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match the illness and the curer's skills as they have observed them. A "powerful" illness requires a known /b'ankilal hposi'il/, while for a "little" illness an /?he'inal hposi'il/ may be chosen. The guesswork involved both in identifying the illness and in evaluating the curer often means that the first curer called will not be the last. However, the ideal rationalization of the selection of a curer is phrased in firm, positively evaluative terms:

/mac'a hunuk hposi'il ya sba kik'tik tal/
"Which curer shall we send for to come?"

"Let us summon Alonso López 'Mad Dog' because he knows how to explain all the things that we suffer."

3. CONCLUSION

In this paper, some aspects of the role of the Tenejapa Tzeltal curer have been described in terms consistent with discriminations made by the Tenejapa Tzeltal themselves; the discrimination of curers from non-curers, the evaluation of and distinction between curers, the establishment of recognized units within the curing performance (and their relation to the evaluation of the curer), the relation of evaluation to the selection of the curer, etc.

The techniques here employed seem to us to be applicable to ethnographic description generally. Whether through these or other techniques, the arrival at cultural descriptions which mirror the discriminations made by informants is a desirable end for ethnography. The present paper is, of course, only a sample; Tzeltal curers and their activities constitute a focus which if artificated with a number of other such foci will place the Tzeltal curers within a potentially ever-widening description, having as its end a Tzeltal-centered "whole-culture" description of the Tenejapa Tzeltal community.

Richard A. Shweder

ASPECTS OF COGNITION
IN ZINACANTECO SHAMANS:
EXPERIMENTAL RESULTS

Ever since the time that ethnographers began to observe the behavior of shamans in the various tribal cultures of the world there have been comments and speculations about the extent to which the shamans are somehow different from the nonshamans in these societies. The shamans have always been observed to occupy special roles in their social systems and to perform special rituals. But are they also psychologically different or distinct in some definable ways? The early ethnographers like Bogoras (1904–1909), Paul Radin (1937), and others suggested that the behavior of shamans displayed "neurotic," or even "psychotic," symptoms. But a more common observation, as more data were collected, was to the effect that while some shamans might be "half crazy," more of them in any given society displayed no such symptoms. This brief but pioneering article by Shweder opens up a whole new area for exploration as he reports on his experimental results to the effect that the Zinacanteco shamans possess certain cognitive capacities that clearly distinguish them from nonshamans in this society. The extent to which these findings may be true in other societies remains to be investigated, but we suggest that Shweder has pointed out a new way in which we may come to understand the distinctive characteristics of shamans. The paper was prepared especially for this volume.

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THE COGNITIVE ROLE OF
SHAMANS IN ZINACANTAN

Among the Zinacanteco Indians of Chiapas, Mexico, the shaman's role is interpretative and constructive. The h'itol (meaning "one who sees" or "seer") is a part-time specialist who diagnoses illness by means of divine revelation and by means of pulsing the blood of the infirmed, and who administers remedies, performs new-house ceremonies, lineage and year renewal ceremonies, rain-making ceremonies, and agricultural rituals, and tries to ritually avert epidemics (Silver, 1966: 42, 268; Vogt, 1969: 416-420). But it is as curer that his repertoire of cognitive skills is most apparent.1

The healthy Zinacanteco shares his imminent soul (c'uel) with a wild animal (canul). Under normal circumstances the animal counterpart is held in custody in a mythical corral by the ancestral gods and the supernatural equivalent of the native police force (Silver, 1966: 19). A man's vulnerability is increased, and the conditions which are sufficient for the genesis of illness, distress, anxiety, and fear are created when the canul is free of its bondage. Freedom is the result of escape or abandonment by displeased gods. The freedom is a negative one. In its natural state of wildness the canul is endangered by all the contingencies of untamed and undomesticated nature. Illness results from such uncontrolled and uncontrollable encounters.

The native belief conceives of the supernatural, and especially the ancestral gods, as a sort of "superego," a control which imposes order upon the disordered and chaotic wild. The sick individual is like a man with high dependency needs alone in the jungle, forced to fend for himself, yet incapable of adaptation to his surroundings, and wishing only to understand why he is condemned to such jeopardy and what he must do to escape from his unsought and unwanted freedom.

The curer's role in this situation is to bring the canul back to the corral (Silver, 1966: 43) and convince the ancestral gods to tend to the canul properly, feed him, and contain him.

There are other themes in the native belief, but from my perspective the shaman emerges as an agent of ancestral control and order who tames the wild by placing it into a cultural framework, the corral, where ancestral authority supports customary behavior, and the integrity of the individual person is unmaligned and protected.

From the native point of view the shaman has extraordinary cognitive capacities.2 The shaman is recruited when he realizes his innate calling in a dream or vision and is thereby selected by the ancestral gods as one capable of "seeing" into the supernatural.

Diagnosis is not related to biological information, but to information concerning divine, supernatural intent. Diagnosis can be variable from patient to patient even when they have similar objective symptoms, and the shaman is free to creatively determine the appropriate explanation of the illness in the light of what he knows of the individual, the family, and the circumstances surrounding the illness. The shaman, of course, may take none of this information into consideration.

The cure is a propitiation, a show of respect to the gods, an attempt to convince them to place things back in order, to not leave anyone abandoned in the wilds. The shaman is indispensable because only he is capable of supernatural revelation into the significance and cure of the illness. The shaman is the individual who in the face of those contingencies of the environment which threaten the Zinacanteco with ill health, anxiety, distress, and fear interprets the uninterpretable and leads the way to security and health.

THE SAMPLE

In the summer of 1967 I designed an experiment the aim of which was to distinguish the cognitive style of Zinacanteco shamans from non-shamans. There are approximately 8000 Zinacantecos, of whom 118 were male shamans in 1966 (Silver, 1966: 24). Thirty-three of these 118 male shamans were selected for testing. They were matched with thirty-three non-shaman males on the basis of three criteria: age, socioeconomic status, and degree of acculturation.

Since Zinacantecos do not convey to the anthropologist much confidence in their knowledge of their exact age, I considered it wise to age-match on the basis of three age categories: ages 22-30, 31-49, and 50 years.

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1 The research was conducted in the summer of 1967 under the auspices of Professor Evon Z. Vogt's Harvard Chiapas Project. I thank him warmly for his patience and invaluable assistance. I wish to thank George Collier, Robert Hahn, José (Cep) Hernández, Klaus Koch, and Evon Z. Vogt for helpful suggestions on an earlier report of this data, and Candy, my wife, for reordering the data. The research was supported by a grant from NIMH-02100.

2 I use cognitive to include perceptual processes.
and over. This division of the age continuum corresponds roughly to the triadic distinction made in Zinacantan between a man who has reached the appropriate age for marriage (vinik xa), a man who has reached the halfway point en route to becoming a respected elder (olvinik), literally “half man,” and old man (bazi mol xa) (Fred Whelan: personal communication, summer 1967).

Socioeconomic status matching was based on subjective ratings and reduced to three categories: rich, middle, poor. In some cases up to three native informants who knew a particular subject were asked to rate him in terms of wealth as rich, middle, or poor. If two of the three concurred, the rating was accepted. In no case did all three informants produce different ratings. A pool of five informants made it possible to always have available three informants who knew all of my 66 subjects. A similar subjective rating was compiled in 1967 by Frank Cancian for household heads in the village of ?Apas. Cancian had two informants rate subjects on three quantitative scales: 1–10, 1–8, 1–3. Wherever possible I used this data as a further confirmation of, or arbitrator between, the judgments of two informants.

Finally, subjects were matched by the degree of their acculturation. Since Zinacantecos speak a preconquest Mayan tongue called Tzotzil, the handiest (perhaps best) indicator of acculturation was the ability to speak Spanish.

EXPERIMENTAL DESIGN

Subjects were presented with and forced to confront concrete examples of chaos, i.e., diffuse, unstructured stimuli. The experimental design consisted of six series of photographs of objects familiar to Zinacantecos. Each series developed through twelve stages from a complete blur to perfectly defined focus. The six series (twelve photos each) were as follows: Evon Z. Vogt with a horse, a market scene, a close-up shot of a foot in a ritual sandal, San Lorenzo, a close-up shot of an ear, and a turkey. The seventy-two photos were arranged into twelve rounds. Each round presented all six scenes in the first degree of focus (a full blur). With each subsequent round there was a gradual development from blur to focus. The last round presented all six scenes in full focus.

Subjects were given the following instructions: "Look carefully and for as long as you like at each photograph I show you. With each photograph if you are sure you know what the photograph is of, tell me. If you are not sure, say 'I don't know.'"

For three of the six series three alternative responses were presented to the subject. For example, with the turkey series the following additional instructions were given: “With this photograph there are three possibilities as to what the photograph is of: It is either a man with a ball, flowers, or a turkey. If you are sure you know what it is tell me. If you are not sure say 'I don't know.'”

All instructions were administered in the native tongue by means of a tape recorder; the design presented to the subject by a Tzotzil informant.

The main independent variable was the difference between shamans and non-shamans matched for age, socioeconomic status, and degree of acculturation. The main dependent variables were the subject's willingness to say "I don't know" to stimuli which were undefinable, and below the threshold of recognition, and the formal patterns to be found in the responses given throughout the experiment.

The point in each series at which the object of the series was recognizable was determined by independent experiments with native informants. These norms of objective recognition set the cutoff point in the photograph design before which a refusal to say "I don't know" was taken to indicate an imposition of form by the subject on diffuse and unorganized stimuli.

RESULTS

Shamans are significantly different from non-shamans in three aspects of cognitive style. The significance of the differences is determined by the application to the data of Student’s T test between matched groups. First, shamans avoid bafflement more than non-shamans. They are imposers of form on diffuse sense data. Second, shamans are more productive in their responses; they are more generative of different responses. Third, shamans seem to have available to themselves their own constructive categories and remain relatively insensitive to the alternative categories provided by the experimenter. Below I list the experimental evidence for each of these three distinctive cognitive capacities of shamans, and the statistical level of significance of the evidence.

3 These results have been cited by Vogt (1969: 476).
1. HIGH AVOIDANCE OF BAFFLEMENT—IMPOSERS OF FORM ON UNSTRUCTURED SENSE DATA

In response to the photographic series where no alternative responses were given to the subject, shamans say “I don’t know” less than non-shamans (.006) and classify the photos in the series at an earlier point in the sequence (.04). The dramatic nature of the shaman’s refusal to say “I don’t know” is revealed by comparing the number of shamans and non-shamans who say “I don’t know” five or less times over the entire design. If the norms on objective visual recognition are used as a standard, a subject ought to say “I don’t know” fifty-nine times during the experiment. In fifty-nine of the seventy-two photos in the whole design it is simply impossible to determine the true nature of the series.

Twenty-three of thirty-three shamans respond with “I don’t know” less than five times. Only eight of the thirty-three non-shamans follow the same pattern.

There is a larger increase in the number of “I don’t know” responses given by non-shamans when confronting a series where no alternatives are supplied as opposed to a series where alternative responses are provided (.03). Non-shamans also delay the point in the sequence at which they are willing to classify the stimuli (.04).

These results indicate the shaman’s capacity to be an imposer of form. He refuses to be baffled by stimuli which are diffuse and lacking in significance. It is crucial to note that the difference between the two groups in the number of “I don’t know” responses is directional but not significant (.10) for the series where alternative responses were presented by the experimenter. In other words, when alternatives and choices of meaning are apparent there is a reduced need to utilize the special array of cognitive capacities possessed by the shaman. In response to a series with readily available alternative responses non-shamans behave in a very “shaman-like” manner. They also stop saying “I don’t know.” They have a form (the alternatives) with which to order the chaos set before their eyes. They, so to speak, do not need a shaman. It is in situations where significance is not clear, and alternative responses lacking that the shaman’s abilities are at a premium.

The same function of the shaman as imposer of form in situations where alternative responses are not forthcoming is revealed by the point of earliest classification in the two groups. When moving from a series with provided alternatives to a series with no alternatives provided the shaman continues to impose form early in the sequence, while non-shamans switch to an “I don’t know” response mode and remain baffled.

2. HIGH GENERATIVE CAPACITY—MORE PRODUCTIVE

The number of different categories suggested by shamans to classify photos over a fixed number of identifications per series is higher both for series with, and without, alternatives provided by the experimenter (.005 and .001). The shaman either has a richer repertoire of categories with which to classify incoming stimuli or uses his available repertoire more creatively.

3. AVAILABILITY OF OWN CONSTRUCTIVE CATEGORIES—“INNER-DIRECTEDNESS” OF RESPONSES

In those series where alternative responses were provided by the experimenter, shamans more often gave responses which were not included in the presented choices (.03). If we add to this consideration the fact that shamans are generally unwilling to say “I don’t know” when confronted with chaotic stimulation the shaman appears to be cognitively “inner-directed,” utilizing his internal classificatory powers to dominate external disorder.

It is my belief that these aspects of the cognitive style of the shaman, the avoidance of bafflement and the imposition of form, the productivity of response patterns, and the self-centeredness of classification are functions of personality and somewhat enduring across situations. The test situation was not a role context. The shamans were not recruited to perform rituals. In the case of avoidance of bafflement, it seems justified to call it a “need” to avoid bafflement. The instructions demanded “I don’t know” responses. Unless the shaman, standing as he was before a diffuse and undifferentiable stimulus, found these instructions frustrating his need for certainty he could easily have said “I don’t know,” as so many non-shamans chose to do.

In closing this section on test results I should note that with only one exception there were no differences between the two groups in the final degree of accuracy of responses. The close-up shot of an ear was the exception. For some reason shamans had considerable difficulty in making a correct identification of the ear, even in full focus!
ROLE EXPERIENCE AND PREEXISTING PERSONALITY

Once it has been ascertained that shamans have some distinctive cognitive capacities it might be asked whether these capacities have developed with experience in performing the role, or whether they are part of the array of personality features which exist before a man becomes a shaman, and which help filter him into the role. Considerable data of a more refined and extensive nature than I have been able to collect would be needed to resolve this issue with any rigor. I can only suggest a way to formulate the problem so as to be able to test it, and exhibit the results of the test on my more crude data.

If role experience is sufficient to account for such distinctive cognitive capacities of shamans as the need to impose form, productivity of response pattern, and "inner-directedness" of classification, then we should expect an increase in the magnitude of these variables in the responses of shamans as their experience in the role increases. If we could rank all thirty-three shamans in terms of some measure of role experience, and then rank them again in terms of the magnitude of the three distinctive cognitive variables in their response patterns, we should expect a significant correlation between the two rankings.

A number of measures of role experience suggest themselves: the number of years a man has been a shaman, the number of ceremonies he has performed, the frequency with which he performs ceremonies.

But difficulties arise when considering the ranking of shamans by their scores on variables distinctive of their cognitive style. Ideally we would like one measure which would indicate the extent to which a given shaman reflects in his test scores the cognition distinctive of shamans. However, we have three distinctive capacities. We do not know how to weigh and combine each of these three features into one measure. I treated all three features as equal in weight and simply added them together. This is bound to be wrong and is one reason this discussion is only suggestive.

The thirty-three shamans were ranked on all three distinctive cognitive capacities. Each ranking of thirty-three scores was divided into eight ranks. Each shaman was given a mean rank over the three rankings and partitioned again into one of eight ranks. This final rank was an ordering based on the equal weighting of the three distinctive capacities.

The final ranking was correlated with a ranking of the shamans into eight ranks or divisions on the basis of a number of measures of role experience. The number of years as shaman lent the strongest support to the role experience hypothesis but fell short of statistical significance (.14; Kendall's Rank Order Correlation Coefficient was used). The result, however, is certainly directional.

The hypothesis that cognitive capacities such as avoidance of bafflement and imposition of form on unstructured stimuli, productivity of response, and "inner-directedness" of classification are aspects of the personality which existed before the role of shaman was assumed suggests a different, although not exclusive, test of the data. Of those non-shamans whose cognitive styles are quantitatively the same as those of a prototypical shaman, a significant number should be in the younger half of the non-shaman sample.

The median age for non-shamans in my sample is forty years. It happens that after this age a man becoming a shaman is somewhat suspected of insincerity (Silver, 1966: 46). I noted the age of every non-shaman with "shaman-like" responses. If preexisting personality is a factor in selection for the role, we can assume that "shaman-like" personalities will have been selected for the role by the age of forty, decreasing the "shaman-like" personalities in the non-shaman sample who are over forty. The preexisting personality hypothesis also proved nonsignificant but directional ($X^2 = 1.88, .18$ significance level).

This second suggestion is even more tentative than the first. It can easily be argued that to have a "shaman-like" cognitive style is not necessarily to become a shaman. But both the role experience and the preexisting personality hypotheses test out in the right direction, and the data is limited. Perhaps a predisposing personality interacts with experience in the role, as a proper combination of sufficient data might indicate.4

4 It is also possible that my evidence provides indirect support for the view that the process of becoming a shaman involves a sudden and radical reorganization of values, attitudes and beliefs which make sense of a hitherto confusing and anxiety-provoking world" (Wallace, 1961: 192). In such a case we do not expect statistical support for either the role-experience or preexisting personality hypotheses. The shaman's cognitive style would not have existed previously to the conversion experience, and would be a "fait accompli" soon after it.
CONCLUSION
Zinacanteco Indians believe that their shamans have distinctive cognitive capacities. An experiment indicated that indeed they do. Their special qualities include a need to avoid bafflement and impose form on unstructured stimuli, a highly productive and generative response pattern, and an "inner-directed" or self-centered style of classification.