ADENDA to "Color in Mesoamerica: Instructions on Procedures"

ADENDUM I:

ETHNOSEMANTIC DETERMINATION AND SAMPLE SELECTION

As stated in the introduction (page 1.), the foregoing instructions on procedures are based on some experience. However, subsequent experience -- mainly, experience derived from attempts to interpret full sets of collected data -- reveals the need (1) to express more specifically the guidelines for sample selection (see page 6.) and (2) to refine the ethnosemantic discovery procedures (see page 28.). The two modifications are integrally related:

I have restricted the size of the essential sample to ten informants, because I have found that various problems of data interpretation only can be resolved by raising the quality of data, not by eliciting quantities of data. I have raised the quality of data by refining the ethnosemantic discovery procedures. The refinements increase by about two hours the time you will need to devote to data elicitation and organization for each of your informants. Hence, the restricted sample size is intended to curtail your total expenditure of time and work. However, when a study is based on a sample of ten, each informant will bear significantly on the final results of the study. Therefore, you must excercise care in choosing the contents of the sample so that the resultant data will be as likely as possible to contain a maximum of information about the color system under study.

Your sample of ten informants should include at least five who are monolingual or traditional speakers, i.e., people who are most likely to have rich but conservative color systems.

It is appreciated that ten conservative speakers might not be accessible to you, and, indeed, some of your ten informants, say, four or five, can be less traditional than others. However, if you test other informants than traditional speakers or monolinguals, they should be your regular language helpers or those who you suspect are vastly adept in color naming or those who are particularly good informants for various reasons, such as their perserverance and patience. You can substitute four or five exceptional informants for others who might be more traditional, providing that you do what you can to include in your sample at least five traditional or monolingual speakers. If some of your informants who most readily provide information and endure prolonged testing procedures are also monolingual or very traditional, then they are optimal subjects for this study.

You need not collect data from more than ten speakers, unless you have the time and desire to do so. Test any speaker at random only after you have either attained the sample of traditional speakers or have attempted this without success.

A Breakdown of Procedures and Time Per Informant

Procedures	Time
1. Naming Task	1: 15
2. Focal Mapping	: 15
3. Graph Transposition	2: 00
4. Ethnosemantic Determination	1: 00
5. Ethnosemantic Graphing	: 30
	5: 00 hours total

The total time required to gather and organize ten sets of data will be about 5 hours per informant x 10 informants = 50 hours total. 5 hours minus 2 hours of graph transposition and 30

minuets of ethnosemantic graphting equals 2:30 of total time which you will work directly with any one of your informants. It might be best to do the naming task and the focal mapping on one day, a session of 1:30 total time. Then, after you have spent two hours by yourself completing the graph transposition, reconvene with your informant for a one-hour session to do the ethnosemantic discovery procedures.

The two sessions with an informant can take place on separate days, days separated, if necessary, by weeks or months. Be sure that you make a note of a time and place where you can relocate your informant for a second session.

As suggested in the original instructions, it is advisable to graph data before doing the ethnosemantic determination: the graphed data will help you to formulate (or, if I visit you, me to formulate) questions and to identify areas to investigate with particular care and thoroughness during the ethnosemantic procedures. However, if you think you only will have one chance to work with an informant or a second session would be an inconvenience, then perform the ethnosemantic determination directly on the basis of the lexical responses you have recorded on your elicitation sheet and extracted for your focal mapping. Go through with a full 2-1/2 hour session if this would be far better than meeting again and if you think that you and your informant have the indurance and patience.

The Revised Ethnosemantic Determination

The ethnosemantic determination consists of three steps of discovery procedures which will reveal the structure of an informant's cognitive system of color. The description of this cognitive system will be either very useful or absolutely essen-

as these appear in the linguistic data on the 5'6" graph of naming responses.

Knowledge of such cognitive structures and relationships is important for both understanding the linguistic system of color designation and for testing hypotheses concerning, specifically, the cognition of color and, generally, the structure of cognitive categories. Such hypotheses cannot be reliably tested against purely linguistic data which, in turn, cannot be fully interpreted without a description of the underlying cognitive system.

Refinements of Discovery Procedures - the Experiential Basis: The pioneering participants in my project found that informants who were requested to map with rice the range of X color term placed a small array of grains on only the more obvious and outstanding examples of the color. Informants tended to leave large areas of -- what, apparently, were to them -- lesser examples of the same color unmapped with rice.

However, many informants could be coaxed with certain statements to extend their mapping of a given category. Examples of coaxing statements are: "Now make it bigger," "Now do a few more," "Now do those that are still that color but not as much," "Now do those that are just a little bit that color," "Now do those that are hardly that color at all,"...etc.

Usually, when coaxed in this way, informants progressively map a color category in small patches or stages. An informant can be coaxed to proceed until he has placed a grain of rice on every dot of color which he considers to be even slightly an example of X color; and he can be encouraged to proceed to a point at which he absolutely insists that no more dots of X color remain to be rice-mapped.

tial in interpreting the linguistic patterns -- or the apparent lack of patterns -- which appear on the seven-segment 5'6" graph. In brief, the three steps of discovery procedures consist of:

Step I. Asking your informant to place grains of rice or equivalent small objects on each 1/4" dot of the color spectrum which he can name with X color term; repeating this procedure for each head lexeme that he has volunteered during the naming task; recording the results.

Step 2. Using colored pencils and some minimal notation to display the results of Step I on a 8-1/2 x 11" graph.

Step 3. Directly asking your informant to verbally clarify ambiguities which remain after Steps 1 and 2. The 8-1/2 x 11" graph elucidates and helps to isolate the remaining ambiguities.

STEP I

Objectives: Step 1 can be called the "rice mapping." The object is to determine the entire range on the spectrum over which an informant can extend and apply each of his head color terms. Also, the rice mapping will reveal certain kinds of relationships between named color categories, such as various types of inclusions and overlaps. The procedure will determine which categories are cognitively independent *of all others* and how these "basic" categories are related. It will determine which named categories are included inside the ranges of other categories and the various manners in which the inclusions are structured. It will reveal, further, the cognitive internal partitions of each color category *regardless of whether* the partitians are named, and it will reveal the internal complexity of each category. The procedure might reveal that the internal partitions of complex categories correspond to the linguistic distributions of modifiers

After an informant has mapped a few categories by increments, he will gain an understanding of what you want him to do. Then your coaxing can be simplified to statements, such as "Now do another part of X," "Now another part," "Another," "Anything left?" "OK, keep going," "Anything left?" "Go ahead," "Anything left now?" "Nothing?" "Absolutely finished?" "That's fine. Now I'll take the rice off the spectrum." "Put a grain of rice on every dot of color that you can call Y."

The rice-mapping technique reveals cognitive information in addition to the relationship between categories and internal category structure, i.e., what the informant considers to be relevant internal partitions. The rice-mapping by stages also reveals the sequential order in which the informant ranks these partitians. On the basis of this kind of refined cognitive data, it might be possible to determine whether the rankings correspond in any regular manner to the ways that categories relate to each other by overlap and inclusion.

The Sequence of Procedures for Recording Ethnosemantic (i.e., Cognitive) Data:

a) Write near the upper left of a blank sheet the color term, X, whose range your informant will rice-map.

b) Ask him to place a grain of rice on each dot within the color spectrum which he can call X. Usually, your informant will respond by mapping out a small quadrant of grains. the dots in the quadrant can be identified as letter-number intersections.

c) Consider this first mapping to be "Stage I," write "Stage I" on the paper to the right of term X,...

X	Stage I
	C8 - 13
	D7 - 12

...and record the letter-number intersections below "Stage I"

which your informant has mapped with rice. Leave the Stage I rice-mapping on the spectrum; do not remove it before beginning Stage II.

d) Coax your informant to map more of the category, as was exemplified in the paragraphs above. Write "Stage II" on the paper below what you already wrote, and record all letter-number intersections of this second mapping under "Stage II":

X

Stage I
C8 - 13
D7 - 12

Stage II
B 10 - 13

It does not matter if, for convenience or in haste, you rewrite some or all of the letter-number intersections in the present stage (e.g. Stage II) that you have written in the prior stage (e.g., Stage I). The repetition later can be eliminated from the data by simple subtraction. This principle applies to all subsequent stages and those which precede them.

e) Continue to coax your informant to map additional stages or parts of the category. Enter each stage on the paper and record corresponding letter-number intersections under each stage. Continue to map until your informant insists that no dots on the spectrum remain unmapped that he can call X.

f) Record the intersections for the final stage. Remove the rice from the spectrum before mapping the stages of another category, Y.

You might find that some categories will be completely mapped in only one or two stages, as these categories are cognitively simple. Other categories will be mapped in many stages, as these are cognitively complex. (although basic terms will be cognitively independent of each other, not all will be of equal cognitive complexity.)

Additional notation and procedures can best be demonstrated in the context of the following example of a set of data for one internally complex color category:

Tepetotutla Chinantec, Informant #1

$n^{y}\acute{o}\eta_{2}$

Stage I

C8 - I3
D8 - I2

Stage II ($t^{y}og_{2}$)

BI0 - I3

Stage III ($\check{s}i_{2}$)

C7
D6-7
E6-7

Stage IV ($r\ddot{e}?_{2}$)

CI5
DI4 - I5
EI1 - I3

Stage V ($lim\acute{o}$)

DI6
EI4 - I6

Stage VI

G8 - I0
H7 - I0

This data was elicited by a member of the Summer Institute of Linguistics in Mexico. There are four features to note:

1. The language name and informant number are entered at the top left. The color term, $n^{y}\acute{o}\eta_{2}$, is entered at the left to identify the name of the category to which the data pertain.

2. During Stages II - IV the informant spontaneously volunteered modifiers when mapping the stages, e.g., as he was mapping Stage III he said, "I'm now putting rice on all of the $n^{y}\acute{o}\eta_{2}$ $\check{s}i_{2}$."

You should record all modifiers which are spontaneously volunteered in parentheses to the right of the Roman numeral.

3. Stages I and VI are not accompanied by modifiers, because the informant volunteered none while he mapped these stages.

4. Stages V and VI are circled. The circles indicate that the stages were prompted, that the informant would not have mapped the stages if the investigator had not asked directly whether those particular stages could be mapped for X color term, $n^{y}on_{2}$.

Prompting and Coaxing: "Prompting" is very different than "Coaxing." Coaxing leaves the decision open to the informant whether he should continue to map ~~this~~ and what area of the spectrum to map next. Prompting also leaves the decision open to the informant whether to continue mapping, but the investigator directly asks whether a given specific section of the spectrum might also be eligible to be named with X term.

There are two ways to prompt an informant to map or to refuse to map a stage or area of the spectrum: (1) linguistically, i.e., use an adjective which the informant volunteered during the naming task and say, "Now put rice on X M," as in the case of Stage V of the Chinantec example, "Now do $n^{y}\acute{o}n_{2}$ lim$\acute{o}$"; (2) indexically, i.e., physically point to a section and ask, "Can you call these X"? as, in Stage VI of the example, "Can you call these $n^{y}\acute{o}n_{2}$ too"? You will notice that the circle around Stage V encompasses the adjective that was used as a linguistic prompter. If you prompt with use of an adjective, you should include it within the circle in this way. The circle around Stage VI, which does not encompass an adjective, implies that the prompting was indexical.

Unprompted data stages are more meaningful than prompted

stages, because unprompted stages reveal both the informant's internal category partitions and his ranking of these. Prompted stages, at best, reveal only the former data and never the latter. Therefore, in so far as possible, you should coax the informant to continue mapping in the manner described above... But, you should avoid prompting as long as the informant is willing to rice-map without prompting.

You should prompt only after the informant refuses your coaxing to rice map further but when, nevertheless, his rice-mapping of a color term covers less area on the spectrum than he covered with the same term in his naming task. In order to make this determination, it can be helpful to have graphed the informant's naming responses and to have reviewed the finished 5'6" graph before asking the informant to rice-map his categories. As discussed above, this would involve doing the rice-mapping in a second elicitation session, with its respective benefits and disadvantages. You can have the seven segments of the 5'6" graph on hand during the rice-mapping; however, be certain that the informant does not examine the graph and compare it to his rice-mapping performance or, conversely, feel that he his being tested or contradicted. A few hand written notes in place of the graph would avoid these possibilities. If you have not completed the graph of linguistic responses, then, in order to prompt, you must rely on your memory of these responses as they were designated during the naming task.

Summary of Step I.: In summary, the procedures for discovering and recording ethnosemantic data are:

a-c) As described above (a-c): (a) Enter the category name or color term at the left, (b) coax the informant to map each named category in stages, (c) indicate the stages with Roman numerals and enter the letter-number intersections that are rice-mapped for each stage.

d) Enter volunteered adjectives in parentheses after the corresponding Roman numeral.

e) Do not prompt -- linguistically or indexically -- unless the informant refuses to proceed and it is clear from other data (e.g., 5'6" graph or your memory of his naming responses) that his category is more extensive than he has indicated with rice.

f) Circle Roman numerals of prompted stages.

g) Enclose in such a circle the modifier used as a linguistic prompter. Absence of a modifier in a circle signifies indexical prompting.

General Provisions for Step I.: Of course, it is recognized that some informants will map absolutely all examples of a color category -- obvious and faint -- on your first request. Other informants will not map neatly in stages, but will map in a haphazzard and halting progression. Some will begin what might look like a succeeding stage before they have finished a prior stage or before you have time to fully record letter-number intersections of prior stages. All might not proceed neatly as projected. The directives under Step I. provide general guidelines. Accomodate diverse performances by whatever means seem best to fit the situation, such as simply describing what occurs.

During the rice-mapping it can be very useful to work in teams of two: one investigator can call out stage numbers and letter-number intersections, coax the informant, and keep a short term mental record of what is being said and done. The other investigator can act as secretary, writing down what the first investigator elicits and calls out.

Often, while rice-mapping (or at other times), a verbal informant will spontaneously devulge extensive ethnographic information about the colors and the terms he is mapping, and

he may volunteer linguistic frames of considerable evidentiary weight (e.g., "X can modify Y but Y can't modify X," "X applies to these colors only when they are the colors of animals," "This word also refers to a root that people once used to make dye.") The acting secretary should record such comments on a blank sheet. Some comments, when recorded verbatim in the native language, are quite valuable as evidence. If you have a tape recorder, you can allow it to continually record during the ethnosemantic determination to prevent potentially important but involved/and rapidly uttered commentary from escaping on the wing.

As stated in the original instructions (p. 29-bottom), it is best to map in succession categories which are remote from each other on the spectrum, so that the informant will not adapt a subsequent mapping to the one immediately preceding in a manner which does not reveal his cognition.

When mapping terms for "black" and "white," you might spare the informant the trouble of lining up 41 grains on rows J or A: After he/declares that all dots in one of these rows are identical and begins to line up grains on that row, help him to finish the row. Then ask him to begin to map any dots of that category that he might find in adjacent rows.

Use the same kind of lighting -- shade near sun -- for the rice-mapping that you used for the naming task.

Step 2: Ethnosemantic Graphing

Your equipment contains ten 8-1/2 x 11" graphs on which to transpose rice-mapping data. You need not make carbon copies of these transpositions, as they involve the use of colored graphite. I will make my own original copies from yours.

Figure I of these instructions (see inserted sheet) repre-

sents the fully transposed rice-mapping data from the Chinantec informant. Figure I illustrates an end result of the following ethnosemantic graphing process:

1. Write the terms for the rice-mapped categories at the bottom of the sheet. Assign a color to each, preferably the same colors that you have already assigned semiarbitrarily to these head lexemes on the 5'6" graph of linguistic naming responses.

2. Draw a straight horizontal line of this color through all graph squares whose corresponding letter-number intersections the informant has rice-mapped on the spectrum for the lexeme which you are representing with that color. Each display of straight lines of a single color will represent a named category.

Of course, it is easiest to transpose the rice-mapping data to the 8-1/2 x 11" graph stage-by-stage, e.g., first transpose the Stage I "yellows" and enclose these lines with small "1"s... then transpose the Stage II "yellows" and enclose these with small "2"s, and so forth. Observe how this has been done for $n^{y}\acute{o}\eta_{2}$, "yellow," in Figure I.:

3. After you have transposed -- or while you are transposing -- all data for one category to the graph, the colored line representing the category should be segmented with small arabic numbers which correspond to the Roman numerals of the stages which the informant has rice-mapped for that category. Thus, on Figure I, the "yellow" line extending between D6 - 16 is segmented into 3...3 (for D6 - 7), I...1 (for D8 - 12), 2...2 (for D13), 4...4 (for D14 - 15), and 5...5 (for D16), because the informant rice-mapped D6 - 7 during Stage III, D 8 - 12 during Stage I, D13 during Stage II, D14 - 15 during Stage IV, and D16 during Stage V. The arabic numbers on the inside margins of graph

squares indicate at what stage the squares between the numbers were mapped for the term and category whose assigned color horizontally intersects these numbers.

4. Two details should be noted: (a) colored lines which represent an entire rice-mapping of a category that consists of only one stage need not be boardered with arabic numbers. Thus, in Figure 1, numbers do not occur on the colored lines representing krema, naranxada, limón, and morado. All of these loan categories (being, apparently, cognitively simple) were mapped in a single stage. Thus, on the graph, no number = Stage I when no subsequent stages were rice-mapped for a category. (b) Stage mappings (i.e., colored lines boarded with arabic numbers) which occur in the same row on both sides of the arbitrary break in the spectrum, e.g., Figure 1, D37 - 40, 1 - 3, only should be enclosed by numbers at the ends which do not falsely appear to terminate at the arbitrary spectral break. This conforms to the fact that columns 40 and 1 are spectrally adjacent and cognitively contiguous. No stage break should be indicated between 40 and 1 in the same row if no such segmentation was indicated by the informant during his rice-mapping. Thus in Figure 1, E37 - 40, 1 - 3 shows no arabic number between 40 and 1 on the outer edges of these squares; whereas, F38 - 40 is enclosed with 1...1 and F 1-3 is enclosed with 2...2, because two stages, I and II, were mapped by the informant and are, consequently, represented on the graph.

5. As you will direct your informants to map each category separately, some of the categories of any one informant will overlap. The overlaps will show up on the graph. Notice that on each 8-1/2 x 11" graph-sheet the squares are vertically rectangular. The vertical rectangularity allows several horizontal lines to be

drawn at different levels through a single square. Thus in Figure 1, three lines are drawn through squares F 1-3 and E 13-15. More than one line in a single square represents an overlap and/or containment of categories. You can fit about five lines into one square, although I hope you will never need to do this.

6. The number of prompted rice-mapping stages can be circled on the 8-1/2 x 11" graph, e.g., ⑥...⑥, if the prompts were indexical, as in Figure 1, G 8-10 and H 8-10; and prompted stages may be marked on the graph with parentheses, e.g., (5...5), if the prompter was linguistic, as in Figure 1, D 16, E14-16. However, if such circles and parentheses tend to crowd the notation on your graph, omit them. They are indicated on the original sheets of rice-mapping data and easily can be consulted during our analysis.

7. The informant's focal choices are represented on the 5'6" graph of naming responces as ⊗. This same focal choice data again can be represented on the 8-1/2 x 11" cognitive graph with a colored X on a line of the same color, as in Figure 1, F 17. Double focal choices can be represented with X X, as in Figure 1, E 38-39; and multiple focal choices will require more of the same notation. In the case some categories likely to be cognitively simple -- the original focal choices will not correspond to the squares marked by the horizontal colored lines of the rice-mapping, e.g., Figure 1: G 2, E 16, G 34. In such cases, the colored X can be marked independently of the colored line and left "floating."

8. In the cases of such floating foci, you might want to recheck or re-elicit an informant's focal choices. Mark on the graph an informant's re-elicited focal choice with a single short, vertical cross-bar, ǀ, as in Figure 1: G 36-37. In this example,

and IV overlapping ranges of nyóŋ$_2$ and rë?$_2$, and, thus, limón names a secondary category that consists of the overlapping ranges of two basic categories. A further inquiry with the informant is in order in this case, because, to my knowledge, this kind of a secondary category has not been reported in the literature. The status of morado, although cognitively simple, might be basic, as it maps an area that is not mapped by other terms. The question can be resolved by directly asking the informant if he considers or does not consider morado to be a type of a class of the various named categories that surround morado on the cognitive graph. Stage VI of nyóŋ$_2$ will require further investigation by direct questioning, because its mapping is disconnected from the other stages of the same category, it was indexically prompted, and it appears to be cognitively tenative.

These examples illustrate how the graph of cognitive data can not only answer questions about the relationships of color terms, but can also isolate ambiguities that remain to be resolved within the system. The resolution is attempted by asking the informant certain direct questions. The questions can be constructed in various ways, depending on the nature of the ambiguities in the data. One line of questions that has proved productive is structured as follows: "Is X a type of Y"? "Where is the domain of Y on the spectrum"? "Can it include X"? Where is the focus of Y."? "Where is the focus of X"? "Can the domain of Y extend beyond the focus of X"? Attempt to resolve ambiguities by asking the informant direct, concrete questions with the spectrum before you. Allow him to point to portions of the spectrum to illustrate his answers.

The formulation of successful questions is a creative undertaking with no procedural rules...at least, none which I have

the re-elicited focal choice is double. If you re-elicit a focal choice and mark it on the cognitive graph with a cross-bar, nevertheless, include also the informant's original focal choice -- even if it is floating -- with the appropriate notation, ✕ .

9. Re-eliciting focal choices is a methodologically sound practice when seeking to affirm probable relationships of inclusion. This practice is discussed in the original ethnosemantic section of the instruction sheet, page 30. Such a re-elicitation was performed in the case of the included Chinantec term ʔwɨ̄ʔ$_2$, Figure 1: G 30 and H 33. On second eliciation of the focal choice, the focus of the included term, ʔwɨ̄ʔ$_2$, was placed outside of the Stage I mapping of the inclusive term, I^{y}a$_2$, and within the most peripheral (last-to-be-mapped) stage, Stage IV, of this inclusive term. This provides concrete information -- two possibilities* -- upon which to base additional questions to be asked the informant. His answers might clarify the manner in which he cognitively *includes* ʔwɨ̄ʔ$_2$ *within* / I^{y}a$_2$.

Various orders of interesting data will call for some specific questions to be asked of the informant during Step 3 of the ethnosemantic discovery procedures. The formulation of such questions is discussed below:

Step 3: Direct Questions

An 8-1/2 x 11" graph of cognitive data reveals and clarifies various aspects of the relationships between color terms and the c categories these terms designate. For example, we can immediately infer from Figure 1 that the informant's color categories that are borrowed from Spanish are, generally, cognitively simpler than his native categories. / The limón term maps the Stages II

naranxada could be a subcategory of li$_1$rosa: the naranxada focus should be re-elicited.

* ʔwɨ̄ʔ$_2$ might designate any partition of l^{y}a$_2$ to the right (i.e., the "red" side) of the l^{y}a$_2$ focus and might itself be focused near or at the focus of l^{y}a$_2$; or ʔwɨ̄ʔ$_2$ might focally designate the most marginal internal partition of l^{y}a$_2$, and the range of ʔwɨ̄ʔ$_2$ might extend left-ward to, but not beyond, the focus of l^{y}a$_2$.

developed yet. Perhaps discovery procedures amount to accurate bookkeeping and orderly recording of preliminary data. The final questions, those which discover the less obvious aspects of a cognitive system, cannot be predetermined. The final questions, to be effective, must be adapted to the informant's culture and to his ability to abstract or to think in terms of concrete demonstration; and the questions must be open-ended so as not to prejudice the informant's answers.

An example of a particularly creative line of questioning was accomplished by a linguist-translator in a Zapotec language. In this language we thought we had found a relationship of double inclusion, with a named category inside of a named category that, in turn, was inside of another named category. The translator affirmed this hypothesis by asking his informant questions that were based on an analogy of equal categories: people and animals. Within people there are men and women, and within women there are girls. The informant readily analogized the color category relations as girls to women to people and stated, further, that there were no equal categories, such as men to women or people to animals. He went on to use the "equals" analogy for other categories, specifically, that loans for "green" and "blue" were equivalent to men and women and were encompassed by a composite native term for "green-blue," equivalent to people.

This section, Step 3, is the least developed of these instructions, because I have not yet built up an inventory of the kinds of problems that could be encountered and of suggestions as to possible lines of inquiry that might resolve certain types of problems. When more experience accures in this aspect of the field work, I intend to expand this section into a practical

and copiously exemplified typology. Meanwhile, you and I will be the ones who collect the experience. I will try to amend the difficiency in written suggestions and with my direct help and consultation:

Consultation

Part of my role as consultant will be to help you to isolate signifcant ambiguities in your data and to help you to formulate questions that might resolve the ambiguities in a way that reveals something about your language of investigation and about color systems. I hope to be able to visit you at least once before you collect all of the data, especially before you collect all of the cognitive data. I will examine the data you have collected and will point out the features of particular importance that you should investigate carefully and thoroughly. I will review with you and leave with you my notes on what you have collected. The notes will outline my hypothetical explanations of your data and will list some questions to pursue in order to test the hypotheses. If you have time, we can perform the ethnosemantic determination from beginning to end with some of your informants.

Ideally, I should visit you twice, once after you have transposed the naming responces and focal choices onto a 5'6" graphs and, again, after you have transposed cognitive data onto the 8-1/2 x 11" graphs. I could then suggest what linguistic data to investigate with special attention during the rice-mapping and, later, what direct questions to ask your informant about the graphted cognitive data which resulted from the rice-mapping. In addition, I have found it extremely beneficial to orient investigators by working with them through all procedures with the first informant or two.

However, probably we will not be able to synchronize our schedules closely enough to arrange all of these potentially productive visits. Moreover, you might collect cognitive data (rice-mapping) from some informants on the same day or during the same session in which you collect linguistic data (naming task). Should we not be able to meet in the ideal manner, continue your investigation nevertheless. Again, I hope to be able to personally orient you and to visit you before you collect all of the data, especially all of the cognitive data.

Review of the Analytical Strategy: The Use of Cognitive Graphs in the Analysis of Linguistic Graphs

As implied above, you will collect, essentially, two kinds of data: linguistic data and cognitive data.

You will collect linguistic data during the naming task, and these data will be organized on the seven-segment 5'6" graph. This graph will display the linguistic system in detail.

You will collect some cognitive data when eliciting focal choices. These will also be entered on the 5'6" graph as ⊗ .

You will collect the major amount of cognitive data in the ethnosemantic determination or rice-mapping. These will concern the structures and relationships of categories. All cognitive data -- those collected in the rice-mapping and the focal choices -- will be displayed on the 8-1/2 x 11" graph sheet. The focal choices are the only data which will be displayed on both graphs.

Both the linguistic and the cognitive data will be essential to our analysis of linguistic color categorization in your language of investigation. The graphed linguistic data will reveal an ample array of words as they are actually used. The pat-

terns of words on the graph or, for that matter, a jumbled admixture of words with no discernible linguistic pattern, will provide clues about what the underlying cognitive relationships between named categories might be. These clues will tell us what hypotheses about category relationships we should emphasize during the ethnosemantic determination, i.e., to what parts of the system we should pay particularly close attention in our attempts to extract accurate and fully developed cognitive data during the rice-mapping.

The results of each ethnosemantic determination will be a 8-1/2 x 11" graph of an informant's cognition of color categories, the interrelationships between categories, and the internal partitions of categories. The results might also include the responses to some direct questions you have asked. This cognitive system will help us to understand what the informant has expressed with his linguistic system, i.e., how he mentally interrelates the various lexemes in his linguistic data. We will be able to determine whether his modifiers correspond to internal category partitions, whether the partitions are ranked, whether some categories are encompassed by others, whether the lexemes for encompassed categories are simple names for certain internal partitions, and whether categories are cognitively simple or complex. We will have a sufficiently refined quality of data to identify various types of category relationships, such as focal (early stage - ranked high) and non-focal (late stage - ranked low) inclusion, overlap, and, perhaps, others not currently recognized in the published or oral tradition of the science.

Summary

The analysis, then, will involve the intercomparison and cross-fertilization of a linguistic system and a cognitive system. This analytical strategy will resolve problems of interpretation which cannot be resolved by collecting a large quantity of linguistic data and by restricting cognitive data to focal choices. The recently developed refinements in the ethnosemantic determination will add an hour and a half to the work required for each informant, and the refinements will bring the total number of work hours to fifty. You can limit these hours to fifty only by limiting your informants to ten, each of which, hopefully, you will be able to choose for his/her ability to provide a rich, full-scale, conservative color naming system. You should increase your sample to more than ten informants only if you have more than fifty hours to devote to the collection of color data.

I think that the restriction of the sample, the refinement of methods, and the increment in required time will produce data of vastly improved quality. The quality will enable us to effectively gain a more thorough understanding of color in your language of interest and, ultimately, of color systems in general. The improvement in results, I hope, will be proportionally greater than the added work.

LINGUISTIC COLOR CATEGORIZATION IN MESOAMERICA: INSTRUCTIONS FOR DESCRIPTIVE FIELD WORK

Introductory Summary and Index

These instructions outline what you need to know of pre-analytical procedures in order to collect and organize original data on Linguistic Color Categorization. The procedures are designed to be as non-time consuming as possible and easy to apply and yet to be capable of producing data that constitute an adequate basis for a professional quality descriptive study on that topic in a particular language. I developed the procedures through a trial-and-error application while collecting color data from eighteen informants in 16 Mesoamerican languages. I have inherited my equipment design and some methods from Berlin and Kay's project, "Human Color Categorization", and I have incorporated into these instructions the experience which those who participated in that project have related to me. A potential fault of these instructions is that they might seem complex on a first reading; however, their simplicity can be shown by this skeletal summary and index:

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How to know when you have enough data for an analysis and what you and I will do then.

II. DATA TO BE ELICITED FROM ~~SOME~~ all INFORMANTS IN SELECTED SAMPLE

1. Ethnosemantic Determination 28

How to determine whether some color categories are encompassed by others, i.e., how to determine relationships of inclusion which are not evidenced on a data graph. How to test for semantic synonymy of color lexemes. Cross referencing semantic data with morpheme lists (I.6)

III. GENERAL DATA TO BE ELICITED AT LARGE

1. The word for 'color'. 31

Words for color-like appearances

Context-specific color terms

Rare, obscure, and arcane color terms

Archaic words for colors

Color-term etyma

2. Cultural and symbolic associations of colors. . 33

Replaced: see Addendum II, pp. 11-14

changed! see Addendum I and Addendum II, but read anyway.

Still Important! Please do not omit.

Equipment

For each investigation of linguistic color categorization you will need the following equipment:

Now some are wooden with chips pressed in acetate ... much lighter.

1. A metal slide file (box) containing 330 loose Munsell color chips, each in a glass slide binder, all arranged in a fixed random order and numbered consecutively, 1-330.

Now a few contain two arrays, one reversed.

2. The box contains a 14" x 5" spectral array of 1/4" circular chips, lettered by row (A-J) and numbered by column (0-40). The array represents the same colors as do the loose chips; however, the array contains 80 more chips than does the box, because the array has an entire row (A) of 41 absolute white and an entire row (J) of 41 absolute black chips. The box contains only one chip each of these colors.

3. ~~50~~ 20 sets of letter-size data elicitation sheets, two sheets in a set, each sheet printed on both sides, each side divided into four columns of numbered datum spaces. There are about 85 numbered spaces on a side, 330 in a set of sheets, numbered 1 - 330 throughout. The numbered spaces correspond to the numbers, 1 - 330, on the loose chips in the box.

4. ~~50 sheets~~ 20 sets of seven-segment data graphs. Each set consists of seven letter-size sheets and constitutes one complete graph. Each graph represents the structure of the spectral array; each graph-square corresponds to one particular color chip, represented both on the array and in the box. The letters and numbers on the left and top margins of each graph correspond

to the letters and numbers of the array. The number in the lower right of each graph-square relates that square to a datum number on an elicitation sheet (and, likewise, to a numbered loose chip in the box).

5. ~~50~~ 20 sheets for recording demographic information.

6. A package of blank letter-size paper.

7. A package of black letter-size carbon paper.

8. A package of about 24 [redacted] assorted colored pencils.

9. 5 letter-size file folders.

10. A pencil sharpener.

11. Two pads of 5' x 8' paper slips. excluded

12. A clipboard or paper clamp.

~~13.~~ Envelopes and postage stamps. 60 8½ x 11 graphs (see Addendum I, figure 1 and Addendum II, pp. 11-15.)

I will provide investigators with, at least, items 1-9. I plan to provide a pamphlet on current hypotheses of universals in linguistic color categorization. See Kay, Paul and Chad K. McDaniel, "the Linguistic Significance of ... Basic color terms," Language (3)54:610-646 (1978).

Bookkeeping

While you conduct your study, please keep in mind the following:

Important! 1. All data -- whether transcribed on elicitation sheets, organized on graphs, or summarized on white sheets -- should be duplicated in carbon. This will provide copies for both of us. Copies will also insure against loss if stored separately from originals and if/when mailed in place of originals.

2. Fill out and make a carbon of a demographic information sheet for each of your informants.

3. Assign each of your informants a number, record this number on his (=his/her) demographic information sheet, and mark every sheet of recorded data pertaining to him with his number. All sheets of data in your files should be marked with an informant number. Each data-graph section has a small space in the upper left for the informant number, and each elicitation sheet has a similar space on one side. When recording focus-mapping and ethnosemantic data on white sheets (explained below), mark the informant number in the upper left. Although this procedure will be a little tedious, it will keep the data from getting mixed up.

4. Although I do not specifically designate a blank space on each graph section for the name of the language, please write this information, including village or dialect name, on each section and on all other sheets of data. When filing or comparing data from different languages, the name of the language will be as necessary as the informant number.

Sample Selection

1. Consider each local settlement to be the subject of a separate study. A conclusive study consists of data from a minimum of 10 ~~[and, for our purposes, a maximum of 25]~~ informants who are all from one place and who all grew up speaking the same dialect. Of course, "local settlement" and "dialect" are not globally defined. The definition of a "settlement"

A sample of 10 is adequate. See Addendum I, pp. 34-35.

is particularly problematical in cases of migratory groups, rancherias, and other dispersed populations. Nevertheless, it is methodologically unsound to skip from village to village when choosing informants for a single study, even though the villages are known to speak the same "dialect".

The only exception is as follows: Investigators working outside of the field with limited access to informants or working with moribund languages should gather data from whatever informants they have occasion to work with. (see 2)

2. Consider data collected from less than 10 informants of a single settlement to be an exploratory sample. Please take as many exploratory samples as you wish. Although samples from different places cannot be coalesced to make a conclusive study of "Linguistic Color Categorization of X People", such samples can constitute valuable comparative data. We will determine what, if any, kind of write-up we can base on sample data.

3. The occurrence of inter-informant variability among your data (especially variability in the number of basic color categories) will increase the number of informants needed for a study. You might be able to reduce variability by selecting informants from a single demographic category. One possible research strategy is to first elicit data from 10 conservative monolinguals or, at least, older traditional speakers. Then, if you have time, select additional informants from the speech community at large. You might find the conservative data to be uniform and the additional data to exhibit a range of

variability. Inter-informant variability is a theoretically significant subject of study in its own right and, if you are interested, by all means investigate it. A study dealing with variable data could require the full complement of ~~25~~ 15 (at most!) informants.

Time

changed! see "time-table", Addendum I, p. 35.

It takes about an hour to elicit data from one informant and about two hours to organize the same data, a total of three hours. 10 informants x 3 hours = 30 hours; 25 informants x 3 hours = 75 hours. Your preanalytical work should take you between 30 and 75 hours, depending on the amount of variability that your sample includes. You will be able to keep the color chips for about three months, during which you can work these hours into your schedule. The period for using equipment is limited in that this project includes three times as many investigations as I have boxes of color chips. If you need more than three months per investigation, we can arrange it if other investigations conclude in less time.

In Berlin and Kay's project a few investigators, in an apparent effort to speed up elicitation in the task of naming loose chips from the box, skipped chips and rows of chips. I am not sure that the results of this random spot-check method can constitute a reliable basis for an analysis that is to be compared universally with other analyses. Some participants in the Berlin-Kay project suggested that I use a non-random, hand-picked abbreviated set of color chips, that elicitation

with 330 chips takes too long. I cannot think of a way to hand-pick chips without either using some of the very hypotheses that we are testing, or, at best making filled-in data graphs look like checker boards. After thorough consideration, I decided that we would gain the fullest return in proportion to our time and effort if all investigators adhered to the original equipment-design of 330 chips.

Important!

Occasionally, a consciencious informant will take an extremely long time to name chips. If an elicitation session takes far longer than you bargained for and the end is not in sight, you might choose to terminate the session at an appropriate point.

Data Collection by Trained Informants

Experiments with this approach failed.

You might want to place a linguistically sophisticated informant in charge of the collection of color data. This is planned by some investigators in this project. I am in agreement with this approach, providing that your helper understands the procedures outlined in these instructions.

yes!

If you do not completely delegate the field work to a trained informant, a helper can aid you with certain tasks, such as elicitation, which are more easily accomplished by two people than one.

a native helper can aid greatly in designing rice mapping directives. See Adendum I and Adendum II, page 16.

DATA TO BE ELICITED FROM ALL INFORMANTS IN SELECTED SAMPLE

Environments and Precautions

Expect to make mistakes when you first use the equipment and apply the procedures. Your first two informants should be people who are accustomed to working with you, regardless of their demographic status.

It is best to seat the informant with his back to the light.

It is best to elicit data in the shade at the edge of the sunlight. If you elicit indoors, work near an open door or a window. Working at night is not recommended. However, if night work is necessary, work under a white light. It is easiest to elicit in teams of two, one to record and the other to show the chips to the informant and to call the chip- numbers aloud. Use this calling-of-numbers or another checking method throughout all of your elicitations to be certain that the chip-numbers continually correspond to the numbers on your elicitation sheets. It is very easy to mismatch the numeration and easy to compound the error throughout many numbers, and it takes time to work backward to find the source of the mistake. Although constantly checking is an immediate chore, it is ultimately the easiest way.

Important!

When showing your informant loose chips, do this against a dull background. The back side of the spectral array is excellent for this purpose. Take care that the informant is not viewing the chip at such an angle that the glare from the glass impairs his vision. One way to avoid glare is to drop

the chip on the dull background and allow the informant to independently handle it ... or you can temporarily take his position to determine from his view where the glare is reflected.

Important! If possible, elicit data out of the presence of native-speaker on-lookers, or at least, ask by-standers not to help the informant or to comment on his responses. In a gregarious field situation you might find it difficult to elicit anything better than an opinion concensus. You might have to let the novelty of the color chips wear off before you can work successfully with individuals.

Orientation

Orient your informant by showing him the 14" x 5" spectral array. Tell him that you wish to know how he names all of these colors, that the colors of the chips on the array are represented in the box (except that the box contains only one chip of row A and one of row J ~~white and one black chip~~), that many chips are similar in color but none are identical, that he will name the chips in the box one-by-one, that he may use the same word for as many colors as he likes, that he should name as many chips as he can with words that he usually uses when speaking his language, that he may decline to name the colors which seem to him to be difficult to name. To illustrate, show him chips 1-5. Point out that chip 2 and chip 5 are almost the same but not identical in color. Ask him to match a chip or two to their counterparts on the spectral array.

Important!

If you can, conduct all elicitation in the native language.

The Naming Task

Show the informant, one-by-one, 1-330, all chips from the box, asking him to name each. Be sure that the spectral array is turned face-downward or removed from view. Record each lexical response in the correspondingly numbered space of the elicitation booklet. You can abbreviate with initials or with numbers, but be consistent and complete. Record tonal distinctions and other subtle phonological and lexical differences. Always record the data fully and exactly as they are volunteered, whether the responses are native words, phrases, obscure words, loans, or "I don't know". Do not substitute native words for loans, and do not discourage elaborate responses. Data which might disappoint you during elicitation can turn out to be significant when transposed to a graph.

Important! very small differences convey information. Never neglect detail!

A uniformity of elicitation procedures will produce data that are most likely to be comparable between languages. If you are tempted to innovate during the naming task, please read "one-by-one" literally. Do not hand the informant two or three chips at once, skip chips, or spread out several chips at a time, even though such strategies might best suit an informant's preference for appraising the colors. Elicitation from more than one informant in a session could distort the data, regardless of whether the informants appear to respond independently of each other. It is best to complete the naming task in a single session and under one quality of light source, interrupted only with short breaks.

Important!

Notational Conventions for Elicitation

these are summarized and supplemented in Appendix III, page 1.

1. Record head lexemes and any and all modifiers.

2. Record "I don't know" with Ø.

3. Sometimes an informant will give a response, X, then change his mind and replace his first (cancelled) response, X, with a second (final) response, Y. Record both responses, placing the cancelled response, X, in brackets and leaving the final response, Y, out of brackets, e.g. ...

239. [X] Y

In the event of two cancelled responses, X_1 and X_2, before a final response, Y, record as ...

$[X_1/X_2]$ Y ... or as ... $[X_1]$ $[X_2]$ Y

4. In the event of two or more alternative final responses, Y_1 and Y_2, record as ...

Y_1/Y_2

... separating the two lexical responses with a slash.

5. Sometimes an informant will make a relatively long (relative to other resonses) hesitation pause before arriving at a name for a chip. When, in your judgement, the pause is unusually long, indicate this with a dash,————, as ...

240.———— Y

241.———— Ø

6. If an informant voluntarily indicates that a modifier is optional (by stating so or by giving a designation twice, once with and once without the modifier), then place the modifier in parentheses, as ...

Y (M).

7. Record false starts by writing the phonemes uttered followed by three dots and enclose all in brackets, as ...

[as ..]

8. When an informant qualifies his response with an uncertain "I think", "maybe", "Isn't it?", etc., record the qaulification as a question mark in parentheses (?) after the response, e.g., yaš (?).

Any of the above notation can be combined productively.

The Focus Mapping Task > "Focal choices"

See Adendum II, page 4.

Preparation: Extract from the 330 recorded lexical responses on your elicitation sheet a list of all different lexical responses. That is, include in this list any unmodified head lexemes, reduplications, and apparent frozen compound designations. One criteria for "frozen-ness" is that the modifier occurs only with one head and the head seldom or never occurs without the modifier. Another criteria is phonological alteration of one or more lexical segments. These criteria are not absolute, nor are they the only ones. You might intuitively suspect that some modified or compound designations are frozen in their reference to color. You can exclude from the list productive and innovative compound designations, unless you want to include some of these. If in doubt about whether to include an item, then include it. Write the list inside the left margin of a blank sheet. Make a

carbon copy, and write the informant number and the name of the language in the upper left.

Elicitation: Ask your informant to point out on the spectral array of 1/4" chips the chip or small cluster of chips which is/are the best example of each different lexical response on your extracted list. If your informant is willing to choose a single chip for each best example, this data will be easier to process ... but do not oblige him to choose arbitrarily from among a small cluster.

Even a multiple focal choice can constitute an important datum.

Your informant's best-example choices are his foci of his color categories. Be sure that he chooses the "best" example, not just the "prettiest" one. You must find some sentence or phrase in his language which will convey this instruction. (When the informant points to a focal chip on the array, protect the plexiglass from ink-stains by avoiding use of a pen point.)

Record this. See Addendum II, page 4., bottom.

Record your informant's focal choices to the right of the items on your list as the intersection of a row-letter and column-number, those marked on the perimeter of the array, e.g., yaš - F 17.

Morpheme Identification

Extract from your informant's lexical responses a list of all free and bound morphemes. Write the list on a blank sheet with a carbon copy. Include head lexemes that refer exclusively to color, natural object words and other words which can refer to non-color phenomena, and all modifiers, affixes,

reduplications, and other non-head morphemes. Provide a dictionary-type definition of each morpheme. Note whether each modifier can or cannot modify non-color words. If you suspect that some forms are loan words, provide the hypothetical original form, e.g., morat < Sp. morado, 'purple'. You should make a morpheme list for each of your informants; but you need to define each morpheme only once in the first list it occurs in, unless its meaning differs between informants.

A special query pertains to natural phenomena words that are applied to colors: Do they presently refer mainly to color or to their non-color referent? A method for investigating this question is discussed in the Ethnosemantic section below. The results of your ethnosemantic inquiries can be cross-referenced to your morpheme definitions.

Data Organization

Preliminary: The raw data on each set of elicitation sheets are randomized. Before we can analyze the data, you must organize them. The organizing is accomplished by transposing the data of each informant from the elicitation sheets to a graph. Your equipment includes enough graphs to organize sets of data from 25 informants for each investigation you conduct and to make one carbon copy of each set.

As mentioned, each square of a graph represents one chip on the spectral array; an entire graph depicts the structure of the Munsell color spectrum. The squares on each graph are lettered by row (A-J) and numbered by column (0-40), as are

the 1/4" chips on the spectral array. Transposition of lexical responses to a graph will place these in their spectral relationship to each other and will identify their meanings in terms of the Munsell standards.

Each graph consists of seven 8-1/2" x 11" sections. The sections allow easy handling, as an entire graph is about 5' 6" long. This length is intended to accomdate rows of 41 (hence, columns 0-40) squares which are large enough to contain clearly written, uncrowded data.

Transposition: The transposition of one set of data from elicitation sheets to graph is an exacting process. To facilitate the task, as many datum spaces as possible (about 85) are printed on one side of a sheet, and each graph-square contains a key-number in the lower right. The key-number corresponds to the number of the datum on your elicitation sheet which you will write in that square. Transpose the data by handling the graph one section at a time and by handling the elicitation sheets one side at a time. Scan the graph section for key-numbers which fall between the lowest and highest datum numbers on the particular side of the elicitation sheet that you are working from. Write each datum in its corresponding graph-square. After you have done this for one graph section, take the next graph-section and repeat the process. As each graph consists of seven sections, you will repeat the process seven times for each of the four sides of your two elicitation sheets.

You need only handle three items at one time: a data

elicitation sheet, an 8-1/2" x 11" graph section clamped to a piece of carbon paper and to a duplicate, and a pencil. It is best to use a sharp pencil to neatly write each datum into its corresponding graph-square.

Important provisions: When you transpose data from elicitation sheet to graph, always do the following:

1. Make a carbon copy of each section of each graph.

2. Write the informant number in the upper left of each graph section. If your carbon paper lacks an upper left corner, directly write the number on the copy. Write the name of the language somewhere at the top of each section.

3. Write in each datum fully, without using abbreviation, even though you might have abbreviated on the elicitation sheets.

4. If you have control of the phonemic system (or the phonetics) of the language, write the data phonemically (or phonetically), including suprasegmental notation, even though you might have used your practical orthography in the booklet. Use IPA, Pike's notation, or any other widely accepted system. The only exception is as follows: Investigators who know only the orthography and do not know the phonemics or phonetics of the language can use the orthography.

5. Write in phonological and lexical variations as they were volunteered by the informant.

6. Leave the lower right of each graph square blank to allow for subsequent [coloration]. The key-number, which is in the lower right, will be colored over.

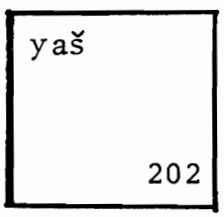
eliminated from the procedures

7. Use the following notational conventions (a-l):

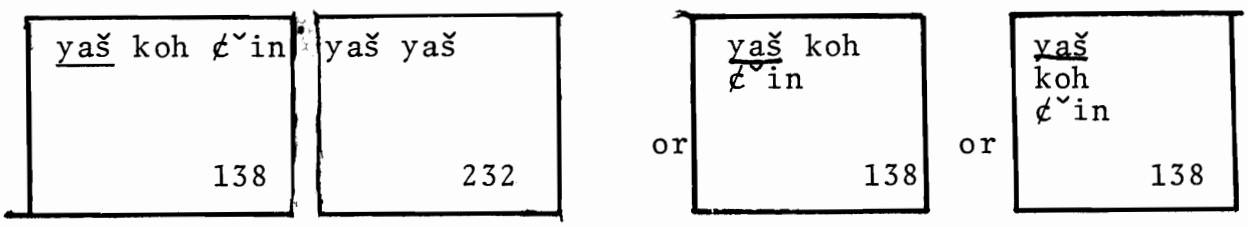
Notational Conventions for Data Organizing

Supplemented in Addendum III, page 2.

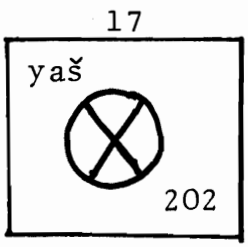
a) Write the lexical response in the upper left of each graph square, as ...



b) Write in full responses with all modifiers, and underline head lexemes when these are accompanied by modifiers which are not placed in parentheses (as discussed under k) such as ...

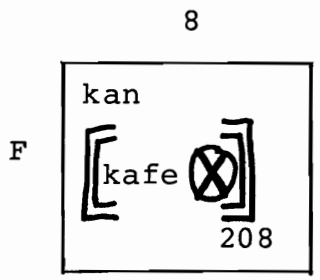


c) Mark focal choices, e.g., yaš - F-17, with ⊗ as ...

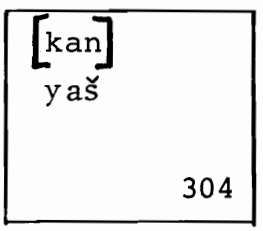


d) In cases in which it turns out that your informant's naming response for a particular square (e.g., 208) is one word,

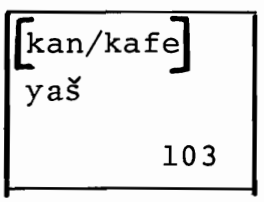
e.g., kan, and he places his focal choice for another word, e.g., kafe - F 8, in the same square (e.g., 208 = F 8), then write the naming response in the upper left and the focal word at the bottom left together with the focal sign ⊗ in double brackets, as ...



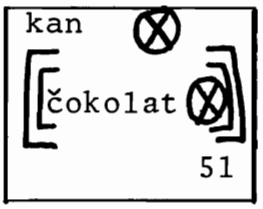
e) Write cancelled responses, enclosed in single brackets on the elicitation sheet, e.g., [kan], in single brackets in the upper left, and write final responses directly below in mid left, as ...



Write rare double cancellations, e.g., [kan/kafe] on the sheets, in the upper left separated by a slash and enclosed in single brackets, and write the final response directly below, as ...



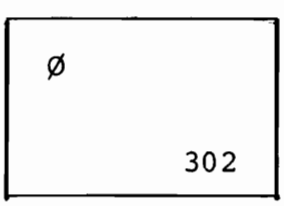
f) Dual focal choices can be written as ...



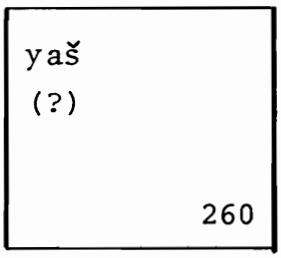
... with the naming response, e.g., kan, out of brackets at the upper left (chosen for that particular square in both the naming task and the focus mapping task) and the other focal lexeme, e.g., čokolat (chosen for that particular square in only the focus mapping task) in double brackets at lower left.

In very rare cases, when neither of two co-occurring focal choices, e.g., kafe and čokolat, is the naming response, e.g., kan, double-bracket both co-occurring lexemes and separate them with a tilde, ~ , as ...

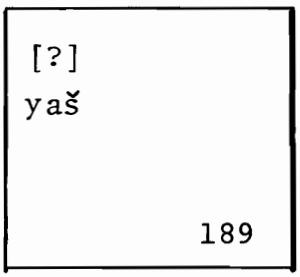
g) Mark zero responses ("I don't know") as Ø in the upper left, as ...



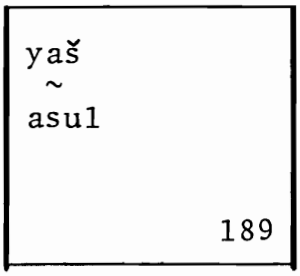
h) Indicate qualified responses ("I think", etc.), shown with (?) on elicitation sheets, e.g., yaš (?), as ...



i) Indicate hesitation pauses, shown with a dash on elicitation sheets e.g., ——— yaš, as a question mark in single brackets in the upper left directly over the belated lexical response, as ...



j) Write alternative final responses, separated with a slash on elicitation sheets, as separated with a tilde, ~ , as ...



... placing the lexemes in the upper and mid left.

k) Write partial responses, marked on sheets as uttered phonemes plus three dots in brackets, e.g., [as ...], in the upper left with the same notation, as ...

[as...] yaš 264

... and write the final response below, e.g., yaš.

l) Write optional modifiers, i.e., those for which the informant has voluntarily demonstrated optionality, as head (modifier) or head + modifier_1 (modifier_2), using parentheses, as ...

<u>yaš</u> (toh) 124	<u>yaš</u> kan (¢'in) 306	<u>yas</u> (kan ¢'in) 149

The above notation, a-l, can be combined productively. It is designed to handle all logically possible forms of data. Likely, you will not encounter some of these forms and will not need to use some of the notation. After you graph a set or two of data, I think you will be able to use the notation from memory.

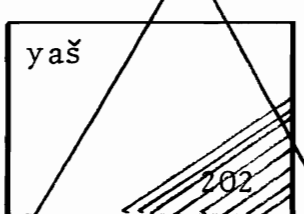
Although the detail in notation might seen unnecessary,

all of it corresponds to significant theoretical constructs (e.g., basic categories, focal regions, category boundaries, non-focal regions, secondary categories, secondary foci, and covert categories). I will explain these when we analyze the data. During our analysis, your full and consistent use of the notation will be indispensable to us.

Coloration of Graphs pp. 25-26 deleted

New technique substituted for coloration. See pp. 11-13 in Addendum II.

After you have transposed a set of your data on to a graph, semi-arbitrarily assign to each different head lexeme a color. Be consistent in this assignment between sets of data. Select the colors from an box of twenty-four colored pencils. Pencil in the lower right corner of every square with the color assigned to the head lexeme which you have written in the upper left, as ...



Color directly over the key-number. It is unimportant whether the number remains visible. Do not provide coloration for lexemes in single brackets [ ] or parentheses ( ) or for zero responses Ø. Color only your original graphs and do not bother to color carbon copies.

In the event of alternative final responses, pencil in

The coloring of squares will vastly aid the discernment of lexical patterns for analysis.

Observations and Notes

You will get to know your data intimately while you transpose them from sheets to graph, and your time will not be consumed merely by busy-work during this process. As you transpose data, you will notice interesting and theoretically pertinent features, perhaps many of them, some pervasive and some consisting of details. Take notes on your observations as you make them, indexing your notes for easy reference to the significant data by language, informant number, and row letter - column number intersections. Your written observations will save us time during our analysis and can be incorporated into the publishable write-up.

During our analysis, we might sort your observations into different classes. It will be efficient if you write each of your observations on a separate 5" x 8" slip, indexing each slip at the top. It will not be necessary to carbon-copy the slips, unless you intend to mail them or otherwise anticipate their possible loss.

Enjoy making observations, and do not feel troubled that you might overlook something. The success of our analysis will not utterly depend on your observations. I will add my observations to yours, and, hopefully, I will notice anything you have missed.

Analysis

After you have prepared graphs of data from at least 10 informants, notify me by mail. Let me know whether the data shows variation or consistency. In the event of consistent patterns between informants, it is likely that we can make arrangements to begin the analysis. The analysis will involve a separate system of techniques, which we will apply together and which I will be responsible for. You will not have to master additional procedures.

As I stated in my original circular, we will summarize the results of the analysis in publishable form under your name.

DATA TO BE ELICITED FROM ~~SOME~~ all INFORMANTS

Ethnosemantic Determination

See Addendum I-II. Vastly revised!

Category Inclusion: The semantic range of some of the words in your data might encompass the focus and range of other words. The purpose of this task is to determine if any such relationships of inclusion exist in your data, i.e., which words are absolutely essential for lexically mapping the spectrum and which words name secondary divisions or subcategories of the essential basic words.

This task might be carried out after you have put some of your data on graphs. The completed graphs could give you a clearer idea of what questions to ask. However, you will

have to meet for a second session with those of your informants whose organized data, you think, warrant an ethnosemantic test. If you want to elicit ehtnosemantic data from an informant with whom you can have only one session, then proceed without benefit of the graph of his lexical data. This task might be accomplished with a select few of your informants, say, about five; although the more informants you have time for, the better. If it is possible, some of these informants, should be monolingual conservatives. Bear in mind that although two informants might appear to use the same named color categories, they might mentally relate their categories in different ways. That is essentially what you will try to determine.

See Addenda I-II

Determine category inclusion by showing your informant the spectral array, and ask "Is X a kind of Y?" or, more concretely, "Can these chips, often called X, also be called Y? ... and can Y chips be called X?" A variant of this method is to hand the informant some small objects -- beans, corn grains, or pebbles -- and ask him to place one of these on each chip in the array that he can call Y. Record all of the letter-number intersections of his mapping. Remove the objects from the array and return them to the informant. Ask him to repeat the procedure for all chips which he can call X. You might want to insert the mapping of another category or two between the mapping of X and Y if you are interested in the relatioship between X and Y. This measure will decrease the chance that your informant will consciously adapt his second mapping to his first in a manner that does not reveal

his cognition. Use your judgement and your knowledge of the culture to work out a system of questions which most effectively discovers your informants' views of category inclusion.

If X can be called Y but Y cannot be called X, then X is a subcategory of Y. However, to make such a statement with certainty, the focus-mapping data of the particular informant tested must show that his focus of X is well within his ethnosemantically mapped range of Y. Before making such statements, recheck the informant's focal choice for X.

Some categories which might involve inlcusion relationships are equivalent to the English glosses red ⊃ orange, yellow, purple, pink, magenta; yellow ⊃ brown, tan; green = blue ⊃ green, blue; black = cool colors ⊃ green = blue, black; purple ⊃ lavender; and others which you might notice or suspect.

Semantic Synonyms: The foregoing line of questions might reveal that some color terms are semantically synonymous, that X = Y. In cases of semantic synonymy of color terms, attempt to determine whether other distinctions, such as age, sex, social contex, syntactic constraints, or textual usage, govern lexical choice.

Primary and Secondary Meanings: Your morpheme section might include some words which regularly apply both to a color and to a natural phenomenon that is typically of that color. Although the etymological origin of such a word might be clearly tied to the natural phenomenon, it is necessary to ask: Does the word <u>presently</u> refer primarily to color or

to its non-color referent? In the case of some words, such as English 'orange', the question might be impossible to decide. However, we should know whether there are some such words in the language of investigation for which a decisive determination can be made, at least among some informants.

One method for approaching the question is to ask your informant the meaning of a particular word out of the context of the elicitation session and out of a sentential frame. Simply ask, "What does X mean?" The informant's first definition can be hypothesized to be the primary meaning of the word. The hypothesis should be tested and revised against the responses of several informants, some of whom have not seen the color chips or heard of your interest in color.

Bookkeeping: Please record your ethnosemantic data on separate sheets, making carbons. Identify informants by number, or, for those who are not contributors to the graphed data, by name, age, sex, locality, birth place, and other languages spoken. You can cross-reference the definitions in your morpheme section to your ethnosemantic determinations.

DATA TO BE ELICITED AT LARGE

Seven categories of data can be compiled generally without attribution to particular informants:

Important!

1. Elicit the word for 'color' if it exists in the language. Also try designations such as 'it is colored', 'it has color', and others. How is the concept of general color expressed? Check carefully to determine whether the

term for 'red' or for another particular color also means 'color' in general. 'Red' indeed means 'color' in some Mesoamerican languages. Note whether particular forms are used by all or only by some informants.

2. Provide a lexicon of all words which relate to color-like appearances, such as striped, spotted, speckeled, blotchey, varigated, murky, tinged, tinted, opaque, clear, transparent, translucent, shiny, glittering, dull, faded, drab, colorless, dirty, dark, light, pale, paint, painted, to paint, dye, dyed, to dye, discolored, or others which you find or think of.

3. Record all context-specific color terms, e.g., words used only for the colors of delimited phenomena, such as complexion, hair, weather conditions, corn-types, foods, animals, vegetation and stages of vegetal growth, feathers, soils, and so forth. Examples of context-specific color terms in English are 'blond', 'swarthy', and 'roan'.

4. Record any rare, obscure, or arcane words for color. Record words which are used generally for color but which did not appear during the naming task. Do all or only some informants use these words? Can any of your informants match them to the spectral array? Are any of the obscure, little-known or seldom used color words variant forms of commonly used color terms?

5. Are there any archaic words for color? Are these archaic terms variants of commonly used terms?

6. Of all color terms (basic, secondary, context-specfic,

rare, obscure, and archaic), do you derive from your general lexicon any etymological hypotheses. Such hypotheses need not be proven and can consist solely of an observed similarity in forms and meanings. For example, the word for 'red' might be similar in form to a word for a 'reddish soil-type', 'yellow' similar to 'rotten', 'grey' similar to 'fox', 'green-blue' similar to 'leaf', 'black' similar to 'charcoal', and so forth ... Or other regular but superficially unapparent relationships could exist between color terms and etyma.

7. Do any of your color terms involve cultural associations or symbolic relationships, e.g., yellow = sickness, rotten; black = severity, poverty; red = rage, health, heat; white = death; or whatever the associations might be? Are there any intriguing similarities between color terms and other terms, e.g., Ayoquesco Zapatec -gă̈ty 'white', and -gâ̈ty 'die', that might imply hypothetical ancient, now-extinct associations? Do any of your color terms involve other kinds of cultural associations, such as cosmological orientations (e.g., red = East, black = up, white = down, green-blue = center), or other?