The Analysis of Culture Content and the Patterning of Narrative Concern in Texts

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INTRODUCTION

DEVELOPMENTS in the use of computers for studying linguistic materials have opened a new field in anthropology. Frequency counts of word-forms have led to the discovery of patterns in narrative and to the preliminary formulation of a theory of cognitive templates. These templates function in the telling of folk tales, myths, and possibly other narratives.

The work reported here is based on the premise that all natural languages are similar in three respects: (1) they have similar kernel structures (Nida 1964:68); (2) there is a parallelism between formal classes and basic function classes in transforms: objects, events, abstracts, and relationals (Nida 1964:68); and (3) they have a large number of similar semantic fields such as kinship, color, form, and number (though with widely differing structures within these fields).²

The first two respects in which languages are similar are in accord with Chomsky’s hypothesis of an innate language-learning mechanism containing linguistic universals and a simplicity principle. Such a mechanism makes it possible for children to acquire a natural language if they live in the communication network which utilizes the language (Chomsky 1959). Insofar as the hypothesis would account for certain universals of content as well as structure it would accord with the third premise. Otherwise the third premise rests on conventional anthropological theory which recognizes the universality of kinship and other semantic fields.

Semantic Theory

A semantic theory can take one of two basic approaches: (1) use of the word-forms as the basic units or (2) use of areas of meaning as basic units. The semantic theories usually proposed by linguists and philosophers take the word-form as their basic unit and point of departure. For example, in the theory advanced by Katz and Fodor (1963) the variety of different meanings of varying relation and continuity usually denoted by a given word-form is presented in a dictionary which is used in conjunction with a series of projection rules. However, the organization of the dictionary around word-forms limits its usefulness in anthropology. An alternative approach is to take the semantic field as the basic unit and work toward the description of the field’s structure and the sense typically held by its representative word-forms through interviewing techniques or distributional studies. In such an approach word-forms are treated only as an imprecise notation made precise by field structure, collocation, or wider context. The same word-forms would very often be used
in more than one field and the problems of metaphor mentioned by Lounsbury (1956, 1964) are eliminated.

The construction of such a field dictionary is visualized as a combination of computer techniques and informant interviewing. Operational procedures for the construction of a field dictionary including criteria for field membership are now under development and will be described in later papers. Here I shall report on some preliminary studies with simulated conceptual areas. The word simulated is used to indicate that these conceptual areas are not culturally based. They are represented by word-forms I have grouped on the basis of comparative studies of folk literature and on prior groupings in earlier computer studies. Though it has taken a number of years to develop them to their present usefulness in cross-cultural studies they are without formal distributional analysis or informant validation, either or both of which would be needed to derive culturally-based conceptual areas for a single (in this case, English-speaking) culture.

These simulated conceptual areas will be hereafter referred to simply as word-groups. A dictionary of these word-groups was used to study themes in Navajo and Zuni thematic apperception tests and a revised dictionary has led to the discovery of significant narrative patterns in translations of Japanese and Eskimo folk tales.

Problems of Translation

There are many reservations to be made about anthropological studies of translated materials. Two considerations of importance here are: (1) the differential loss of information for denotative as opposed to emotive meaning; and (2) the importance of preserving the sense (in Vygotsky’s usage, 1962:46) and avoiding the distortions of overly strict literal translations.

The construction of emotive fields and the translation of emotive meaning is problematic because of the private nature of emotive meaning and the usual link of emotive meaning with specific experiences. Sometimes the experience is remembered almost as an image, other times, as in the memories evoked by smell, a previous emotional state is recalled. Very often the same sort of associations occur with word-forms themselves. The emotionality caused by capitalism, communism, and freedom in many Americans suggests that in these cases emotive meaning is tied to the word-form in a way that denotative meaning is not. The different emotional responses a Christian may have to the King James translation and to a freer modern translation of the Bible is due to the same process. As in translation, such changes in word usage involve a greater loss of emotive meaning than of denotative meaning. Similar emotional experiences tend to be culturally bound more than similar experiences of a more purely cognitive nature. Both types of similarity, however, are obscured when the experiences are cast into the transformations of the respective grammars of the cultures being compared.

Whorf’s chief error, in an otherwise laudable endeavor, was his literal translation. He mapped English terms onto alien phrases in a one-to-one rela-
tionship, resulting in semantically strained or absurd English sentences which supposedly demonstrated the alien nature of thought in the other language. Vygotsky's treatment of the relation between thought and language does not make this error; and the Paulhan-Vygotsky use of sense to indicate the full understanding of words in context (Vygotsky 1962:146) is helpful in making the important distinction between literal and free translations. A literal English translation which respects neither English syntactics nor explains implicit meanings of the original text is less accurate (in the sense of quantity of semantic information conveyed) than a good English translation which is grammatically correct and intent on getting as much of the meaning across as possible, including that which may derive from non-linguistic context. It is often the case that poor anthropological work is reflected in supposedly precise literal translations simply because the anthropologist never fully understood the sense.

Malinowski demonstrated the inadequacies of literal translation in the sentence "We run front-wood ourselves," a metaphorical description of a competitive episode in an overseas trading expedition (1923). "Front-wood" literally translates a special term used in boasting to indicate the lead canoe in a race. While, as Quine demonstrates (1960), no translation can ever capture the original meaning (we never completely understand each other even in our own language, Nida 1964:53), the purpose of a translation is to communicate as much information as possible, not obscure it. There are enough universal conditions of human experience to make a certain degree of understanding possible. If this were not so, ethnography itself would be impossible, for most ethnographies are, in effect, translations.

The amount of information communicated in good translations has apparently been sufficient to allow the emergence of statistically significant results in the work with simulated conceptual areas and translated texts described here. To invoke translation obstacles as criticism of the results would seem valid primarily for two types of argument: (1) that accounts for the statistical significance or (2) that the results indicate characteristics of the translator rather than the original author. Because of the heterogeneity of the patterns found, the first possibility is unlikely. Information theory and the results of a study by Mosteller and Wallace (1964) suggest that the second possibility is unlikely also.

Translation is essentially the communication of information in varying amounts by different word-forms in different contexts. The shortest, most frequent word-forms carry the least amount of information. The longest, least frequent word-forms carry the most. The information carried by the shorter word-forms in English are grammatical in nature and vary from one speaker to the next. One translator may use the passive voice more than another. One may prefer verbs, another prepositions. In translation these are all stylistic variations derived from kernel structures containing essentially the same kind and quantity of information.

The longer, less frequent words, have less of a function grammatical. Their chief function is the carrying of non-syntactic information, and here the link
between the original language and the translated language is more direct. When Mosteller and Wallace (1964) attempted to distinguish the papers written by Hamilton from those written by Madison, they could not do so on the basis of low frequency, high information words. They called these "contextual" words because their usage depended so much on the context or topic of the material. They could differentiate the two authors only by the smaller high frequency words. The studies described here have a different goal—to describe topics and contexts on the assumption that these topics and contexts will be culturally revealing.

THE TAT STUDY

Navajo and Zuni thematic apperception tests collected by Kaplan (1957) were used for a preliminary study to explore the various ways one can work with word-groups. This analysis was made prior to the discovery of patterns in the Japanese and Eskimo folk tales discussed in the next section.

Thematic apperception tests, hereafter called TAT's, are a series of drawings and photographs depicting persons engaged in various activities and social relationships. The TAT pictures are shown to a respondent who makes up stories about them. These stories presumably reveal aspects of the respondent's personality and culture. Because the Navajo and Zuni have been so well described, they were chosen to more easily validate the procedure.

The anthropologist who is interested in psychology seeks a kind of "cultural" personality—be it modal personality, national character, a cluster of personality types, or something else. If he works with the traditional categories of personality assessment he is bound to find great variability between individuals of the same culture simply because personality assessment has to do with individuals rather than culture. If one is interested in cultural characteristics (which, by conventional definition, are widely "shared" or shared by significant groups in some fashion) high variation between individuals indicates that one's categories are not measuring cultural characteristics. In the past many anthropological studies of projective tests have used categories developed for the study of personality rather than culture, and the high variance found in such studies should not be surprising.

What one means by cultural characteristics must be specified. Here I shall speak of four definitions of culture, each with language as the primitive, or anchoring, criterion. The distinguishing features are whether culture is or is not a construct of the ethnographer and whether it is widely or narrowly shared.3

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<tr>
<th>Artificial construct of the anthropologist</th>
<th>True characteristics of the people being discussed</th>
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<tbody>
<tr>
<td>Shared by a speech community</td>
<td>culture⁴</td>
</tr>
<tr>
<td>Shared by a group within a speech community</td>
<td>culture⁵</td>
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Because projective tests provide only a small fragment of imperfect data about culture\(a\) it will be difficult to tell whether regularities found in them are manifestations of culture\(a\), culture\(b\), chance similarities in personality, systematic biases or errors, or other factors. When one speaks of culture\(a\) or culture\(b\) he is, of course, making only rough (though hopefully objective and reproducible) approximations to culture\(a\) and culture\(b\).

The analyses that can be used to arrive at these approximations with computers include studies of textual concern and economic behavior; textual concern and cultural dispositions; word-group segmentation; contrastive opposition to a single stimulus; narrative patterns in a single theme; word-group combinations for test indices and interpretive clarification.

A relation between textual concern and economic behavior was found with a word-group encompassing meteorological interest. In the TAT stories of the Zuni there is more concern with forms of moisture than in the Navajo stories. The word-forms snow, snowing, rain, raining, rainy and clouds totaled .039 per hundred words for the Navajo and .135 per hundred words for the Zuni. Not as an indication of significance but only as a guide (because moisture concern was separated from the meteorological word-group after the data was examined) a \(T\) test would put this at better than the .05 level of significance. The Zuni were also more skyward oriented than the Navajo with the word-forms sun, sky, moon, moonlight and star totalling .026 for the Navajo and .092 for the Zuni. Again this would be significant at the .05 level with the \(T\) test had the grouping of these words been done prior to an examination of the data.

The Zuni were less concerned with exposure to the elements. The Navajo have a slightly higher frequency in this regard with the word-forms: snow-storms, stormy, storm, storming, cold, freezes, freezing, cooled, hot, heat, warm, wind, windy, sunshine, and earthquake with a total frequency of .085 for the Navajo and .058 for the Zuni (not significant at the .05 level).

The Navajo are sheep herders who need to protect their animals from bad weather and find good ground forage for them. The Zuni are crop growers. During the summer they look to the skies for rain to mature their corn and during the winter they need snow for early spring moisture to germinate their corn. The respective meteorological concerns of the Zuni and Navajo (who are neighboring people) directly relates to their traditional means of livelihood. Thus by a purely statistical count of the frequency with which meteorological terms appear in TAT's we have an idea of their relative importance.

Computer analysis of content can be used to test subjective statements about dominant themes or dispositions. A number of anthropologists who have studied Navajo life have commented upon the Navajo theme of travel and movement (Astrov 1950; Hoijer 1951; Kluckhohn 1949; Landar 1959; and Spencer 1957). In everyday conversation, myth, and ritual, Navajos describe the circumstances of travel in great detail. There is evidently a mental set that predisposes the Navajo to think in terms of travel. This was tested with a TRAVEL word group composed of the following word-forms: bridge, crawl, creep, crossroad, departure, embark, expedition, highway, horseback, journey,
road, roadside, sail, street, stroll, lane, march, path, travel, traveler, vagabond, voyage, walk, wander, wayside.

The mean scores per hundred words of Navajos and Zunis for the TRAVEL group were .273 and .175 respectively. The difference is statistically significant at the .05 level, using a T test. Retrievals were then made of sentences that contained each word-form of the word-group. The words walk -s, -ed, -ing, wander -s, -ed, -ing, travel -s, -ed, -ing, sail, horseback, and creep were, with one exception, used to indicate actual travel. These words appear more frequently in the Navajo (.170) than the Zuni (.065) protocols. Other entry words, however, were higher in frequency for the Zuni stories. The words, street, road, and bridge, for example, appeared more often for the Zuni. A study of these sentences showed that the Navajo used word forms in the TRAVEL group to indicate the idea of travel, the Zuni used word forms in the TRAVEL groups for orientation and setting, suggesting the existence of two different conceptual areas that are culturally distinctive. Similarly the PLACE word-group was broken down into areas and orientation on the one hand and places associated with means of travel on the other. As would be expected, the Navajo were high in the travel subdivision and the Zuni high in the areas and orientation subdivision. Thus distinctions in conceptual emphasis cross-cut the fixed word-groups. If the same distinction is noted within several word-groups, the distinction gains in validity as a cultural distinction. In such a case the original word-groups can be recomposed in culture-specific studies.

The notion of contrastive opposition developed by Saussure in linguistics can be applied to broad conceptual dispositions as well. For example, the Navajo response to one of the Murray TAT pictures which shows a group of men resting or sleeping is to speak of travel (12 out of 15 Navajos mention it)—usually by stating that the men are resting in the middle of a journey. In contrast the Zuni think of the men in the picture as either resting from work or as lazy or out of work (only one of the 12 Zunis mentioned travel).

While the Navajo idea of rest is a conceptual opposite of travel in one direction, home is its opposite in another. The Navajo think of home more as an end state or goal after a period of travel. This conception appeared in Navajo stories more than twice as often as in Zuni stories. Further, home appears more frequently at the conclusion of Navajo stories than in Zuni stories. This is shown in the graphs of figure 1.

When a Navajo arrives home it is usually the end of the story; there is nothing more to tell. But for the Zunis something may be going on in the home that is important in the respondent’s story. This finding resulted from a manual count of the word “home” in each of five sections of the story. The procedure was not automated until the study of Eskimo and Japanese folk tales reported in the next section.

A study of the TAT sentences containing home gave the general impression that the Navajo regard their homes as havens, as places of relaxation. The Zuni gave less indication of such an attitude and more often showed the home as a place of discord and tension. This was an intuitive interpretation of the
sentences containing home. There was a way that this interpretation could be more objectively tested. A series of word-groups defined before the Navajo and Zuni material had been examined were selected as measures of relaxation and tension. The theme of relaxation was composed of word-groups with the following titles: ASSIST, COMFORT, EASY, AFFECTION, HAPPY, and PLAY. The tension measure was composed of DESTRUCTION, DISCOMFORT, DIFFICULT, DISLIKE, SAD, BATTLE, and ANGER. The computer was asked to retrieve all sentences containing the conjunction of the wordform "home" with the indices of tension or relaxation. The results were statistically significant only at the .10 level:

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<tr>
<th></th>
<th>Navajo</th>
<th>Zuni</th>
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<tbody>
<tr>
<td>Tension and home</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Relaxation and home</td>
<td>13</td>
<td>6</td>
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The number of sentences containing both elements in conjunction is so small that a much larger sample would seem necessary for testing with rough indices of this sort. Nevertheless, the possibilities in this approach look promising.

This is not to suggest that the results, even if significant, would reflect actual Navajo or Zuni life. What we have is an objective measure of two modes as they appear in texts. Thus in one sphere of Zuni culture we have a way of measuring content that, with better construct validity and larger samples, can
illuminate a limited aspect of a longstanding dispute in which pueblo culture is characterized as gentle, nonaggressive, cooperative, modest, and tranquil by some writers and as hostile, suspicious, ambitious and tense by others (Bennett 1946). The technique is simply a componential clustering of several cross-cultural categories to approximate a concept of importance. Here a type of objectivity has entered an area previously considered as vague, subjective, and not reducible to operational testing.

THE FOLK TALE STUDY

Unless one is examining a specific and carefully delimited aspect of cultural behavior or using theoretically defined cross-cultural variables as in the above indices, the use of artificially produced TAT’s may be less productive than natural texts such as folk tales. A folk tale is a complex cultural production. It may function as a catharsis, provide a world view, describe sanctions and prohibited behavior, liberate one from the immediacy of his own situation, or describe various types of useful behaviors and strategies. Even a single motif in a folk tale may be complex. It may mean different things to different individuals or many things to a single individual. To understand the psychology of folk tales in a culture would require data which is costly to collect on the scale needed: comparisons of different renditions of a tale as it passes from one individual to the next; comparisons of the different occasions on which the folk tale is told; studies of attitude and emotional states of listeners and tellers; interviews with listeners on associations for images; studies of recall; and many others. But while the collection of extra-linguistic contextual data is formidable in terms of the detail needed to answer many of the questions we are now asking about folk tales and their functions, there are many other questions which do not require this vast amount of extra data. In particular, the computer analysis of folk tales has opened up exciting vistas for future research on the conceptual structuring of folk tales.

The assumption of regularities, patterns, or structures of some sort in folk tales and myths, as with many other aspects of culture has long been a part of anthropology. Two investigators, Propp (1958) and Levi-Strauss (1958) have contributed interesting procedures for examining patterns in folk tales and myths. Their techniques, however, are reproducible only to a limited degree. If one wishes to derive structures that are part of the culture rather than of the investigator’s own analytical scheme one must either subject the results in some way to native affirmations or find a method in which the patterns are objectively determined. The work described here is in the direction of the second alternatives.

By using a revised set of word-groups (Colby, n.d.) and by dividing a collection of Eskimo folk tales (Spencer 1959) and Japanese folk tales (Seki 1963) into sections, an unexpected number of statistically significant patterns emerged. Each tale was divided into nine equal parts. These were then grouped into nine sections. All the first parts of the folk tales were put into section one, the second parts in section two, and so on up to section nine. The word-group
frequencies of these sections were then graphed and tested for statistical significance. Out of 195 independent word-groups counted for the Eskimo material, 45 or 23 percent were statistically significant at the .01 level using a chi-square test for "flatness." For the Japanese material, 23 percent were also statistically significant at this level.

Working on the assumption that those areas of a culture which are most patterned are important (which is not the same as saying that those areas most important in a culture are most patterned—problems of flexibility, change, cultural lag, creativity and variety would all figure here), I have made a preliminary examination of some of these. In another publication (Colby 1966b) the ten most significant Japanese and Eskimo patterns are compared and discussed briefly. Here I shall indicate how a few of the Eskimo patterns coincide at about the same point in the plot development shortly before the middle of most of the longer Eskimo stories. This was first noticed on examining an activity word-group called "work" (Pattern E1, figure 2). A study of the three subdivisions of this word-group revealed that two of them ("hunting, fishing, and gathering," pattern E2, figure 2; and "chores, routine activities, and the manufacture of objects," pattern E3, figure 2) had similar patterns. The third ("agriculture and herding") was represented by only one word used outside the conceptual area of interest. The two significant subdivisions were high at the beginning of the stories and low in section four.

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1-----------------------------61
2-----------------------------44
3-----------------------------25
4--8
5-----------------------------20 E1
6-------------17
7-----------------------------22
8--12
9--16
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1-----------------------------41
2-----------------------------30
3-----------------------------15
4--3
5--9 E2
6--5
7--8
8--3
9--4
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1-----------------------------12
2-----------------------------9
3-----------------------------9
4--1
5--6 E3
6--4
7--5
8--4
9--4
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Hunting, fishing and gathering   Chores, routine work and the manufacture of objects

Fig. 2. E1 shows the frequency for the word group "work" in the nine parts of the Eskimo folk tale sample (chi-square is 82.82). E2 and E3 are subdivisions of E1. E3 is corrected for the large number of usages of the words "make" and "use" which did not represent the concept being measured. E1 is not corrected and also includes the word "tend" from another category not shown.
Numerous other word-group patterns showed a low frequency in the fourth part of the stories. Most of these other patterns, like those in figure 2, seemed to mark a turning point where routine activities are at a low, but where the characteristic activity of conflict between the protagonist and other individuals or animals was not yet begun.

On the other hand, the fourth parts of the Eskimo tales have a high frequency in the following groups shown in figure 3: positive evaluation words (pattern E4), observation words (pattern E5), location words (pattern E6), and attitude words (pattern E7). The frequencies of these word-forms indicate a salience of concern with (1) choice (even in small actions not directly connected to the main thread of the plot); (2) the observation of people, animals and supernatural events in a situation in which the individuals observed are providing the protagonist with important support including magical aid and instructions which are needed by the hero later in the story; and (3) the description of the location and physical attitude of these supportive individuals (usually seated inside houses).

1----4 1------------------------36 1------------------------85 1------------------------28 1------------------------E4 1------------------------E5
2----4 2------------------------40 2------------------------82 2------------------------75 2------------------------E7
3----4 3------------------------53 3------------------------104 3------------------------93
4--------11 4------------------------68 4------------------------16 4------------------------16
5------8 5------------------------40 5------------------------69 5------------------------E6
6----4 6------------------------35 6------------------------65
7---3 7------------------------50 7------------------------E5
8--2 8------------------------44 8------------------------58 8------------------------E7
9---- E4 9------------------------28 9------------------------46

Positive evaluation Observe

1------6 1------------------------85
2--------8 2------------------------82
3------------12 3------------------------75
4---------------------23 4------------------------104
5------------------16 5------------------------93
6------------------14 6------------------------69
7---------8 7------------------------65
8--------4 8------------------------58
9------5 9------------------------46 9------------------------E6

Attitude Location

Fig. 3. Four patterns which have their highest frequency in the fourth (of nine) sections of Eskimo folk tales. The chi-squares for these are: positive evaluation, 15.08; observe, 21.99; location, 23.94; and attitude, 26.57.

The first encounter with supportive people or animals therefore typically happens in the fourth part of the stories. The hero or heroes are shown how to perform magic, are admitted into a supernatural family group (usually by marriage), or are helped by someone who feels sorry for them. This positive
interest and protective concern from other individuals is crucial to the impending struggle sometimes already hinted at in this section. The struggle itself is reflected in the frequencies of the patterns in fig. 4: the fight word-group (pattern E8) and the eventual victory of the hero and death of the enemy in the death word-group (pattern E9).

A detailed study of the patterns showed that for any single word-group, there often seemed to be a variety of patterns for different concepts represented by the word-group. Some were superimposed on others. Only in those instances where one of the patterns seemed to be well-measured by word-forms in a word-group and at the same time was sufficiently more frequent than competing patterns (indicated by the same or other word-forms in the group) did patterns clearly emerge. While 45 patterns at better than the .01 level of significance were found, the rough technique and subjectivity of the word-

<table>
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<tr>
<th>Fight</th>
<th>Death</th>
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Fig. 4. The fight (E8) and death (E9) patterns. The chi-square values are 21.90 and 27.83 respectively.

group definitions would suggest that if patterns do exist, there must be hundreds more which were not caught by the measuring instrument.

Obviously a cognitive structure is not available for direct observation and can only be hypothesized. All we can observe are the cultural productions—in this case, folk tales and their patterns which are a result of some mental process. Since the storage of information in the human brain is limited, these patterns must be formed by an efficient and economical cognitive process. Elsewhere (Colby 1966b) I have described this process in terms of pattern parts or “templates” which are called forth according to situation and need. These templates are combined in various ways by a higher order of cognitive schemata. The schemata would be a set of rules or formulae or some other controlling mechanism at a superordinate level.

The use of template and schema rather than cognitive pattern or structure does away with the connotations of rigidity which the latter two words usually have. The logical consequences of the template theory match the findings, but the theory requires considerably more development before it can suggest good test situations. Even in its present form, however, the theory indicates lines of future inquiry where more than a simple search for patterns is called for. One such inquiry would be a detailed study of the folk tales, myths, TAT’s, and
other textual materials that can be gathered from individuals within a single culture to find out the extent of intra-cultural variation on those patterns found by computer. This is the direction current work at the Museum of New Mexico is taking.

Interestingly enough, these patterns and the hypothesized templates fit well with the theory of cultural models recently advanced by Roberts and Sutton-Smith (1962) and Roberts, Sutton-Smith and Kendon (1963). While this theory so far centers on only one of the numerous functions of folk tales, it deals with what is probably the most predominant and important function: the modelling of strategies and behavioral modes in ways that are culturally important in socialization.

Folk tales, according to Roberts, Sutton-Smith and their colleagues are part of an array of cultural models which include art, sculpture, drama, literature, toys, maps, plans, and games. These models are available to culture users as a means of external information storage (Roberts 1964). The information is passed from one individual to the next as they become involved (e.g., listening to folk tales, playing games) in the models. Through such involvement behavioral styles can be vicariously internalized, which might not otherwise be learned until a later time and at some cost. Children's activities such as games often model behavior styles for situations normally not experienced until adult life. The theory of cultural models thus ties in with what we are now finding out about how children learn. Ethologists and psychologists interested in early mental development speak of imprinting periods or critical stages when certain types of behavior can best be learned provided the environment offers the necessary stimulus. While there is certainly a great difference between the learning process of animals and humans, the conception of sensitive stages of development seems to be applicable to both, though for humans with qualifications concerning the focus, duration, and consequences of stimulus absence during the period.

The importance of ethological principles and the theory of cultural models is that together they help us to better understand how models provide the environmental stimulus for developing children. The timing of some model stimuli may be more important than others. Models such as folk tales may contain a variety of elements, each with special meaning for different people in different roles and different stages of maturation.

When a child's interest is centered on a cultural model it seems useful to assume that something like cognitive templates are formed. The process may well be the same that occurs in language learning where a child perceives speech patterns. He then imitates them and ultimately arrives at a mental organization which allows him to "generate" similar patterns, even when forming an understandable sentence that may never have been spoken before. In the same manner, when a person listens to a folk tale, he discerns patterns subliminally. The patterns are then used to derive templates and schemata which can later reproduce the patterns when needed. The schemata would determine the combination of templates according to context and need. The resulting behavior eventually leads to the further production or perpetuation of models.
CONCLUSION

A study of conceptual areas and statistical patterning in TAT's and folk tales requires an understanding of the gap between thought as transformed in the terminal strings of a specific language (and sometimes translated into the terminal strings of another) and thought as exists in the mind before such transformations. If one uses an approach based on conceptual areas and semantic fields rather than on the word-form as is common in most semantic theories, and if one considers the difference between the syntactic peculiarities of a translator as reflected in the frequencies of function words, on the one hand, and the cultural information that shows through translation in contextually linked word, on the other, cross-cultural comparisons of folk tales will provide important insights in a new area of anthropological investigation made possible by high-speed computers. These insights take on added significance in the framework of a theory of cognitive templates which suggests an explanation for the large number of statistically significant patterns found so far and which can be related to the theory of culture models recently advanced by Roberts and Sutton-Smith.

With content analysis by computer one can reduce text content to isolated items and their contexts. It is basically a componential approach with word-groups and combinations or parts of word-groups representing underlying conceptual areas and semantic fields. One can systematically explore conceptual oppositions and construct special indices for testing hypotheses. One can inventory and map out conjunctive and disjunctive relations, settings and contexts, dispositions and trends. The new precision now available with modern computers highlights many problems which were previously difficult to study. It has also focused more attention on research strategy and design. When we get to the point of understanding much more about the regularities and patterns in textual materials we can then more intelligently explore the relations between texts and non-verbal behavior in different cultures.

Future plans are to investigate the differences that arise from different types of texts, as well as to study variations on a single theme in different cultures, different areas, and at different periods in history. Analyses of effects arising out of the data-collecting situation and out of translation distortion will follow.

The greatest problem area is the diverse and complex nature of the relationships between the analyzed text and the rest of culture\(^a\) or culture\(^b\) and the extent to which a single folk tale, TAT, or autobiography represents culture\(^x\) or culture\(^y\). We cannot get around the problem by pooling the results of different text types because each one may be a unique part of a mosaic rather than a replicated element. There is much to be learned about texts themselves before we can successfully attack this larger question of how a text relates to its cultural environment.

NOTES

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1 For a definition of semantic fields see Lounsbury (1964). There are several different meaning levels at which one must work in the analysis of texts. These range through Charles Morris’ semantics and pragmatics (1946). At the highest level are domains of cultural interest. On successively lower levels are conceptual areas, semantic fields, and specific usages (senses) of word-forms. For a discussion of how semantics can relate to these higher levels, see Colby (1964, 1966a).

2 Rather than settle on distinct terms for these different conceptions of culture, I prefer the superscripts to emphasize that these distinctions are made for this one discussion with no attempt to generalize beyond it. What constitutes a “group” within a speech community does not require specification in this exposition. The question of “culture-sharing” is a crucial one and all too often is neglected in traditional ethnographic statements of a normative nature. We are currently working on a computer technique for analyzing the full range of contextual variation in informant answers to specific question frames in a study of Ixil texts. In the work reported here, however, variation was recorded only for the frequency of word-forms in texts.

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