Aguaruna color categories[1]

BRENT BERLIN—*University of California, Berkeley*
ELOIS ANN BERLIN—*Alameda County Nurses Association*

major outlines of Aguaruna Jívaro color classification

In this paper we explore the basic outlines of the classification of color by the Aguaruna Jívaro, a people of the rain forests of north-central Peru.[2] According to the classification of Berlin and Kay (1969), the color vocabulary of the Aguaruna can best be classified as Stage IIIa, a system which includes basic color terms for BLACK, WHITE, RED, and GRUE. This is the first such system to be described utilizing standardized eliciting materials. Furthermore, several unexpected findings make Aguaruna of particular theoretical interest, the most important of which are the following:

(1) While the majority of informants tested are found to have basic terms for the categories BLACK, WHITE, RED, and GRUE [green + blue],[3] the focal area for lexically undifferentiated GRUE differs from that predicted in Berlin and Kay (1969:17) in that it appears in *blue* rather than in *green*. This finding requires a slight modification of the proposed order by which color foci are encoded in the diachronic development of any language's color vocabulary.

(2) Patterned variation reveals considerable cognitive and lexical diversity within the Aguaruna population in terms of the number of basic color categories found in any particular individual's system. While thirty-four or approximately two-thirds of the informants tested show a Stage IIIa system as described above, five informants show color vocabularies that can best be interpreted as Stage IV (with terms for BLACK, WHITE, RED, GRUE, and YELLOW), and sixteen individuals possess a Stage V color terminology (with terms for BLACK, WHITE, RED, GRUE, YELLOW, and GREEN). Nonetheless, the new categories of YELLOW and GREEN in Stage IV and V systems, respectively, are precisely those categories which Berlin and Kay predict will be added in the history of a language's development of basic color terms. Furthermore, informants exhibiting Stage IV and V systems are seen to have greater knowledge of Spanish than those with Stage IIIa systems who are, for the most part, monolingual.

(3) The persistence of the extension of a term for *black, bukúsea,* into the *greens* and *blues* is quite similar if not identical to the extension of comparable terms in Dani, a Stage I color system (Heider 1972), and in Binumarian, a recently described Stage IIIb

The basic color categories of the Aguaruna Jívaro are described in detail, and the influence of culture contact is explored. Methodological problems and new elicitation procedures are discussed. Finally, some elaboration on and modification of the Berlin and Kay basic color term theory is suggested.

color system (Hage and Hawkes n.d.). These data taken together support Heider's original hypothesis of an ancient dichotomy of cool-dark vs. warm-light hues which is still present in languages with early systems of color vocabulary (Heider 1972). Furthermore, data from Aguaruna and Tzeltal (Berlin n.d.) suggest that reflections of the cool-dark category may even be found through Stage IV systems and may not be entirely lost until Stage V.

procedure

Initial efforts to elicit color terms from poorly bilingual and totally monolingual informants following the procedures outlined in Berlin and Kay (1969:5-7) proved inadequate. There is no single expression for the sensation of 'color' in Aguaruna, and even bilingual informants found it difficult to produce an unambiguous utterance for the abstract question "What are the names for each color in Aguaruna?" (cf. Conklin 1955 for a similar observation on Hanunóo color classification).

We experienced somewhat more success when we worked with bilingual speakers only in Spanish; from interviews with them we were at least able to begin compiling an initial list of potentially valid basic color terms. One early list included the following expressions and their approximate Spanish glosses as provided by native informants.

kapántu	'rojo'
púhu	'blanco'
čamíŋ	'amarillo'
samékmau	'verde'
wíŋka	'azul'
šuwín	'negro'
bukúsea	'negro', 'azul'
yaŋkú	'amarillo'
yamakái	[no gloss, efforts made to point out the color of some object. Range close to 'maroon' in English]
daŋáŋ	[no gloss, color pointed out on artificial or natural object. Close to 'pink' in English]

We were never successful in determining the possible taxonomic relationships among such terms by simple elicitation (e.g., "is X a kind of Y?"). As will be seen below, inclusion relationships were determined from informants' individual acetate mappings (cf. Hage and Hawkes [n.d.] for a similar approach arrived at independently in their work on Binumarian).

Given the list of ten potentially valid basic color terms, we next directed our attention to mapping these terms on the standardized Berlin and Kay Munsell color array.[4] Mapping proved almost as difficult a task as verbal elicitation.[5] Our first major breakthrough occurred when we ceased prompting informants with a given term and requiring that they map it, but, instead, began presenting *natural* or *artificial* objects and asking *wahí hakitíyaita* 'what stain does it have', a question provided us by a bilingual schoolteacher. Informants were not only able to respond rapidly to the question but also found the task an engaging and pleasant diversion. By selecting from the natural environment and from our field equipment, we were able to gather objects which were representative of all but two of the proposed universal color foci (*brown* and *pink*) described in Berlin and Kay (1969:2). A set of forty-five objects was eventually compiled. Most artificial objects were made of plastic (cups, plates, etc.), the colors of which were highly saturated. Each of these objects was matched or coded to the Berlin and Kay

Munsell color array insofar as possible. Natural objects presented greater problems for color coding (due to ripening, wilting, etc.), but matching was nonetheless easily accomplished. Five objects which were utilized were not coded (a yellow-green mottled leaf [*Citrus* sp.], a dark green leaf [*Citrus* sp.], metallic gold paint on a flashlight battery, an unripened banana, and an avocado). The list of the forty-five objects which were selected and their corresponding Munsell equivalents (using Munsell notation) is presented in Table 1.[6]

Table 1. Objects used as part of the stimulus materials in studying Aguaruna color terms.

Object	
1. green felt pen	(10G4/)
2. green felt pen	(2.5G5, 4/)
3. light green felt pen	(10GY7/)
4. light blue jar	(10BG7/)
5. light red dish scrubber	(5R5/)
6. blue-green dish scrubber	(2.5BG5/)
7. blue-green box	(2.5BG4/)
8. yellow cup	(5,7.5Y8/)
9. (discarded)	
10. dark-green soap wrapper	(2.5G4)
11. light-green soap wrapper	(10GY8/)
12. orange peach palm fruit (*Bactris gassipaes*)	(2.5YR6/)
13. red shotgun shell	(7.5R4/)
14. light blue plate	(5G9/)
15. pale blue cup	(2.5BP7/)
16. green cup	(7.5G10, 7/)
17. yellow-green mottled leaf	[not coded]
18. dark green leaf	[not coded]
19. ripe yellow lemon (*citrus* sp.)	(5Y8/)
20. turquoise battery	(5BG6/)
21. metalic gold on battery	[not coded]
22. green juicer	(10G7/)
23. blue-green saucer	(2.5BG4/)
24. blue plate	(2.5BP5/)
25. red box	(7.5R4/)
26. orange *cocona* (*Solanum* sp.)	(5YR7/)
27. red chili pepper (*capsicum* sp.)	(7.5R3, 4/)
28. orange chile pepper (*capsicum* sp.)	(2.5YR6/)
29. green cup	(2.5BG4/)
30. yellow corn kernal	(10Y8/)
31. green eraser-pencil	(2.5G4/)
32. discarded	
33. blue ball point pen	(4.5, 10B4/)
34. black squash (*cucurbita* sp.)	(neutral 1)

Table 1. (continued)

Object	
35. yellow-green lid	(7.5GY8/)
36. yellow squash (*cucurbita* sp.)	(2.5Y8/)
37. blue dish sponge	(2.5BP5/)
38. pink cup	(2.5R5/)
39. unripe banana (*musa* sp.)	[not coded]
40. dark orange *cocona* (*Solanum* sp.)	(10R4/)
41. ripe avocado (*persea* sp.)	[not coded]
42. charteuse pencil	(10YR6/)
43. orange pencil	(2.5YR6/)
44. purple pencil	(2.5P3/)
45. ripe orange (*citrus* sp.)	(2.5Y8/)

In addition to colored natural and artificial objects, we developed a series of twenty-three painted strips.[7] Each painted strip was coded, as were the colored objects, to the Berlin-Kay Munsell color array. While the use of single, unmounted standardized Munsell color chips would have been more suitable than the individually produced painted cards, no such chips were available to us at the time of the research.[8] A list of the twenty-three colored painted cards and their approximate Munsell coordinates on the Berlin-Kay array is presented in Table 2. Figure 1 depicts the distribution of objects and painted cards as coded to the Berlin-Kay array.

Table 2. Munsell coordinates from Berlin and Kay array
for 23 painted strips used in the study of Aguaruna color categories.

Number	Teranashi Name	Munsell Coordinates
S1	Chinese white	(Neutral 10)
S2	lemon yellow	(7.5, 10Y8/)
S3	chrome yellow	(2.5Y8/)
S4	orange	(2.5YR6/)
S5	vermillion	(10R5/)
S6	Napel's yellow	(7.5YR8/)
S7	burnt sienna	(2.5YR3/)
S8	vandyke brown	(5Y2/)
S9	yellow ochre	(10YR5/)
S10	carmine	(7.5R3/)
S11	red purple	(7.5RP2/)
S12	violet	(7.5P2/)
S13	chrome green deep	(5, 7.5G2/)
S14	veridian	(10G2/)
S15	chrome green light	(10GY6/)
S17	sky blue	(10B3, 4/)
S18	cobalt blue	(2.5BP3/)
S19	ultramarine	(7.5BP2/)
S23	ivory black	(Neutral 1)
S24	olive	(7.5GY2/)
S26	raw sienna	(7.5YR3/)
S29	sap green	(7.5, 10YG3/)
S31	grey	(Neutral 5)

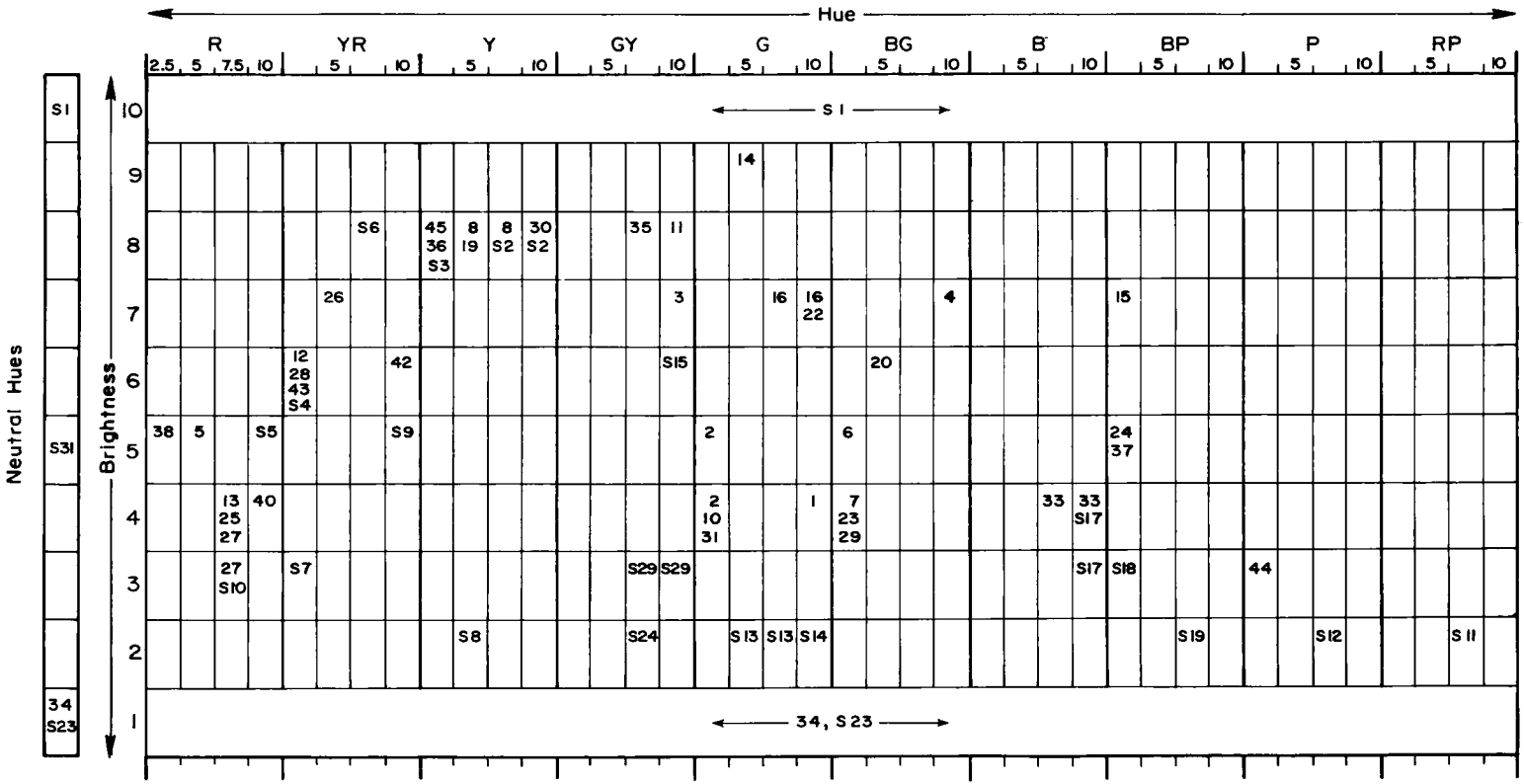


Figure 1. Distribution of colored objects and painted cards as coded to the Berlin and Kay Munsell color array. (See Tables 1 and 2 for names of objects and painted cards.)*

*Uncoded objects: 17 yellow-green mottled leaf (*Citrus* sp.)
18 dark green leaf (*Citrus* sp.)
21 metallic gold paint on flash light battery
39 unripened banana
41 unripened avocado

the elicitation routine

Data were collected from fifty-five informants ranging in age from fifteen to sixty years. Elicitation was carried out individually with a single informant in the presence of the two investigators.[9] Each informant was asked his name, age, and place of residence in Spanish. Language proficiency was rated as: monolingual (inability to respond to these questions) or some Spanish (ability to respond). Good proficiency in Spanish was rated according to our personal knowledge of the individual or volunteered demonstration of the language in conversation.

The series of colored natural and artificial objects was then presented, in no particular order, with the qualification that we usually began by displaying a red object. One investigator would draw an object from a basket and present it to an informant with the question, *wahí hakitíyaita*, 'what stain does it have?' The other investigator would record the response in a notebook. Some effort was made to vary the objects so that several objects of the same color were not presented serially. The painted cards were presented next, again in no particular order.

The final task required of all informants was the mapping of the terms which *each* informant had individually volunteered in the object-and-painted-strips-naming-tasks onto the standardized Berlin and Kay Munsell color array.[10] Mapping was carried out by placing the mounted color array (which had been out of sight during the other naming tasks) before the informant, generally on the floor in front of him in the open doorway of our house, covering the chips with a clear piece of acetate. Each informant was presented with a black felt marker pen and asked: *tintiáta mun nenéntu aší* _____ 'draw a big wall around all of the _____' and, subsequently, *tuyá sínči* _____ or *tuyá dekąs* _____ 'where is the strong(est) _____', 'where is the true _____'. Informants were allowed to choose more than one focal chip if they so desired. The standard, however, was a single chip, and few individuals selected more than three or four adjacent chips as focal.

Some individuals had some difficulty in carrying out the mapping procedure, especially in drawing category boundaries. Others performed the task as well as college sophomores. Mapping was unequivocabaly easier for all informants immediately after having completed the object/painted chips naming tasks. Selection of category foci proved to be easy for all informants, a finding in keeping with the results reported in Berlin and Kay (1969).

Each informant's acetate mappings and naming responses were immediately coded on individual 8½ X 11 inch code sheets. Foci were indicated by lightly hatching focal areas on the code sheet in the appropriate color; boundaries were indicated by a single colored line. Naming responses for the colored objects and cards were noted by placing a colored dot in the appropriate area on the code sheet. Simple inspection of the distribution of coded foci, ranges, and naming responses for any particular informant permitted, in most cases, the rapid classification of that informant's individual color terminology in terms of stage because these three sets of data, taken together, reveal both the stability of reference and the general extension of each term in an unambiguous way.

results

The distribution of basic color terms in Aguaruna reveals representatives of three stages of color categorization: Stages IIIa, IV, and V. Of thirty-four Stage IIIa informants, twenty-nine were rated as monolingual and five demonstrated minimal knowledge of

Table 3. Relationship of Spanish proficiency and stage of color terminology for 55 Aguaruna.

	Monolingual	Minimal Knowledge of Spanish
Stage IIIa	29	5
Stage IV	2	3
Stage V	0	16

Spanish. The remaining twenty-one informants used Stage IV (five individuals) or Stage V (sixteen individuals) color vocabularies. Three of the five Stage IV informants showed minimal control of Spanish. Two of this group were rated as monolingual but were, nonetheless, in residence in a Catholic boarding school. Finally, all sixteen Stage V informants demonstrated at least a minimal knowledge of the Spanish language. These data are summarized in Table 3.

Stage IIIa systems

The thirty-four informants who possessed Stage IIIa systems universally shared the basic terms *kapántu* RED, *púhu* WHITE, and *wíŋka* GRUE. While all thirty-four informants were aware of BLACK, they labelled this category by the terms *šuwín* and/or *bukúsea*. This latter term may range, for some informants, over some of the so-called "cool" hues, namely blues and purples.

Other terms elicited in the object naming tasks (*yaŋkú, čamíŋ, paúŋ, yamakái, samékmau, aét, daŋáŋ*) can be shown to be secondary or non-basic in terms of one or more of the following criteria: such terms (1) are taxonomically included in one of the four basic terms, (2) have unstable and sometimes discontinuous foci and wide, variable extensions as determined from naming responses, (3) are names for natural objects or stages of ripeness.

discussion of individual categories for Stage IIIa systems

kapántu RED (probably < *kapáut* 'to burn')

kapántu is universally shared in Aguaruna Jívaro as the term for RED. Composite mappings of the thirty-four Stage IIIa informants' foci and boundaries for this category are given in Figures 2 and 3.

Figure 2 reveals a distinct clustering of focal *kapántu* responses precisely in that area recognized as focal *red* in Berlin and Kay (1969:9). While the cluster of foci appear to be somewhat larger in extension than that reported for the original sample of twenty languages, those chips chosen ten or more times as focal are identical to the major clustering of focal red chips found in the earlier study.

The range of Stage IIIa informants' mapping for *kapántu* shown in Figure 3 reveals an extension of the term which includes universal focal *yellow, orange, brown, purple*, and *pink*, an extension in keeping with that suggested for early systems in Berlin and Kay. This extension is further corroborated by the pattern observed in naming responses to

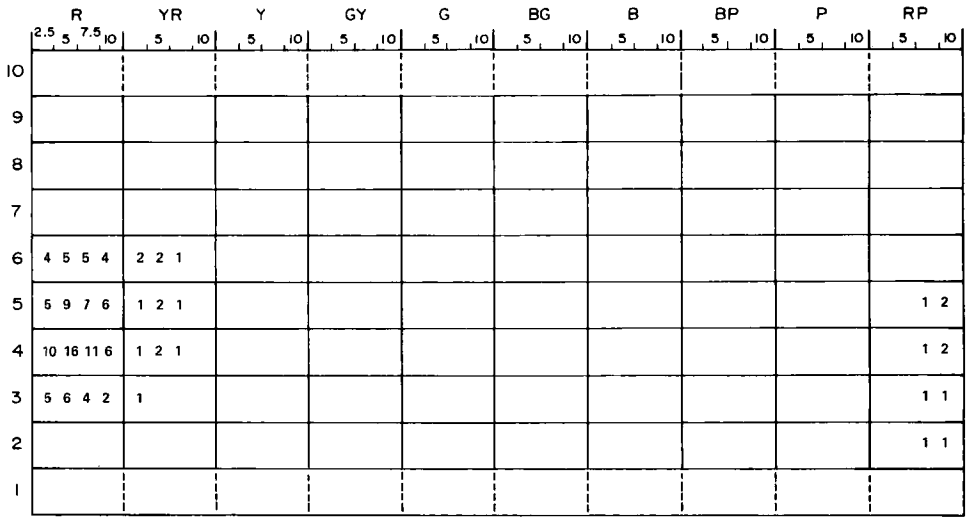


Figure 2. Foci of *kapántu*, Stage IIIa.

	R	YR	Y	GY	G	BG	B	BP	P	RP
10										
9	16 15 15 19	20 20 20 24	22 22 21 21	13 13 10 10	7 5 4		2	2 2 6 8	9 11 12 12	12 12 12 12
8	23 25 25 25	25 25 26 26	26 24 22 21	19 16 14 13	9 7 4		2 2	2 2 10 12	16 18 23 26	26 26 26 26
7	27 27 27 27	27 27 27 27	26 24 22 21	20 15 14 12	10 7 4		2 2	2 2 11 17	18 21 25 26	27 27 27 27
6	33 33 33 32	32 31 30 28	25 23 22 20	20 17 14 14	9 7 4		2 2	2 4 8 15	18 20 25 27	27 28 28 28
5	34 34 34 33	33 32 32 29	28 24 24 21	19 16 14 14	10 7 4		2 2	2 2 14 16	18 21 26 28	28 29 29 29
4	34 34 34 33	33 32 30 28	25 22 22 20	19 15 14 14	10 7 4		2 2	2 4 13 18	19 21 27 28	28 29 29 29
3	31 31 31 31	27 26 24 22	22 20 19 18	16 15 9 11	10 5 4		2	2 4 11 15	19 21 25 25	26 26 27 27
2	22 23 25 25	24 20 20 18	18 17 15 14	12 12 11 11	7 4 4			3 9 8	14 15 17 19	19 19 19 19
1										

Figure 3. Range of *kapántu*, Stage IIIa.

objects and painted strips as seen in Figure 4. Of particular interest are the large numbers of *kapántu* responses for objects and cards coded as focal *yellow*.

Secondary color terms which appear to be totally or partially included in *kapántu* are *yaŋkú* and *čamíŋ* (roughly yellows and yellow-greens), *paúŋ* (roughly red-orange) and *yamakái* (roughly purple).

yaŋkú (> *yaŋkuhí* 'flower')
čamíŋ (probably < *ɬamát* 'to ripen yellow', cf. *ɬamáu* 'ripened banana')

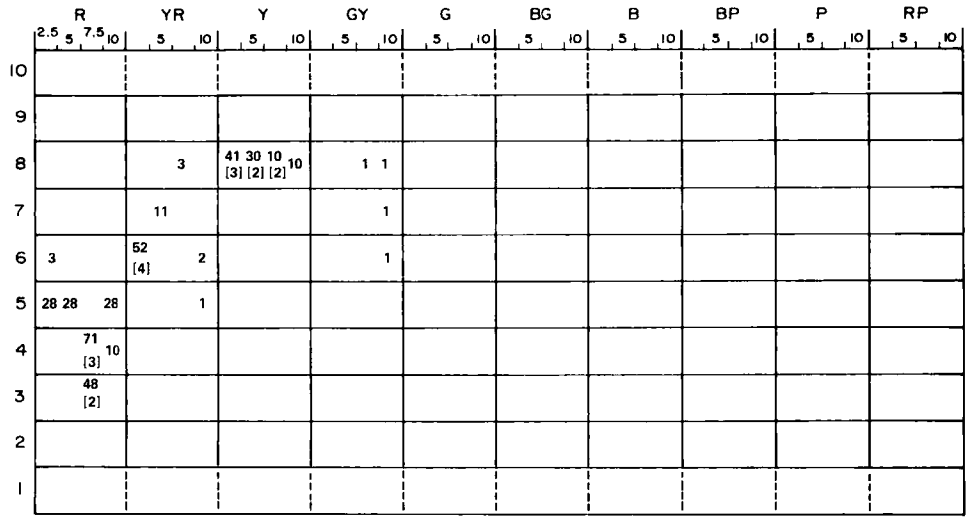


Figure 4. Naming responses for *kapántu*, Stage IIIa. (Sixteen informants called yellow-green leaf *kapántu*, six informants called the metalic gold battery *kapántu*.)

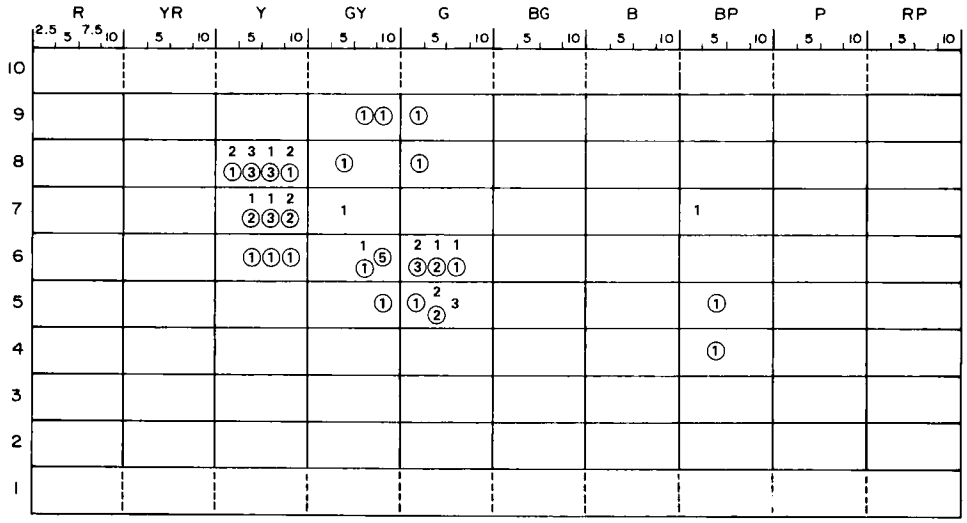


Figure 5. Foci for *yaŋkú* (in circles) and *čamíŋ*, Stage IIIa.

These two secondary terms appear to be near synonyms and range widely over the color chart. Of the thirty-four Stage IIIa informants, twenty-nine possesses the term *yaŋkú*, twenty-three *čamíŋ*. Eighteen of the thirty-four have both terms, eleven use *yaŋkú* only, while five use *čamíŋ* only. A composite of Stage IIIa informants' foci and range for both terms are given in Figures 5 and 6. It is of interest to note that both terms have discontinuous distributions; one focus occurs in what is basically universal yellow, the other in the yellow greens. Figure 7 depicts the naming responses to objects and painted strips for *yaŋkú* and *čamíŋ*. As can be seen in that figure, naming responses for both

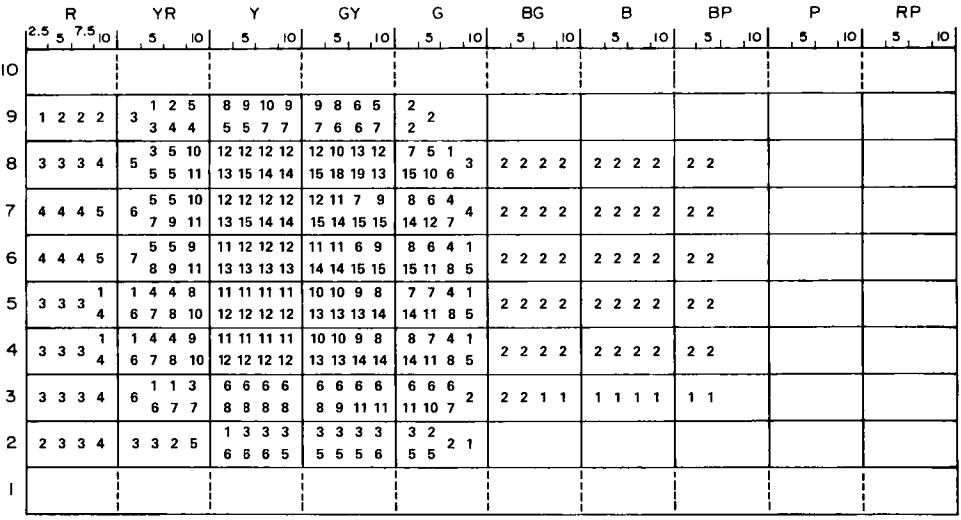


Figure 6. Range *čamíŋ* (upper number in any chip) and *yaŋkú* (lower number in any chip and all chips with solitary number), Stage IIIa.

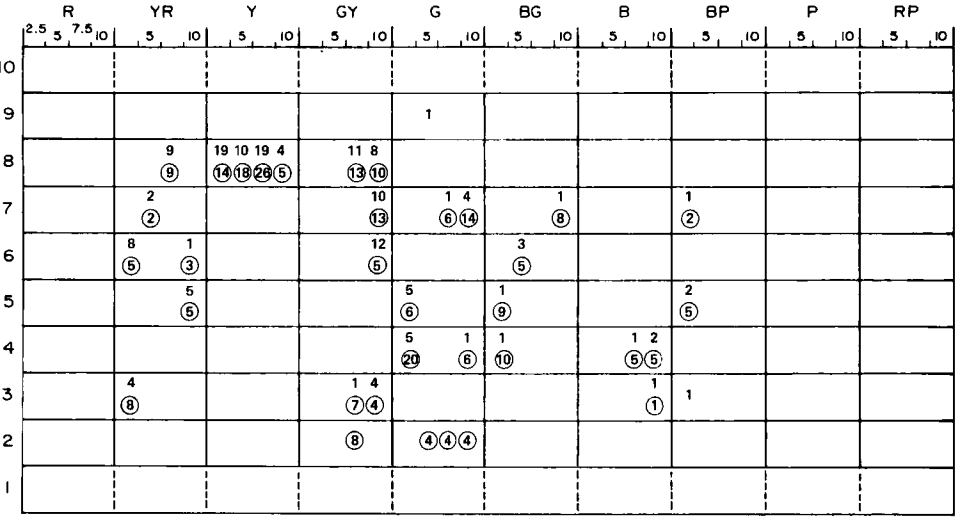


Figure 7. Naming responses for *yaŋkú* (in circles) and *čamíŋ*, Stage IIIa.

terms can be found virtually over the entire color array, ranging from yellow reds at one extreme to blue purples at the other. Discontinuous foci in conjunction with the wide extension revealed in naming responses lead us to treat *čamíŋ* and *yaŋkú* as non-basic terms.

páuŋ (< *páu* 'the tree, or fruit of the tree', *Pouteria* sp.)
yamakái (*yamakái* 'tree (unidentified), the leaves of which provide a deep purple dye commonly used in dying men's kilts, edges of net bags, and, formally, bark cloth and women's dresses')

páuŋ was used one or more times by fifteen informants, and *yamakái* was used by seven informants. Neither is used frequently by a single informant. The ranges of both terms are always included in that of *kapántu*.

púhu WHITE

púhu is universally shared in Aguaruna as the basic color term for WHITE. (One informant names a focal white chip in the naming tasks as *yaŋkú*, but this most likely represents a simple performance error.) The term's extension does not vary greatly from focal *white*, as can be seen in Figure 8. Naming responses, however, show an extension of the term into high brightness hues, especially yellow-reds, yellows, and green yellows.

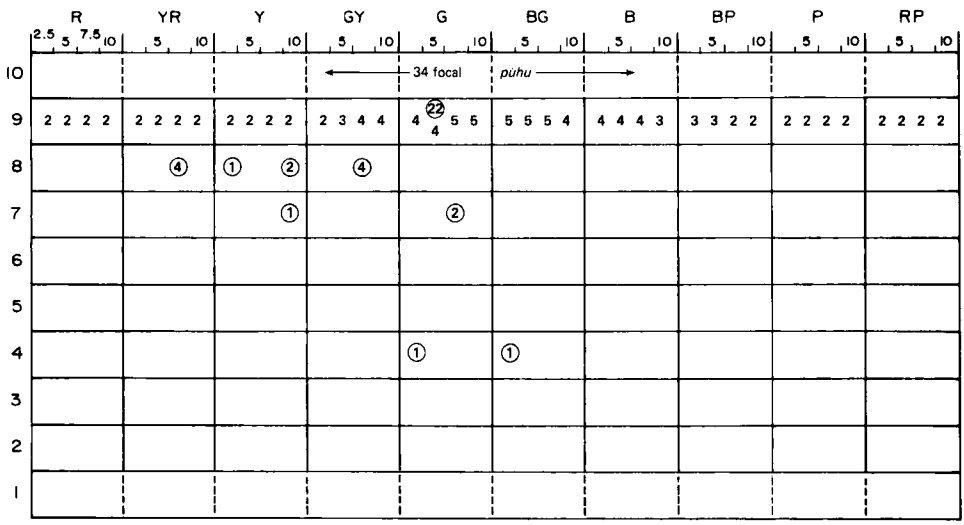


Figure 8. Foci, range, and naming responses for *púhu*, Stage IIIa. (Numbers in circles are *púhu* naming responses. Eight informants also named neutral grey 5 *púhu*.)

A synonymous form, *puḍú*, is sometimes used for WHITE, but its extension and focus is identical with the more common *púhu*.

wíŋka GRUE

wíŋka is with one exception the basic color term for GRUE for Stage IIIa informants.[11] The composite foci and ranges for this category are given in Figure 9 and 10. Figure 9 reveals a distinct clustering of focal *wíŋka* responses in universal focal *blue* as recognized in Berlin and Kay (1969:9), though one informant selected a low brightness *green*. As with *kapántu*, the focus of *wíŋka* appears somewhat larger in extension than *blue* as described in the original Berlin and Kay study, though the greatest density of responses is almost identical to the previous findings.

Figure 10 shows the full extension of GRUE to range over the blue purples, blues, blue greens, and most greens, a fact made particularly clear from the distribution of naming responses to objects and painted cards and shown in Figure 11.[12]

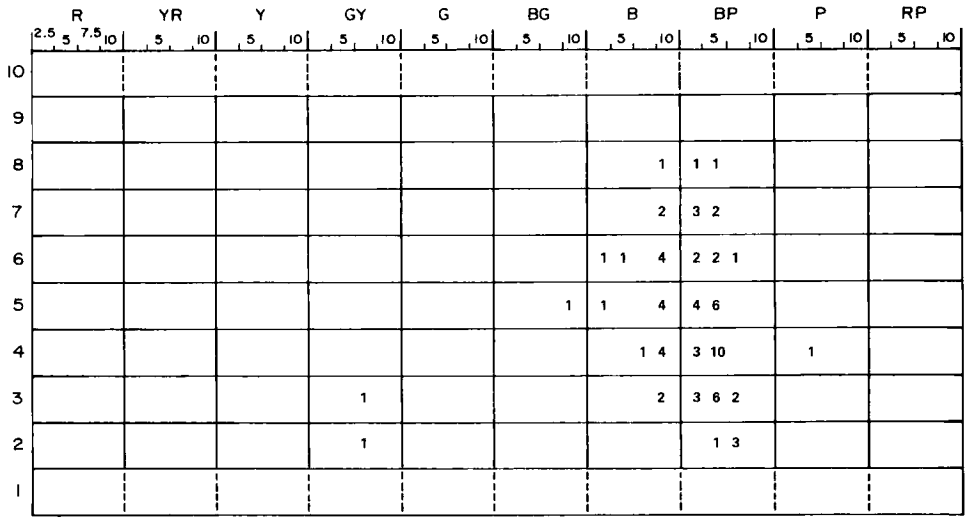


Figure 9. Foci for *wíŋka*, Stage IIIa.

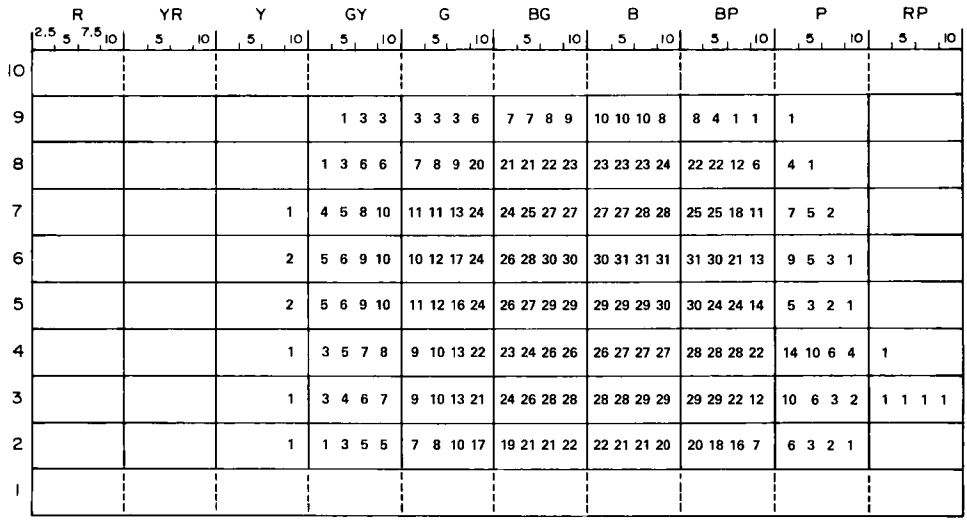


Figure 10. Range for *wíŋka*, Stage IIIa.

While the presence of a term for GRUE with the extension noted for *wíŋka* conforms to the expected description of Stage IIIa systems presented in Berlin and Kay (1969), the discovery that focal GRUE lies in *blue* (rather than in *green*) is unexpected and provides a counterexample to the Berlin and Kay theory regarding the order in which the postulated universal color foci are encoded in language generally. The incorporation of this new finding requires a slightly revised evolutionary order for the acquisition of color terms and is discussed on pages 81-83.

šuwín BLACK, *bukúsea* BLACK, DARK-COOL

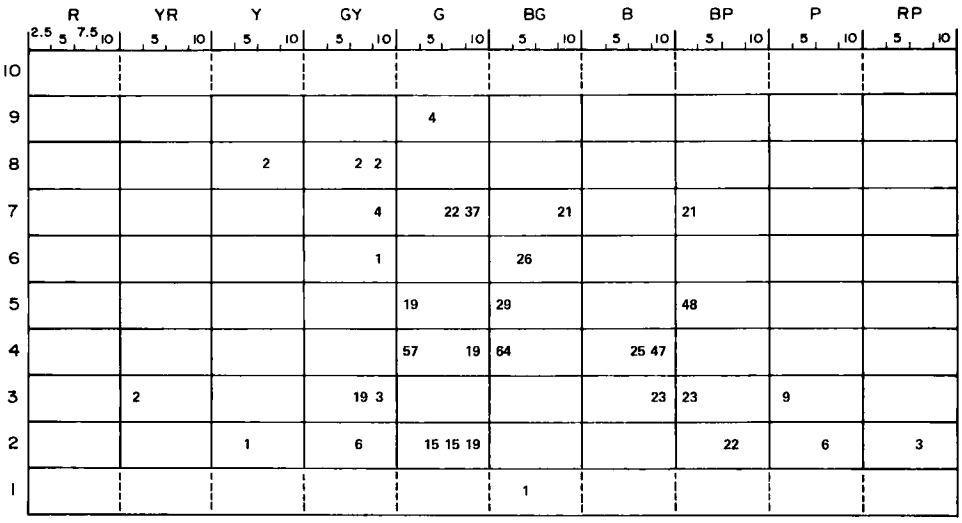


Figure 11. Naming responses for *wíŋka* Stage IIIa.
(Ten informants named neutral grey 5 *wíŋka*.)

Two partially synonymous terms for *black* have been elicited in Aguaruna, *šuwín* and *bukúsea*. *šuwín* is found in the naming responses of twenty-four of our Stage IIIa informants while *bukúsea* occurs in the responses of thirty-one.[13] The range, composite foci, and naming responses for *šuwín* are shown in Figure 12. Figure 12 reveals that *black* is universally the focus of *šuwín* for those informants who used the term. Its range moves slightly into the cool hues.

The composite foci for *bukúsea* are shown in Figure 13. Ranges and naming responses for this term are seen in Figures 14 and 15, respectively. Figure 13 reveals that while the

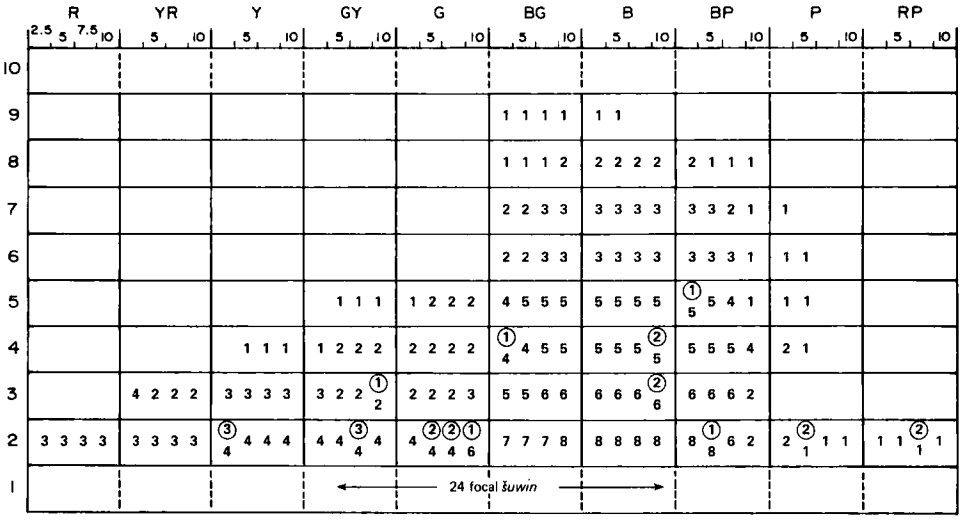


Figure 12. Foci, range, and naming responses for *šuwín*, Stage IIIa.
(Numbers in circles are *šuwín* naming responses.)

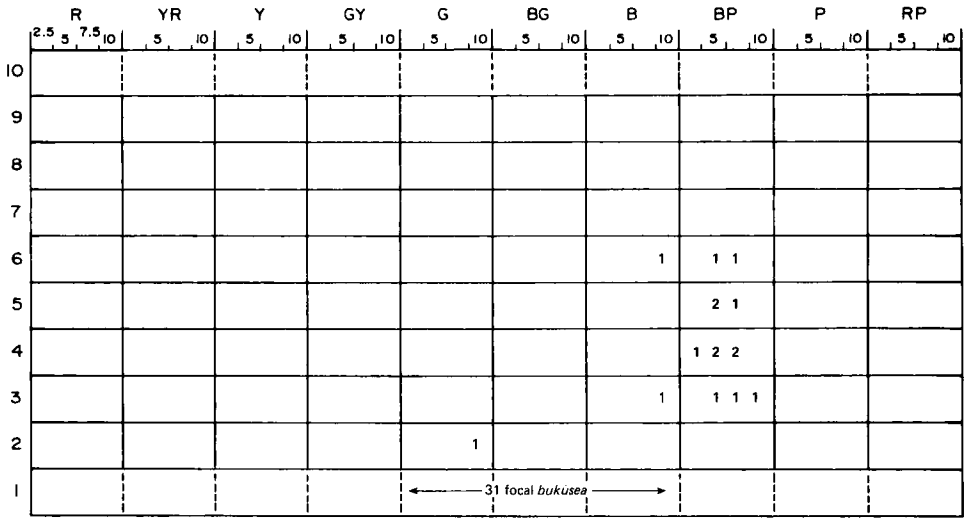


Figure 13. Foci for *bukúsea*, Stage IIIa.

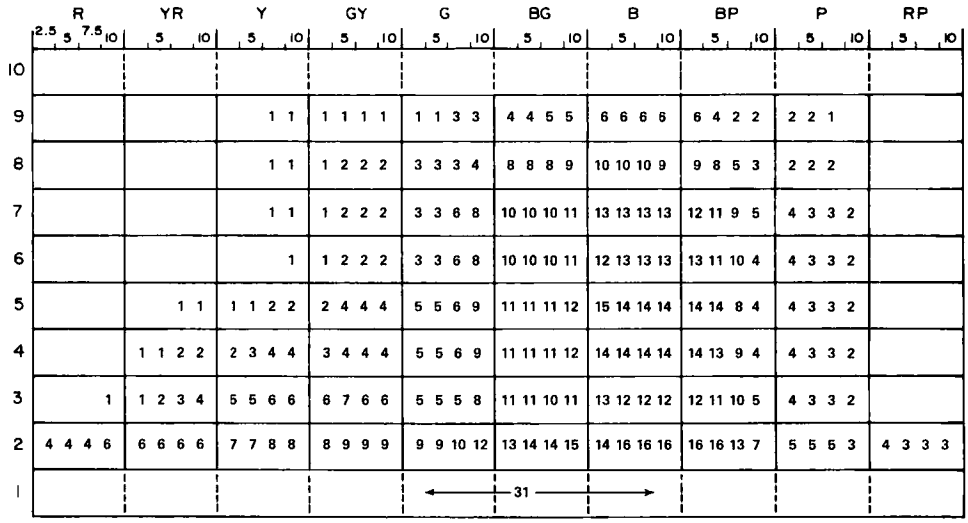


Figure 14. Range for *bukúsea*, Stage IIIa.

majority of *bukúsea* responses find a focus in *black*, some individuals (seven informants) place the focus of this term in *blue* or, in the case of one informant, low brightness *green*. Furthermore, the range of the term, as seen in Figure 14, covers almost entirely the complete complement of 'cool' spectral hues. The significance of *bukúsea* is perhaps best thought of as DARK-COOL, a conclusion verified independently by the linguist Mildred Larson who has worked among the Aguaruna for several decades. She writes in a personal communication that "the line between blue and *bukúsea* is hard to make. *Bukúsea* for me means dark. So a dark blue or dark red may be called *bukúsea. Shuwín* is more a true black." The theoretical significance of this particular distribution of *bukúsea* will be discussed in the concluding sections of the paper.

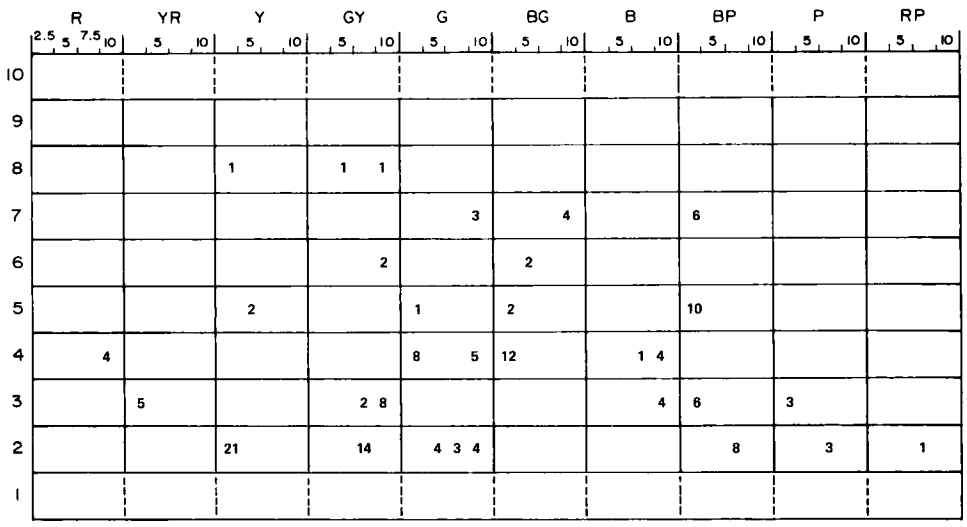


Figure 15. Naming responses for *bukúsea*, Stage IIIa.

Stage IV systems

Five informants show Stage IV basic color systems with terms for BLACK, WHITE, RED, GRUE, and YELLOW. Four informants in this set restrict the extension of the form for *black* (either *bukúsea* or *šuwín*) to *black* or low brightness hues, while one shows an extension into *blues*. Four place the focus of GRUE in *blue*, the fifth in *green*.

The category for YELLOW appears to be emerging for each of our Stage IV informants. However, the relative recentness of the category is attested by the diversity of terms used by these individuals as can be seen in Table 4.

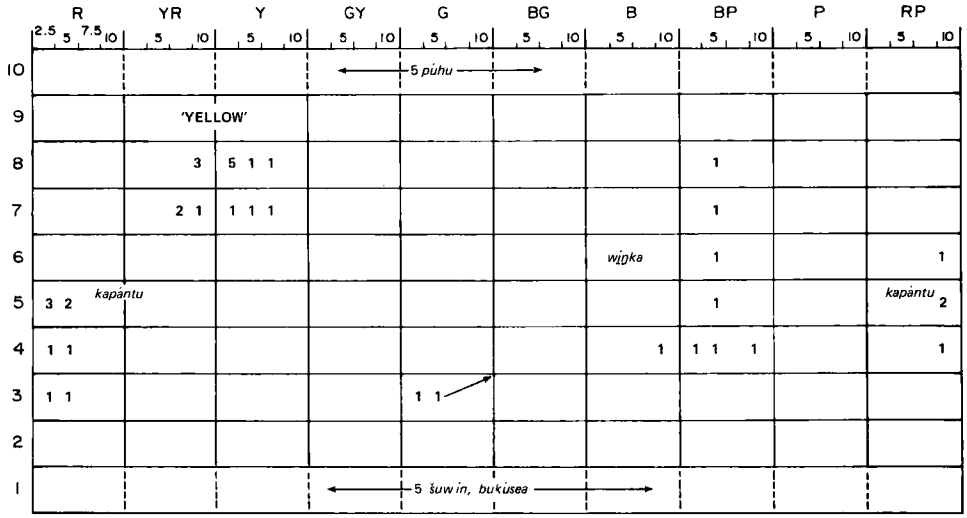


Figure 16. Composite foci for Stage IV basic color terms.

Table 4. Terms used by Stage IV informants for YELLOW.

Informants No.	Term
11	*yaŋkú*
46	*čamíŋ*
47	*paúŋ*
41	*čamíŋ, daŋáŋ*
16	*čamíŋ, yaŋkú*

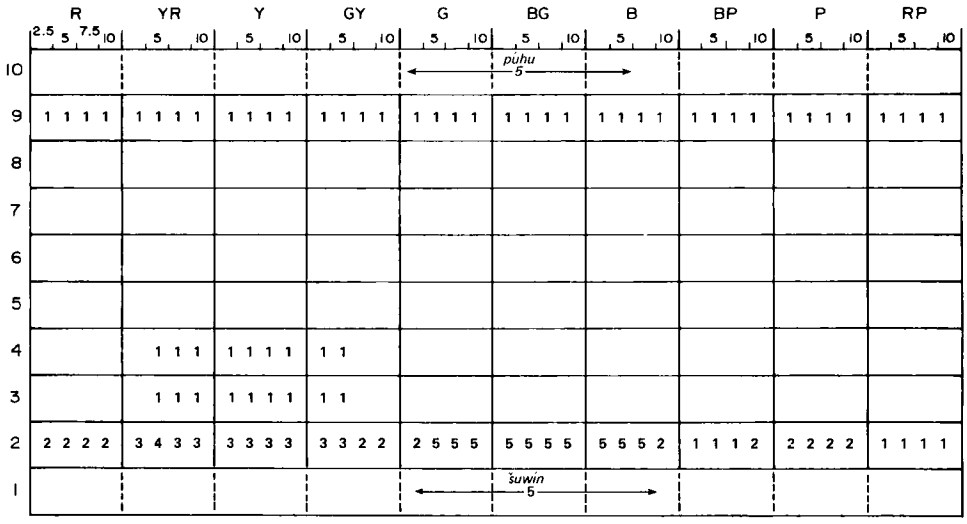


Figure 17. Range for *šuwín* (with synonymous *bukúsea*) and *púhu*, Stage IV.

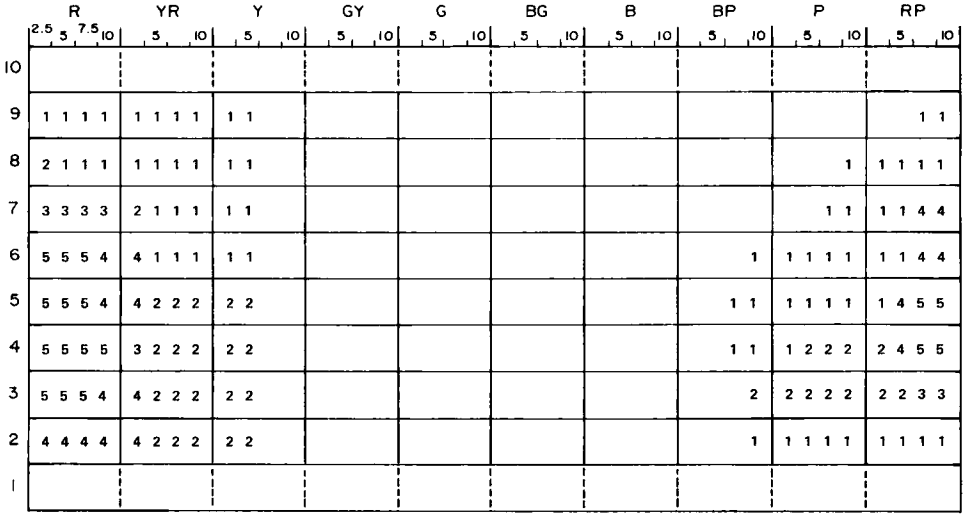


Figure 18. Range for *kapántu*, Stage IV.

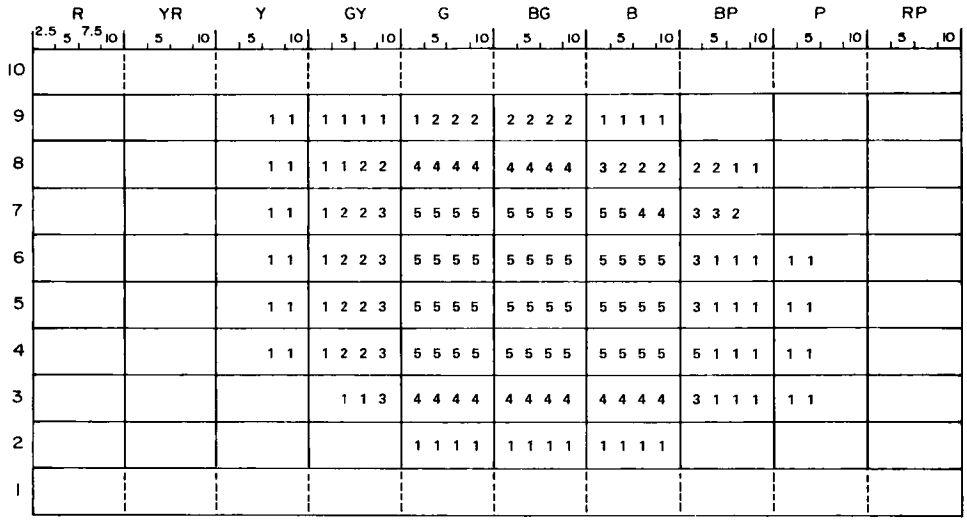


Figure 19. Range for *wíŋka*, Stage IV.

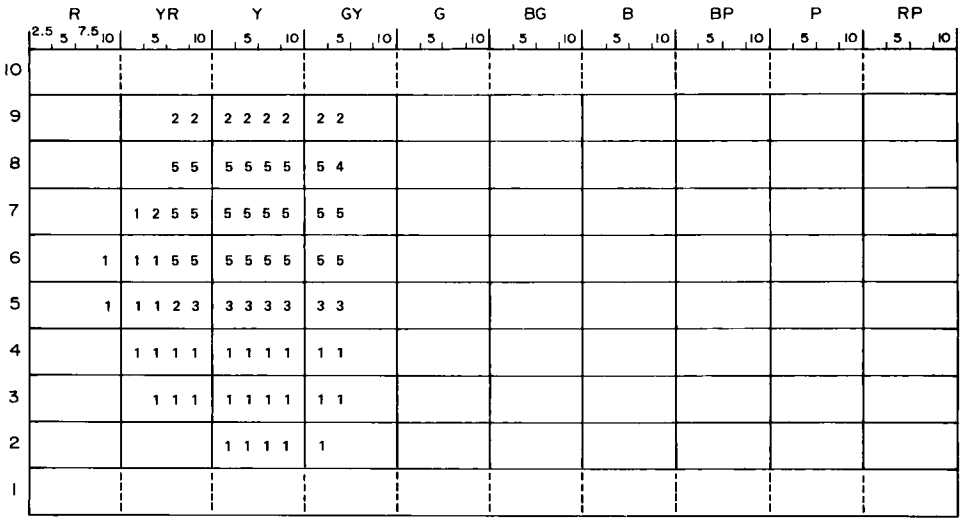


Figure 20. Range for YELLOW (see text), Stage IV.

Table 4 reveals that, while no single universally agreed upon term for YELLOW has yet developed, *čamíŋ* appears to be a slightly preferred synonym.

A composite mapping of foci for the basic color categories of Stage IV informants can be seen in Figure 16. Ranges for Stage IV color terms can be seen in Figures 17-20.

Stage V systems

The remaining sixteen informants in our sample of fifty-five can be classified as exhibiting Stage V color terminology. Like their Stage IV cohorts, they have developed a

Table 5. Terms used by Stage V informants for YELLOW.

Informants No.	Term
55, 45, 15, 44	*yaŋkú*
32, 57, 34, 25, 13, 8	*yaŋkú, čamíŋ*
37, 18, 22, 14, 28	*čamíŋ*
49	*páuŋ*

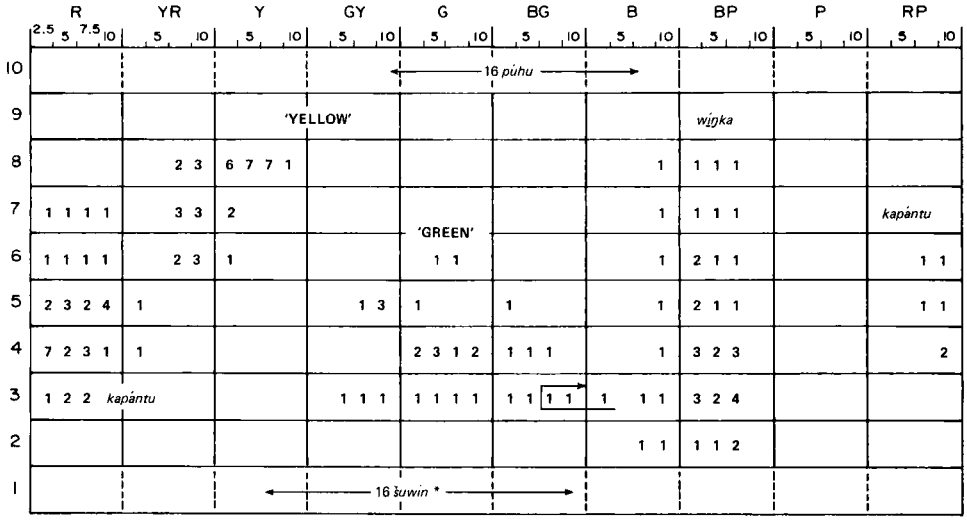


Figure 21. Composite foci for Stage V basic color terms.
(*Five informants treat *bukúsea* as synonymous with *šuwín*;
six informants treat *bukúsea* as synonymous with *wíŋka*, see text).

	R	YR	Y	GY	G	BG	B	BP	P	RP
10										
9	1 1 1 2	2 2 2 2	1 1 1 1	1 1 1 1	1 1 1					
8	4 5 5 5	4 4 3 3	2 2 1 1	1 1 1 1	1 1 1				2 2	3 3 3 3
7	7 7 7 8	8 5 3 3	2 2 1 1	1 1 1 1	1 1 1				1 1 3 3	6 7 7 7
6	13 14 14 14	13 7 5 5	2 2 1 1	1 1 1 1	1 1 1				1 1 3 5	11 12 12 13
5	16 16 16 15	14 8 7 6	3 3 2 2	2 2 2 2	1 1 1				1 1 3 6	11 12 13 14
4	15 15 16 15	13 9 6 6	3 3 2 2	2 2 2 2	1 1 1				1 1 3 6	10 11 12 13
3	10 11 12 11	4 5 5 4	3 1 1 1	1 1 1 1	1 1 1				1 1 3 4	9 10 10 11
2	2 3 3 4	4 2 2 2	1 1 1 1	1 1 1 1	1 1 1				1 1	2 3 3 3
1										

Figure 22. Range of *kapántu*, Stage V.

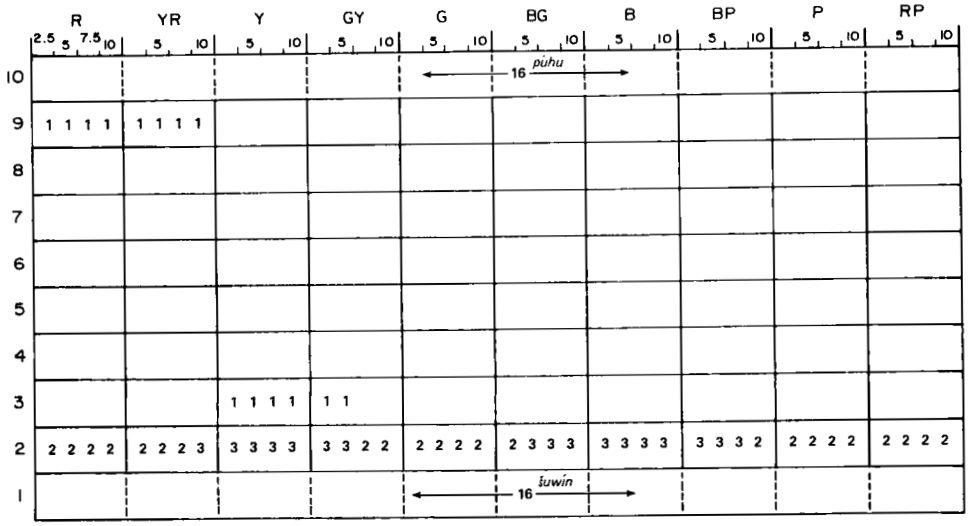


Figure 23. Ranges of *púhu* and *šuwín*, Stage V.

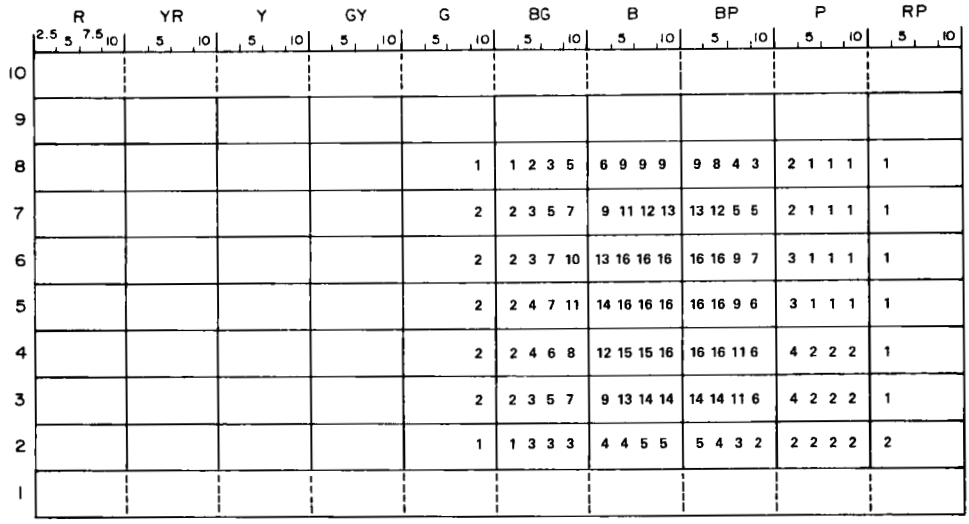


Figure 24. Range of *wíŋka*, Stage V.

category for YELLOW. They differ from Stage IV systems, however, in that *wíŋka, the* old GRUE term, becomes restricted to BLUE, and a new category, GREEN, has begun to emerge.

There is still some variability in the term chosen for YELLOW. As can be seen in Table 5, *čamíŋ* and *yaŋkú* continue to function as near synonyms. One informant used *páuŋ* for YELLOW, a term sometimes used, it will be recalled, as a secondary term included in *kapántu* RED.

The term *samékmau* (<*samék* 'fresh thing, as a leaf') appears in the speech of eleven Stage V informants as the term for GREEN. *aét* 'unripe' is used by one informant for this

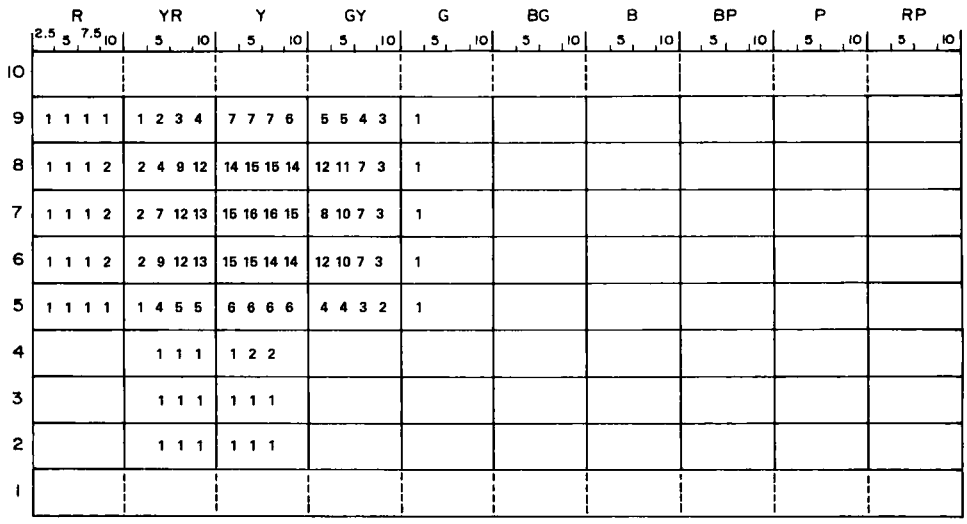


Figure 25. Range of YELLOW, Stage V (see text).

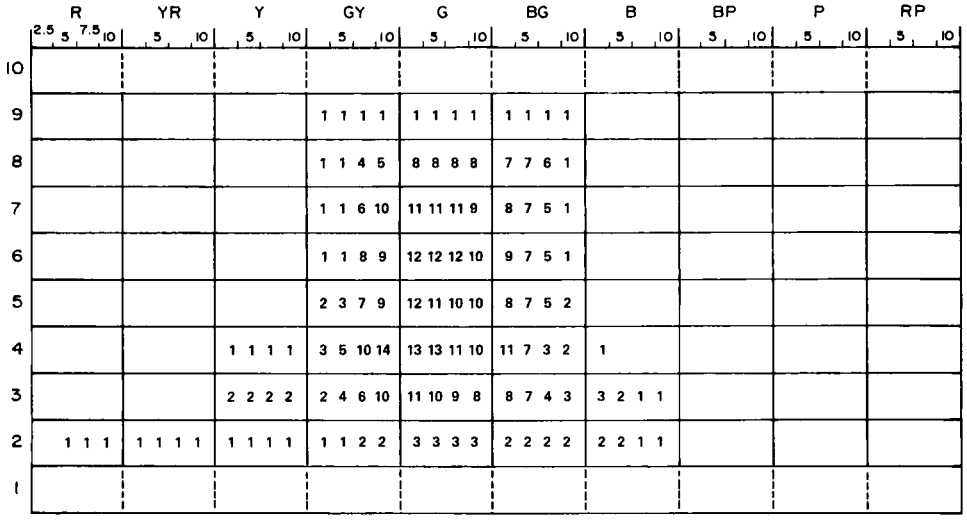


Figure 26. Range of GREEN, Stage V (see text).

category. Oddly enough, two informants have adopted what appears to us to be an exceedingly difficult cognitive strategy in that the term *yaŋkú*, most commonly used for YELLOW, is consistently used for GREEN. The yellow category is labelled as *čamíŋ* by one individual and as *páuŋ* by the other. Why *yaŋkú* should be chosen as the label for this cateogry is as difficult to explain as why the same term should have been used for GRUE by one of our Stage IIIa informants.[11] It is even more puzzling how such systems can continue to be utilized. Both Stage V informants are females and reside, interestingly enough, on rivers quite remote from one another, the Cenepa and the Nieva.

The term *šuwín* appears to be preferred over *bukúsea* as the label for *black*. Twelve informants use *šuwín*; four use *bukúsea*. Of considerable interest is the near perfect synonomy of *bukúsea* and *wíŋka* (blue) for six informants who use *šuwín* for *black*, a fact discussed in more detail in the conclusion of the paper.

A summary composite mapping of foci and extensions of basic color terms for Stage V systems can be seen in Figures 21-26.

basic color terms in other Jivaroan languages

Shortly after this paper was written, we were able to obtain information on two of the three other Jivaroan languages of the Jivaroan family, Jívaro proper and Achual. Achual, a language spoken in northern Peru east of the Santiago River, is basically a IIIa system with the following terms: *šuwín* BLACK, *púhu* WHITE, *kapántin* RED, and *winkiá/kinkiá* GRUE. The term *takúm* 'yellow guacamayo' is at times used for YELLOW but is not considered as a basic term (Gerhard Fast, personal communication). Jívaro proper, of Ecuador, has the following basic terms according to Glen Turner (personal communication): *mukúsa* BLACK, *púhu* WHITE, *kapáaku* RED, *wíŋka* GRUE (though *samék* is sometimes used), and *yaŋkú* YELLOW. These data show basic Aguaruna (i.e., the majority of the most conservative informants) to be Stage IIIa along with Achual, while Jívaro proper may best be classified as Stage IV. It is hoped that standarized eliciting materials may be used in the near future to study in further detail not only Jívaro and Achual, but also Huambisa, the fourth and last language of the family. However, as can be seen from the terms reported for Jívaro and Achual, Aguaruna conforms well to a basic Jivaroan pattern.

summary and theoretical implications

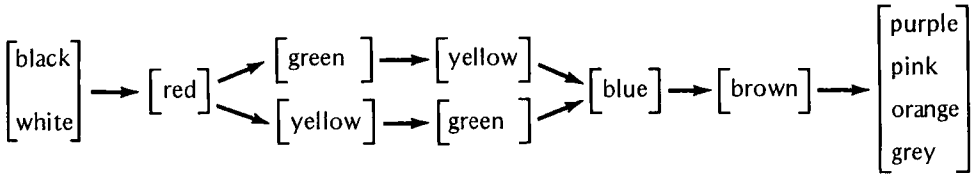
The preceding description of Aguaruna color categories has the following implications for a general theory of the development of color vocabulary:

(1) The discovery that the focus of Aguaruna GRUE lies in *blue* requires a modification of Berlin and Kay's predicted order by which the postulated universal color foci are encoded in a language.

(2) Contact with a language possessing a more advanced basic color vocabulary can significantly modify the aboriginal system of color classification. However, the modification appears to be highly regular in that the acquisition of new terms is precisely that predicted in the Berlin and Kay sequence for the diachronic addition of basic color terms.

(3) The persistence of a term for dark, cool hues (*bukúsea*) suggests an ancient dichotomy in color categorization best interpreted as one of light-warm vs. dark-cool and not simply one based on brightness contrasts as suggested in the original Berlin and Kay formulation. This findings corroborates the results of Heider (1972) for the Stage I Dani and those of Hage and Hawkes (n.d.) for the Stage IIIb Binumarian.

implications of Aguaruna GRUE In Berlin and Kay (1969), the predicted order in which universal color foci are encoded in the basic color vocabulary of any language is as follows:



This sequence allows for the recognition of seven stages in the evolution of basic color terms, namely,

Stage I:	black, white
Stage II:	black, white, red
Stage IIIa:	black, white, red, green
Stage IIIb:	black, white, red, yellow
Stage IV:	black, white, red, yellow, green
Stage V:	black, white, red, yellow, green, blue
Stage VI:	black, white, red, green, yellow, blue, brown
Stage VII:	black, white, red, green, yellow, blue, brown, purple, pink, orange, grey.

Two sub-types in the development of basic terms are recognized for four-term systems, which, for convenience, have been called Stages IIIa and IIIb. Stage IIIa systems have added a term covering the GRUE range and, on the basis of the experimental data derived from one language (Tzeltal) and the published literature, Berlin and Kay placed the focus of GRUE for systems of this sub-type in *green*. The Aguaruna data, however, show clearly that, for this language at least, the focus of GRUE is squarely in universal *blue*. Current field studies on other systems of color classification reveal that Aguaruna is not unique in this regard.

Recent research by Heinrich (1972, 1973, n.d.) on Eskimo color terminology (classified as Stage IV in Berlin and Kay) shows that speakers with undifferentiated GRUE (*tunqu-*) vary considerably in their selection of *blue* or *green* as the focus of this category, though *blue* is chosen slightly more frequently than *green*.

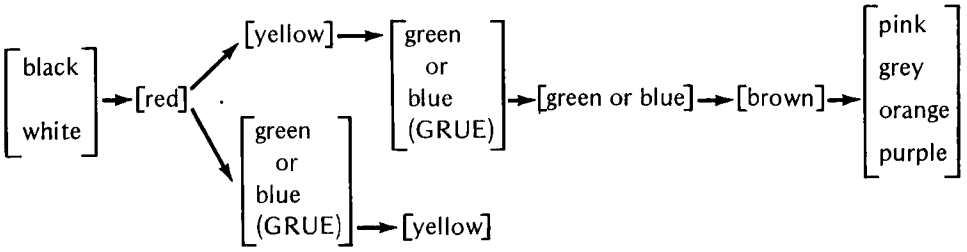
Work in progress by Dougherty (n.d.) on the New Hebrides Futunese indicates that focal GRUE (*wuwu*) in this Stage IIIa language varies from *green* to *blue*. Some informants select both foci as typical *wuwu*.

Furthermore, a review of the data from Navaho (also classified by Berlin and Kay as Stage IV) suggest that GRUE (*dooƛ'iz*) finds its focus in a high brightness *blue* (Landar, Ervin, and Horowitz 1960:380; Ervin-Tripp, personal communication). A focus in this area would be in keeping with Father Haile's gloss of *dooƛ'iz* as *blue* in his study of Navaho colors and cardinal directions (Haile 1943).

These data from Aguaruna, Eskimo, Futunese, and Navajo now make it possible to provide a more suitable explanation of some apparent discrepancies in the focus of GRUE as discussed in Berlin and Kay (1969). There, it may be recalled, of the forty Tzeltal Stage IV informants studied by B. Berlin in 1968, nine selected *blue* rather than *green* as the focus of Tzeltal GRUE (*yaš*). The explanation offered at the time was that Tzeltal was likely moving from a Stage IV to a Stage V color system, the selection of *blue* as focal GRUE being evidence to this effect. Such an explanation would seem unlikely given these new findings. It seems more likely that either *green* or *blue* represent legitimate foci for Tzeltal *yaš*.

Finally, the internal reconstruction of Japanese basic color terminology strongly suggests that *ao, blue*, is much older than the term for *green, midóro*. There is no reason not to suppose that *ao* functioned as GRUE in ancient Japanese with focus in *blue*.

These data taken together indicate clearly that either *green* or *blue* may be selected as the focus of GRUE when this lexically undifferentiated category appears in the evolution of any particular language's (or individual's) basic color vocabulary. As a consequence, the postulated order by which color foci are encoded must be modified as follows:



Thus, for any particular language or speaker, the encoding of either *blue* or *green* at Stage V will depend, in this new formulation, on which of the two perceptual foci was selected when the language added GRUE.

implications of language contact for the development of color categorization While all of our fifty-five informants have had some contact with speakers of Spanish, the degree of bilingualism varies from literally a few words to relative ease of conversation. Although no systematic effort was made to determine control of the language other than our brief attempts to communicate in Spanish prior to the elicitation routine, our informal observations indicate that speakers utilizing Stage IV and V color vocabularies are considerably more proficient in Spanish than those informants evidencing Stage IIIa systems. We believe that contact with Spanish culture (and hence the Spanish language) most simply accounts for the differences observed between IIIa systems, on the one hand, and Stage IV and V systerms, on the other.

These findings can be interpreted as support for the view that color categorization can be significantly modified when speakers of a language with an early stage system come into prolonged contact with speakers possessing a more advanced color terminology (cf. Hickerson 1971). However, it is of major importance to note that while Spanish exhibits a Stage VII color terminology (possessing basic color terms for *all* the eleven universal perceptual foci), those Aguaruna who have modified their basic color vocabularies have encoded only those foci for *yellow*, then *green*, precisely those foci predicted and in the diachronic order specified by Berlin and Kay. We can now predict: *Where basic color vocabulary can be shown to be changing due to culture contact, basic color terms will be acquired in the identical order by which they are added diachronically in the evolutionary development of languages generally.*

implications of the persistence and extension of Aguaruna *bukúsea* The extension of a term for black *bukúsea* into the low brightness greens and blues is strikingly similar to the range reported for the 'dark' term in Dani, a Stage I language (Heider 1972), as well as the distribution of the term for black in Stage IIIb Binumarian (Hage and Hawkes n.d.).

Something of this extension can be found even in Tzeltal, a Stage IV terminology, as reported in Berlin and Kay in their description of Tzeltal GRUE (*yaš*): "when greater specification of *yaš* is requested, many informants restrict the term almost exclusively to greens and some blue-greens. 'Blues' and 'purple-blues' are recognized as a distinct area and are designated by a descriptive phrase *ʔihkʼʔihkʼtik šyašal* 'blackish green' or simply *ʔihkʼʔihkʼtik* 'blackish' " (1969:32). In evaluating *bukúsea* in Aguaruna, we may speculate that at one time in the development of Aguaruna color categories it ranged even more widely over dark-cool colors than it does today. At some point *šuwín* became established as *black* (focusing on the 'dark' component of *bukúsea*) while the term *wíŋka* became fully established as the term for GRUE (focusing on the 'cool' component of *bukúsea*). The status of *bukúsea* at the present time varies considerably from informant to informant. For some, it appears to be retracting toward *black* and may eventually, for these speakers at least, become perfectly synonymous with *šuwín*. For others, it appears to be drawn toward the focus of *wíŋka* and, in several Stage V systems, it is almost perfectly synonymous with this term as a label for BLUE.

These data from Aguaruna, Dani, Binumarian, and Tzeltal would tend to support the conclusions of Heider (1972), McDaniel (personal communication), and others that the basic perceptual dichotomy of color categorization in the early stages of color vocabulary growth is not simply one of brightness contrasts (light vs. dark) but rather one of brightness *and* wave length, leading to the opposition of light and 'warm' [long wave-length] vs. dark and 'cool' [short wave-length]. Furthermore, these data suggest a persistence of the unity of *black* and cool hues, especially *blue*, through the third and fourth developmental stages of color vocabulary growth.[14] Not until Stage V are BLACK and WHITE fully reduced to *black* and *white*, that is to neutral values (Berlin and Kay 1969:19), a prediction borne out in part by the Aguaruna materials for informants with Stage V systems.

Finally, these new data may now allow us to restate the evolutionary progression of the linguistic recognition of the eleven universal perceptual color foci in a way which expresses the relationship of foci to one another assuming an original dichotomy of light-warm vs. dark-cool: (1) At Stage I, the warm-light category, encompassing the universal foci of *white, red, yellow, brown, orange, purple,* and *pink,* is lexically opposed to a category comprised of the cool-dark foci, *black, green,* and *blue*. High brightness *greys* are included in the warm-light category, low brightness *greys* in cool-dark. Foci for both of these two primordial categories are fluid and unstable, though we may now speculate that *red* tends to dominate WARM-LIGHT and that *black* tends to dominate COOL-DARK. This position would be in keeping with Heider's results for the Dugum Dani. (2) At Stage II, WARM-LIGHT begins to separate into two linguistically distinct categories. The original term for WARM-LIGHT becomes more restricted to high-brightness chromatic hues with *white* becoming focal. A new term emerges and becomes firmly established in focal *red* with extensions into the chromatic warm hues. *Black* continues to become focal for COOL-DARK, though it is still floating at this time. (3) At Stage III, two possible developments may occur: The COOL-DARK cateogry may divide (Stage IIIa), leading to the emergence of GRUE. The ancient unity of *black, blue,* and *green* may still be recognized, however, by the extension of black into these cool chromatic hues. Focal GRUE may be either *blue* or *green.*

The WARM-LIGHT chromatic category dominated by focal *red* may divide (Stage IIIb) leading to the emergence of *yellow*. The cool-dark category in Stage IIIb systems remains essentially unchanged from that of Stage II. (4) At Stage IV, Stage IIIa systems

will encode focal *yellow* while Stage IIIb systems will encode GRUE, the latter finding a focus, as before, in either *blue* or *green*. (5) At Stage V, undifferentiated GRUE will divide. The new category may encode either *blue* (if *green* was focal in the GRUE period) or *green* (if *blue* was focal in GRUE). (6) At Stage VI, focal *brown* will emerge from the WARM-LIGHT category. (7) At Stage VII, focal *purple, pink, orange,* and *grey* will become encoded in no particular order.[15]

In closing, let us be the first to admit that this basic summary of the growth of color vocabulary is only a gross approximation of a complex process of lexical evolution. Nonetheless, the outlines of an emerging picture, no matter how vague, are beginning to become apparent as the results of a growing body of new research on color lexicon become known. The current work on Aguaruna has shown that we should fully expect modification of and elaboration on the original Berlin and Kay theory of basic color words. We also remain convinced, however, that revealing modification and elaboration must be based firmly on replicable, empirical experimental research and new ethnographic field studies. Without such a base, much evaluation of the theory will remain largely in the area of speculation.

notes

[1]The comments of Janet Dougherty, William H. Geoghegan, Per Hage, Kristan Hawkes, Albert Heinrich, Nancy Hickerson, Paul Kay, Mildred Larson, and the detailed criticisms of Chad McDaniel have helped shape this paper into its present form. We are appreciative of their interest and intellectual stimulation. The research on which this paper is based grows out of a larger study of Aguaruna folk biological classification supported by the National Institute of Mental Health, Grant MH22012. Additional financial support has been provided by the Language-Behavior Research Laboratory and the Center for Latin American Studies, University of California, Berkeley. This financial assistance is gratefully acknowledged.

[2]The Aguaruna Jívaro are a widely dispersed manioc cultivating people who reside along the Upper Marañón River and most of its major tributaries in north central Peru. They may number as many as 20,000 (Uriarte 1971), making them, along with the Campa, Shipibo-Conibo, and Cocama-Cocamilla, one of the largest aboriginal lowland forest groups in Peru. Their territory is vast, encompassing from 22,000 to 30,000 square kilometers, all of it tropical rain forest, and ranging from 200 to 1000 meters in elevation (Guallart 1964; Siverts 1972). Linguistically, the Aguaruna comprise one of four large tribes which make up the Jívaroan language family (McQuown 1955), Equadorian Jívaro, or Jívaro proper, being the best known of the four groups (Harner 1963, 1970, 1972) and the only one for which a modern ethnography has appeared. The segmental phonemes of Aguaruna Jívaro are as follows: Consonants: p, t, k, ʔ, b, d, c, č, s, š, h, m, n, ŋ, w, y, r. Vowels: i, ɨ, u, a, all of which have nasalized counterparts. For purposes of orthographic convenience, we write the central ɨ as e, following Larson (1966).

[3]Modifying the convention adopted in Berlin and Kay (1969:162n.12), glosses for color *categories* appear in caps while glosses for *foci* appear in lower case italics. GRUE as a label for green + blue was originally suggested somewhat facetiously in a paper read by Berlin and Kay at a supper meeting of the social anthropologists of the Anthropology Department, University of California, Berkeley. We reintroduce the blend in a non-facetious spirit at this time because it is a good mnemonic for this lexically undifferentiated category.

[4]The standardized Munsell color array used in Berlin and Kay (1969) has been modified slightly, and the new version was used in the current research. The modified array is as the original described in Berlin and Kay except for the following changes: (1) Forty black (neutral 1) chips have been added on the lower border as the bottom row of chips, and forty white (neutral 10) chips have been added along the upper border as the top row of chips. Such a presentation represents, to use the analogy of Kay, a "mercator-like" projection of the color solid, with pure black and pure white stretched along the lower and upper borders of the two-dimensional chart. (2) Individual color chips have been "jammed" edge-to-edge with no intervening space separating them as in the original chart. (3) The entire array has been placed on a neutral 5 gray background and mounted on two sheets of 1/8-inch plexiglass, the array being divided between 7.5G and 10G.

[5]Opening the board for the first time before a monolingual Aguaruna, presenting him with a felt pen and asking, *tuyá aši kapántu* 'where are all the red (ones)' often produced humorous but

nonetheless discouraging results. Many informants would simply stare at the array as if transfixed by the pleasant merging of one hue and another. Others who could bring themselves to place the pen to the plastic would begin drawing individual small black circles around chip after chip, often moving horizontally along some level of brightness, completely ignoring hue. Several Aguaruna would attempt to provide a different name for each perceptually different chip, employing spontaneously a formidable inventory of secondary "color terms" which later proved to be the names of trees, dyes obtained from certain fruits, and feathers of particularly colorful parrots. One informant, when asked to show where all the 'red' chips were, took the pen and very carefully circled the entire board.

[6]Accurate Agfachrome 35mm slides of the complete array of objects used, with an accompanying code sheet, are available from the authors on request at cost. The original non-perishable objects may also be examined at the Language-Behavior Research Laboratory, University of California, Berkeley.

[7]Low gloss opaque water color paints in tubes, Guitar Paint No. G-182 Teranishi Chemical Industry Co., Ltd.

[8]Those wishing to obtain examples of the individual paint splotches used are invited to write the authors.

[9]Working in primitive field conditions where privacy is often difficult to attain due to curious onlookers presents numerous problems with which every ethnographer must cope in some form or other. Onlookers are apt—and the Aguaruna especially prone—to respond to questions directed to the informant and often to provide what they consider the "correct" response. As an example, younger Aguaruna, in the early stages of the research, would display amusement at their elders' naming of lemons or corn kernels as *kapántu* 'red' rather than as *yaŋkú* 'yellow'. We were eventually able to make arrangements for conducting the elicitation routine out of the sight—if not hearing range—of interested spectators.

[10]The use of standardized eliciting materials is crucial if meaningful comparative work is to be carried out in the study of color classification. While criticisms of the method used by Berlin and Kay have been made by numerous anthropologists, those ethnographers and psychologists who have used the standardized array in actual field conditions have found it a most effective means of determining in an unambiguous way the foci and ranges of color terms (cf. Heider 1972; Hage and Hawkes n.d.; Heinrich 1973, n.d.; Harkness 1973). This is not the place to answer the most vociferous critics of the methods used or conclusions arrived at by Berlin and Kay, though such a response is in preparation.

[11]One informant, a monolingual girl of twelve or thirteen years, used the term *yaŋkú* for GRUE in her otherwise perfect IIIa system. We can think of no explanation for this usage.

[12]For some informants, *wíŋka* is partially synonymous with *bukúsea*. See page 000 for discussion.

[13]As we were attempting to establish the meanings of only those color terms actually *used* by individual informants, we did not determine whether the remaining ten informants who did not use *bukúsea* knew this term or whether the remaining three informants knew *šuwín*. However, we have no reason to believe that the two terms are not universally known to all native speakers of the language.

[14]In the last stages of drafting this paper, a recent report by Bornstein (1973) was called to our attention by Chad McDaniel. The implications of Bornstein's article, which devotes itself to the psychophysiological aspects of color naming, can be termed nothing short of sensational and will no doubt be seriously scrutinized and challenged many times. While we can not adequately summarize Bornstein's hypothesis here, it will suffice to say that his argument would provide a strictly physiological explanation as to why the category DARK-COOL, encompassing the foci *black*, *blue*, and *green*, should persist as long as it apparently does in early stage systems. Bornstein claims to have shown that yellow intraocular pigmentation ("yellow filters") greatly reduces the amount of short-wave length visible radiation which reaches the photo-receptors, "thereby . . . causing a perceptual collapse of shorter visible wavelengths" (Bornstein 1973:42). Furthermore, high concentrations of yellow intraocular pigmentation is found predominantly in highly pigmented peoples. It is precisely in the color vocabularies of such people, Bornstein maintains, that "black, blue, green confusion" most commonly is found. [Interested persons are encouraged to view the color chart through a yellow lens filter for a startling appreciation of the "Bornstein effect".]

[15]Berlin and Kay suggest that *grey* is encoded in Stage VII, although they recognized the possibility of the theory being revised in this regard as new data become available (Berlin and Kay 1969:45). Recent findings by the Hills (Hill and Hill 1970) and others suggests that *grey* may appear early in color vocabulary growth, though we know of no good evidence to suggest that it occurs unambiguously in some particular earlier stage.

references cited

Berlin, Brent
n.d. Tzeltal Color Categories. Unpublished manuscript. Language-Behavior Research Laboratory, University of California, Berkeley.

Berlin, Brent, and Paul Kay
1969 Basic Color Terms: Their Universality and Evolution. Berkeley: University of California Press.
Bornstein, Marc H.
1973 The Psychophysiological Components of Cultural Differences in Color Naming and Illusion Susceptability. Behavior Sciences Notes 1:41-101.
Conklin, Harold C.
1955 Hanunóo Color Categories. Southwestern Journal of Anthropology 11:339-344.
Dougherty, Janet
n.d. Futunese Color Categories. Unpublished manuscript. Language-Behavior Research Laboratory, University of California, Berkeley.
Guallart, José Maria
1964 Los Jívaros del Alto Marañón. American Indigena 24:315-332.
Hage, Per, and Kristen Hawkes
n.d. Binumarien Color Categories. Unpublished manuscript. University of Utah.
Haile, Bernard
1943 Soul Concepts of the Navajo. Annali Lateranensi 7:70.
Harkness, Sara
1973 Universal Aspects of Learning Color Codes: A Study in Two Cultures. Ethos 1:175-200.
Harner, Michael
1963 Machetes, Shotguns and Society: An Inquiry into the Social Impact of Technological Change among the Jívaro Indians. Unpublished Ph.D. dissertation, Department of Anthropology, University of California, Berkeley.
1970 Technological and Social Change among the Eastern Jívaro. *In* XXVII Congreso Internacional de Americanistas, Republica Argentina, Actas y Memorias Volume I, pp. 363-388.
1972 The Jívaro. New York: Free Press.
Heider, Eleanor
1972 Probabilities, Sampling and Ethnographic Method: The Case of Dani Color Names. Man 7:448-466.
Heinrich, Albert
1972 A Non-European System of Color Classification. Anthropological Linguistics 14(6):220-227.
1973 Chroma as a Casual Factor in Colour Identification. Paper presented at the 72nd Annual Meeting of the American Anthropological Association, New Orleans.
n.d. Systematics of Canadian Eskimo Colour Terminology. Report to the Canada Council. GS72-0165. University of Calgary.
Hickerson, Nancy P.
1971 *Review of* "Basic Color Terms: Their Universality and Evolution." Brent Berlin and Paul Kay. International Journal of American Linguistics 37:257-270.
Hill, Jane H., and Kenneth C. Hill
1970 A Note on Uto-Aztecan Color Terminologies. Anthropological Linguistics 12:231-238.
Landar, Herbert, Susan M. Ervin, and Arnold E. Horowitz
1960 , Navajo Color Categories. Language 36:368-382.
Larson, Mildred
1966 Vocabulario Aguaruna. Lima, Perú: Instituto Lingiústico de Verano.
McQuown, Norman
1955 The Indigenous Language of Latin America. American Anthropologist 70:501-570.
Siverts, Henning
1972 Tribal Survival in the Alto Marañón: The Aguaruna Case. IWGIA Document 10. Copenhagen, Denmark.
Uriarte, Luís
1971 Situación de Genocido, Etnocidio, e Injusticia Entre las Tribus Aguaruna y Huambisa del Alto Marañón. Cuadernos de Documentacion 2: Comisión Episcopal de Accion Social. Lima, Peru.

Date of Submission: July 1, 1974
Date of Acceptance: July 17, 1974