Eike Hinz

Cognitive Structures and Processes in [Aztec] Verbal Magic

magical word', Malinowski stresses the pragmatic aspect of verbal magic. He writes:

"The essence of verbal magic, then, consists in a statement which is untrue, which stands in direct opposition to the context of reality. But the belief in magic inspires man with the conviction that his untrue statement must become true. How far this is rooted in emotional life, in the power of man to day-dream, in unconquerable human hopes and human optimism, is clear to those who are acquainted with the fact of magic as well as with the theoretical literature connected with it." (Malinowski 1935, II: 239)

In this study I will try to make Malinowski's ideas expressed above more precise by focussing on the cognitive structures involved in verbal magic and on their relationship to verbal behavior[2]. An analysis of the conceptual structures and of the rules of behavioral performance for Aztec verbal magic will be presented, and a tentative model of the cognitive processes which account for the formation of Aztec spells will be proposed. Later it will become clear why such a model as I envisage it has to be group or culture specific. An explication of the concept of magic in terms of universal properties is given in section (5), together with a short discussion of the theory of cognitive balance and a short consideration of "conceptual transformations".

The ideas and results reported in this preliminary paper go well beyond my original study of Aztec spells (Hinz 1970). The purpose of this paper is (1) to demonstrate the relevance of the cognitive component in verbal magic (Chapter 3 and 4), (2) to emphasize the dynamic aspect of verbal magic by integrating memory features, information structures, information processing and behavior into a hypothetical psychological model (Chapter 6), and (3) to develop a *research paradigm for cognitive anthropology* (Chapter 6, 1st Paragraph).

The influence of artificial intelligence and studies in the psychology of belief systems will be evident to everybody who is familiar with the theoretical literature (see the references to Abelson, K. M. Colby, and Schank). Though we are not yet at the point of complete synthesis of verbal magic by computer programs (*"artificial magic"*), but the recent work of Colby and Knaus (Ms., 1972) represents a firm step in that direction. The present work is intended as another such step.

Spells are viewed here as part of an *action*. This means that the speech act of reciting the spell is an action and is embedded into a context of actions, e. g., involving simultaneous or antecedent or subsequent

Cognitive Structures and Processes in Verbal Magic[1]

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1. Introduction

Since Malinowski's publications little progress has been made in the study of magic as a mode of thinking, although Malinowski's ideas can be recast into a framework for the study of magic as a cognitive phenomenon. In his theoretical fragment of an 'Ethnographic theory of the

[2] I do not want to discuss *Malinowski's* functional theory of magic here (*Malinowski* 1948: 70, "The function of magic is to ritualize man's optimism, to enhance his faith in the victory of hope over fear.") — For a criticism of the logical structure of *Malinowski's* functional explanations see *Stegmüller* 1969: 565 - 566, summarizing *Hempel's* and *Nagel's* analyses.

rituals or curing actions. In investigating the semantic and pragmatic structure of verbal magic, we try to uncover the *ontological presuppositions* underlying the speech act: we make explicit those properties of a spell which characterize what kind of thing a spell is in the everyday world of the informants.

The data for this study are drawn from Ruiz de Alarcón's collection of Aztec spells, written in 1629[3]. We use the spells from this source as a *protocol* for the reconstruction of cognitive structures and processes. The basic methodological procedure is the split-half technique, using one part of text for elaborating on the structural analysis and for formulating the hypotheses on the cognitive structures and processes, and confronting the analytical results with other texts which have not been used for the analysis. A hypothesis which characterizes a proposition as being inadmissible is considered false if such an inadmissible proposition is found in the texts. In such a case the rules which interdict this proposition are considered false (cf. Hinz 1970: 56 - 57 and 103 f.).

2. The raw data: two examples

The following two examples shall serve as an illustration of Aztec spells:

"Come, my mother, mistress of the earth;
for in your hand I place my sister, the woman,
who is arranged in eight blocks:
well carry her in your arms, well embrace her;
it will not take a certain amount of time,
but only within five instances I will see her:
I will look into her face."
(Ruiz de Alarcón 1892: 175)[4]

This is a spell used for planting maguey. The objects mentioned are "earth" and "maguey". The first one is addressed directly. A preparing action by the magician is described and the earth is admonished to take care of the maguey plants. The desired result is stated in futuric sentences: the instantaneous availability of ripe maguey plants.

Special terms are used to name the objects ("the-woman-who-is-arranged-in-eight-blocks"); terms like these, which are characteristic of Aztec spells, will be called '*ciphers*' in this study (cf. Hinz 1970: 33 - 51).

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[3] Ruiz de Alarcón, Hernando (see *references*); see *Hinz* 1970 for a detailed discussion of this source. The spells were collected in the first quarter of the 17th century in the area covered by the present day states of southern Morelos and northern Guerrero.

[4] Aztec text: Tla xihualhuia, nonan tlaltecutli: ca ye momac nocontlallia in nohueltiuh chicuetecpacihuatl: huel xicnapalo, huel xicnahuatequi; àmo quexquich cahuitl in nic-hualittaz, ca çan macuil-aman nic-hualittaz: ixco, icpactzinco nitlachiaz. (RA 175).

"Hey, come along, green woman;
go to scare away the green fever, the blackish fever,
the red fever, the yellow fever:
I have already sent you to the place-of-the-
seven-caves.
Not tomorrow and not the day after tomorrow;
but right now you will make him leave.
Who is the god, who is the admirable,
who is going to destroy your creature.
It is me, personally, me, who is the lord of magic."
(Ruiz de Alarcón 1892: 218 - 219)[5]

This is a spell used for curing fever. The objects mentioned are the helpful object "ololiuhqui" or "peyote" ('green woman') as a medicine, the harmful objects "fever" and its unnamed "originator", and the "patient" ('your creature') and the "stomach" as part of the body ('place-of-the-seven-caves'). The medicine is admonished to expel the fever immediately. The magician asks for the identity of the fever's originator; the negative initial situation is represented in the progressive phrase ('. . . is going to destroy . . .'). The perfective sentence ('I have already sent you . . .') represents an action in preparation for change. The last sentence seems to represent the coercive quality of the magician.

The cipher 'green woman' refers to the color of the medicinal object; 'woman' *(cihuatl)* may indicate an item of a botanical folk taxonomy, which cannot be reconstructed because of lack of data. The cipher for 'stomach' *(chicomoztoc)* seems to reflect the properties of hollow space and ramifications. Alas, we do not have any information on the attribution of the direction-colors (?) to fever.

3. Analysis of conceptual structures

The term 'conceptual structure' refers to the conceptualizations and ontological presuppositions implied or expressed in the linguistic utterances in the spell.

Imperatives and agents and grammatical objects used in the second person indicate that an addressee is involved in the spells. Thus, the spell can be seen as constituting a message for somebody. The spell can be analyzed in terms of communicative actions within a *system of communication*. It is possible to reconstruct this system with its units (actors), relations (actions and states), applicable situations (initial conditions) and effects (expected results).

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[5] Aztec text: Tlacuel; tla xihuallauh, xoxouhqui cihuatl; tla xicpehuitl, xoxouhqui totonqui, yayauhqui totonqui, tlatlauhqui totonqui: coçauhqui totonqui: ye oncan nimitztitlan chicomoztoc. Amo quinmoztla, àmo quinhuiptla, niman axcan ticquixtiz. Ac teotl, ac mahuiztli in ye quixpolloa mo-tlachihualtzin. Nomatca, nèhuatl, ninahualteuctli. (RA 218 f.).

The *actors* referred to in the spells are "supernatural" beings (saints, gods, Virgin Mary) or persons or objects which are relevant to the situation. These objects are treated as animate beings, even if *we* would consider them inanimate. This (reconstructed) *process of animatization* is a presupposition logically underlying the addressing of these objects and the transmission to them of messages which fit their role in the communicative situation. Moreover they can act, have motives and affects and a personlike body. To stress the importance of this fact, I refer to Alarcón who reports a question a reciter asked his sleeping-mat the next morning: Had any malevolent person tried to approach the reciter during sleep? (Ruiz de Alarcón 1892 : 155).

The actors named and referred to in the spells have distinguishable properties which are either self-evident or are brought out in Alarcón's commentary. The actors can be categorized according to the following properties:

(a) objects which are helpful to the magician in fulfilling his task: helpful spirits, medicines, instruments, ritual paraphernalia;

(b) objects which are obstructive to the magician: impediments, harmful persons or objects or spirits, diseases and their originators;

(c) objects which are either supported by the magician or which should be gained or produced by using the spell: bees, fish, game, maize, the patient; the magician himself if he uses the spell for self-protection or for curing his own disease.

(d) the reciter magician, if he is not identical with (c).

The objects (a - c) can be addressed directly (morphologically marked as second person) or indirectly (morphologically marked as third person) by the reciter magician:

"May he go in peace (from here), may he leave me in peace;
for there far away is the place where he is expected:
for there far away he will be expected."
(Ruiz de Alarcón 1892: 219)[6]

Here the disease is addressed indirectly.

Before considering the actions and states expressed and referred to in the spells, we will examine the initial situations in which spells are applied and the expected results (intended situations). Ruiz de Alarcón's *Tratado* contains spells for the protection of the reciter, for enchantment and disenchantment, for cutting wood, burning lime, hunting, fishing, seeking beehives, for protecting cornfields against predatory

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[6] Aztec text: Ma çan yhuian quiça, ma çan yhuian nechtlalcahui: ca ye nepa inchialoca (!); ca ye nepe (!) in temachilo. (RA 219).

animals, for planting and sowing, for harvesting, for influencing other persons' feelings, for divination, for curing and healing, for alleviating birth, and for bathing the child after birth.

I hypothesize that the situations in which spells are used represent *specific states of deficiency*, involving uncertainty, risk, or still unfulfilled conditions for a successful outcome (of an action or an event). This corresponds to the context of reality Malinowski talks about in his quoted passage.

Alarcón reports some comments from his Indian informants on the expected result of magical speech[7]. From these comments we can infer the conceptualization of the *intended situations* into which the initial situations should be changed. The intended situations are states in which the deficiency of the initial situation *is removed*, e. g., the successfully burnt lime, the possession of game, fish, beehives, etc., the restored health of the patient, etc.

Both of these situations are described in some spells[8]:

"The priests, the dusty birds have damaged it (the bone);
they have smashed it, they have broken it (A); but now
we will glue it, we will heal it." (B)

The negative initial situation (S1) is asserted for the past (A); the action which leads to the positive intended situation (S2) and the situation (S2) itself are asserted for the immediate future (B).

Thus, we can summarize so far that conceptualizations of the situations S1 and S2 and the direction of their change are presupposed in the spells.

Let us now consider what the reciter magician tells the other actors in order to bring about this change of situation. The *messages* sent from the reciter magician can be categorized according to sentence types:

proposition

time-specific:	described or prescribed[9] actions and/or their results;
time-unspecific:	attributions

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[7] "... con el frio del agua sienten aliuio y attribuyen el effecto al falso encanto ... " (RA 201) (comment on a spell for curing eyes); — "... declaro (the informant) que aunque los brujos o otros enemigos y hechizeros avian venido y intentado dañarle en su negra cama, y llegado a alçarle la ropa della por diversas partes que nunca auian podido hazer mas impedidos de las dichas invocaciones" (RA 155).

[8] Aztec text: Otlatlacoque in tlamacazque, in teuhtotome; otlaxaxamanique, otlapoztecque (A): auh in axcan ticçaçalozque, ticpatizque (B). (RA 213).

[9] Classifying the imperatives as propositions deviates from logical use; it is, however, possible to analyze the imperative into a prescriptive factor

attention signal

question

The attention signal and the question types will be described later. The propositional messages sent from the reciter magician to the objects addressed display a strict pragmatic categorization:

A. Prescriptive exhortations to do something helpful to the magician or the person involved (e. g., the patient), or which contribute to the desired result.

B. Prescriptive interdictions concerning actions harmful to the magician or the person involved, or which might prevent the magician from changing the undesirable initial situation.

C. Descriptive assertions that actor X will do something which is helpful to the magician or the person involved, or which contributes to the desired results.

D. Descriptive rejection that X will do something which is harmful to the person involved, or which prevents the magician from changing the undesirable situation.

E. Descriptive assertions or rejections of attributes of an actor or a situation which enable the magician or other positive actors to do something helpful or to prevent something harmful.

F. Persuasive maneuvers which appeal to the addressee positively (reverence, allurement, compassion) or negatively (coercion, menace, shame) for help or for protection from harm.

G. Descriptive assertions that the magician himself or other positive actors have done something, are doing something, or will be doing something which contributes to the desired result.

H. Descriptive assertion that actor X has done or does something harmful.

Verbal magic can be considered social interaction. A pragmatic *rule of expectancy* can be constructed which relates the speech act (description, prescription, persuasive maneuver) to the actual performance of the actions referred to or implied in the speech act.

There is a clear organization of the conceptualized actions or attributes (states) in terms of *temporal properties and evaluative implica-*

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and a descriptive one (cf. *Sebeok* 1956: 296 f., quoting *Jørgensen;* cf. *Stegmüller* 1965: 519 f. (3rd ed.)). Moreover, a futuric component in singular non-general imperatives can be isolated (something which should be done, has not been done yet and is not being done yet right now). See Hinz 1970: 71 ff. for a more detailed analysis.

tions (i. e., an action or a state implying the undesired situation S1 or the desired situation S2; these evaluative implications are psychological implications because they may consist of rules of expectancy rather than of rigorous logical deductions (cf. Abelson 1968)).

In order to explicate the conceptual structure of propositions in terms of evaluative implications, I introduce the following metaconcepts:

A. As Schank reports (1971, 1973), the sentence "John hurt Fred" can be analyzed as "John did something which caused Fred to be hurt". On this analysis we can easily distinguish between an actor's action and its result, which can be another action or a state, with the two events linked causally.

B. The action or the class of actions which cause(s) the situation S2 presuppose(s) many initial conditions which are mostly taken for granted. I have found it useful to introduce the following conceptual distinction[10]: between the relationship *'making possible'* which indicates that an event is a pre-condition for another event but does not imply that this other event is brought about without the performance of further actions; and the relationship *'actualizing'*, which indicates that an event directly *causes* another event to happen. Both of these relationships imply temporal properties: what makes something possible is temporally preceding, what is made possible is temporally subsequent; what causes something precedes what is caused.

The several types of propositions in terms of their evaluative implication and temporal range is described in Table 1.

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[10] After the completion of this manuscript I received Robert P. *Abelson's* paper "The Structure of Belief Systems" (published in R. *Schank* and K. M. *Colby, Computer Simulation of Thought and Language.* San Francisco: W. H. Freeman & Co., 1973). There are some interesting parallels between his concept of "Serial plan" (D. 2.) and my chain of events in the evaluative implication types. Abelson has a precise explication of the concept of "enabling" (D. 1.) which supports my distinction between the "making-possible" and the "actualizing" relationship.

Table 1: Evaluative implication types

evaluative implication type	structure	temporal property
1 Action CAUSING a state which MAKES POSSIBLE another action causing S2	(A) ⇒B → C ⇒S2	PAST, PRESENT, FUTURE
2 *State* wich MAKES POSSIBLE an action causing S2 (or IMPOSSIBLE an action preserving S1)	(B) → C ⇒S2	PAST, PRESENT, FUTURE or* TIMEUNSPECIFIC/ TIMELESS
3 *Action* CAUSING S2	(C) ⇒S2	(*Not*-PAST), PRESENT, FUTURE
4 *Action or state attribute* CHARACTERIZING S2	(C) = S2	(*Not*-PAST, *Not*-PRESENT), FUTURE
5 *Action or state attribute* CAUSING S1	(C') ⇒S1	PAST, PRESENT, *Not*-FUTURE
6 *Action or attribute* CHARACTERIZING ... S1	C' = S1	PAST, PRESENT, *Not*-FUTURE
7 *Action or attribute* CAUSING a *motive* CAUSING another action causing S2 (or preventing the persistence of S1)	(E) ⇒M ⇒C ⇒S2	PAST, PRESENT, FUTURE**
8 *Attribute* SPECIFYING THE MOMENT of an action causing or characterizing S2	D (C = S2)	IMMEDIATE FUTURE, *Not*-OPEN FUTURE

* Two sets of such states can be distinguished: states which are the result of mentioned actions (temporal range specified), and states where no causing actions are mentioned or implied (temporal range unspecified).

** The actual temporal range of a proposition E depends upon the relative location of the event in the chain of events; a proposition which describes the consequences of an action causing S2, for instance, can be asserted only for the future. The consequences are anticipated, of course.

Let us exemplify these types of evaluative implications and explain their distinction in more detail.

In Aztec spells, actions are conceptualized as having already happened only if they help to *prepare* the change from S1 into S2 (i. e., if they cause a state which is presupposed for performing other actions successfully); but the action which *causes* S2 or which *characterizes* S2 is never asserted to have already happened[11]. Thus: "I brought it (the

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[11] This seems to be the case with some of the invocations in the Yucatec Mayan ritual of the Bacabs. Cf. *Roys* 1965: 44, Incant. XX: "*Shortly ago,* then, I vigorously bruis*ed* you, you red tainted bowl, you red rattlesnake. Thus, then, you descend to the place of Anom, the white man." (Anom: cf. *Roys* 1965: 143).

medicinal herbs) with me": i. e., the reciter has performed a past action which caused the herbs to be at that place where they can perform further actions which will heal. In contrast: "It (the herb) will cure him (the patient)": i. e., "The herb is to perform a (future) action which (directly) causes the patient to be cured".

The sentence "Immediately I will see her (the corn's) face" "characterizes" the state S2 because it is pragmatically equivalent to the proposition "I will have corn immediately available". It is not an action which causes S2.

"I am without blood" characterizes a condition for further actions: it prevents an action involving violence against the reciter (from a spell for self-protection).

There are also some propositions which represent, or are related to, what I will call "persuasive maneuvers". These maneuvers are used to persuade the addressee to perform a desired action. They may represent the consequences of an actor's performance of an action which causes S2, or they may represent states which imply punishment or reward and therefore motivate the actor to certain actions (either performing them or abstaining from them). "Far away you are needed" (Ruiz de Alarcón 1892 : 206), represents a state which should motivate the actor (the disease) to leave the patient. We can explicate the conceptual structure of the persuasive arguments for the motive "avoidance of punishment" or "achieving reward" in this way:

(1) action B preserving S1 causes punishment Q *or* action A causing S2 causes reward P.

(2) avoidance of action B *and/or* performance of action A causing S2 causes reward P *or* doesn't cause punishment Q.

(3) reward P *or* non-punishment Q is desirable therefore, avoidance of action B *and/or* performance of action A can be expected.

Negated propositions are either interdictions and rejections that X will do something harmful, or they are related to persuasive maneuvers which appeal to the addressee:

"Now I have not been overcoming you,
I have not been coming to destroy you:
only aside I will be pushing your hand,
your foot."
(Ruiz de Alarcón 1892: 210)[12]

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[12] Aztec text: in axcan àmo mocan onihualla, àmo onimitzpòpoloco: çan çomolli (!, E. H.), çan caltechtli nocontoctiz in moma, in mocxitzin (RA 210).

Notice that such a negated proposition must be connected with an affirmative one; it cannot be asserted as an isolated one (Hinz 1970 : 104).

The conceptualized events (actions, states) outlined above can be described as a *belief molecule*[13], which is capable of different substantial interpretations depending on the situation for which the spell is constructed.

The pragmatic-conceptual structure of the situational model encapsulated in Aztec verbal magic is this (Fig. 1):
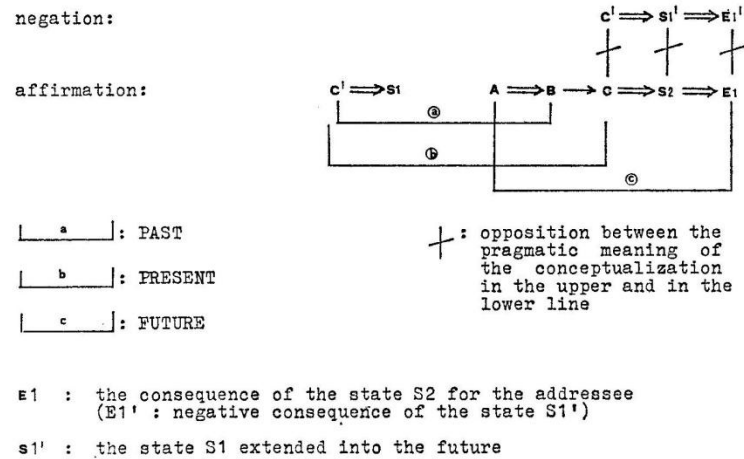

Fig. 1: The pragmatic-conceptual structure of the situational model

The temporal properties of propositions representing the various conceptualizations are indicated by the lines.

We can now formulate a criterion of falsification for propositions in Aztec verbal magic:

(1) If a proposition in the spells cannot be reconstructed as *part* of one of the evaluative implication types outlined in Fig. 1, the model is considered false.

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[13] A belief molecule consists of sets of sentences which are linked by implications, for instance: A does X, X causes Y, A wants Y. See R. P. *Abelson* and *Reich* 1969.

(2) If one of the following properties of propositions is found in the spells, the model is considered false:

$$\begin{array}{l} C \\ S2 \\ E1 \end{array} / \text{PAST} / = F; \quad \begin{array}{l} S2 \\ E1 \end{array} / \text{PRESENT} / = F; \quad \begin{array}{l} C' \\ S1 \end{array} / \text{FUTURE} / = F$$

Capital letters indicate the evaluative implication type, /TIME/ the tense aspect of the proposition (F = false).

4. Towards rules of communication

It is adequate to assume that the messages expressed in the spells are not arbitrary. The expression, 'rules of communication', refers to restrictions of what is communicated and how it is communicated.

Aztec magical communication consists more in loosely structured discourse rather than in highly structured formulas. To characterize this type of communication we need two kinds of rules which would allow us to *build up a plan of communicative action while talking*:

(1) conceptual rules for encoding sentences;

(2) sequential discourse rules for concatenating sentences.

Before considering these rules let us describe the attention signal and the types of questions which can occur in Aztec spells.

The attention signal is expressed as

1 *tla xihuallauh*
2 *tla xihualhuian*
3 *tla xihualmohuica*   ("come!")
4 *tla xihuiqui*
5 *tlacuele* ("hey!")

   + name of the addressee

6 vocative signal: name + e, if speaker is male; unmarked, if speaker is female (extremely few cases)

(There are very few cases of type 5 and 6.)

There are four types of questions:

(1) question for the cause of a negative actor's action;

(2) question for the identity of a negative actor;

(3) question for the locality of an actor; and

(4) question for the truth value of a proposition.

Type (4) is used to consider alternatives, or to ask for information to decide between alternatives.

We are now considering *rules of encoding*. The belief molecules defined in terms of evaluative implications and temporal properties constitute the systematics of propositions admissible in magical communication.

Basic conceptual rule:

In Aztec magical communication, a proposition which can be reconstructed as *part* one of the implicational structures with a temporal indicator as listed in the definition of temporal range, is admissible.

The spells contain many expressions which are specific to them. For these expressions, which I will call "ciphers", a systematic cognitive process can be reconstructed which accounts for their formation. A detailed analysis of these "ciphers" shows that they refer to selected aspects of the objects named by them (cf. Hinz 1970 : 35 and 42). The operation of enciphering consists in selecting an aspect or a property of the object under consideration and in selecting a name which is based on the selected property.

Definition: x refers to the object, 'x' refers to the name of that object.

The analysis of the ciphers in the texts shows that various objects can be named by the same cipher, *and* that the same object can be named by various ciphers.

I. *Selecting a property*

$x =_{df} e_1, e_2, \ldots, e_n$ (1)
(object x defined by properties $e_{1, n}$)

$A = e_1$ (2)
(selected property)

II. *Assigning a name*

There are two possibilities for assigning names:

A. A name is assigned to the property e_1: 'e_1'.
The process of enciphering consists in assigning the name 'e_1' to object x as a name:

'e_1' $\rightarrow x$ ($x \in E_1$) (3)
(name 'e_1' assigned to object x which is an element of the class of objects sharing the property e_1)

B. An object y is selected which shares the property e_1 with object x. A name 'y' is assigned to object y. The process of enciphering consists in assigning the name 'y' to object x as a name:

'y' $\rightarrow x$ ((x, y) $\in E_1$) (4)
(name 'y' assigned to object x; objects x and y are both elements of the class of objects sharing the property e_1)

Examples:

(1) *tlatlauhqui chichimecatl* (" red chichimec")

objects named:
(a) axe (from copper)
(b) ant (red)
(c) hook for bait (from copper)
(d) inflammation on the skin

properties:
(a) color: red
(b) activity: to cut, bite, pierce, itch.

chichimecatl, chontalli ("chichimec, stranger") is used as a cipher for needle (Ruiz de Alarcón 1892 : 214)

(2) *chicomoztoc* ("place of the seven caves")

objects named:
(a) stomach
(b) cupping-glass or air-pocket

properties:
(a) hollow space
(b) ramifications.

no-chicnauh-ozto-c ("place of my nine caves") is used as a cipher for "ear" (Ruiz de Alarcón 1892 : 202)

Let us now turn to the *sequential discourse rules* for concatenating sentences.

Only very few hypotactical sentences can be observed in the sample[14]. Most sentences are short and are arranged paratactically, without marked logical connectives.

The following rules can be regarded as general statements on Aztec spells:

(1) A minimal spell consists in two sentences, one of which must be a proposition.

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[14] 19 hypotactical sentences have been observed in the spells for curing (in contrast to 333 paratactical sentences; no hypotactical sentence has been found in the spells for planting and sowing.). See *Hinz* 1970: 94 f.

(2) All spells contain at least one proposition which represents either an action or an attribution causing or characterizing S2, or a *negation* of an action or an attribution characterizing or preserving S1.

(3) If persuasive maneuvers are used (reverence, menace, allurement, shame, compassion), prescriptive commands or present/futuric descriptive propositions to do or not to do something must immediately precede or follow the phrases which represent the persuasive maneuver(s).

(4) If a spell contains a question, the same type of question cannot be repeated in the same spell, unless immediately (as an iteration).

(5) If a new object is addressed directly (marked by use of 2nd person morpheme) in magical speech, there must be a reference to this object in the preceding sentence, *or* an attention signal must be used as an introductory phrase.

(6) A spell can be ended with a proposition, a question or an attention signal.

(7) If the moment of an action causing or characterizing S2 is to be specified, this action must have already been mentioned in the preceding sentence, *or* it must be mentioned in the same sentence.

(8) If an object is addressed directly, all the commands for it *and/or* descriptions of its actions are transmitted in *blocks*.

This means that to address an object, to transmit commands/descriptions to it, to address another object, to transmit commands/descriptions to that object, to address the first object again and continue talking to it (transmitting commands, etc.), is avoided.

With these *rules and random choice* procedures we can build up a *plan* for magical communication, and, eventually, for a computer program which generates new spells.

5. Aspects of a theory of verbal magic

Theories (in combination with initial conditions) never explain events in their totality; but they can sometimes explain certain *aspects* of events. To take two aspects, we could be interested in an historical explanation of how Aztec verbal magic over time came to be the way it is, or why there are magical ways of behavior, etc.

To explain communicative phenomena characteristics of the magical mode, we postulate a system of strategies governed by a delusional

belief system. We define a delusional belief system as a network of beliefs accepted as true by their holder, but rejected as false by most others (cf. Colby e. a. 1971: 3). We ignore the invalidity of magical beliefs in this analysis.

The input-output strategies of a magician are dominated by delusions of the *effect* of directed talking (communication) on changing a situation. One part of the input strategies of a magical mode operate to structure an actual situation by scrutinizing it for the following properties:

We have maintained that verbal magic occurs only in a situation which is (1) *specifiable* for the magician and (2) conceived as *deficient/negative* or potentially deficient/negative (involving the danger of becoming negative) by the magician or his client, and (3) where change to a desired positive situation S2 is *possible*, according to empirical knowledge of the world stored in the magician's memory, and (4) is *uncertain* or contains some *risk* (or: where a potentially negative situation can be prevented, but *not with certainty*).

If the situation is unspecifiable, representing an overall feeling of deficiency, verbal magic is not applicable. To revive a dead person might violate the empirical knowledge concerning possibilities of curing; therefore verbal magic might not be applicable. But this depends upon the belief of what is possible and what is impossible. Moreover, we hypothesize that verbal magic is not used in situations which are conceived as positive or as changing to positive states with certainty and without intervention.

Another part of the input strategies consists of rules for constructing a normative model of situational change. This seems to be a neglected aspect in the study of verbal magic: that spells encapsulate a *formal* model of situation change. Thus, spells from different cultures I have seen so far contain descriptions or prescriptions of conditions and goals of situational change, but no information of how these conditions can be fulfilled *empirically* and *technically*. Arbitrary presuppositions are introduced which are formally consonant with the wish-belief (a desired positive situation). Thus, the wish-belief is conceptually transformed into a fact-belief. Events (conditions, goals) mentioned in verbal magic are analogous to *possible* events in reality; but in verbal magic these events are marked as *necessarily* occurring. Thus, instead of technical operations on the situation we are dealing with cognitive operations on conceptual structures and with verbal operations on the situation[15]. The

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[15] Cf. *Morris* 1938: 42 ("In the magical use of signs the distinction (between sign and object, E. H.) is less clearly made (than with the poetical use of signs, E. H.); operations on the sign vehicle take the place of operations on the more elusive objects."); *Hinz* 1970: 109/110.

formal model of situation change is embedded in a "technical" model of *making or doing*: the *model of human verbal interaction* or communication. The latter model presupposes that there is somebody who is listening to what (he/she) is told and who will do what (he/she) is told.

This might be a first hint on the genesis of highly stylized cognitive structures in verbal magic and their diversified elaboration in different cultures. The possibilities of how to define such a formal model of situational change seem to be indefinite, and so there are multiple solutions for this problem differing in the logical and ontological presuppositions.

The introduction of an affective variable seems to be necessary to explain the dynamic process of generating the cognitive structures involved in verbal magic. In the more refined versions of the theory of cognitive balance, a *high charge* of conflicting beliefs is presupposed to induce the operation of conceptual transformations. ,Charge' is defined as degree of import or interest of a (wish-) belief (cf. K. M. Colby 1968: 521 f.):

> If we have the highly charged wish or belief X and the conceived situation or the encountered belief $\overline{X}$, our anxiety increases. An internal cognitive process is operating on the conceptual structures of the conflicting belief or wish-belief which produced the tension and the anxiety; this cognitive process might consist in substituting $\overline{X}$ by Y or by denying $\overline{X}$. It reduces or resolves the imbalance and tension, and, consequently, lowers the anxiety level.

I hypothesize that verbal magic applies to highly charged cognitive conflicts and is avoided in situations which are culturally defined as trivial.

The output strategies of the magician are governed by the rules of directed talking, especially by the *modes* of directed talking: commands, persuasive maneuvers, and "predictive" statements related to the conceived formal model of situational change. Thus, we can say that the problem solving strategy is developed according to the model of human verbal interaction, as already pointed out.

We can now try to characterize verbal magic in terms of elementary cognitive and behavioral processes or structures. The detailed cognitive structure of the formal model of situational change and the detailed rules of directed talking (communication) vary from one group to another. The following properties, however, seem to be *universal*:

A. the belief in the efficacy of verbal magic (directed talking) to bring about the change of situation and the absence or rejection of respective disbeliefs;

B. the type of situations (as described above) where verbal magic is applicable;

C. the construction of a conceptual formal normative model of situational change;

D. a high charge of the wish-belief of situational change; and

E. directed talking as the behavioral operation to bring about the change of situation.

We can say that verbal magic represents a special type of goal-directed problem-solving behavior which is characterized by the cognitive processes and structures (beliefs) outlined above. Referring to the theory of cognitive balance which we have used to combine the cognitive and the affective variables into a dynamic process, we have tried to relate the study of verbal magic to other fields of cognitive studies where a similar *process of conceptual transformation* can be observed. Conceptual transformations and their causes can be seen as a more comprehensive problem system.

Such conceptual transformations can be idiosyncratic, socially widespread and uncanonized, or socially canonized into highly stylized cultural rules. There are an unlimited number of possibilities of how to actually perform conceptual transformations — the framework of ontological presuppositions may vary considerably (for instance, with the magical mode of behavioral phenomena, the conceptual normative model of situational change).

In his paper "Computer Simulation of a Neurotic Process", Kenneth M. Colby describes how modifications of beliefs are carried out by defensive mechanistic processes. These processes *transform* the conceptual structure of an old belief in forming a new derivative:

> "No belief can be expressed, if it is evaluated as dangerous to do so. A search is made through all the beliefs in a given complex. If a conflict is found, a danger signal is activated.... The response to danger is to modify or transform the regnant member of the conflict (the one against which the others in the complex are being searched for conflict) until it no longer conflicts with any other belief in the complex. When a successful derivative belief has been formed, anxiety, if you will, is reduced and the derivative can be expressed in output ...."
> (K. M. Colby 1963: 170/72)

Colby observed the following processes which are conceptual-linguistic transformations:

(1) Deflection: Shift Object (Not Self)
(2) Substitution: Cascade Verb
(3) Displacement: Combine (1) and (2)
(4) Neutralization: Neutralize Verb
(5) Reversal: Reverse Verb

(6) Negation: Insert *Not* before Verb and D_0 (5)

(7) Reflexion: Shift Object to Self

(8) Projection: Switch Subject (Self) and Object (Not Self)

(K. M. Colby 1963: 172)

Alas, K. M. Colby's description is extremely sketchy. Nevertheless, we can observe some similarities between the conceptual transformations outlined by Colby and those in Aztec verbal magic (e. g., reversal, negation, shift in agency from self to object).

Abelson's results of studies on modes of inconsistency resolution, as they occur in daily life thinking, can be seen as an analysis of conceptual transformations, too. Abelson has tried to develop an algorithmized model for the process of rationalization as it occurs in daily life situations. E. g., if there is a belief encountered which is in conflict with a held belief, the person might try to rationalize the belief, denying the psychological responsibility of an actor for his action:

(a) He may try to *reinterpret* the *final goal* of the action.

(b) He may conceive the action as an *accidental by-product*.

(c) He may try to *find* the *prime mover*.

"In 'reinterpret final goals', for example, the general idea is to generate an implication of the sentence predicate which reverses the evaluative sign of that predicate."

(Abelson 1963: 295)

Here, the similarity of conceptual transformations consists in the reversal of negatively evaluated conceptualizations.

Notice the pragmatic difference: rationalization applies to *post factum interpretations*, while verbal magic applies to *"predictive* interpretations" and *projected* doing.

Two types of conceptual transformations can be differentiated:

(1) occurs in verbal magic, neuroticism and in such daily life situations as considered above (rationalization);

(2) occurs (often?) in dreaming and (in most cases?) in poetry.

The conceptual transformations we have been concerned with have been caused by inconsistencies between conceptions (intentions) with high affective charge ("importance"); i. e., they are related to anxiety or stress (type (1)). These inconsistencies with their high affective charge seem to be absent, at least in some cases, in dreaming and in poetry. This might point to a direction of considering the affective components in conceptual transformations as very important variables which need further clarification.

6. The invocation of spells as sequences of subprocesses

This is an attempt at modeling the process of producing magical speech (i. e., a spell) in a particular situation. In order to simulate the construction of spells we need a memory model which incorporates linguistic experiences (morpho-syntactical procedures, lexical items) and external world experience (concepts, beliefs, including cultural knowledge). The psychological model of cognitive processes is composed of lawlike statements (situational analysis in magic), cultural rules (conceptual structures and rules of communication) and singular statements of initial conditions. These initial conditions are: The hypothetical individual who is supposed to carry out the modeled processes is a magician who is being asked for help. The request for help consists in a short description of the negative situation S1 by the client.

The whole process of constructing a spell can be seen as consisting of several "subprocesses". An initial task is to name, characterize and interconnect these "subprocesses", as in the following flow-charts (see fig. 2, p. 142, and fig. 3, p. 143).

While we may accord this flow-chart an initial plausibility as representing the relations among the "subprocesses" of spell-invocations considered at this (relatively abstract) level, it deserves notice that our present inability to specify the precise internal constituency of most of these "subprocesses" leaves the flow-chart rather far from computability. Its value, then, is as a means of indicating the organization of spell-invocation at the level now under analysis.

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A. *Appendix: Two cross-cultural illustrations*

(1) C h e r e m i s s p e l l s

Thomas Sebeok (1956) has proposed a formalized analysis of the logical structure of Cheremis spells. In general, there are two statements involved in a spell:

(1) from a premise, which is true if interpreted empirically, the healing of the patient is concluded;

(2) from a premise, which is false if interpreted empirically, it is concluded that the patient is not healed.

The relationship between premise and conclusion is biconditional or an equivalence.
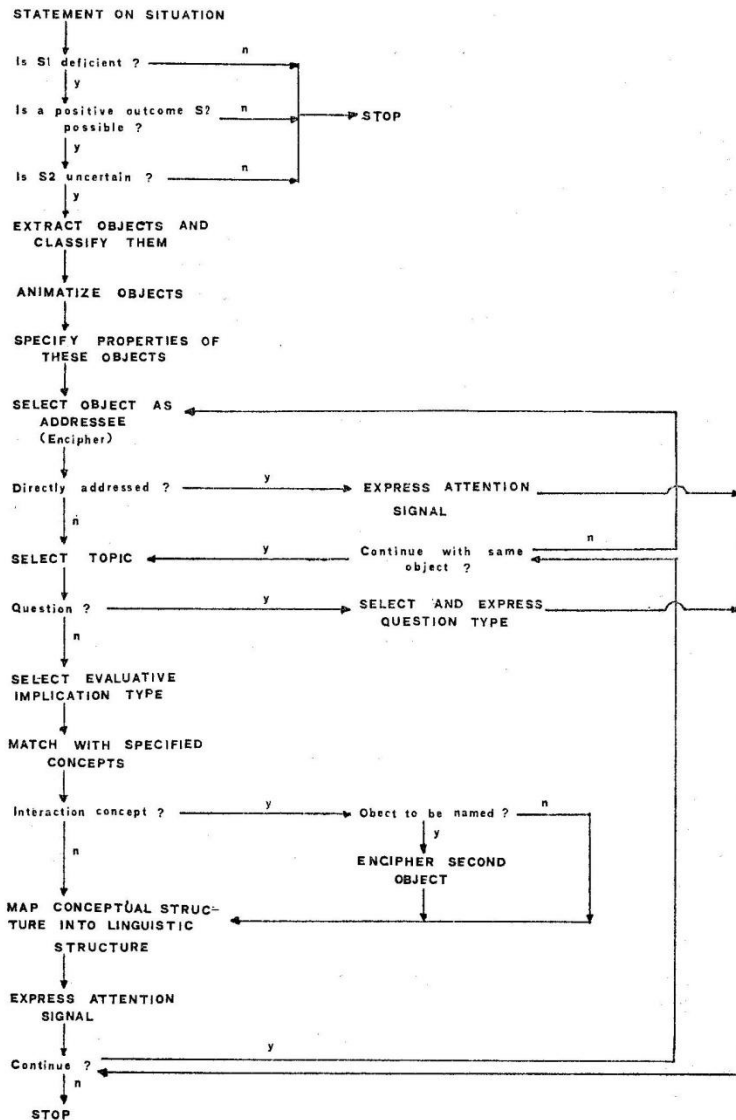
STATEMENT ON SITUATION

Is S1 deficient ? — n

y

Is a positive outcome S2 possible ? — n → STOP

y

Is S2 uncertain ? — n

y

EXTRACT OBJECTS AND CLASSIFY THEM

ANIMATIZE OBJECTS

SPECIFY PROPERTIES OF THESE OBJECTS

SELECT OBJECT AS ADDRESSEE (Encipher)

Directly addressed ? — y → EXPRESS ATTENTION SIGNAL

n

SELECT TOPIC ← y — Continue with same object ? — n

Question ? — y → SELECT AND EXPRESS QUESTION TYPE

n

SELECT EVALUATIVE IMPLICATION TYPE

MATCH WITH SPECIFIED CONCEPTS

Interaction concept ? — y → Obect to be named ? — n

n   y

ENCIPHER SECOND OBJECT

MAP CONCEPTUAL STRUCTURE INTO LINGUISTIC STRUCTURE

EXPRESS ATTENTION SIGNAL

Continue ? — y

n

STOP

Fig. 2: Flow chart of cognitive "Subprocesses"

SELECT PROPERTY OF OBJECT CONSIDERED

Select object x with same property ? — n

y

NAME OBJECT X

ASSIGN THIS NAME TO FIRST OBJECT

NAME SELECTED PROPERTY

ASSIGN THIS NAME TO FIRST OBJECT

EXIT
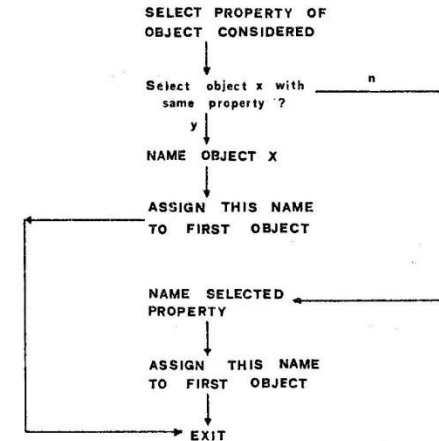
Fig. 3: Subroutine Enciphering

I reconstruct the following deductive argument underlying the Cheremis spell:

(1) $0 \leftrightarrow S$ If and only if event 0, then healing (S)

$\dfrac{0}{S}$ Event 0 is asserted as true

Therefore event S, healing, is true

(2) $0' \leftrightarrow \overline{S}$ If and only if event 0', then not-healing ($\overline{S}$)

$\dfrac{-\,0'}{-\,\overline{S}}$ Event 0' is rejected as false

Therefore event $\overline{S}$, not-healing, is false

Underlying the construction of this spell is a logico-conceptual model of situation change by establishing a (formal and arbitrary) relationship between two classes of events ($0/0' :: S/\overline{S}$). This relationship is purely conceptual. Thus, the constraint put on the situational change which can occur in conceived reality is purely conceptual.

(2) Ilongot spells

In her article "Metaphors and Folk Classification" M. Z. Rosaldo gives an example of an Ilongot spell from Northern Luzon, Philippines:

"Hey, all you spirits, come listen now!
Here are your thighs, spirit;
May your thighs be twisted, spirit, if you do not
make this child well.

Open his heart, spirit, make him light, spirit.
May he spin like an eel away from sickness.
May he be as clean as glass.
Here are your fingers, spirit: I steam your fingers,
spirit.
They will be knotted, spirit.
Make him well now!"

In her commentary Rosaldo writes:

"The spell may continue for as long as five or ten minutes. The spirit is told to wipe away the sickness, to drop the sickness, to make the patient like a thorny tree that cannot be touched by harm. The spirit is warned that he will find himself sick by morning if the patient is not cured. When the spell is over, the herbs are typically tossed away, past house and courtyard: the spirit is told to carry his illness somewhere else. The practitioner spits away the evil and is done."
(Rosaldo 1972: 85)

We can see that a system of communication is established by introducing a certain class of beings ("spirits") which are conceived as being able to change the situation considered. The message consists in exhortations to do something helpful or which contributes to the desired result, and various persuasive maneuvers which appeal to the addressee negatively (menace) to do something helpful effectively and not to fail.

We may reconstruct a conceptual structure similar to that reconstructed for the Aztec spells.

B. *Appendix: Towards legal sentence types lists*

How are we to map the basic conceptual rule (see section 4 and the evaluative implication types in section 3) into semantic-syntactical sentence structures? Seizing upon an idea developed by R. P. Abelson (1969) we can conceive a list L of *legal sentence types,* each specifying a semantically and pragmatically reasonable subject-verb or subject-verb-object(1-object 2) sequence (see Abelson 1969: 643). Nonsensical and undesired combinations of categories, such as an intransitive verb with one or two objects or the possibility of harmful-object attacking and overcoming the patient in the future, are not allowed. I am using the following notation to indicate morpho-semantic properties of the legal sentence types:

N: indicates assertion (ϕ) or negation (N) of the sentence type.

M: indicates the aspect of time. (M1 = imperative, M2 = futuric, M3 = present, M4 = intentional (cf. Hinz 1970: 71), M5 = perfective (perfect or imperfect morpheme), M6 = predicative (time-unspecific forms consisting in nominal predications in Aztec).

S: indicates the agent (grammatical object) (S0 = negative agent, S1 = positive agent, S2 = reciter magician, S3 = goal-agent).

O: indicates the recipient (the grammatical object) (O0 = negative actor, O1 = positive actor, O2 = reciter magician, O3 = goal-actor).

V: indicates the verb expressing the action or the attribute (state-description).

The sequence of the morpho-semantic properties can be represented as follows: N-M-S-0-0′-V (0′ indicating a second object = instrument, recipient or directive). One-place predicates (intransitive verbs) are represented by: N-M-S-V.

Morpho-semantic restrictions for propositions of the Sx-Oy(-$0'z$)-relation type or the Sx-predicate type hold for the following components:

(1) for the assertive modifier N_i

(2) for the temporal modifier M_j

(3) for the agent category Sx and the object category $Oy/O'z$.

In combining these components with verbs propositions are formed which can be tested for acceptability by successive attempts to fill the implicational structures in the basic conceptual rule.

The following section is an illustration based on a morpho-syntactical and semantic-pragmatical sentence-for-sentence analysis of the spells for *curing* diseases (cf. Hinz 1970: 82 ff.). Our representation is simplified here and does not attempt to recast all the details of the previous analysis into this framework of legal sentence types lists.

The following information for filling the implicational structures is needed:

I. *Semantic sub-categories:*

N: assertion / negation

M: PAST / PRESENT / FUTURE

S: NEGATIVE / POSITIVE / RECITER / GOAL

O: NEGATIVE / POSITIVE / RECITER / GOAL

V: *(actions or attributes)*

V1: DISAPPEAR

V2: LEAVE Obj.

V3: OBEY Obj.

V4: DESTROY Obj.

V5: TAKE WITH Obj./Loc.

V6: HELP Obj.
V7: ACQUIRE Obj.
V8: HEAL Obj.
V9: APPEASE Obj.
V10: BE-FORCEFUL

II. *Elements of semantic sub-categories:*

S/O-negative: (a) PAIN, DISEASE, EXHAUSTION, FEVER
                (b) DISEASE-ORIGINATORS

S/O-positive: (a) MEDICINES, (HERBS)
                (b) OTHER INSTRUMENTS (hand, needle etc.)

S/O-reciter: MAGICIAN or BODY-PARTS of him

S/O-goal: (a) PATIENT
                (b) PATIENT'S BODY-PARTS

M-past: M5 (perfect, imperfect)

M-present: M3, M4

M-future: M1, M2

M-unspecif.:   M6

V1:   to disappear, to go away, to perish

V2:   to leave, to stop bothering Obj.

V3:   to obey, to accept Obj.

V4:   to destroy, to throw out, to frighten away, to persecute, to
        damage Obj.

V5:   to take with, to call, to be accompanied by Obj.

V6:   to sustain, to glue, to breathe into, to shelter, to embrace,
        to help Obj.

V7:   to take, to acquire Obj.

V8:   to heal/cure, to alleviate (pains of) Obj.

V9:   to calm down, to appease Obj.

V10:   to be priest, to be lord of magic

III. *Legal sentence types:*

M1/2/4-S0-V1

M1/2/4-S0-O3-V2

M1/2/4-S0-O1/2-V3

if N-M1/2/3/4-S0-O1/2-V3, then M1/2/4-S1/2-O0-V4

M1/2/4-S1/2-O0-V4

M3/5-S0-O3-V4

N-M1/2/4-S0-O3-V4

M1/2/3/4/5-S1/2-O1-V5

M1/2/3/4-S1/2-O3-V6

M1/2/3/4-S1/2/3-O1-V7

M1/2/4-S1/2-O3-V8

M1 2/4-S1/2(/3?)-O0-V9

M6-S2-V10

Any violation of these illustrative legal sentence types by actually
occurring sentences in Alarcón's text also falsifies the basic conceptual
rule.

References cited

Abelson, Robert P. (1963): Computer Simulation of "Hot" Cognition. In:
Computer Simulation of Personality. S. Tomkins, Ed. New York: Wiley

— (1968): Psychological Implication. In: Theories of Cognitive Consistency:
A Sourcebook. R. P. Abelson e. al., Eds., Chicago: Rand McNally.

— (1968): Simulation of Social Behavior. In: Handbook of Social Psychology.
G. Lindzey and E. Aronson, Eds., Reading, Mass.: Addison-Wesley.

— (1973): The Structure of Belief Systems. In: Computer Simulation of
Thought and Language. R. Schank & K. M. Colby, Eds. San Francisco:
W. H. Freeman.

— and J. D. *Carroll* (1965): Computer Simulation of Individual Belief
Systems. The American Behavioral Scientist, May 1965: 24 ff.

— and C. M. *Reich* (1969): Implicational Molecules: A Method for Extracting
Meanings from Input Sentences. In: Proceedings of the International Joint
Conference on Artificial Intelligence. D. E. Walker and L. M. Norton, Eds.
Boston: Mitre Corporation.

Colby, Benjamin N., and R. *Knaus* (1972): The Divination Program. Un-
published paper on Ixil Maya divinations, UC Irvine.

Colby, Kenneth M. (1963): Computer Simulation of a Neurotic Process. In:
Computer Simulation of Personality. S. Tomkins, Ed. New York: Wiley.

— (1968): A Programmable Theory of Cognition and Affect ,in Individual
Personal Belief Systems. In: Theories of Cognitive Consistency: A Source-
book. R. P. Abelson e. al., Eds. Chicago: Rand McNally.

— S. *Weber* and F. D. *Hilf* (1971): Artificial Paranoia. Artificial Intelligence 2:
1 - 25.

Hinz, Eike (1970): Anthropologische Analyse altaztekischer Texte, Teil 1: Die
magischen Texte im Tratado Ruiz de Alarcóns (1629). Beiträge zur mittel-
amerikanischen Völkerkunde, Bd. IX. Hamburg: Kommissionsverlag Klaus
Renner, München.

Malinowski, Bronisław (1935): Coral Gardens and Their Magic (2 vols.). London: George Allen & Unwin.

— (1948): Magic, Science and Religion and Other Essays. Glencoe, Ill.: The Free Press.

Morris, Charles (1938): Foundations of the Theory of Signs. In: International Encyclopedia of Unified Science, vol. 1, No. 2. Chicago: University of Chicago Press.

Narens, Louis (1973): Belief Systems of the Insane. Social Sciences Working Paper 31, School of Social Sciences. UC Irvine, Cal.

Rosaldo, Michelle Z. (1972): Metaphors and Folk Classification. Southwestern Journal of Anthropology, 28: 83 ff.

Roys, Ralph (1965): Ritual of the Bacabs. Norman, Okla.: University of Oklahoma Press.

Ruiz de Alarcón, Hernando (1892): Tratado de las Supersticiones y Costumbes Gentílicas que oy viuen entre los Indios Naturales desta Nueua España. Anales del Museo Nacional de México, Epoca I, vol. 6: 123 - 223. F. del Paso y Troncoso, Ed. Mexico, D. F.

Schank, Roger (1972): Conceptual Dependency: A Theory of Natural Language Understanding. Cognitive Psychology 3: 552 - 631.

— (1973): The Conceptual Analysis of Natural Language. In: Natural Language Processing. R. Rusting, Ed. New York: Algorithmics Press, Inc.

— N. *Goldman*, Ch. J. *Rieger*, Ch. *Riesbeck* (1973): Memory, Analysis, Response Generation and Inference on English. In: Advance Papers of the Third International Joint Conference on Artificial Intelligence, Stanford. August 1973. Stanford, Cal.: Stanford University, Computer Science Department.

Sebeok, Thomas (with F. Ingemann) (1956): Studies in Cheremis II: The Supernatural. Viking Fund Publications in Anthropology, No. 22. New York.

Stegmüller, Wolfgang (1963, 3rd edition): Hauptströmungen der Gegenwartsphilosophie. Stuttgart: Kröner.

— (1969): Probleme und Resultate der Wissenschaftstheorie und Analytischen Philosophie. Band I: Wissenschaftliche Erklärung und Begründung. Berlin, Heidelberg, New York: J. Springer- Verlag.

Synopsis

Kognitive Strukturen und Prozesse im Spruchzauber

In diesem Beitrag wird die Beziehung zwischen kognitiven Strukturen und sprachlichem Verhalten untersucht. In diesem Sinne wird eine Analyse altaztekischer Sprüche in Zusammenhang mit den Regeln für ihren Gebrauch versucht. Es wird eine Explikation des Begriffes Magie versucht und die Theorie des kognitiven Gleichgewichts wird zur Erklärung herangezogen.

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Herausgegeben von Hilde Thurnwald

1. **Nationale Vorurteile.** Eine sozialpsychologische Untersuchung an 881 Personen. Von K. Singh Sodhi und R. Bergius. 94 S. 1953. vergr.

2. **Grundfragen menschlicher Gesellung.** Ausgewählte Schriften. Von R. Thurnwald. 160 S. 1957. DM 22,60

3. **Die amerikanische 'Cultural Anthropology' und das Wertproblem.** Von W. Rudolph. 184 S. 1960. vergr.

4. **Die Ma'dan.** Kultur und Geschichte der Marschenbewohner im Süd-Iraq. Von S. Westphal-Hellbusch und H. Westphal. 355 S. mit 68 Abb. und 11 Karten. 1962. DM 79,80

5. **The Jat of Pakistan.** Von S. Westphal-Hellbusch und H. Westphal. 110 S. mit 6 Abb. 1964. DM 23,80

6. **Der Kulturelle Relativismus.** Kritische Analyse der Grundsatzfragen-Dikussion in der amerikanischen Ethnologie. Von W. Rudolph. 291 S. 1968. DM 79,80

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8. **Hinduistische Viehzüchter im nord-westlichen Indien.** I. Die Rabari. Von S. Westphal-Hellbusch und H. Westphal. 358 S. mit 32 Abb. und 3 Ausschlagtafeln. 1974. DM 86,—

9. **Hinduistische Viehzüchter im nord-westlichen Indien.** II. Die Bharvad und die Charan. Von S. Westphal-Hellbusch und H. Westphal. 262 S. mit 32 Abb. 1976. DM 84,—

10. **Sozialwissenschaft und Gesellschaft bei Durkheim und Radcliffe-Brown.** Von G. Dombrowski. 162 S. 1976. DM 44,—