# L'archéologie est arrivée

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RÉSUMÉ

Il s'agit d'une réflexion à partir de l'épistémologie et de l'histoire intellectuelle de deux domaines de l'anthropologie moderne: le structuralisme et l'archéologie, dans le but d'établir une base commune aux deux sous-disciplines. Il semble que l'on puisse trouver un terrain de rencontre dans les méthodes de la cybernétique et de l'analyse des systèmes, sinon en philosophie. On suggère quelques visions archéologiques selon une modalité structurale.

In his remarks to the Research Seminar in Archaeology held in 1971 at the University of Sheffield, Edmund Leach predicted to the assembled participants that the structural paradigm, "currently high fashion among the social anthropologists," sooner or later would catch up with archaeology (1973: 762). Undoubtedly there are those in the archaeological field who feel uneasy at the thought of sharing paradigms with anthropology's Delphic oracle as well as those who deny that such an eventuality will ever be realized. As Klejn notes (1977: 25), however, "the sprouts of such a movement are already poking through."[1] Therefore, it would seem to be a fruitful exercise to inspect the parent soil of those sprouts to see if any parallels or regularities might be evident in their germination or in their fruition. The first step in such an undertaking should be a perusal of the intellectual heritage and context of the French Connection, structuralism.

[1] It should be noted that Klejn probably has been preadapted to such an alternative by his studies with Vladimir Propp, the Russian folklorist. Scholte (1968: 198) and Boon (1972: 92) discuss Propp's influence on Lévi-Strauss and Jakobson.

Structuralism has been a mixed bag. Historically, it has referred to a method, a movement, an intellectual fad, and an ideology. Basically, structuralists adhere to the conviction that there is a structure underlying all human behavior and thought, and that this structure in its cohesiveness, meaning, and generality can be revealed by detailed analysis (Gardner 1973). Marx, Freud, Weber, and Saussure, all have been considered precursors of modern structuralism in their conviction that analysis of the structure, data, and subsurface phenomena can explain the underlying cause and motivations for human behavior and mental functioning. Among contemporary structuralists the "undisputed high priest" is Claude Lévi-Strauss. In 1949 the first extensive presentation of his controversial and imaginative work in anthropology appeared in *Elementary Structures of Kinship.* It was not, however, until several years later in 1955, when *Tristes Tropiques* flashed across the literary horizon that the image and perspective of Lévi-Strauss became the cause célèbre of the French intellectual scene.

Occasionally the observation has been made that probably structuralism could not have developed anywhere else but in France. Certainly, there is small doubt that the French intellectual tradition has been the *primum mobile* in the development of structural methods and objectives and in supplying its essential "esprit."

As Gardner (1973) has indicated, three main figures and their place in the French tradition should be kept in mind as indicative of such development. Descartes visualized the mind in its unique functions of language and reasoning as separate from the biological mechanism of the body. He conducted analyses of such functions with an emphasis on logico-mathematical formulations and deductive reasoning. Rousseau, on the other hand, stressed the affective, the unique, the primitive aspects of human experience; his interest in the relationship between man and society and between man and nature prefigured a contrastive view of humanity. Bergson echoed Rousseau's anti-rational theme by challenging the limits of scientific inquiry and by contrasting the intellectual mentality to the intuitive; he considered the latter to be the "natural way" of comprehension and conceptualization. Nonetheless, he carried on Cartesian precepts in a central concern with language and reasoning and with the synthesis and unification of knowledge within a logical framework.

Gardner has pointed out the value of examining a structural analysis of this tradition in perceiving those factors which have remained constant and those that have occurred in cyclical phases. The following analysis is adapted from his description (1973: 24).

*A Structural Analysis of the French Intellectual Tradition*

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| Synchronic elements (always present) | interest in mind; objectivity; synthesizing of knowledge; unique status of human beings; special properties of language; respect for mathematical/original thinking; critique of earlier philosophy. |
| Diachronic elements (recurring) | primary interest: in individual/in society; in French culture/ in the varieties of world cultures; in logical-mathematical thought in affective life and aesthetic aspects of thought. |
| Diachronic elements (increasing in importance) | interest in findings of modern science; rejection of introspection; search for empirical data and confirmation. |

This analysis is admittedly simplistic, but it is not without virtue. It compresses a large amount of information and organizes that information in such a way that change and continuity can readily be seen. In this manner such an analysis accomodates that part of the French tradition which includes the niche of Descartes, of Rousseau and of Bergson. Structuralists maintain that if such an analysis is carried out properly, it can assume a predictive function. A major criticism is that no allowance is made for change and influence emanating from other traditions. Probably for this reason Gardner points out the desirability of including a "developmental" analysis as higher levels of organization may develop which could not have been deduced from knowledge of earlier events.

The development of such a tradition had its roots in the interest and inquiry into the "science" of man which first was formalized under the Greeks. It increased in fervor during the ferment of the Enlightenment. During the second half of the Nineteenth Century under the catalyst of Darwinism, this study became formalized in empirical research and investigation. At this point a dichotomy which previously had developed between rational and empirical studies during the Enlightenment became more pronounced. The Anglo-American tradition inherited from Bacon and Locke was focused on empiricism. The French "quest for mind" incited by Cartesian antecedents concentrated on the search for the general

properties of the intellect in "its affective and cognitive components" (Gardner 1973: 29), and, subsequently, in derived societal models. Thus, in the fledgling study of anthropology, functionalism and the empirical approach became the heart of the Anglo-American tradition, while on the continent Durkheimian societal philosophy flourished and then was inherited and subtly reformulated by Mauss. Such was the scene which preceeded structuralism. To escape the dangers of an arid empiricism or of a factless philosophy, structuralists seized upon the formal properties of thought as a mediating tool of analysis. With energetic eclecticism, their method utilized perspectives drawn from differing approaches including structural linguistics and communication theory (Lévi-Strauss 1958).

Special note should be made of the work of Ferdinand de Saussure in its influence on the techniques of structuralism. This Swiss linguist was among the first to treat language as a separate, distinct system with its own characteristics and its own rules. He considered language to be a system of signs, including within it "semiology," the science which deals with signs. He pointed out the arbitrary nature of the linguistic sign, distinguishing between the signified, or concept, and the signifier, or sound image, which together made up the sign. Saussure emphasized that linguistic analysis was concerned with the determination of relationships among basic elements as units which could only be defined in a structural sense through their relationships with one another (De George 1972; Gardner 1973).

Saussure reoriented the field of linguistic studies and, subsequently, inspired new concepts and techniques, including those of the Russian scholar, Roman Jakobson. Jakobson's work centered on the determination of "distinctive features," qualities of emitted sounds which constituted what he believed to be the basic building blocks of language. The isolation and definition of these distinctive features in turn led to a determination of more complex linguistic units which themselves were constituted by these features. When Lévi-Strauss encountered Jakobson and his work in the 1940's, it was as if the framework and method of structural anthropology was catalyzed in a single serendipitous stroke. For, in Jakobson's concept – the isolation of structural factors for languages in a small set of distinctions which could generate diversity of a system – Lévi-Strauss saw a *modus operendi* for determining the underlying features of

culture in what he considered to be a parsimonious and precise account of the range of cultural systems (Gardner 1973: 119). He does not postulate a one-for-one correspondence between linguistic and cultural phenomena; the correlations between the two are of forms, homologies, contradictions and transformations (Scholte 1969: 362).

Leach (1974) points out that involved with an exposition of this account of the search for human universals is a phylogenetic form of argument. Verbal categories furnish the mechanism through which universal structural characteristics of human brains are transformed into universal structural characteristics of human culture. If these exist as universals at some rather deep level they must be considered innate. They are patterns internalized in the human psyche along with the specialized development of those parts of the human brain involved with speech formation and reception. A child is born with the innate capacity to learn how to make meaningful utterances and to decode the meaningful utterances of others. As Jakobson sees the initial series of basic sound discriminations in the formation of language as physiologically determined, so Lévi-Strauss sees category formation in humans as following similar universal "natural" paths. Lévi-Strauss' use of the linguistic model is not problem-free. Many have claimed that in revealing new insights, he leaves accuracy behind. Critics point to imprecision in definitions and arbitrariness in the choice and use of analytic devices. Moore and Olmsted (1952) consider that imprecision in Lévi-Strauss' foray into kinship systems as exfoliated by linguistic structures. The authors do not deny the possibility of isomorphisms between aspects of kinship structures and aspects of linguistic structures, but such relationships must be delineated with *care.* Leach (1974) also points out that the linguistic model which Lévi-Strauss uses is now considered out of date by theoretical linguists. There is far greater complexity involved in the mechanisms of pattern generation and recognition than is furnished by the digital computer model of Jakobson and Lévi-Strauss. Although in many circumstances the human brain does have a tendency to work from binary perceptions, it certainly proceeds on an analog path as well.

From time to time attention has been directed to the affinities between the works of Lévi-Strauss and Noam Chomsky (Gardner 1973; Leach 1974). The linguistics which Chomsky advocates, under

the names of transformational or generative grammar, does share some points with Lévi-Strauss' rules for myth analysis. Whereas Lévi-Strauss has been grappling with only the recorded cultural forms as transformations of one another, Chomsky has sought those general principles which determine the form of grammatical rules in particular languages, rules that in one measure or another are common to all languages. Chomsky believes such principles are biologically determined – just as Lévi-Strauss adheres to his genetic origins of thought categorizations. Both emphasize the determinant role of language and the distinct possibility of innate knowledge of codes (Gardner 1973). Both are anti-behavioralist and are highly scornful of the "stimuli/response" mode of analysis. Both use notations derived from formal mathematical systems. It is interesting to note that Chomsky is critical of Lévi-Strauss' lack of rigor and precision and cites the need for verification through testing of his hypotheses. Lévi-Strauss, on the other hand, takes exception with the Chomsky perspective of man as a creature with infinite capacity for original thought. Chomsky's picture of man has developed from a Cartesian perspective. "The empiricist view is so deep-seated in our way of looking at the human mind that it almost has the character of a superstition. After all we do not accuse the biologist of unscientific mysticism when he postulates the genetic transmission of complex 'instinctual' behavior patterns" (Chomsky in Lyons 1970: 119). Chomsky does differ from that traditional rationalist perspective which adheres to the ultimate irreducibility of distinction between "body" and "mind" (Lyons 1970: 119). It has been pointed out that Chomsky's explicit concern with exact models in rebuttal of "left-to-right" generated models of language was derived from communication theory (Ardener 1971: lxiii).

In adopting the ground rules of cybernetics and information theory Chomsky joined the ranks of those in the social sciences, including Lévi-Strauss, who recognized a powerful tool for analysis. During the late 1940's this method of analyzing complex systems in terms of the flow and processing of information originally was voiced in Wiener's notion about the brain and concomitant feedback mechanisms and in Shannon's theory of information. Subsequently, Chomsky has shifted his primary concern with the output generated by such a model – the body of utterances – to the more difficult problem of the acquisition of competence – the generative grammar for the language.

Leach (1974) indicates the extent of Lévi-Strauss' cybernetic orientation in his treatment of the communication of myth. The "code" which expresses the mental patterns is discovered through the analysis of positions of units within the myth and their significant relationships between each other. Furthermore, from Wiener's theory Lévi-Strauss has drawn his concepts of "scale" and the distinction between "mechanical" and "statistical" models. Predictably, though, he does not pause long enough to clearly define "scale." Information theory as a mathematical theory of communication, hence drawing on mathematical concepts, has furnished a fertile source for his images. "Entropy," "topology," "transformation groups" are concepts which have been duly absorbed and reformulated into Lévi-Straussian verbiage. Of course, it is not just verbiage. For just as the phoneme afforded Lévi-Strauss the basic ingredient of binary oppositions and their relationships, cybernetics provided the analogy between systems of communication, including that of language, and the systems of exchange and reciprocity. Thus, cultures are "codes" allowing meaningful communication with social processes assuming the function of "grammars" governing the rules of reciprocity. "Society is, by itself, and as a whole, a very large machine for establishing communication between human beings" (Lévi-Strauss in Tax 1953: 321). In this way the cybernetic model can be used to characterize society as a whole while information theory can be brought to bear as a tool for analyzing particular social circumstances or particular areas of culture – such as the domains of myth, totem or kinship (Scholte 1969). Just as Lévi-Strauss has come to apply the Prague-type method to *ideological* oppositions, he has examined and extended the implications of communication concepts into an all-pervading symbolistic analysis included within his present concern with semiology (Ardener 1971).

These, then, are some of the "constituent units," the preoccupations and the traditions from which structuralism has emerged. The question now must be directed toward how this paradigm fits together with that paradigm developed on Anglo-American anthropological soil, particularly as it relates to the realm of modern archaeology.

The intellectual tradition which underlies the Anglo-American perspective is rooted in empirical philosophy descended from Bacon

and transformed by his heirs. Primacy is attributed to the behavioral act, and, with a quantitative, descriptive method, problems are expressed in terms which are generally inductive and diachronic. This tradition sees language and mind not as *a priori* "givens," but as *a posteriori* "activities," unified with the social and cultural mileau in observable behavioral roles (Scholte 1970). The "functional" aspect of this tradition is typically ahistorical and emphasizes controlled methods of experimentation/observation in fine-grained explanations of behavior. The latter, in part, is the effect of the American disciples of William Wundt and his research in experimental psychology (Gardner 1973). At this point, the particular trajectory of American tradition should be examined.[2]

At almost all levels of attainment the American mentality has been keyed to the conviction that the intellectual caste system and rigid class distinctions of the Old World have been avoided in the New. In this milieu a projection of Jeffersonian individualism and the shrewd, self-confident opportunism of the Frontier mentality combined in the belief that the main determinants and constraints on social and intellectual mobility were the exgencies imposed by the physical environment. At the same time, as Tocqueville so astutely perceived, conformity and a pursuit of material equality marked the goals and commitment of the traditional American character.

Consequently, because of the peculiarities of its socio-political experience, the American intellectual tradition has developed in a different direction than its Anglo "genitor." Most obvious is a continually influential belief in the determinant role of the environment. A concomitant theme has been an emphasis on materialism and on overt behavioral patterns and their adaptive value. Moreover, this tradition is marked by pragmatism, equalitarianism, and an intrinsic conviction that the communality of humanity has precedence over the individual. Knowledge has been considered as a reflection within man of the "real" surrounding environment. A structural analysis might not yet be able to isolate "recurring diachronic elements" in this tradition as its intellectual individuality has only been established for a relatively short time. Nonetheless, the "diachronic elements - increasing in importance -" are much the

[2] The basis for this analysis is derived from Potter (1962), Higham (1970), Gardner (1973), and prior exposure to Tocqueville and Parrington.

same between the American and the European traditions in general: the interest in findings of modern science, the search for empirical data and confirmation, and, perhaps more emphatic than its European counterpart, the rejection of introspection. To the latter in the American version should be added a rejection of abstract philosophy.

In the realm of American anthropological theory a developmental consideration was the advent of historical particularism, a paradigm shared by American archaeology. The parameters of this paradigm were a constraint on theoretical forays into culture change, evolutionary projections and the formation of general propositions. These constraints were most visably rejected in the 1960's by the proponents of "New" archaeology.

A few cynical scholars have intimated that portions of the early rhetoric surrounding the "New" archaeology suggest that its tenets emerged Athena-like from the brain of Lewis Binford. And one must admit that there persists an aura of self-proclaimed uniqueness in vintage Binfordiana. Of course, countless undergraduate papers, preliminary examinations, and even Walter Taylor have borne testimony to the debt "New" archaeology owes to "old" archaeology and to still older anthropology. In a wider context it can also be seen as a reflection of what John Higham (1970: 19) terms that "puristic spirit" which had crested throughout the social sciences during the early post-war years. This movement excluded the normative and tended to expel the historical from any central focus. Partially due to demands for rigorous methodology, a method of inquiry was developed which was marked by concern for data collected under controlled conditions, amenable to statistical manipulation, and therefore, more orderly and precise than that afforded by the accumulative tactics of previous years. Of equal importance was the attempt to elevate theory construction and the concomitant mathematization of problems to a nomothetic level. If the predictive power of the "hard" sciences could not be equaled, it certainly could be approximated. A structuralist would claim that this spirit was predetermined given the elements of the American tradition.

With this general temper prevailing, the so-called Explanatory period of American archaeology was ushered in with a three-fold theoretical orientation of culture-ecology, evolutionary change, and

logico-deductive reasoning. One of the more influential and enduring aspects of this new trajectory was the explicit concern with a systemic view of culture.

Man relates to his environment and makes decisions on the basis of his rational capabilities and of his experience. A basic tool used on many levels of abstraction is analogy. To the social scientists analogy is one means of verification, a type of replication, through establishing relationships and identifying recurring patterns. As such, it has been a source of possible hypotheses for future testing. The mechanistic analogy resulted from the technological triumphs and success of the scientific revolution of the 17th and 18th Centuries when even the Almighty was pictured as the Great Watchmaker. With perspectives drawn from Darwin and the evolution of biological species the long-utilized organismic analogy became a more precise analytical tool. Among others, Spencer and Radcliffe-Brown made use of this particular device. General systems theory has presented a variant on both the mechanistic and organismic analogies, and because it primarily focuses on process, it has avoided some of the pitfalls which the prior methods incorporated. Systems analysis in considering and specifying units or populations and their functional relationships provides more heuristically valuable models whose explanatory powers can be more closely focuses on the complex phenomena of the social sciences.

Churchman states that systems are defined in a multitude of ways, but that all definers agree that "a system is a set of parts coordinated to accomplish a set of goals" (1968: 29). One of the most fundamental features is the possibility of describing a system in purely *structural* terms by systems analysis. A description of a system refers to relations between parts and among parameters. A system, then, can be thought of as a bundle of relationships; relationships which are variable. In this way Binford can state:

> In cultural systems, people, things, and places are subsystems, and the locus of culture process is in the dynamic articulations of these subsystems. This complex set of interrelationships is not explicable by reduction to a single component... (1972: 198).

It is interesting to note that in 1958, following the example of linguistics, Lévi-Strauss had defined anthropology as "a general theory of relationships. It will be possible to analyze societies in

terms of the differential features characteristic of the systems of relationships which define them" (Lévi-Strauss in Scholte 1969: 365).

Systems have been used as models since Plato and Thomas Aquinas, but interrelations between parts of systems (sub-systems) were not examined explicitly in the social sciences until the work of the classic functionalists. Where they failed was in not accounting properly for changes both in subsystems or in their interrelations. In systems analysis as developed by cyberneticians two of the more useful concepts have been the notion of homeostasis and negative feedback, the first cybernetic, and positive feedback and deviation amplification, the second cybernetic. The latter, supplies those processes which can account for growth and change (Maruyama 1963). In a systems analysis, under alternative assumptions, bodies of data can be manipulated, as in a diagraph, focusing on the links or network between parts. The resultant model can furnish information about postulated processes and alternatives. Archaeologists have found these concepts and models most useful in relating human action and adaptive behavior in an ecosystem model. A classic example is Flannery's projection of the origins of agriculture in Mesoamerica (1968). Here, systems analysis is utilized as a heuristic device in the simulation of human behavior in patterned responses to ecological determinants. Flannery has further stated that "the ultimate goal of systems analysis might well be the establishment of a series of rules by which the origins of some complex system could be simulated" (1972: 421).

One meaning of the word "kbernes" – the Greek word from which Wiener derived "cybernetic" – is "steersman." Consequently, the cybernetic network performs the steersman's function, control and communication. Cybernetics participates in systems analysis in a constructional role in that sector that deals with information, information processing and information processing systems. "In an ecosystem approach to the analysis of human societies, everything which transmits information is within the province of ecology" (Flannery 1972: 400).

In the recognition and use of the analytic capabilities of cybernetics, the archaeologist is traveling in the company of the structuralist... probably, on the other side of the road. For, true to his tradition, the archaeologist has seen information as instrumental

in behavioral adaptations to environmental factors in social and economic spheres. The structuralist sees information as being communicated in messages of biologically-determined universal mental constructs reflected in exchange of words, messages and economic goods. It is a matter of speculation as to who will cross the road first. Both incorporate a program of action, goals and meaning. Both recognize the importance of variability as integral in the structure of information links. Both see their enterprise as scientific and deterministic, or at least, probablistic, in efforts to establish general processes or laws of human behavior.

The archaeologist presently is exploring the limits of his niche. Fortunately, he participates in that human propensity to expand niches, and in a dialectical process, to absorb new methods and modes of inquiry in an effort to break through constraints imposed by limited data. So, he may well follow the example of the sociocultural anthropologists in examining the symbol and image of the structuralist. The success of such a meeting will only be possible, in the long run, when confined to testable reconstructions within specified boundaries. One such instance might be explored in an approach which synthesizes the analysis of elements of historicized myth (e.g. Dumeziel 1970) and linguistic reconstructions (e.g. Friedrich 1966 and Benveniste 1973) to produce a prototype to be tested by archaeological investigation. A different trajectory has been hypothesized by the structural Marxists (Friedman and Rowlands 1979). In the realm of historical archaeology, where a wealth of information can be derived from archival sources and written documents, efforts are being directed toward the development of a model drawn from mental constructs and behavioral evidence (Deetz 1977). The success or failure of these proposals will be measured by comparative studies in the prehistoric, the historic, and the ethnographic record.

It well may be that linguistic models hold the key, whether the communication be visual or verbal. As Klejn states, Deetz has attempted an operational approach in isolating the relations of functional forms of artifacts and artifactual assemblages by a method analogous to that of structural linguistics (Deetz 1967: 83-98). Deetz himself acknowledges problems in precise definitions of structural rules of a culture's artifacts. Artifactual categorization does not have

a one-to-one correspondence with linguistic categorization. Furthermore, the mixing of levels of meaning leads to confusion.

Another course is suggested by Flannery's allusion to "a series of rules" as a generative model, or in other words, a "grammar" in the Chomskian sense. That linguistic metaphor has been expanded by Gould (1980) in a search for universal principles of residue behavior and, more specifically in a grammar for lithic technology. Both Flannery and Gould have the good sense to specify that these models result in *simulations.* The danger lies at that point, as in some Lévi-Straussian projections, when simulations or hypotheses become dogma.

If ever the twain do meet, the archaeology fulfills Leach's prophecy, the exchange will have value for both sides. As Murphy has so cogently pointed out, the study of symbols or mental structures cannot be understood merely as a translation of their relationships to each other (1971: 205). For, although image and activity may not afford an exact fit, without activity, image is a sterile, formal construct.

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