Oysters, Smoked Salmon, and Stilton Cheese

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Lévi-Strauss is distinguished among the intellectuals of his own country as the leading exponent of "Structuralism," a word which has come to be used as if it denoted a whole new philosophy of life on the analogy of "Marxism" or "Existentialism." What is this "Structuralism" all about?

The general argument runs something like this. What we know about the external world we apprehend through our senses. The phenomena we perceive have the characteristics we attribute to them because of the way our senses operate and the way the human brain is designed to order and interpret the stimuli which are fed into it. One very important feature of this ordering process is that we cut up the continua of space and time with which we are surrounded into segments, so that we are pre-

disposed to think of the environment as consisting of vast numbers of separate things belonging to named classes, and to think of the passage of time as consisting of sequences of separate events. Correspondingly, when, as men, we construct artificial things (artifacts of all kinds), or devise ceremonials, or write histories of the past, we imitate our apprehension of nature: the products of our culture are segmented and ordered in the same way as we suppose the products of nature to be segmented and ordered.

Let me give a very simple example of what I mean. The color spectrum, which runs from violet, through blue, to green, to yellow, to red, is a continuum. There is no natural point at which green changes to yellow or yellow to red. Our mental recognition of color is a response to variations in the quality of the light input, notably to luminosity as between dark and light and to wave length as between long and short. Wave length gets shorter as we move from infrared to ultraviolet, while temperature, as measured on a thermometer, gets less; luminosity is zero at either end of this spectrum and reaches a maximum in the middle—that is, in the yellow.[1] It is a discrimination of the human brain which breaks up this continuum into segments so, that we feel that blue, green, yellow, red, etc., are quite "different" colors. This ordering mechanism of the brain is such

[1] Physicists must forgive the archaic account of the relation between color and thermal radiation. The practical description of color difference is highly technical but, as an example, the "reflectances" (luminosities) of the three standard artists colors Emerald Green, Chrome Yellow, and Cadmium Red, with wave lengths respectively 512, 581, and 600 millimicrons, are in the ratio 2:3:1: A thermometer placed in different parts of a spectrum derived from a white light source will register the greatest temperature rise in the infrared and the least in the ultraviolet.

that anyone who is not color blind can readily be taught to feel that green is the "opposite" of red in the same way that black is the opposite of white. In our own culture we have in fact been taught to make this discrimination, and because of this we find it appropriate to use red and green signals as if they corresponded to plus and minus. Actually we make a number of oppositions of this kind in which red is contrasted not only with green but also with other "colors," notably white, black, blue, and yellow. When we make paired oppositions of this kind, red is consistently given the same value; it is treated as a danger sign—hot taps, live electric wires, debit entries in account books, stop signs on roads and railways. This is a pattern which turns up in many other cultures besides our own and in these other cases there is often a quite explicit recognition that the "danger" of red derives from its "natural" association with blood.

Anyway, in our case, with traffic lights on both railways and roads, green means go and red means stop. For many situations this is sufficient. However, if we want to devise a further signal with an intermediate meaning—*about to stop / about to go*—we choose the color yellow. We do this because, in the spectrum, it lies midway between green and red.

In this example the ordering of the colors green-yellow-red is the same as the ordering of the instructions *go-caution-stop*; the color system and the signal system have the same "structure," the one is a transformation of the other.

But notice how we have arrived at this transformation:

a) The color spectrum exists in nature as a continuum.

b) The human brain interprets this continuum as if it consisted of discontinuous segments.
c) The human brain searches for an appropriate representation of a binary opposition plus/minus and selects green and red as a binary pair.
d) Having set up this polar opposition, the human brain is dissatisfied with the resulting discontinuity and searches for an intermediate position: not plus/not minus.
e) It then goes back to the original natural continuum and chooses yellow as the intermediate signal because the brain is able to perceive yellow as a discontinuous intermediate segment lying between green and red.
f) Thus the final cultural product—the three-color traffic signal—is a simplified imitation of a phenomenon of nature—the color spectrum—as apprehended by the human brain.

The essence of this whole argument may be exhibited in a diagram (Figure 1) which represents two superimposed triangles. The corners of the first triangle are the colors green, yellow, red, which are differentiated along two axes: (1) short wave length/long wave length and (2) low luminosity/high luminosity. The corners of the second triangle are three instructions concerning movement: *go*—continue in a state of movement; *caution*—prepare to change your state of movement; *stop*—continue in a state of non-movement. These messages are again differentiated along two axes: (1) movement/no movement and (2) change/no change. By superimposing one schema on the other the colors become signals for the underlying instructions: the natural structure of the color relations is the same as the logical structure relating the three instructions.

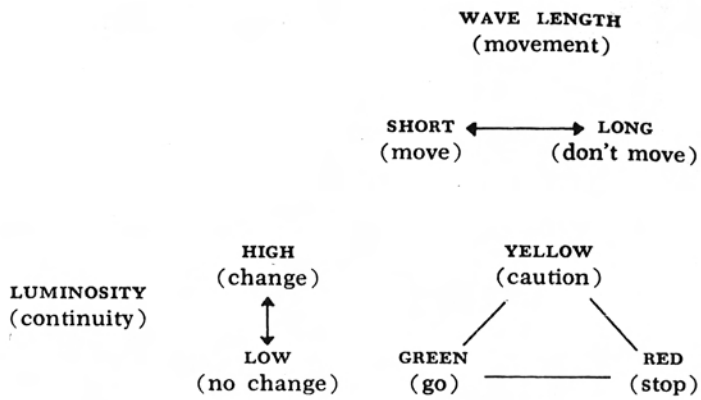


Figure 1. Traffic-Signal Color Triangle

This particular example has not, so far as I am aware, ever been used by Lévi-Strauss, but the structuralist thesis is that triangles of this kind, implying comparable transformations of models of nature as apprehended by human brains, have very general application, though in the general case the possibilities are more complicated.

In my example, the pattern was subject to two special constraints: first, it is a "fact of nature" that the sequence of colors in the spectrum is green-yellow-red and not yellow-green-red or green-red-yellow, and second, there is the further fact of nature, which certainly goes back to very early paleolithic times, that human beings have a tendency to make a direct association between *red* as a color and *blood* as a substance, so that, if any one of these three colors is to be selected to mean "stop-danger," it is much more likely to be *red* than either *yellow* or *green*. On this account the correlation between the members of the two triads are, in

this case, more or less predetermined. The equivalences $\left\{\begin{matrix}\text{red-yellow-green}\\ \text{STOP-CAUTION-GO}\end{matrix}\right\}$ are given and we do not need to pay attention to alternative possibilities offered by the rest of the matrix.

STOP	CAUTION	GO	
red	*yellow*	*green*	—actual sequence
red	green	yellow	
yellow	red	green	other
yellow	green	red	possible
green	yellow	red	sequences
green	red	yellow	

But in the general case, a structural analysis needs to start by setting out *all* the possible permutations and to proceed by examination of the empirical evidence on a comparative basis. Lévi-Strauss himself puts it this way:

> The method we adopt . . . consists of the following operations:—
> (i) define the phenomenon under study as a relation between two or more terms, real or supposed;
> (ii) construct a table of possible permutations between these terms:
> (iii) take this table as the general object of analysis which, at this level only, can yield necessary connections, the empirical phenomenon considered at the beginning being only one possible combination among others, the complete system of which must be constructed beforehand. (*Totemism* [English translation of *Le Totémisme aujourd'hui*], p. 16)

As I have explained for the traffic-signal case, the ultimate object of the exercise is to discover how relations which exist in nature (and are apprehended as such by human brains) are used to generate cultural products which incorporate these same relations. This point must not be misunderstood. Lévi-Strauss is not an idealist in the style of Bishop Berkeley; he is not arguing that Nature has no existence other than in its apprehension by human minds. Lévi-Strauss' Nature is a genuine reality "out there"; it is governed by natural laws which are accessible, at least in part, to human scientific investigation, but our capacity to apprehend the nature of Nature is severely restricted by the nature of the apparatus through which we do the apprehending. Lévi-Strauss' thesis is that by noticing *how* we apprehend nature, by observing the qualities of the classifications which we use and the way we manipulate the resulting categories, we shall be able to infer crucial facts about the mechanism of thinking.

After all, since human brains are themselves natural objects and since they are substantially the same throughout the species *Homo sapiens*, we must suppose that when cultural products are generated in the way I have described the process must impart to them certain universal (natural) characteristics of the brain itself Thus, in investigating the elementary structures of cultural phenomena, we are also making discoveries about the nature of man—facts which are true of you and me as well as of the naked savages of Central Brazil. Lévi-Strauss puts it this way: "Anthropology affords me an intellectual satisfaction: it rejoins at one extreme the history of the world and at the other the history of myself, and it unveils the shared motivation of one and the other at the same moment." (*Tristes Tropiques*, p. 62)

It is important to understand just what is being proposed. In a superficial sense the products of culture are

enormously varied, and when an anthropologist sets out to compare, let us say, the culture of the Australian Aborigines with that of the Eskimos or that of the English he is first of all impressed by the differences. Yet since all cultures are the product of human brains, there must be, somewhere beneath the surface, features that are common to all.

This, in itself, is no new idea. A much older generation of anthropologists, notably Adolf Bastian (1826–1905) in Germany and Frazer in England held that because all men belong to one species there must be psychological universals (*Elementargedanken*) which should manifest themselves in the occurrence of similar customs among peoples "who had reached the same stage of evolutionary development" all over the world. Frazer and his contemporaries assiduously compiled immense catalogues of "similar" customs which were designed to exhibit this evolutionary principle. This is *not* what the structuralists are up to. The recurrence of a detail of custom in two different parts of the map is not a matter to which Lévi-Strauss attaches any particular importance. In his view, the universals of human culture exist only at the level of structure, never at the level of manifest fact. We may usefully compare the patterning of the relations which links together sets of human behaviors, but we shall *not* learn anything if we simply compare single cultural items as isolates. In the traffic-signal case, it is the contrast between the colors and the switching from one color to another that provides the information; each color has relevance only in relation to the others.

These very general ideas are a development of arguments originally developed by the Prague school of structural linguists but particularly by Roman Jakobson

(1896–), who has resided in the United States since 1942 and who was an academic colleague of Lévi-Strauss at the New School for Social Research in New York at the end of World War II. The influence on Lévi-Strauss of Jakobson's style of phonemic analysis, which derives in turn from much earlier work of Saussure, has been very marked. Lévi-Strauss repeatedly makes an assumption that other modes of cultural expression, such as kinship systems and folk taxonomies, are organized like human language. This culture/language analogy has been developed out of Jakobson's distinctive feature theory, but Lévi-Strauss has not exploited the additional insights which might have been derived from Chomsky's thinking about generative grammars. Incidentally, Chomsky himself has expressly declared that Lévi-Strauss' use of linguistic analogies is unjustified, though he agrees that Jakobson's argument must constitute a basic part of any general linguistic theory, including his own.[2, 3]

It is interesting to see how Lévi-Strauss sets about deriving his cultural generalizations from his linguistic

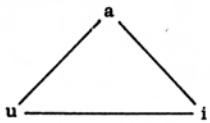
[2] See Noam Chomsky, *Current Issues in Linguistic Theory* (The Hague, 1964), p. 67.

[3] In the view of many professional linguists the publication of Noam Chomsky's *Syntactic Structures* (1957) had a significance for linguistics comparable to that of Einstein's early papers on relativity theory for physics, and it has sometimes been argued, to Lévi-Strauss' discredit, that in relying on a Jakobson-style linguistics, he is following a model that is no longer viable. Two points need to be made on the other side. First, even if Chomsky's work is an advance on that of Jakobson, it does not invalidate the genuine merits of the latter; second, the characteristics of Chomsky's linguistics, which are subsumed under the titles generative and transformational grammars, have many points in common with the generative and transformational rules for myth analysis which Lévi-Strauss developed on

base. His discussion of the "culinary triangle" provides a case in point. This is one of the major themes which persist throughout the four published volumes of *Mythologiques*, but it has also been the subject of an independent article, which I will summarize here.[4]

Lévi-Strauss begins with a brief reference to Jakobson's thesis in the following terms:

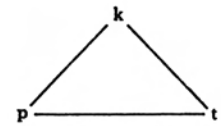
> In all the languages of the world the complex systems of oppositions between the phonemes are no more than a multidirectional elaboration of a more simple system which is common to all, namely the contrast between consonant and vowel, which through the working of a double opposition between compact and diffuse, acute and grave, generates on the one hand what we may call the "vocalic triangle":



and on the other the "consonant triangle":

his own quite independently. But on the other side again, "The idea of a mathematical investigation of language structures, to which Lévi-Strauss occasionally alludes, becomes meaningful only when one considers rules with infinite generative capacity." (Chomsky, p. 66) Lévi-Strauss has been concerned to demonstrate only that varieties of cultural forms, as they are actually recorded, are transformations of one another. Chomsky has tackled the more fundamental problem of seeking to formulate grammatical rules that will discriminate between transformations which make acceptable sense and those which do not. Why can we say: "The cat sat on the mat," but not "The mat sat on the cat"?

[4] Claude Lévi-Strauss, "Le Triangle culinaire," *L'Arc* (Aix-en-Provence), No. 26 (1965), pp. 19–29. English version in *New Society* (London), December 22, 1966, pp. 937–40.



Most readers are likely to find such a pronouncement somewhat baffling, so I will give a rather more extended version of the original doctrine.

Jakobson claims that young children gain control of the basic vowels and consonants so as to generate meaningful noise patterns in a standardized sequence.[5] The child first develops the basic vowel/consonant opposition by discriminating a contrast in loudness:

Vowel (V)	/	Consonant (C)
(high-energy noise)		(low-energy noise)
(loud-compact)		(soft-diffuse)

The undifferentiated consonant (C) is then split by discriminating pitch—a low-frequency (grave) component ("p") and a high-frequency (acute) component ("t"). The high-energy (compact) velar stop consonant ("k") then complements the undifferentiated high-energy (compact) vowel ("a") while the low-energy (diffuse) consonants ("p," "t") are complemented by corresponding low-energy (diffuse) vowels ("u"-grave, "i"-acute).

The whole argument may be represented by a double triangle of consonants and vowels (Figure 2) discriminated as compact/diffuse, and grave/acute.

But let me go back to the "culinary triangle." After his initial brief reference to the linguistic prototype,

[5] See R. Jakobson and M. Halle, *Fundamentals of Language* (New York, 1956), pp. 38 *ff.*

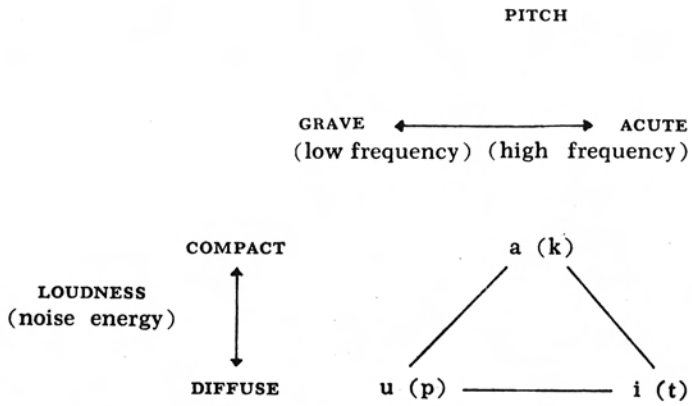


Figure 2. Jakobson's Primary Vowel-Consonant Triangle

Lévi-Strauss observes that just as there is no human society which lacks a spoken language so also there is no human society which does not, in one way or another, process some of its food supply by cooking. But cooked food may be thought of as fresh raw food which has been transformed (*élaboré*) by cultural means, whereas rotten food is fresh raw food which has been transformed by natural means. Thus, just as Jakobson's vowel-consonant triangles represent the binary oppositions compact/diffuse and grave/acute which have become internalized into the child's computer-like mental processes, so also we can construct a culinary triangle to represent the binary oppositions normal/transformed and culture/nature, which are (by implication) internalized into the *eidos* of human culture everywhere.[6]

[6] For this use of the term *eidos* see Gregory Bateson, *Naven* (New York, 1936), p. 220. In Bateson's language *eidos* refers to "a standardization of the cognitive aspects of the personality of individuals."

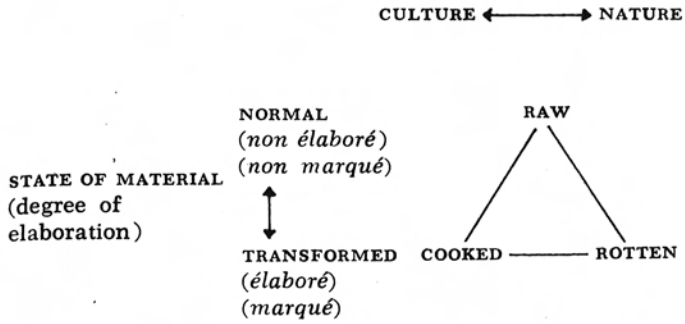


Figure 3. The Culinary Triangle (Primary Form)

It is not a necessary part of Lévi-Strauss' argument that raw (unprocessed) food must lie midway between the natural and the cultural, though it is, of course, a fact that most unprocessed human foodstuffs fall into the category "domesticated plants and animals," i.e., they *are* both cultural and natural.

Finally Lévi-Strauss completes his exercise in intellectual gymnastics by claiming that the principal modes of cooking form another structured set which is the converse of the first:

(a) *Roasting* is a process in which the meat is brought into direct contact with the agent of conversion (fire) without the mediation of any cultural apparatus or of air or of water; the process is only partial—roast meat is only partly cooked.

(b) *Boiling* is a process which reduces the raw food to a decomposed state similar to natural rotting, but it requires the mediation of both water and a receptable—an object of culture.

(c) *Smoking* is a process of slow but complete cooking; it is accomplished without the mediation of any cultural apparatus, but with the mediation of air.

Thus, as to means, roasting and smoking are natural processes whereas boiling is a cultural process, but, as to end-products, smoked food belongs to culture but roast and boiled food to nature.

Lévi-Strauss summarizes his whole argument in the diagram shown in Figure 4.

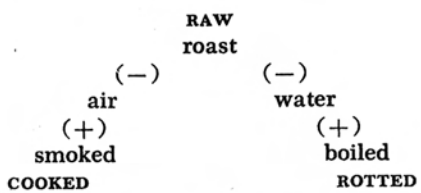


Figure 4. The Culinary Triangle (Developed Form)

In his original article, "Le Triangle culinaire," Lévi-Strauss qualifies the generality of this schema by noting that our own system, which distinguishes *grilling* from *roasting*, and *steaming* from *boiling*, and adds a category *frying* (which is a form of boiling in which oil is substituted for water), requires a much more complicated model—and at this point some English-speaking readers might begin to suspect that the whole argument was an elaborate academic joke. But exactly the same diagram (Figure 4) appears on page 406 of *Mythologiques III* (1968) accompanied by the same text, so we must try to take the matter seriously. This is rather difficult. Lévi-Strauss has not adhered to his own rules of procedure as specified above (page 20), and the

whole operation suggests a game of acrostics in which appropriate words have been slipped into the vacant slots of a prearranged verbal matrix. Elsewhere Lévi-Strauss has claimed that "behind all sense there is a non-sense"[7] but perhaps the best that one could claim for this fandangle is that behind the nonsense there is a sense, even if it is not the sense of ordinary conversation.

What Lévi-Strauss is getting at is this. *Animals* just eat food, and food is anything which is available which their instincts place in the category "edible." But *human beings*, once they have been weaned from the mother's breast, have no such instincts. It is the conventions of society which decree what is food and what is not food and what kinds of food shall be eaten on what occasions. And since the occasions are social occasions there must be some kind of patterned homology between relationships between kinds of food on the one hand and relationships between social occasions on the other.

Moreover, when we look into the facts, the categories which are treated as significant *kinds* of food become interesting in themselves. The diet of any particular human population is dependent upon the availability of resources and, at the level of actual items of foodstuff (bread, meat, cheese and so on), there is very little overlap between the shopping list of an English housewife and the inventory of comestibles available to an Amazonian Indian. But the English housewife and the Amazonian Indian alike break up the unitary category "food" into a number of subcategories, "food A," "food B," "food C," etc., each of which is treated in a different way. But, at *this* level, the categories A, B,

[7] Claude Lévi-Strauss, "Réponses à quelques questions," *Esprit* (Paris), November 1963, pp. 628–53.

C, etc., turn out to be remarkably alike everywhere. They are, in fact, categories of the kind which appear in Figure 4, and the significant thing about such categories is that they are accorded very different levels of social prestige. I do not mean only that the different components of the feast can always be fitted into our prearranged slots—oysters (raw), smoked salmon (smoked), lobster soup (boiled), saddle of mutton (roast), soufflé (cooked), Stilton cheese (rotted)—but rather that foods of these different general classes bear a standardized relationship to each other. For example, according to our conventions, whenever the menu includes a dish of roast meat it will be accorded pride of place in the middle; steamed and boiled foods, on the other hand, are considered especially suitable for invalids and children. Why should this be? Why should we tend to think of boiled fowl as a homely dish but of roast chicken as a party dish?

All sorts of rationalizations can be devised to fit any particular case—for example that boiling fowls are cheaper than roasters, or that boiled food is "more digestible" (what is the evidence for this?), but all such explanations begin to look rather thin once it is realized that other peoples, with very different cultures from our own, sort out their foodstuffs in very similar ways and apply status distinctions of comparable sort. Some foods are appropriate only to men, others only to women; some foods are forbidden to children; some can only be eaten on ceremonial occasions. The resulting pattern is not always the same, but it is certainly very far from random: Lévi-Strauss has even claimed that the high status which attaches to roasting as against boiling is a *universal* cultural characteristic, so that boiled food is highly regarded only in relatively democratic types of society. "Boiling provides a means of complete conservation of the meat and its juices, whereas roasting is accompanied by destruction and loss. Thus one denotes economy; the other prodigality; the latter is aristocratic, the former plebeian." ("Le Triangle culinaire," p. 23)

An odd line of thought, certainly, yet if we accept Lévi-Strauss' unexpected frame of reference, such comments are not nearly so arbitrary as they may appear. In that we are men, we are all a part of nature; in that we are human beings, we are all a part of culture. Our survival as men depends on our ingestion of food (which is a part of nature); our survival as human beings depends upon our use of social categories which are derived from cultural classifications imposed on elements of nature. The social use of categories of food is thus homologous with the social use of categories of color in the traffic-signal case (page 19). But food is an especially appropriate "mediator" because, when we eat, we do establish, in a literal sense, a direct identity between ourselves (culture) and our food (nature). Cooking is thus universally a means by which nature is transformed into culture, and categories of cooking are always peculiarly appropriate for use as symbols of social differentiation.

In another context, in which Lévi-Strauss is concerned to debunk the anthropological mystique that has clustered around the concept of totemism, he has criticized the functionalist thesis that totemic species are given social value because they are of economic value. On the contrary, says Lévi-Strauss, it is the species themselves considered simply as categories that are socially valuable: totemic species are "goods to think with" (*bonnes à penser*) rather than "goods to eat" (*bonnes à manger*) The culinary triangle is the other side of the same argument. Foodstuffs, as such, are of course "goods to eat"; but this alone does not explain the complications which

we inject into the classification of food; food *species*, like totemic *species*, are "goods to think with."[8] (Cf. pages 40–42.)

This is an unfamiliar style of discourse, and it has to be admitted that here, as elsewhere in Lévi-Strauss' writings, there is an element of verbal sleight of hand which invites caution rather than enthusiasm. All the same, the reader should not imagine that the "culinary triangle" is just an elegant *jeu d'esprit* by a master of the unexpected analogy. Lévi-Strauss has by now marshaled a great deal of evidence to show that the processes of food preparation and the categories of food with which they are associated are everywhere elaborately structured and that there are universal principles underlying these structures. Moreover, the method of analysis, however bizarre it may appear, has wide application. The culinary triangle first appeared in print only in 1965, but triangles of comparable type occur in many earlier parts of the Lévi-Straussian corpus.

In the 1945 paper which is the foundation work for all his subsequent structural anthropology. "L'Analyse structurale en linguistique et en anthropologie,"[9] the corners of the triangle are MUTUALITY, RIGHTS, OBLIGATIONS, while the binary oppositions appear to be exchange/no exchange and receivers/givers. In *Les*

[8] Several critics have rebuked me for mistranslation, but in fact I cite Lévi-Strauss' own words to avoid this imputation. Literally, *bonnes à penser* means "good to think," *bonnes à manger* "good to eat." But "good to think" is not English, and the adjectival plural of the French is untranslatable. It seems to me that here, as so often, Lévi-Strauss is playing a verbal game. Totemic species are categories of things, and it does in fact convey the meaning better to refer to them as "goods" than my critics would allow.

[9] An English translation of this paper appears as Chapter 2 of *Structural Anthropology* (New York, 1963), the English version of *Anthropologie structurale* (Paris, 1958).

Structures élémentaires de la parenté (1949), the triangle becomes BILATERAL MARRIAGE, PATRILATERAL CROSS-COUSIN MARRIAGE, MATRILATERAL CROSS-COUSIN MARRIAGE, and the oppositions are symmetry/asymmetry, alternation/repetition. "La Geste d'Asdiwal" (1960) includes a highly complicated triangle which combines geographical and food category parameters in such a way that vegetable food is opposed to animal food, sea to land, East to West, and definition to lack of definition.[10] This is not just a game. Lévi-Strauss is endeavoring to establish the rudiments of a semantic algebra. If cultural behavior is capable of conveying information then the code in which cultural messages are expressed must have an algebraic structure. It is possible that Lévi-Strauss is making larger claims for the importance of this algebra than is justified by the evidence, but there is more to it than a trickster's game of tic-tac-toe. Let us go back to the beginning.

[10] An English translation, "The Story of Asdiwal," may be found in E. R. Leach, ed., *The Structural Study of Myth and Totemism* (London, 1967), pp. 1–48.