which insists on constructing knowledge from irreducibly basic and elemental units. Structuralism rejects atomism in favour of the primacy of structure,- therefore (in structuralist thinking) in favour of usually invariant relations.

Several of the contemporary disciplines in the vanguard of functionalism are equally based on symbolic systems, centring around communications science. These disciplines are however more concerned than structuralism with the "fit" of their abstractions to the objects of their attention and more adjusted to possible applications. The concept of space is likely to constitute a part of their analytical systems or armaments.

3. Ricoeur is widely quoted in the literature for having described Lévi-Strauss's position as a "Kantism without the transcendent subject" (Broekman p.131, Eco (1968) p.296, Paz p.129, de Fusco p.200, ..). In the form of'trascendentale' and 'transzendentales' in italian and german. Lévi-Strauss finds the comment valid.

Setting language and symbols against space thus appears particular to structuralism at the present time, but this is only a reformulation of age-old or classical controversies. The structuralist approach is often Kantian[3], even when this is under some disguise, and the Kantian premises do not change much simply by disregarding spatial "paradigms".

The disciplines which include space in their analyses either as it is implicit in functional or causal theories, or as a special variable or dimension, admittedly have not produced significant social science, for example. But disregard of space does not resolve the problem of structuralism with respect to space. Since structuralism is so much satisfied with transformations as long as these are properly rigid and since it has small interest in safeguarding empirical references, it is necessarily not in a position to refuse associative operations which would involve symbols not only representing or eliminating space but also symbols within space.

As an example, social institutions which have no spatial existence may be analyzed in terms of patterns of movement (spatial). This will clearly involve transforms and produce a proxy science. Other theoretical positions may have objections to such functionalist habits, but it is not clear why structuralism should disapprove of them.

If we disregard the partially hidden emphasis on exclusively semiological analyses and the consequent exclusion of other approaches, the following points suggest the possible contributions of structuralism to a richer methodology of handling space:

.at the bottom of our experience of space may not be the geometry of space

.the totality of the perceived environment includes data which are not observable at "this" point at "this" time

.structures are as likely to be non-spatial as spatial

The ideological overtones of spaceless analysis will not be treated here[4]. At this point the manner of dealing with space itself is of greater concern. The concept of space as it has become an everyday habit and an a priori category does not deserve the high treatment generally given to it, but it can be disentangled from the mechanistic causal methodology.

There are many ways to perceive or to classify space. Each one could be brought into analysis at will. Such an approach will also imply non-spatial treatment at times, but not exclusively.

Entities not Considered as Sums of Inputs

In the empiricism of Locke the thinking human being is taken as the sum of inputs to his organism[5]. Even if these are structured by 'laws of asociation', Locke's scheme is still and only an extension of the cartesian partition of universe into thought and matter. This partition should be considered as lingering on in the system of Kant and only feeble by degrees in that of Newton[6]. The duality reappears in the division of organic from non-organic.
In such a world either one-half (matter) is given a mechanistic spatial causal treatment, as in the cartesian tradition, or there are attempts to merge both halves under the same treatment by way of the human organism and through the continuity of the ether, as we find in the Newtonian school[7].

The structuralist position does not rely on a mechanical causality within and through space. As a matter of fact manifest in it are great efforts to condemn such an approach. In addition, for human beings and for other organisms and entities (as contrasted with their environments) structuralism does not accord a dominating role either to wholes or parts, this insistence distinguishing it from some ramifications of gestalt theories and even from systems approaches and cybernetics (structuralism admits that parts may operate in terms of their own 'laws'). Finally, the structuralist position seems not to rest on the cartesian dualism. In this manner structuralism could and does veer away from the use of causal input concepts, but in so doing avoids not the other hermetic cartesian half, -that of the mind.

Alternative Perception

The following observation may be true for all systematized

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4. A trend, presumably starting with F. Perroux in 1949, emphasizes abstract organizational analysis at the expense of geographical dimensions, -with respect to economic and regional considerations. As a result the context grows to world scale: this after all does not eliminate the spatial dimension but only makes organisational structures worldwide. The abstract organisational structures must be standing in place of large corporations (the logic of this trend works in terms of economics of the firm).

5. B.HILLIER, and A.LEAMAN,The Man-Environment Paradigm and Its Paradoxes, AD, n.8, 1973.

6. The cartesian partition is in critical enough a position for the theory of knowledge, but more important still is its lingering effects and its domination in our time over the methodology of sciences, the organisation of production, and the logic of daily living.

As for the model "inputs-into-the-organism", it may be more illuminating to consider it an instrumental extension of the empiricist attitude with respect to the "outside" world rather than the basic mode of empiricism itself.

7. The ether continues within biological organisms. The omnipresent ether serves as the base for spatial and mechanical causality. In this way, and at least in this respect, the human organism does not make part of a separate world as in the cartesian formulation, but is a part of the mechanical world in the extension of space.

Since Newton's formulation results from his doubts about the possibility of action at a distance, it is worth remembering that he wavered on this question throughout a great part of his life, and that the thinkers on the European continent exercised pressure on him in the direction of this doubt.

methodologies, in philosophy or in science: logical elaboration is made either for the observed world or in purely conceptual terms, and very often as a combination of both. The rigour with respect to the choice of the combination is only ¡hypothetical and in addition is coloured by social relations.

The logical elaboration in all three cases necessitates the use of elemental premises, axioms and concepts. The elaborations could be employed in order to revise the elemental premises and concepts, but the history of thought shows that the reverse has been the dominating trend, - the elaborations change more often than the premises and in each change the claim is made that they rest safely on observations or logic or often on both.

There comes a time when the premises exhibit a need to be grounded further. At that time, in contrast to the elaborations which though created by man continue to amaze men, some coarse supposition is made to hold together a structure which has no foundation. In the rationalist program of Descartes (by implication) and Leibniz the worlds inside the observer and outside both sealed against each other are held together by a 'pre-established harmony'. In structuralism, a field supposed to evade such pitfalls, the same reappears under the name of a "final nature" (in the french meaning), a finality we shall not be able to grasp at any level of inquiry[8].

This "final nature"[9], combined with transformation methods which lead to invariant relations and which themselves are rather invariant, further combined with the non-temporal emphasis of structuralism, points to or suggests an unremittingly conservative rationalist position, where human thought can be only ahistorical and absolute. There is a surprise here however.

A structuralist assault, with the purpose of restructuring human perception and conceptual apparatus, starts with a critique of 'empirical facts'[10]. Even though the concept of objectivity is not brought into the discussion at this point in the usual structuralist presentation, there is here an implicit division or duality in the cartesian or Berkeleian sense between subject and object, —we notice that the critique is kept on the other side of the fence, not touching the mental apparatus yet.

In the same operation, in order to attain the "real" it is maintained that the lived experience must be repudiated first[11]. We are allowed to cross the fence now through the reference to experience, but the "real" will not lead in Lévi-Strauss to any formulation which will be dissimilar to eternal essences, or pre-established harmonies and the like.

Elsewhere the fence is crossed, and the structuralist does not mind an invasion of the world of reason. Observations and perceptions will be given a rethink, by implication conceptual tools will be shaken and rearranged, and structures derived from observations will be allowed transformations into various "levels" and we shall have a choice between these levels[12]. In this type of formulation human thought and logic do not seem to be absolute, and there do not appear references to eternal essences; but the quest for an elusive final "nature" is not dismissed, and transformations remain totally within the whim and realm of the inner side of the fence.

8. From Lévi-Strauss. There are many other parallels to "pre-established harmony". One type widespread at the present, concerns the assumptions of homomorphisms and isomorphisms among various branches and subjects of inquiry. These however may be methodological excesses, and not metaphysics.

9. The final nature also has affinities with the concepts of preformation, innatism, and apriorism.

10. J.MEPHAM in D.ROBEY, Structuralism, an Introduction,London: Clarendon Press/ OUP, 1973, pp. 108 and 114.

11. Lévi-Strauss: "répudier le vécu"

12. Lévi-Strauss's assertions; he is the principal author to treat levels.

The symbolic world of representations in this inner side is not however grounded on personal interpretation only, but the systems of signs are socially systemic even though their coerciveness may vary from each other[13] and from "functional" social relations.

We can move outside this symbolic social system only "by means of another complete theory"[13], "to be free of the symbolic representations not only requires us to destructure our perception and understanding, but also to construct an alternative semantic for the symbolic systems of society – an alternative theory which will construct a different picture entirely of the social 'reality' represented in .."[13]. This is the most revolutionary formulation in our knowledge of the mission of structuralism, it only remains for us to see that this will be implemented without recourse to eternal verities, of the general or mental or geometric kind, and without recourse to transformations of the significances of lived experience into circular invariant mathematics.

A general critique of structuralism often remains elusive because of the limited number of fields into which it has been applied until the present time. This situation makes it possible for the structuralist school to put forward either different or inconsistent propositions on different occasions. Such an observation is equally applicable to the structuralist attitude on the restructuring of perception and of symbolic systems. Lévi-Strauss's anthropological studies on the one hand, for example, and his theoretical output on the other allow him only on several occasions, and not on others, to say that we are to respect other societies and change our own[14]. This formulation in its radicalism is parallel to the demand for *destructuring our perception*, but far from determining the methods of structuralism in detail and in general, it is only the reflection of the possibility of making statements within the limited referential frame of structural anthropology (usually non-industrial societies) while more general epistemological assertions are pronounced elsewhere.

The methodology of structuralism simply by eliminating the time dimension is not enabled to defend the perceptions of non-european societies. Furthermore it still has to produce a critique of the perception systems of our *"own"* society more voluminous that the literature concerned with reductions to geometric or platonic invariants. Structuralism constantly runs the risk of adopting an *ontological platonist* [15] position, which would maintain that there actually are such objects as relations, concepts or sets.

.   *Questions by-Passed*

The discovery of certain structural relations or transformations in previously amorphous collections appears to be satisfactory enough for structuralists in a number of fields. In such a quest several of the outstanding problems of *knowledge* are by-passed. In cases where symmetry, equilibrium and rationalistic structures are sought, or where contexts are continually reduced, structuralism is not more equipped than other methodologies to produce non-trivial knowledge and is sometimes less so.

In other cases the by-pass is likely to direct attention to more fruitful enquiries. One of these cases concerns "truth".

13. B.HILLIER, and A.LEAMAN, The Man-Environment Paradigm and Its Paradoxes, AD, n.8, 1973.

14. O.PAZ, Claude Lévi-Strauss, an Introduction, Ithaca/London: Cornell University Press, 1970, p.97.

15. For the definition of this expression see CHIHARA, C.S. Ontology and the Vicious-Circle Principle, Ithaca/London: Cornell University Press, 1973, p.62 and passim.

In the literature of methodology and philosophy "truth" is among the haziest notions. In structuralist writing it does not appear to be a major concern; while the structuralists tend to logical analysis, and while truth tables continue to occupy an important place in logic (these being different from philosophical truths), the notion is not often used in structuralism. On the other hand the search for a "final nature" is similar to the notion of truth in trying to dig ever deeper, both tied to the mistake of digging while the premises and concepts are held rather invariant and independent of the possible findings at different levels.

If a discovery of structural relations in a given problem is found satisfactory by a structuralist, this may be considered his kind of "truth", in case the operation is supposedly associated with the search for a final nature. In actual practice a formal structural relationship is likely to be found satisfactory by a structuralist at any one of the levels of enquiry. Under the circumstances structuralism is less able to dig ever deeper than some of its practitioners think. The structures that are found stand up by themselves, without further foundations underneath them. This type of methodological choice could be named the *bootstraps*[16] approach, which is not any less rigorous than the unsupported premise that all findings need further supports. We can now have lateral reinforcements or simple collections rather than only vertical foundations.

The field of structuralism is sometimes proposed as a whole epistemology. The evasion of the questions of truth and foundations is *not enough for such grand claims. In fact* structuralism in itself is not universally concerned even with all types of structures, but only with some. The appellation "structuralism" appears like a misnomer for this reason. It is also probable that the concept of structure is still implicitly tied to the reductions performed according to the principles of *synchrony* (elimination of temporal sequence) rather than to the later developments associating it to the mathematical theory of groups. If mathematical groups are limited types of structures, the principle of synchrony is often used to bring forth even more limited contexts. These aspects diminish any pretensions structuralism may have towards universality.

COMMENT ON THE ABOVE THEMES AND ATTITUDES

A comparison of structuralism with other methodologies suggests that deliberate jumps in the level of inquiry (these being more characteristic of structuralism than of others) and analysis need not be restricted to those associated with meta-languages or, in a perverse way, with algebraic transforms. In the other direction (fewer jumps in the level), knowledge need not be associated always to a greater number of steps in abstraction, -variations on the lower levels of abstraction themselves being able to provide significant knowledge.

Methodologies other than structuralism also study structures. Outside the european-western tradition, or in times prior to it the epistemological questions asked may have been closer to the type "is there structure in this?"[17], in proper or improper contrast the european question over the last four centuries, even excluding structuralist theories, seems to be "let us impute structure, or let us create (perhaps bold)

16. In physics the "bootstraps hypothesis" assigns sufficiency to the cause for the existence of subatomic particles when this can be referred to the behaviour of other such particles. No further more basic and simpler particles are looked for. M.Gell-Mann's Theory of Quarks, 1964. Also G. Zweig.

17. The question here refers to empirical observations. There must be much less difficulty in imputing or creating structure when it comes to apocrypha, *religion, informal thought and social* manipulations. There is also no reason to deny that there may be structure in "unconscious" processes. Concealment and explanation are also likely either to require or to lead to structures, the former possibly necessitating more rigorous treatment than the latter.

abstract structure". Even the case of meta-languages, and even
the attitudes and works which run counter to the main
european tradition may be seen to be part of the same headlong
rush.

This rushing and this structuring are basically instrumental,
adjusted for the domination of either resources or individuals
and classes. But the questions are still presented as
epistemological. It is not clear how much structuralism
stands outside this mainstream. The structuralist attitude
however, is addressed to the redefinition of several
formulations of the european tradition. Many of these
formulations centre around the dualisms of subject-object, and
organism-environment. It was previously pointed out that
structuralism evades some of the spurious questions and
dualisms. However, it is not totally free from taking sides
in the subject-object duality because of its rationalist habits.

We should be in a position to learn *new* structures *from*
"existing" things. These things should be allowed to suggest or
dictate their *own* structures. Their "characteristics" could be
"established" in wide or restricted generalisations. In such
inquiry the mental apparatus should not project itself
forward, even while studying itself.

Other structures may be created or proposed or imagined. Some
of these will be refuted by "empirical" structures, some will
not.

If there is to be any rigorous "fit" of abstract structures to
"existing" things, several fits may all be legitimate rather
than one alone.

Several methodological attitudes do not accept one or another
of these positions. Structuralism itself is not equally at
home in all. In addition the structuralists have not yet
improved on some basic weaknesses which beset other
methodologies.

Subjectivity and objectivity are again cases in point. In the
sciences, which are out to subdue or perhaps even reduce
subjectivity, it is of great interest to us to notice the
tendency not to admit the subjective sources and bases of the
abstractions used, this being a major deficiency in rigour and
a lack of "objectivity" with respect to "subjective" matters
(in other words, formalisations do not eliminate subjective
choices from scientific formulations - several thinkers are
intensely, aware of this, while the scientific community either
totally ignores or strives to conceal it).

In the other direction (involving not the subjective bases of
"objectivity" but the objective nature of some subjectivities)
mental and emotional states in the biological organism which
are observable and therefore amenable to objective empirical
treatment are not accorded such treatment (except for the
greatly reduced and distorted proxy findings of behavioural
and behaviorual science).

SUBSTANCE AND FORM

Ferdinand de Saussure's terminology is less formal than that of
structuralism today. The distinction of substance from form is
similar to those of syntagm from paradigm and langue from
parole, while the formulations resulting from these have now
acquired more formal terminologies.

18. The sourcebook for Ferdinand de Saussure is SAUSSURE, F.de. *Cours de Linguistique Générale*, Paris:Payot,1916. There exist full and partial translations in english. The outline and elaboration of his theories are to be found in Lane, Barthes, Piaget, Jencks, Leach. Here we follow Lyons in Robey.

19. Lyons: this duality is similar to the Aristotelian matter and form; but the term does not sit properly: it is opposed to both 'matter' and 'form' in the Aristotelian tradition. However, the recent meaning of 'matter' is more particular.

20. The concept signifier *(signifiant)*, signified *(signifie)* and the others will reappear in the second part of this article.

This use of "a priori" is not exactly similar to the usages which developed later in structuralism.

"Substance is the substratum of variation and individuality". It has no existence independent from form, but it can be "logically" distinguished from it for purposes of analysis.[18] Saussure takes the familiar example of the marble shaped into a statue. This marble is "substance": potentially many things, actually none. Form will be imposed on it.

Saussure treats language in terms of the same distinction, but there are two kinds of substance in language[19] : sound and thought. A basic unit of language, the phoneme results from the *structure* (form) imposed by language on the continuum (substance) of sound. Phonemes (then) make up the words (*signifiants*: as in french). The sense (rather than the denotation or reference) of a word (this sense called *signifié*) also derives from the imposition of a structure on the a priori nebulous continuum of thought[20] .

Words and meanings have existence only within particular languages (structures). This structuralist insight is fruitful and avoids the non-rigorous generalisations of functional analyses, but also pushes structuralism toward a preference for narrower contexts and for closed systems rather than open. Since significance in this case can only be established with reference to bounded and clearly defined systems and since changes taking place through time dislocate both the clarity and the system the same insight commits structuralism to synchronic analysis. After this point structuralism cannot possibly shake loose from synchrony, and thereby is equally committed to distort many methodological issues in order to favour synchrony.

21. There are other major terminological systems within linguistic structuralism, such as those of Jakobson, Barthes, Eco. These do not coincide with each other nor with Morris/Peirce's, but unfortunately they overlap.

The combination of a word-form with a meaning yields a *sign*[21] . (Lyons: many authors describe meaning in terms of categorisatio: of 'reality' and not in terms of imposition of form. Structuralism can be associated with phenomenalism or idealism, or conversely dissociated from both – as was done by Hjelmslev, Copenhague structuralist school).

The non-formal distinction of substance and form seems to have prepared the way for structuralist formalisms, but on its own terms it is not committed to close the circle of any particular analysis while the more formal methods are so committed. This distinction increases the choices in the definition and location of theoretical questions, and by-passes the unitary ontology of functionalist methods.

As the concept of form involves *contexts* in order to elucidate significance, syntagmatic and paradigmatic structures likewise involve contexts, the first to elucidate binding relationships *within any given linear framework, and the second to elucidate* the effects of the replacement of singular elements on that linear context itself.

PARADIGM

22. Even though the word paradigm may connote a succession of permutations or several structures slightly different from each other, outside of structuralism it has still wider meanings.

It is fairly certain that very often the term refers to a theoretical model. It is only one of many expressions vaguely used in this sense. The term is used more often than is really necessary. It apparently is judged to be elegant. Again in this case it does not have to refer to the variation of a single element, more likely it will refer to the variation of several or all. It could cover the whole range of the

In structuralism *paradigma*[22] is treated along with *syntagma*. We shall not dwell here on this relationship, instead we shall point to the connections of the concept of paradigm to other formal concepts within structuralism.

The paradigmatic relations are those between a given element (in linguistics a word for example) in a given context and other elements at the same level which might have occurred in its place.

inflections,-in our estimation this sense is not at all excluded in structuralism.

One historical derivation is from linguistic declensions (and conjugations). In this sense it is easily used again to refer to the whole range of the inflections.

It could refer to the association made in and by memory concerning the common traits or properties of various events and things.

It refers to the structural relations of elements among which we may exercise choice. This is the sense that is found most significant for the purposes of this article. On the other hand we would prefer to accept the whole range of inflections as an open system rather than closed.

Paradigm refers also to the Platonic world of ideas, which is taken as the prototype of the perceivable world we live in. Structuralism seems not to commit itself to a particular tint on this usage of "paradigm", but the prototype is re-introduced in other structuralist formulations.

In the text we have referred to "association" in Saussure and "paradigm" in Hjelmslev.

In the beautiful book EASLEA, B. Liberation and the Aims of Science, London: Chatto and Windus for Sussex University Press, 1973, p.11, the widely known T. Kuhn work (The Structure of Scientific Revolutions, 1962) is concisely quoted on paradigms.

In Kuhn's terms (without added elaboration), the concept is difficult to define but paradigms are readily revealed in the 'textbooks, lectures and laboratory exercises' of scientists. The scientists may 'agree in their identification of a paradigm without agreeing on, or even attempting to produce, a full interpretation or rationalization of it'. Kuhn supplies several partial definitions. Paradigm is 'prior to the various concepts, laws, theories and points of view that may be abstracted from it'. It consists of a 'strong network of commitments' of various types, and it is 'the source of the methods, problem-field and standards of solution ...'.

Easlea notes, adding Kuhn's acknowledgment, that in the 1962 work there are at least two quite distinct usages of "paradigm". The first, 'concrete example of successful scientific practice' (quoted from Easlea). The second became 'exemplar' and 'disciplinary matrix' in Kuhn's later terminology.

We remember that R. Merton's use of the term is parallel to the above elaborations.

23. In contrast to nomothetic, also characteristic in structuralism because of the loose and excessive use of the term 'law', here is the "normothetic" emphasis or basis of structuralism. Its use at this point is ours. The term may have been first coined by Trnka, at least in the literature on structuralism. (As for nomothetic, I prefer to use it in the sense of a tendency to exaggerate the seeking and establishment of 'laws', and not of "pertaining to universal law").

We may be more inclined here to emphasize the similarity of the *langue* and *parole* distinction to that of paradigm and syntagm than is usually the case. *Langue* denotes the general given structure of the means of expression for a community, while *parole* denotes any individual or idiosyncratic use of it. Paradigmatic relationships are certainly not lacking in the general language, but paradigmatic changes will be more abundant in the case of *paroles*.

Saussure's intentions with respect to langue versus parole are apparently subject to debate. However this much is clear: the linguist studies in the main the regularities of *langue*[23] This normothetic emphasis will tend to reduce any richness or open-endedness which paradigmatic methodology seems to promise in structuralism, -such an observation reproducing only the comments we have previously made on structuralism, a field in which most theoretical structures start with a promise of open-ended inquiry but end in closed restricted systems.

PERMUTATIONS

In spite of all this, treatment of paradigmatic change still points to methodologies which are not favoured by causal mechanical sciences, by functionalist or correlative approaches, or by behaviourist and behavioural structures and ideologies. Paradigmatic change and its study points to an *exhaustion of permutations* concerning possibly an unrestricted number of elements in equally unrestricted contexts, an effort much too costly and not very properly suited to the aims of predictive or causal or functionalist sciences.

An exhaustion of this kind will open the way for an *"algebra of possibilities"* (an expression used in structuralist literature), which algebra will also be able to study *absent structures* or elements absent in a given actual structure. The study of such universes of possibilities and absences has only been taken up outside the bounds of science, - but a rigorous science in this manner is needed in general and especially in the case of social structure and superstructure.

In structuralism neither the total system nor any of the parts have to impose their laws on each other. This is the contribution that structuralism brings to methodology over and above the definitions of gestalt theory and systems theory. The substructures can be treated here in terms of their own "laws". This approach and the exhaustion of permutations are mutually suitable to each other, but the approach cannot be satisfied by the essentially commutative mathematics of the theory of groups.

The independent treatment of the "laws" of substructures may be considered to have been appropriate for structuralism until the present time on account of the fields of inquiry this methodology has been limited to. We do not have to accord priority to this treatment at all times, but the reason for this is not mathematical (most relationships may be expressed in the form of permutations and matrices without damage to the observations and insights which were obtained before the transformations), it is that substructures need not be treated independently at all times.

In structuralist applications most of the work is commutative in form, and in the rest the permutations are not exhausted. The results are obtained not through permutative operations,

24. Leach in Robey pp. 41-42. Leach, more
emphatically than others, says that
structures in linguistics should be
distinguished from mathematics.

as some structuralists propose, but through insights which cut the exhaustion short.

In anthropology (and linguistics) structures subject to the formal transformations tend to be non-repetitive[24], this favouring a permutative treatment in our estimation. Such structures will not possess one "form" which will be a more correct or true expression of the "underlying" relationships the structuralists are seeking, but should admit many forms.

The general field of sciences usually shies away from such an admission. In opposition, structuralism is able to contribute, in addition to the algebra of possibilities and absent structures, a study of polyvalence: however, what we consider the superiority of structuralism, Lévi-Strauss considers only a stage to be transcended Even though this is most emphatically asserted by Lévi-Strauss and not by others, the dominating tendency in structuralism seems to be similar. The structuralists are probably not seeking the totality of the information to be provided by permutations, but a single formal structure "underneath" all. The following example may show at which point we prefer to distinguish permutation from structure, and how structuralism tends to equate them.

Leach, starting with the expression of his doubts about the wholesale transfer of linguistic methodology into social anthropology, suggests that just the same it is proper to consider human beings within a communications framework, this presumably indicating the similarities between the two fields. He is also aware that we receive various messages at the same time and that we integrate them, in my estimation an awareness which causal or functional methodologies do not usually possess. On the other hand, while the several messages and their integration are likely to be non-repetitive and therefore to require a permutative analysis, Leach and the structuralists maintain that this integration must possess a structure, which structure they will prefer to emphasize at the expense of other information.

Such attitudes are partly based on the original insights of de Saussure and partly on the more recent formal or mathematical formulations.

25. Diachrony does not provide a precise
context. At de Saussure's time the
historicist school was verging on
nationalistic racism. Also other reasons.

If structuralism is a coveted departure from diachronic study[25] for linguists, a combat against atomism (which reduces wholes to their prior elements) for psychologists, and often a position against historicism or even functionalism in philosophically based discussions, it is for the mathematically inclined an opposition to compartmentalisation and recovers unities through isomorphisms. We shall only note here that, in contradistinction to the beliefs of structuralists, permutation is a better opposition to compartmentalisation, that isomorphisms are not permutations, and that isomorphisms establish new compartments.

In order to conclude on permutations, let us observe that such operations proposed in part of the structuralist literature are not appanages of the platonist equipment of this methodology, indeed they are rather strange to it. In contrast they are suitable for a restructuring of perception and theory. They should not prove congenial to the theory of groups because each permutation may signify a non-translatable situation. They are parallel to a "bootstraps" epistemology because within them deeper levels are not sought. On the other

hand it is possible that on the part of many structuralist writers, their understanding of paradigm is not permutational because they seem to accept paradigm as synonymous with similarity and correlation.

ARBITRARINESS OF SIGNS

Structuralism, within its connection with semiology or without, is a method concerning signs. This should help to establish its claim to being a general epistemology, as all knowledge and sciences are involved with signs. The larger part of sciences nod only prefer one-to-one relationships not among the various values of variables, but also take more seriously one-to-one correspondence of signs to signifieds (or objects). On the other hand certain structuralists admit or even emphasize the possible polyvalence of some types of signs. In the case of polyvalence the various denotations or connotations may still be definite. In case these are indefinite we may talk of the arbitrariness of signs. This is considered by many structuralists.

26. R.S.WELLS in M. LANE, *Introduction to Structuralism*, New York: Basic Books, 1970, p. 102.

Among them, in Saussure[26] the arbitrariness of the sign leads to the consideration that two materially different entities are the same within a system if they have the same value and relations (Wells finds this position very similar to that of functionalism in anthropology). Once more, here, structuralism adds dimensions to formal knowledge, but immediately sets out to reduce these dimensions. One of the reasons for this may be the influence exercised on Saussure by the Lausanne school of economists, with its reductionist emphasis on equilibrium, exactly at the time when the structuralist was drawing up his other formulations (the habit of expressing all manners of relationships in the form of equalities being, naturally, much older).

27. J.PIAGET, *Structuralism*, New York: Basic Books, 1970, pp. 77, 79.

In Piaget[27] the arbitrariness of the verbal sign is cited as one of the grounds on which synchronic methodology should be preferred to diachronic. The reasoning is not made explicit. It could possibly go like this: structural studies require definite contexts and thus require the analysis of relations between unchanging elements within unchanging frames; since the elements (signs) will change through history a diachronical approach will not allow structural studies. In this instance structuralism not only refuses to study history (except in the prétended form of a sequence of structures) but consciously rejects the examination of the epistemologically promising arbitrariness of signs, the existence of which it more than admits.

28. Elaborated and discussed by Jean Pouillon and Umberto Eco, in Eco (1968) p. 304

"STRUCTURELLE" VERSUS "STRUCTURALE"

The *pensee structurelle*[28] should be considered within the structuralist stream, but it seems to reverse the tendencies we have observed and criticised above. The structure or system of signs, in other words the "message", may be used to question the very structure or code (*il codice*) itself, in contrast to what may be called mainstream structuralism where without exageration we may say that the structure is held sacrosanct. Every utterance may instigate a discussion or investigation upon the language that generated it. In such a case there is an emphasis on paradigm over syntagm, as we see it, and similarly one of *parole* over *langue*.

"Structurelle" thought brings back the emphasis on

polyvalence, attacking cartesian bidimensional axes. Under the circumstances the theory of groups would equally go overboard, we think.

"Structurelle" thought allows the formation of 'historical' codes and subjects them to discussion in order to generate new communicative modalities. This looks like the optimal, non-reductionist, not rationalist nor idealist, non-overformalist use of structures (if we are ready to forget the formalist and commutative flatscapes of Stockhausen music, action painting and the like, all of which seem to be part of " structurelle" thought).

LEVELS

Paradigms, permutations and absent structures involve a question of the "level" of observation and inquiry. Lévi-Strauss insists that the reality studied does not entirely reside at the level of perception (sense data, presumably, for other schools of thought). It is likely however that this structuralist attitude is not mainly addressed to a subversion of the possible deceptions and probable insignificance of sence daha as they stand by themselves, but instead is motivated by the hovering rationalist abstractions so lovable to many structuralists and by the parallel platonist formulations. The same author proposes that our choice of a particular level for study depends on the problems we pose for ourselves. As we prefer to associate these levels most often with levels of abstraction, this above proposal appears to be parallel to our observation that significant knowledge may be obtained through focus on any given level of abstraction. In other words there is no a priori criterion to select only one level of abstraction in which significant knowledge can be obtained.

On the other hand, again with the same author, the the extremely ordered, pre-formed, consistent and rather unitarian world of ideas comes back to quash the starting polyvalences: according to him the levels of appearance do not exclude each other, and especially, do not pose contradictions. In this circular quashing which takes place in nearly each structuralist analysis, and which is so similar to the operations in the theory of groups with respect to this circularity, there is a double problem. First, Lévi-Strauss does not even start a metaphysical inquiry, but in maintaining that there are no contradictions here, makes a metaphysical assertion. Second, the discussion of levels in structuralism implicitly or explicitly assumes discreteness between levels (this being parallel to the independent treatment of the 'laws' of substructures and overall structures). This discreteness cannot easily be part of causal or functional sciences. In addition correlative sciences, with reference to statistics, would by definition ignore the question of discreteness, and in their operation would eliminate the very analytic tool "discrete" even when it may be thought proper to use, and even in many manifestations of the stochastic approach.

At exactly the point where structuralism appears to push beyond the confines of continuous functions and to call for the discrete treatment not only of measures and values (here in place of variables) but also of levels, the principle of non-contradiction re-establishes the continuity.

CONTEXTS

We have seen the role fo context with respect to several structuralist principles. We find that structuralism tends to strip relevant contexts away. Structuralists insist that(total) contexts are their mainstay. The different evaluations result from the different uses of the term. The context of the structuralist is the text of the esthetic, linguistic or anthropological material studied. The contexts stripped away as far as we are concerned are the historical, the geographical and the like. The structuralist context seems limited to the text and does not quite exist outside it, the reason being again that wider contexts make both structuralist simplification and structuralist precision impossible.

This same quandary, although not accepted as such by structuralists who think of the situation as one of discipline and rigour, leds this methodology to reductionism. Structuralists maintain they are against reductionism. Their reductionism is a result of the constant algebra-like simplicities as well as the type of transformations they feel themselves entitled to perform on the sign/meaning systems.

Such reductions may sometimes be different from the search for ever simpler and more basic entities, and are clearly different from the logical-positivist reduction to sense data (also initially a language-signs-logic position), and from the "unity of science" reduction to physics. They are also different from phenomenological reduction, which perhaps surprisingly will be more empirical at least in intention, more idealistic in practice but less rationalist.

The structuralist reductions either determine or colour the formal and mathematical preferences of this methodology.

THE STILL MORE FORMAL ARRAY / MATHEMATICAL AND LOGICAL

Piaget observes that when structuralism is defined in negative terms (in its oppositions to other positions) there is much diversity within it. In the "positive" definition two aspects are important to him. One, that structures are self-sufficient, and that they do not need extraneous elements for intelligibility. Two, that spite of their diversity structures have certain common and perhaps necessary properties.

It is incomprehensible for us why such preferences and tastes should be announced prior to investigation and to the insights it may bring. Once they are announced, as they are here, it is equally incomprehensible why we should be overjoyed with self-sufficiency or common properties.

If and when things and happenings have common traits we should be sensitive enough to observe them. There will be pitfalls if we make this into a compulsory program: transformations will manage to liken to each other dissimilar phenomena, and new knowledge is less likely to arise if we are on the watch for similarities rather than differences (even though in causal mechanical science the belief in the universal validity of certain laws, and therefore the expectation to find common properties in various phenomena have several times served, as in astronomy and gravitation, to the discovery of new things and phenomena if not laws and to the consolidation of a variety of processes).

I

29. J. PIAGET, *Structuralism*, New York:
Basic Books, 1970, p.7 .

30. The term 'law' should be more
suitable, apart from causal science, to
functionalism than to structuralism.
Furthermore, the mathematics of groups and
the idea of law are not necessarily
reducible to each other.

Allowing that atomism operates by
compounding prior elements, there are
not one but two alternatives to it.

The first reverses the process and goes
from the complex to the simple. This
leads to a concept of emergent
totalities, where emergence is vaguely
attributed to a law of nature and not
further analyzed. The whole is viewed
as prior to its elements, "or
contemporaneous with their 'contact' "
(Piaget p.8). The Comte, Durkheim,
gestalt and field positions may be
classed here.

The second does not reverse the process,
and may not view as prior either the
elements or the whole. We have doubts or
structuralists here, many of whom seem
to have deep feelings for wholes.
However, structuralists constantly allow
independent "laws" to substructures.
Furthermore, the term 'holistic' is
used with critical intentions in
structuralism. The structuralist version
of the second alternative is named
"operational structuralism" by Piaget,
with the proviso that the structure here
is definitely non-temporal, —whatever
the efforts Piaget spends to seek
franchise from this bound.
The first alternative, in our opinion,
and possibly not in Piaget's, gives rise
more than the second to the grave problem
of *preformation*. How have these composite
wholes been formed? Did they always
exist? Did someone compose them?

We find that many structuralists do not
take the trouble to refute preformations
openly, and some verge upon them, or
rather it. This would bring structuralism
very close to Husserlian essences,
Platonic forms, or "Kantian a priori
forms of synthesis" (Piaget p.9).
Piaget discusses the matter at length.

Even in the case of language, undeniably
a result of historical "processes", the
structuralist-antistructuralist Chomsky
opts for innatism.

31. Anxious not to present this branch
of mathematics as the single foundation
nor the origin of structuralism, we did
not place it at the beginning of this
article. Consequently however, we have
made many references to it without a
prior exposition.

If formulations are accepted to be strictly the product of
mental processes nothing can be discovered except further
properties of these processes. If they are not so accepted,
the fields of study should be in position to suggest
methodologies. Physics appears to have found its own, and other
fields should find theirs. If all phenomena, through the
theory of groups and other manipulations, are reduced to
binary cross tables we only obtain the common properties of
the binary tables, and we rediscover that we can reduce many
types of structures to binary form. The structures that are
found belong to the mental operation and not to the phenomena
observed.

These self-sufficient and so to say avuncular structures are
characterized for Piaget by wholeness, transformations and
self-regulation. The partial similarities to cybernetics, the
gestalt and general systems theories are immadiately apparent.
The differences of structuralism are seldom clarified.

Self-regulation: in the structuralist version the larger
structure does not annex substructures. In addition Piaget
postulates that an operational system is one which excludes
errors before they are made, "because every operation has its
inverse in the system". Since every operation is thus
reversible "an 'erroneous result' is simply not an element of
the system". This argument hinges on *error:* finalistic,
teleological strong assertions working with hindsight wisdom
and exaggerating the significance of steady-state analysis
even more than some of the fields mentioned in the previous
paragraph, referring once more to equilibrium analysis.

The inverse here not only points to matrix algebra, but also
more generally to mathematical groups. While the consequent
reversibility is only one type among others, it is mainly
tinged by an opposition to the irreversible processes which
the dreaded diachronic approach may insert into a methodology.

Faced with irreversibilities, at least with respect to time,
Piaget has recourse to the concept of feedback, clearly at
odds with the main formulation. Other structuralists may not
face the irreversibilities at all.

Wholeness: the difference of structures from aggregates brings
with it the idea of law, and these very laws define the
structure. These are not reducible to "cumulative one-by-one
association of (the constituting) elements"[29]. They confer on
the whole over-all properties distinct from the properties of
the elements[30].

Transformations: they require a *closed* system. This is
consonant with other main principles of structuralism. It
establishes an essential difference of structuralism from
other schools of thought, especially systems theory. Like
self-regulation, it points to the theory of groups.

THE THEORY OF GROUPS[31]

As de Saussure was influenced by the concept of equilibrium in
economics, the gestalt theorists used physics references
because of their previous training (reminding us of the great
number of social science theoreticians who were first trained
in engineering), Lévi-Strauss expresses his liking for
algebra in general.

32. There are other serious questions beyond redundancy. One is that the widest and most natural application of group theory is in one-to-one mappings: this form is not suitable to the concerns of structuralists, many of whom furthermore openly reject an emphasis on one-to-one correspondences.

Piaget on the other hand points out that the first known 'structure' in his sense and the first to be studied as such is the Galois "group". In a mathematical group, a combinatory operation yields only the elements of the given set. The set contains an identity element. The combinatory operation has an inverse in the system, the two yielding the identity element. The combinatory operation is associative (its inverse equally so).

Piaget does not comment on the redundancy in this set of laws. Instead he finds the "fruitfulness of the notion ... extraordinary"[32] .

Groups provide us with the following very general coordinations among the operations: the return to the starting point is always possible, the same terminus is attainable by alternate routes (comment: are structuralists prepared to exploit the counter-reductionist implications of this?), -the itinerary not affecting the point of arrival, thus associativity (the reductionist ideology within the same operation).

This formalism not only serves to eliminate diachrony, but also the significance of lived history and of other cumulative processes. It cannot possibly even accommodate a simpler engineering concept such as load-carried. As the routes in question may also be in space, the formalism serves to eliminate the spatial dimension once more from structuralism, in parallel to the authors we have seen here, and to others[33]

33. Lévi-Strauss, Hillier and Leaman, Piaget, Perroux, the theoreticians of homogeneous regions.

34. J. PIAGET, Structuralism, New York: Basic Books, 1970, p.20

The formalism supplies us with an internal logic, which fulfills "three of the basic principles of rationalism"[34] :

    i.principle of non-contradiction
      -we have already seen this in Lévi-Strauss. Structuralism honours this principle ad nauseam. Lévi-Strauss on his part manages to forget it in his flirtations with dialectics, or in his polar graphics of societies. Further, the "location" of non-contradiction is not specified. Finally this principle should make it impossible to maintain that substructures may have their own independent 'laws' when subjected to the usual structuralist transforms.

    ii.principle of identity, and by way of the

    iii.identity element *the independence of the end result from the route taken*
      -not even mechanical nor functional sciences can assume such wide-ranging reversibility and associativity.

35. GANDY in D.ROBEY, Structuralism, an Introduction, London: Clarendon Press/OUP, 1973, p.140.

In this formalism "*the nature* of the relations is ... irrelevant"[35] While the *nature* of relations is insufficiently treated in mechanistic-causal, functionalist or statistical approaches, structuralism formally refuses to provide an alternative.

The celebration of mathematical groups by Piaget continues, proposing that transformations may be administered in small doses "for any group can be divided into subgroups and the avenues of approach from any one to any other can be marked out". As an example, the group of displacements (where the dimensions of a body, as well as the angles, straight lines, etc. are held invariant) can show us the way to the next "higher" group where we let the dimensions vary while keeping the shapes invariant: the group of displacements has thus become a sub-group of the shape group. In this manner we may be led to affine geometry, projective group and topology. It

36. The *Erlanger Programm* was set forth
by Felix Klein in the 1870's. The
program is oriented towards geometry
(properties of space which remain
invariant under a given group of
transformations). Therefore types of
geometries may also be distinguished
from each other in terms of the type of
transformation group. There are, since
the 1910's, geometries which do not
conform to the Program.

Groups are considered as the mathematical
mainstay of *structuralism* not only by
the Piaget school but also by some
mathematicians. Piaget's involvement is
such that the Klein groups are called
Piaget groups in psychology (Barbut in
Lane p.379).

Gandy finds that not everything Piaget
calls group can be called a group (in
Robey p.146). It seems that at the turn
of the century almost everybody, and
later Eddington, thought that all
abstract structures were groups.

Piaget is concerned with other abstract
structures as well. Barbut lists the
types in mathematics (in Lane p. 382).
Certain articles on mathematics in the
Encyclopedia Britannica (1974) should
prove helpful to the location of the
issues.

Piaget strives to insert mathematics int.
structuralism. Gandy has certain doubts.
As concerns Piaget's formal delimitation
of structuralism Gandy thinks that the
loosening of restrictions may some day
prove more interesting. He finds (in
Robey p. 144) that Piaget's formulation
of self-regulation is "artificial in a
mathematical context". We cannot
exercise judgment in mathematics, but
this comment may be distantly related
to some of the doubts expressed in the
present article.

Mathematics and physics are not the
stiff dogmatic priestly thing in the
sense accepted and propagated by
non-mathematicians and non-ppysicists,
for example social scientists. In the
case here mathematics are mishandled in
the first instance by structuralists,
and later by mathematicians. Even if
disagreement between mathematicians
should surprise lay people, such as
social scientists, Gandy thinks that
A.Weil's (as we understand, the
mathematician collaborator of
Lévi-Strauss) formalizing assumptions
with respect to kinship are highly
implausible.

On the other hand, Barbut estimates that
the use of the concrete strengthens
mathematical intuition, and by being
more specific (our word) permits greater
efficieny. It seems that structuralism
does not take this lesson.

Barbut himself (in Lane p.373) promises
to demonstrate the Klein groups's
presence in many human activities but
does nothing of the kind.

37. Some of these will be treated in
the second part of this article.

38. J.PIAGET, *Structuralism*, New York:
Basic Books, 1970, pp.77, 79.

39. J.PIAGET, *Structuralism*, New York:
Basic Books, 1970, pp. 55,56.

appears that the progression of this sequence is affined to
the Erlangen program.[36]

Piaget expands his treatment of mathematics and elaborates
with semi-groups, and "parent structures"[37]

SYNCHRONY

The structuralist position will observe at the outset that
a language, in strict terms, is not actually the same
language in two widely separated periods. In still stricter
terms it is not the same language even within shorter
intervals. In the study of the structural relations each element
is required to be distinct and invariant; with the passage of
time they will change or will lose their distinctness.
Therefore historical study will have to be eliminated from
structuralism.

History itself could be studied as a sequence of structures,
keeping to the definition that a slightest change means a
different structure.

It is a grave formal and statistical mistake to impute such
system-wide "structuration" to human and other languages. In
addition the promise to study the sequence of such minutely
differentiated structures cannot possibly be in the earnest.
The affinity between the laws of equilibrium and synchrony
already exists in Saussure. Piaget emphasizes that such "laws"
of equilibrium are relatively independent from "laws of
development"[38], thus apparently if the exalted equilibrium is
to be studied in terms of its pristine and hermetic elements
"laws" of development will just out.

"In biology", an organ may change its functions, and the same
functions may be exercised by different organs. This may be
interpreted in terms of polyvalence, of alternative-routes
analysis not reduced to associativity, of permutations and may
lead to an anti-functionalist conclusion. On the other hand
Piaget draws from all this the lesson that once more the
"laws" of synchrony exhibit relative autonomy.

Piaget makes several sorties from his basic formalism
concerning mathematical groups and synchrony, in the vein of
feedbacks and "operational structuralism", but comes back to
the fold with the statement "structure is of its very nature
non-temporal".

In the anthropology of Lévi-Strauss diachrony cedes to
synchrony on two counts in the main. First, historical study
will not be precise or fruitful (our own terminology) because
we ignore the origins of the societies we investigate. Second,
the changes brought by history do not affect the human mind.

We consider it an admission on the part of Piaget, as
concerns structuralism, when he finds the gestalt type of
structure (for us akin in this respect to the linguistic or
Lévi-Strauss types) appealing to those who are looking for
structures which may be thought 'pure', unpolluted by history
or genesis, functionless and detached from the subject[39].
These gestalt structures are just the same unlike mechanical
models, as he agrees, in that they are "non-additive" (an
improper appellation of the familiar principle that wholes are
not equivalent to the sum of parts).

In its rejection of diachrony and history structuralism agrees
formally with the usual premise that what distinguishes

historical and "dynamic" processes is nothing but the dimension
of time. Time is only one parameter in such processes.

In spite of his emphasis on synchrony Levi-Strauss uses the
concept of time. In his structural anthropology the principal
variety is mechanical time, reversible and non-cumulative.
He does admit an oriented and non-reversible time, that of
history, but for some reason calls it *statistical*. The
'mechanical' model is assigned to the study of primitive
societies and 'statistical' to the 'advanced'. The author,
who accords little importance to the differences between
primitive and advanced societies, reverses his procedure with
respect to time; by the same token his absolutism and
apriorism with respect to the human mind is not consistently
carried into the even shorter history of 'advanced' societies[40].

A study of the Hopi kinship system leads to the introduction
of other varieties of time into structural anthropology[41]. The
kinship system requires no less than three different models
for the time dimension. The anthropologist's structures are
derived from the lineage terms used within families, and with
respect to generations. The discovered structure includes an
"empty" time, stable and reversible; a progressive
non-reversible time; and an undulating, cyclical, reversable
time. At this point we pass the boundaries of synchrony and
functionalism both

Leach finds[42] that "the intelligibility of the diachronic
transformations is no greater and no less than the
intelligibility of the synchronic transformations", while
pointing out that Lévi-Strauss always refused to apply
structural analysis to diachronical matters. Lévi-Strauss is
here and there.

We remember Leach on the subject of the integration of the
messages received by the mind. If we spread this integration
over a length of time: for Saussure recollected experience is
part of a single synchronous totality: we have one more
foundation for synchronic analysis. In this instance, the
effect of elapsed time and of the sequences on perception and
recollection is not considered, instead an opportunity is
seized to observe and catch at one point of time the aleatory
integration of dispersed events.

SYMMETRY

Lévi-Strauss, perhaps to show that he is not limited to simple
algebra, finds an "original asymmetry" in the world, like
high and low, sky and earth, and so on. This is deceiving. The
author not only refuses to treat his information asymmetrically,
but is in a position even to ignore the observation of
asymmetries. Polarisation does not mean asymmetry, quite the
contrary, polar and non-polar binary terms in their usual
treatment constitute the high-point of the symmetrical
world-view for Lévi-Strauss and for others.

It is with a certain relief that we see authors sympathetic
to structuralism in agreement with the above comment[43].
'Gestaltung' and other structures are compared by de Fusco to
"s(i)mmetria vitruviana".

Lévi-Strauss still insists that more than others the
functionalist school tended to push asymmetrical phenomena
into the background[44]. There is no exaggeration in this. On
other pages: he takes care constantly that significant

40. Lévi-Strauss's rationalism may be
judged more absolutist than the
rationalist contents in Kant's work, as
for his Kantism see Note 3.

41. C.LEVI-STRAUSS, *Structural
Anthropology*. Harmondsworth: Penguin,
1972 (1963), p.301

42. E.Leach. *Lévi-Strauss*, London:
Fontana, 1970, pp. 93,16.

43. de Fusco pp.161-162, Leach (1970)
p.10.

44. C.LEVI-STRAUSS, *Structural
Anthropology*, Harmondsworth : Penguin,
1972 (1963), pp. 161-162

45. Norbert Wiener's (*Cybernetics*, 1948) arguments are presented and discussed in *Lévi-Strauss* pp.55-57

In Lévi-Strauss p.3.4 : von Neumann

46. At the end of this first part it will be useful to point to the amazing *kinships* of this structuralism which we have been talking about. The tendency to find structural analysis in a large number of thinkers, artists and philosophies is greater in authors sympathetic to or within structuralism. Here is a sample:

de Fusco p.203 (with reference to Barthes): gestalt theory, and Freud .. to Merleau-Ponty and Lucien Goldmann, with respect to parts and wholes
de Fusco p. 161 : cybernetics to biology. Lane in Lane p. 15 : Chomsky .. to the biologist F.Jacob.Lane in Lane p. 19 : Dumézil to Lacan to Foucault Broekman's *Strukturalismus* throughout. But some examples : starting with Foucault (p.9), Descartes et al., anthropologist Kroeber (p.11 - Lévi-Strauss explains why this instance), Merton and Parsons (p.25).

As the philosophy of the frustrated french intellectual left (p.26)(from Améry and Furet by way of Schiwy; Hızır sees this as a theme and as probably an "external" (:surface) association and cause (Hızır p.228).

Nietzsche (Broekman p.30), cubism, Joyce, Stravinsky, Picasso (pp. 42,43), Mondrian, Butor (p.44), so forth.

We have selected only a sample. Furthermore we have excluded avowed structuralists, precursors like the Moscow and Prague schools, and others whom we have already referred to, or will, like Marx.

Eco in Robey p.61: zoosemiotics, etc. Eco La *Struttura Assente* pp. 254-256 : Cassirer and Langer to Minkowsky (psychopathology) and Binswanger; and Aristoteles (p.257-258), plus countless other references throughout the book.

Mepham in Robey p.108 : Cuvier
Gandy in Robey p.143 : Carnap et al.
Piaget p.11 Sally (Piaget's references in various scientific disciplines are too numerous)
Paz p. 5 : Rousseau and Diderot; Mallarmé (p.57) and Buddhism (passim). In this very interesting work Paz establishes other connections.

This survey was limited to the above works. We have excluded the overlaps, except one, we notice.

knowledge may arise from asymmetrical data and minute detail (the perihelyon of Mercury is not a good example for asymmetrical data; moreover a statement is needed as to whether the author likes or dislikes to reduce such data into symmetries).

The taste for symmetry is only a manifestation of rationalism and of nomothetic excess. Lévi-Strauss cites arguments by Wiener and von Neumann[45] and agrees that these point to defects and weaknesses in social sciences, but in his zeal this time nomothetic rather than rationalist, tries vainly to save at least the basic premises of structuralism. In this case structuralism takes ad hoc cover once more under linguistics.

The Wiener arguments are as follows: One, the development of social sciences themselves will have repercussions on the object of their studies; the observer is too much part of the investigated events. Two, the statistical runs are always too short for valid induction. Three, mathematical analysis in social sciences would bring results which should be of as little interest to the social scientist as the results of a statistical study of gas would be to an individual about the size of a molecule.

In parallel to the mechanical and statistical times of Lévi-Strauss there are his models with respect to definiteness and causality (our terminology). "Laws" may be referred to models in the primitive societies in explicit ways: these will be mechanical models. In "our" society, for reasons of social fluidity and many others, the formulation of *invariants* requires average values and thresholds: these will be statistical models (here the author approaches usual terminology).

In a totally different context Lévi-Strauss has recourse to the von Neumann argument: an almost exact theory of gas, with about 10^{25} freely moving particles, is incomparably easier than of the solar system with nine bodies. Lévi-Strauss: the objects we deal with in human affairs are considerably more numerous than those in Newtonian mechanics, and considerably less than those concerning statistical – probabilistic laws (this is very similar to Popper's clouds and clocks argument).

The observations by Wiener and von Neumann may constitute bases for critical attack on several methodologies, they cannot serve as an exegesis to the symmetries, or to the excesses and distortions of structuralism, which however are not as grave as those of some alternative formulations.[46]

YAPISALCILIK

ÖZET

"*Structuralisme*" çıkış ve ağırlık açısından bir dilbilim yöntemidir. Bununla beraber bu yazıda "yapısal"cı yaklaşımın dilbilim *dışında* bilgi kuramı olarak değerlendirilmesi yapılacaktır. Piaget, Lévi-Strauss, Hillier ile Leaman, Eco ve diğer yazarlar dilbilime ne kadar gönderme yaparlarsa yapsınlar, "yapısal" yöntemi diğer dallar için de büyük farkla en yararlı yol olarak göstermektedirler.

Birikim dergisi 1977 yazında Türkiye'de "yapısalcılık" tartışmasını yoğunlaştırdı. Yazının bu birinci yarısı ile Birikim dergisi tartışmaları arasında ancak çok dolaylı bir ilişki var.

Eldeki yazının birinci kesimi yöntemin tutum ve seçeneklerini açıklamakta. *Structuralisme* fazla indirgeyici bir dönüşümler "cebir"i kullanıyor. Dil, simge ve uzam dizilerinde dizilme sırası ve dizi içi unsurların tek tek dizi dışı unsurlarla değiştirilmesi incelenmekte (syntagma, paradigma). Benim açımdan, yapısalcı tutum *paradigma*'nın zenginliklerini işleyeceğine, bunu *syntagma*'ya bağlayarak hem çerçeveyi daraltmakta, hem indirgeme gereklerini tekrar abartmakta, hem de işlevci yönteme kaymaktadır.

Uzam/uzay ve zaman boyutları "yapısalcı" yöntemde "kaldırılmakta", fakat bu tutum 20nc yuzyılın *uzay-zaman* bilimi abartmalarını düzelteceğine, eski usçuluk önerilerine ve soyut "mantık" ilişkilerine dönüş yapmaktadır.

Diğer parça-bütün yaklaşımlarına (system'cilik, gestalt'çılık, kybernetik) kıyasla *structuralisme*'de alt-parçaların kendi yasalarına bütünden bağımsızlık daha fazla tanınıyor. Yöntemin, bazı yazarlarda görülen, en "devrimci" yönü toplum simgelerinin ve insan algılamalarının "değiştirrilmesi" olmaktadır.

Yazının ikinci kesimi *Structuralisme* kuramlarında bulunan temel kavramları ele almaktadır. Saussure'ün ünlü dört ikilisi içinde bazı kavramları diğerlerinden daha önemli saydım. *Paradigma*'yı *syntagma*'dan sıyırarak, "olabilirlikler cebiri", çok-değerlilikler, v.b. konuları *paradigma*'lar içinde inceledim.

"Structuraliste" yazarların bir çoğu yöntemlerinin temeline soyut mathematik ve mantık'ı oturtmaktadırlar. Bununla beraber yazıda bu konular sonlara doğru alınmıştır. *Paradigma* ile eş zamanlılık : tek zaman kesiti (synchronie) konusu arasında bir geçişi, daha doğrusu tercih ettiğim bir dizilişi bu soyutlamalar bölümü sağlamaktadır.

Synchronie (diachronie'ye karşı olarak) Saussure'ün gene dört ikilisinden bir tanesi içindedir. Bu konunun önemini yazıda azaltmaya çalıştım. Buna karşılık alt bölümlerin çoğunda diğer yöntem öğelerini nasıl etkilediğini belirttim.

Bakışım ve denge gibi, aslında ya metaphysik tercih ya da zevk konularından ibaret olan kavramların bütün bilim uğraşlarında bulunduğu şekilde *structuralisme*'e gereksizce girdiğini çeşitli yerlerde belirtiyorum.

Bütün alt bölümler ilk olarak *structuralisme*'in kısa betimlemelerini, sonra da gene kısa değerlendirmeleri vermektedir. Böylece bu betimleme/tanımlar ancak bu değerlendirmeler, ve de yazının sonra yayınlanacak ikinci yarısı için giriş niteliğindedir.

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