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## COLOUR TERMS IN SETSWANA: THE EFFECTS OF AGE AND URBANIZATION

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We report a study of the colour terms of Setswana, involving 390 subjects, which compares children with adults, and people from rural areas with people from more urban areas. The study was carried out as a further test of Berlin & Kay's (1969) theory of colour universals and as an investigation of the variations and developments in Setswana across age groups and area of residence. Our results show a move away from traditional Setswana colour terms towards the use of borrowed English terms across the entire colour term inventory, particularly in the young and those who have been to school. Further, a decline in the use of Setswana 'cattle' terms by the young reflects a change in tradition. The basic colour term inventories were by and large consistent with Berlin & Kay, irrespective of whether these were borrowed English terms or traditional Setswana terms. Finally, an unusually large number of the sample showed partial colour vision defects.

### 1. Introduction

Setswana is the main language of Botswana, in southern Africa. We recently reported on colour terms in Setswana in an adult sample (Davies *et al.*, 1992) and in a sample of children (Davies *et al.*, 1994). There was a striking difference between the two groups: children used far more borrowed English terms than the adults. It appears likely that this difference is associated with changes in language use under the influence of westernisation; Botswana is changing rapidly under the impact of the revenue from diamond mines and of tourism. We therefore undertook and report here a cross sectional study of basic colour term inventories: people living in a rural location were compared with people living in a more westernised, rapidly developing 'town', and children were compared with young adults and older adults. The major aim of the study was to investigate the influence of urbanisation and education on Setswana, but in addition, it was also carried out as a test of Berlin and Kay's (1969) 'evolutionary' theory of colour term universals. In order to test this theory, it is necessary to establish the likely basic colour term inventories of the various sub-groups and to compare these inventories with the set of inventories permitted by the theory. We will outline the theory in some detail below and describe our operational procedure for establishing basic colour terms; we will also summarise our original results before describing the current study.

The opportunity to study change in colour language is particularly useful since the growth in the inventory of basic colour terms seems to be an example of evolutionary development. There are numerous examples of extensions of the inventory over time, but no undisputed examples of a shrinking of the inventory. This contrasts with most other areas which have been of interest to typologists; most other phenomena (systems of articles, gender and so on) are cyclical in nature, they rise, develop, decay and are lost. This makes the work on colour that much more important, since opportunities to observe a particular development are unlikely to come round again in the way that they do with the usual cyclical developments.

Berlin and Kay (1969) acknowledged that colour term inventories varied in size and in their denotations across languages, but proposed that, rather than 'varying without constraint' (Gleason, 1961), they were drawn from just eleven 'basic' terms. According to the theory, languages evolved from a state with just two colour terms, black and white (dark and light), through to eleven colour terms by taking the 'permissible routes' described by left to right progression through the hierarchy shown in Figure 1.

The concept of *basic* colour term is central to the theory. Basic colour terms are: 'monolexic', by which Berlin and Kay mean that their meaning cannot be derived from meanings of the parts; furthermore, they are not restricted to a small class of objects; they are not subordinate to other colour terms; and they are psychologically salient. Although basic colour term inventories are always drawn from the hierarchy, languages may show considerable variation in their non-basic colour terms. We should note that this concept of basicness has been criticised as unnecessarily restrictive by Crawford (1982) and Moss (1989), among others.

Kay and McDaniel (1978) strengthened the theory by linking it to visual perception and physiology. They distinguished between the 'primary' terms—the first six terms on the hierarchy—and the 'derived' terms—the last five terms. The primary terms correspond to Hering's (1920) six opponent process colours, whereas the derived terms denote 'blends' of pairs of the primary colours. Primary colours are perceptually salient and seem to have unique and independent neural channels, at least in the mid-brain, (see for example Jameson, 1985). The order in which languages encode colours may reflect this perceptual salience and thus account for the hierarchy to some extent. According to Kay and McDaniel, languages with less than six basic terms should have at least one 'composite' category—a combination of two or more

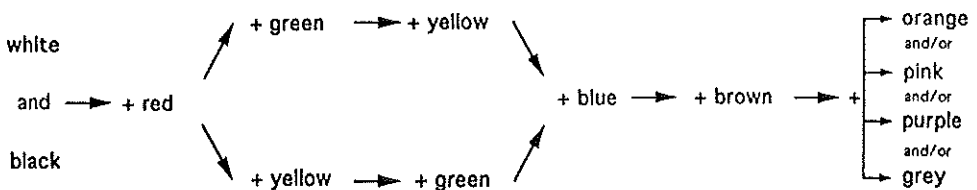


Fig. 1. The Berlin and Kay Hierarchy of Basic Colour Terms

primary categories. Setswana has such a composite term—*botala* 'grue' denoting green with blue.

Our earlier work used two main tasks: colour term lists and colour term mapping. The list task simply requires informants to say as many colour terms as they know. Salient terms will tend to be given early in people's lists, and a good indicator of basicness is the frequency across respondents of each term; basic colour terms will tend to have high frequencies. As well as being frequent, there should be good agreement across speakers as to what a term denotes. This can be assessed by the colour mapping task in which subjects are asked to name a representative sample of colours. The results from the two tasks converged to suggest that Setswana has four definite basic terms—*bosweu* 'white', *bontsho* 'black', *bohibidu* 'red' and *botala* 'grue'. Such an inventory is consistent with the Berlin and Kay theory. There were two other terms with some claim to basic status: *bolsetlha* 'yellow' and *borokwa* 'brown'. If *bosetlha* 'yellow' is basic, together with the four terms given above, then this set also fits the theory. But, if *borokwa* 'brown' is basic, then this challenges the theory to some extent: brown should not appear until after grue has decomposed into its component primary terms, green and blue and there is no sign of this happening in Setswana. The early acquisition of a term for brown has been noted in other languages, and the hierarchy has been somewhat loosened to accommodate such findings (Kay *et al.*, 1991). Part of the difficulty in deciding whether *bosetlha* 'yellow' was basic was that, as well as denoting yellow, it was also used to describe some brown and grey stimuli; and there was another term, *sethunya* 'yellow blossom', which was a contender for the yellow slot. Finally, we decided that *bosetlha* had the better claim to basic status because the low frequency with which *sethunya* appeared in elicited lists suggested low salience.

There were two further kinds of colour terms of particular interest. First, a number of non-basic terms denoted areas in colour space for which there was no basic Setswana term. These terms were non-basic because either they were used by only a few people, or there was little agreement over what they denoted, or, more usually, for both of these reasons. These non-basic terms could be the seeds around which new basic terms will grow to fill the 'missing' basic slots. For instance *mathubapula* 'sand' could eventually fill the basic slot for orange, and *selaole* 'purple' could become the basic term for purple.

Second, in addition to the general colour terms we have described, there is a rich vocabulary of specific colour terms, most notably 'cattle' terms. These are terms used to describe cattle and include 'mixed' terms such as *bonala* 'red and white'. Setswana, like other Bantu languages, does not have sex as a component of its gender system. However, there is a distinct derivational form of adjectives for describing female cattle (the form without the derivational suffix being used for male cattle). The frequency of use of cattle terms varies with the sex of the speaker. Cattle terms are used more commonly by men than by women, which is consistent with traditional role specialization in Botswana; men herd the cattle, whereas the women grow the crops,

and these two activities take place some distance apart. Although many of these cattle terms are 'pied' terms in that they denote skin patterns as well as skin colours, some of them, for instance *boebu* 'grey-roan', denote single colours. The prevalence of these terms offers another route into acquiring new basic terms; it is possible that the restrictions on the use of these terms might be loosened sufficiently to allow them to be used as general terms. This appears to have happened with the term *bosetlha* 'yellow'. The existence of a feminine form of this term, *bosethana* 'yellow (of cattle)', indicates that *bosetlha* 'yellow' might originally have been a restricted cattle term.

Our study of the acquisition of colour terms by children was partly intended to see whether younger, less traditional people would have larger basic colour term inventories than the older and more traditional sample that we had originally studied. If they did have larger inventories, we were interested to see if this had been accomplished by the inclusion of the traditional terms that we mentioned above. Our main findings were first, that children had basic colour term inventories of about the same size as adults. Second, that they had acquired their basic inventories by about six years of age. Third, that the children, unlike the adults, used many English terms, and these substituted for traditional basic terms rather than filling the missing basic slots. Finally, children also differed from the adults in that the use of cattle terms was rare.

Although the basic colour term inventory for the children differed from the inventory for the adults, both inventories were reasonable approximations to 'legitimate' inventories according to the Berlin and Kay theory. It appears to be common for languages to acquire new colour terms by borrowing from another language but they do so without violating the principles encapsulated in the Berlin and Kay hierarchy (see for instance, Berlin and Berlin 1975, and Maffi 1990 for examples of the impact of neighbouring languages). In our work on Bantu languages we have described two cases of splitting of combined green with blue categories by the acquisition of a separate basic term for blue, leaving the original combined term to denote green. In one case, Xhosa (Davies and Corbett, 1994) the new term for blue was borrowed from English, and in the other case, Chichewa (Davies *et al.*, 1995), the new term was a traditional term which had gained saliency.

The main aim of the present study was to investigate the variations and changes in Setswana further, and to try to establish the extent to which the differences noted between our two samples were due to westernization, education or to natural variations across regions of the country. In addition, we intended the study as a further test of the Berlin and Kay theory in a context of rapid social change. We studied a large sample of informants aged from four to eighty-five years who lived either in a small, relatively remote village or in a large, more urbanized village. We also included a smaller sample of adults from a region of Botswana about 700 miles away from our original site, to investigate possible variations across the country.

We used the list task outlined earlier to establish the inventories of basic colour terms. The list task gave us essentially the same results as the combined list and colour

mapping tasks in our earlier studies. It is a simple and quick method for establishing what colour terms there are, and the likely basic terms can be deduced with reasonable reliability (see Corbett and Davies, forthcoming, for a discussion of measures of basicness). Our operational measure of basicness was the number of people in a sample that included a particular term in their lists. The higher this frequency of occurrence, the more likely it is that the particular term was basic.

## 2. Method

### 2.1 Subjects

The main sample of 371 informants came from in or around Kanye in the south east of Botswana. They all spoke Setswana as their first language, but some knew a little English. The urban group consisted of 222 people who lived in Kanye; the rural group consisted of 149 people who lived in a small village about 30 miles from Kanye. Table 1 shows the distribution of age and sex for each group. Both samples had approximately equal numbers of males and females in them, and were stratified into three approximately equal sized age groups: 4 to 20 years (mean 11.6 years); 21 to 40 years (mean 29.5 years); and 41 to 85 years (mean 54.0 years).

The subsidiary sample were from locations around Maun in the north west of the country. There were 19 people in this group, 11 men and 8 women, aged 20 to 40 years and they were all first language Setswana speakers. They lived either in Maun itself, a rapidly developing town, or in government work camps in more rural areas. However, no clear distinction in terms of degree of urbanisation can be drawn between these two sub-samples as many of the people in the camps were itinerant workers with home bases in Maun.

### 2.2 Procedure

The experiment was conducted by native Setswana speakers and all instructions

Table 1. The main sample: distribution according to dwelling, age and sex (mean and standard deviations of the ages are given below the age range).

Age group	Dwelling			
	Sex	Town	Rural	Total
4-20 years (11.6; 3.9)	Male	50	35	161
	Female	37	39	
21-40 years (29.5; 5.8)	Male	38	16	110
	Female	31	25	
41-85 years (54.0; 9.3)	Male	38	12	99
	Female	28	21	

were given in Setswana. Informants were asked to say as many colour terms as they knew, and these were written down by the experimenter in the order that they were given. Many informants offered one or more English terms; most such informants were asked if they knew an equivalent Setswana term and this response was recorded in addition to the English term. This task list took about two minutes on average.

Subjects in the main sample went on to two further tasks: The City University Colour Vision Test (Fletcher, 1980); and a 'colour-shape' grouping task. The colour vision test is a simple and quick test of colour vision which can provide a preliminary indication of any colour vision anomalies. It requires no literacy on the part of the informants. The results of the colour-shape task bear on rather different issues to those reported in this paper, and so we will not describe the procedure further. Subjects in the subsidiary sample did only the list task.

### 3. Results

#### *3.1 Language used in the elicitation task: main sample*

The sex of one informant was not recorded so data from this subject were excluded from the statistical analysis. Nearly all respondents produced a list of colour terms; one child, aged five years, failed to do so and another, aged 10 years, provided a list of fruit and vegetables in English. Despite the fact that the fieldworkers used Setswana, many respondents included some English terms in their lists or listed only English terms. The likelihood of an informant using English varied with age, where they lived and whether they had been to school. But these three variables co-varied to varying degrees themselves; for instance the children were more likely to have been to school than the adults, as were those who lived in Kanye compared to the rural group. Loglinear analysis was used to see which of the demographic variables were the best predictors of the language used on the list task. This statistical procedure can be thought of as equivalent to analysis of variance or multiple regression, but it can be used on categorical variables such as we have here. Its advantage over the more familiar Chi-square test of association is that the impact of all the demographic variables, as well as interactions between them, can be assessed in a single test which takes into account the associations between the predictor variables. For the Loglinear analysis subjects were categorised as using Setswana exclusively, or as using English exclusively or as using both languages. The analysis showed that education has the strongest association with the language used: 55% of those who had not attended school used only Setswana, compared with 23% of those who had been to school. There was also a significant association between language used and age, over and above that due to education. The younger groups were more likely to have used either English exclusively or to have used some English.

#### *3.2 Demographic effects on the terms given*

A special feature of Setswana is the extensive vocabulary of cattle terms. The total number of cattle and non-cattle terms given were calculated separately for each

respondent who had used Setswana for the list task. The mean scores for each class of term for each sub-group made up from the full factorial combination of male and female, adults and children, and urban or rural, are shown in Table 2. These data were subjected to analysis of variance (type of term by sex by age by location).

Overall, more non-cattle terms than cattle terms were listed ( $F = 7.53$ ;  $df = 1, 195$ ;  $p = 0.007$ ). Males across both age groups produced more terms than females ( $F = 8.33$ ;  $df = 1, 195$ ;  $p = 0.004$ ) but a significant interaction between sex and type of term ( $F = 7.52$ ;  $df = 1, 195$ ;  $p = 0.007$ ) shows this was just due to the men producing more cattle terms. Children produced fewer terms than adults ( $F = 12.11$ ;  $df = 1, 195$ ;  $p = 0.001$ ) but a further interaction between age group and type of term ( $F = 12.11$ ;  $df = 1, 195$ ;  $p = 0.001$ ) shows that this was largely due to them listing few cattle terms. A three-way interaction between sex-of-speaker, age and type of term was significant ( $F = 4.07$ ;  $p = 0.045$ ) and was probably due to the fact that the girls listed even fewer cattle terms than the boys. We did not find the difference we expected between the town and rural populations.

### 3.3 The terms

The colour terms were given as a number of variants. First, for the traditional Setswana terms, the prefix varied: *bo-* was the most common prefix, but *k-* was also used. Second, alternative forms of a word were occasionally given (e.g. *-ramaga* and *-thamaga* 'mottled red-brown and white', *-shampa* and *-champa* 'red and white'). Third, cattle terms were sometimes given in the female form and sometimes in the male. Fourth, 27 speakers offered between one and three borrowed English terms with no prefix. In calculating the scores given below in Table 3, the variants described above were treated as equivalent, with the exception of the cattle terms for which we give the frequency of the male and female forms separately (these will be shown in combination in Table 5).

Table 3 shows the percentage of the total sample that offered each term and the

Table 2. Mean number of cattle/non-cattle terms produced by male and female adults and children under 17 from town and rural locations ( $N = 204$ )

		Cattle	Non-cattle	Total
Town	Children ( $N = 18$ )	0.56	3.33	3.89
	Adults ( $N = 60$ )	3.82	2.67	6.48
Men				
Rural	Children ( $N = 18$ )	1.22	3.22	4.44
	Adults ( $N = 24$ )	5.17	1.54	6.70
Town	Children ( $N = 3$ )	0.00	3.33	3.33
	Adults ( $N = 35$ )	0.97	3.26	4.23
Women				
Rural	Children ( $N = 17$ )	0.06	2.77	2.83
	Adults ( $N = 29$ )	1.69	2.86	4.55

Table 3. Colour term elicitation

Term	Gloss	Children						
		Total (369)	Town (142)	Rural (83)	<7 (16)	7-11 (67)	11-16 (61)	Maun (19)
yellow		47	38	40	63	63	59	10
blue		41	26	42	50	58	51	
green		38	26	33	44	61	50	
-ntsho	black	31	35	29		36	31	84
red		30	27	16	81	34	39	
black		30	27	31	44	25	38	
white		29	27	30	19	30	36	
-hibidu	red	27	28	16		26	26	68
-sweu	white	25	23	24		33	30	68
purple		24	19	24	31	33	21	
-tala	grue	23	31	16		21	25	68
brown		20	15	30	31	25		
-setlha	yellow	19	27	18		10	20	47
pink		18	14	18	19	18	25	
orange		14	9	10	19	18	26	
-rokwa	brown	11	18	18		1	1	53
grey		9	14	18		9	8	
-hunwana	reddish-brown (f.c.)	9	15	10			5	
-hunohu	reddish-brown (m.c.)	8	11	12		4	7	15
maroon		7	9	11		1	2	
navy-blue		7	8	6		6	7	
-nkgwe	white-backed (m.c.)	4	14	4				10
-nala	red and white (m.c.)	5	9	6		7		31
-naan	red and white (f.c.)	5	7	5		1	7	
-tuba	dun, fawn (m.c.)	5	8	6		3	31	
-phatshwa	black and white patches (m.c.)	5	9	6		1		37
-tilodi	black and white spotted (m.c.)	4	8	5				5
-tlhaba	dark brown on muzzle (m.c.)	4	6	8			2	10
-tshwana	darkish or black (f.c.)	4	7	5		1		10
-gwana	white-backed (f.c.)	4	8	3				
-setlhana	yellow (f.c.)	4	5	6		4		10
-tshunyana	blazed (f. animal)	4	4	7		3		5
-ramaga	mottled red/brown and white (m.c.)	3	4	6	5	5		
-pinkie	pink	3	4	7				5
-tshumu	blazed (m.c.)	3	2	7		2		
-webu	grey roan (m.c.)	3	2	7				5
-gweba	red and white spotted (m.c.)	3	6	2				
-champa	red and white (m.c.)	3	4	6				10
-phatshwana	black and white patches (f.c.)	2	3	6				6
setlaole	purple	2	6					
-gwebana	red and white spotted (f.c.)	2	4	1				21
-champana	red and white (f.c.)	2	3	5				5
cream white		2	5	1			1	
-tubana	dun, fawn (f.c.)	2	1	5	3			5
phihadu	black (m.c.)	2	4	2				10
-kotswana	grey roan (f.c.)	2	2	5		5		
mathubapula	sand	2	4					
-tshwana	pure white (f.c.)	2	2	2		2		
-swaana	white (f.c.)	1	1					5
lephutshe	pumpkin	1	1	2		2		21

*Continued*

Table 3. Continued

Term	Gloss	Children					
		Total (369)	Town (142)	Rural (83)	<7 (16)	7-11 (67)	11-16 (61)
-ramagana	mottled red/brown & white (f.c.)	1	1	2		2	
violet		1		2		3	
-tlhabana	dark brown on muzzle (f.c.)	1	10			2	10
sethunya	mimosa blossom	1	3				21
-rokwana	brown (f.c.)	1	1	8		2	26
-tilotsana	black and white spotted (f.c.)	1	2				5
-hala	pinkish (m.c.)	1		4			
botlha	bitter taste	1		4			
light brown		1	2				
-chele	yellow	1			1	1	1
silver		1	1				
mustard		1	1				
-khukwa	dark brown muzzle (m. goat)	1		2			
-khukhwana	dark brown muzzle (f. goat)	1		2			

The percentage of people offering each term, for the main sample, subgroups of the main sample and for the sample from Maun. The subgroups of the main sample are: those living in towns; those from rural areas; children under seven years of age; children between seven and eleven years of age; and children between twelve and sixteen years of age. Sample sizes are given in brackets.

(f.c. = female cattle; m.c. = male cattle).

percentage of each sub-group that did so, for those terms offered by more than one respondent (those offered by a single informant are shown in Appendix 1). The terms are ordered by the frequency with which they were offered by the main sample. A number of additional cattle terms provided by Maun informants is listed in section B of Appendix 1 and section C of Appendix 1 gives combinations of terms that were offered by a few informants.

The strength of the influence of English is demonstrated by the fact that the three terms most frequently offered, particularly by children, were the English terms *yellow*, *blue*, and *green*; other basic English terms also occupy positions near the top of the frequency list. The most commonly used Setswana terms are those which appear early in the Berlin and Kay hierarchy: *bontsho* 'black', *bohhibidu* 'red', *botlha* 'grue' (green and blue), *bosweu* 'white', *bosetlha* 'yellow' and *borokwa* 'brown'. Overall these traditional Setswana terms were offered by relatively small proportions of the sample: *bontsho*, the most frequent term, was offered by less than one third of the main sample, and *borokwa* was offered by only about a tenth of the informants. Even if we disregard those subjects listing in English, the percentage of informants offering *bontsho* and *borokwa* was only 38% and 14% respectively. More of the Maun sample offered traditional terms: 84% listed *bontsho* 'black', and nearly half the sample listed *borokwa* 'brown' and *bosetlha* 'yellow'.

Table 4 shows the mean position in the lists occupied by the most frequent terms (Berlin and Kay claim that basic terms are likely to appear early in elicited lists).

Table 4. Mean list positions of the most frequent terms

Borrowed		Setswana	
Term	Mean	Term	Mean
yellow	3.5		
blue	2.8		
green	3.2		
red	3.1	bontsho	3.2
black	4.0		
white	3.8		
		bohibidu	1.7
		bosweu	3.3
purple	4.9		
		botala	4.1
brown	4.3		
		boseltha	3.8
pink	4.7		
orange	4.6		
grey	5.9		
		borokwa	3.9

*Bohibidu* 'red' emerges very clearly as the highest ranked Setswana term but there is little difference between the other Setswana terms. There was a wider range in the ranking of English terms. The primary chromatic terms, *yellow*, *blue*, *green* and *red*, which appear early in the Berlin and Kay hierarchy, are consistently ranked higher than *brown*, *purple*, *pink*, *orange* and *grey*, the derived terms, which occupy the lowest positions in the hierarchy.

Finally, in Table 5 we give a comprehensive list of the Setswana colour terms offered by more than one informant with male and female cattle terms taken together.

### 3.4 Translations

190 informants who listed at least one English term were asked to give a Setswana translation. Appendix 2 lists all the terms given as translations. Although few had any problem translating *black*, *white* or *red*, many informants did not know the Setswana equivalent of other English terms. *Purple* provided the most extreme example; 85% of the informants said they did not know the Setswana equivalent. A difference between *blue* and *green* emerged, both of which can be translated as *botala*. Whereas only 30% of informants were unable to provide this translation for *green*, 46% could not provide a translation for *blue*.

The translation data obtained for *yellow* and *brown* sheds some interesting light on the meaning of *boseltha*. Relatively few informants translated *yellow* as *boseltha* while, at the same time, 71% of those who provided a translation for *brown* gave *boseltha* compared with only 13% who gave *borokwa*. Further evidence that the Batswana do not regard *yellow* and *boseltha* as equivalent, is that this pair of terms

Table 5. Setswana colour-term elicitation combining male and female cattle terms

Term	Gloss	Frequency	
		Male	Female
-ntsho	black	116	15
-hibidu	red	99	
-sweu	white	92	11
-tala	grue	86	
-setlha	yellow	71	14
-rokwa	brown	42	5
-hunohu	reddish-brown	31	36
-nkgwe	white-backed	23	14
-nala	red and white	21	19
-tuba	dun, fawn	18	8
-tilodi	black and white spotted	16	3
-tlhaba	dark brown on muzzle	16	4
-phatshwa	black and white patches	18	9
-pinkie	pink	12	
-tshumu	blazed	12	13
-gweba	red and white spotted	10	8
selaole	purple	9	
-champa	red and white	10	8
phihadu	black	7	
mathubapula	sand	6	
-ramaga	mottled red/brown & white	13	5
-webu	grey roan	11	7
lephutshe	pumpkin	5	
sethunya sa mookana	yellow mimosa blossom	4	
-hala	pinkish	3	
-khukwa	dark brown muzzle (goat)	2	2

had the highest co-occurrence of any pair of equivalent English and Setswana terms; 11 people included both terms in their lists. The only other sets of terms with notable co-occurrences were for *botala* 'grue' and *blue* and *green*. Twenty informants listed either *blue*, *green* or, in a few cases, both *blue* and *green*, in addition to *botala* 'grue'.

### 3.5 Colour vision test

Approximately one quarter of the sample failed one or more items on the City University Colour Vision Test. The most prevalent errors indicated mild tritanopia—yellow—blue colour anomaly. But the tritanopic errors were often accompanied by errors indicating Daltonism—red—green colour anomaly. Such a pattern of errors is indicative of an acquired colour vision defect rather than an inherited defect such as Daltonism<sup>2</sup>.

## 4. Discussion

The most frequent traditional Setswana colour terms given in this study match those found in our earlier study (Davies *et al.*, 1992) which had a much smaller sample of

informants. This was so both for the large sample in the south of the country and for the small sample from the north. These terms are: *bosweu* 'white', *bontsho* 'black', *bohitudu* 'red', *botala* 'grue', *bosetlha* 'yellow'<sup>3</sup> and *borokwa* 'brown'. However, these terms were offered by a much smaller proportion of the informants than in the previous study. This is in part due to the number of informants, particularly the young and those who had been to school, who gave English terms or Setswanized forms of English terms. But even considering just those people who gave only traditional Setswana terms, only the first four of the terms given above were given with sufficient frequency to suggest that they have sufficient 'shared salience' to qualify as basic colour terms. This set of four terms is a 'permitted' set according to Berlin and Kay's theory.

All eleven English basic colour terms appear more frequently than any Setswana cattle terms, although not in the order predicted by Berlin and Kay. *Yellow*, *blue* and *green* are listed notably more often than *black*, *white* and *red*. It is interesting that these three particular English terms should head the list: the choice of a basic Setswana term for yellow is far from clear; and Setswana has no terms which describe the blue and green regions of the colour space separately.

In our previous study we described *bosetlha* 'yellow' as a basic term, even though *sethunya* 'yellow blossom' was used to name focal yellow by almost all the sample. Despite this consensus on its denotation, *sethunya* 'yellow blossom' was not given very frequently in elicited lists, and its range of use was almost completely restricted to focal yellow; less good exemplars of yellow were never called *sethunya* 'yellow blossom' but were called either *bosetlha* 'yellow' or *mathubapula* 'sand'. Also, about one third of the informants used *bosetlha* to name grey tiles. In the current study, those people who offered *brown* in the list task were most likely to say that the Setswana equivalent was *bosetlha* 'yellow' rather than *borokwa* 'brown'. Further, discussions with bilingual colleagues in both the north and the south of the country indicated that focal *bosetlha* 'yellow' is more like *khaki*—a yellowish-brown. Thus it appears that traditional Setswana does not have a basic term for yellow within Berlin and Kay's framework: *sethunya* 'yellow blossom' fails to qualify because of its low salience and *bosetlha* 'yellow' fails to qualify because it does not include the focus of universal yellow. However, *bosetlha* 'yellow' has relatively high salience and fills a useful role. Much of the environment, from the sandy ground to the colours of animals, are coloured yellowish-brown. It is possible that in response to the typical colours of their world the Batswana have segmented colour space to include a basic term for yellowish-brown, and if this could be demonstrated Setswana would be an exception to Berlin and Kay's theory.

The trend observed in our previous study of children (Davies *et al.*, 1994) for informants to use borrowed terms from English, can be seen in the present data; in this case it is not just children who use English terms but also many of those under 25 years of age. The association between the use of English terms and the likelihood of having attended school suggests that education may be the vehicle by which people

adopt English terms. Adoption of English terms is not used to supplement traditional Setswana by filling the 'missing' basic slots; rather it is used as wholesale substitution for traditional Setswana terms, and informants were often unaware that there were equivalent Setswana terms to the English terms that they offered. For instance, those people who offered *purple* were unlikely to say that the Setswana equivalent was *selaole* 'purple'.

The move away from traditional Setswana colour terms observed in the young includes a reduction in the frequency with which cattle terms are used. It is still more common for men to use these terms, which reflects the traditional roles of men as cattle-herders and women as crop growers, but the young use the terms less than their elders probably because they now spend less time at the cattle posts than young people of a generation ago.

## 5. Conclusion

Compared to our previous study, there appears to have been a move away from traditional Setswana colour terms towards the use of borrowed English terms. This has happened across the entire colour term inventory, rather than being restricted to filling the missing basic colour term slots of traditional Setswana. This trend was most marked in the young and in those who had been to school. The decline in the use of traditional Setswana terms included a decline in the use of cattle terms, although the traditional role differentiation was still evident with men using cattle terms more than women. Basic colour term inventories fit Berlin and Kay's theory to a first approximation, but there is an interesting suggestion that categorisation of the yellow-brown region of colour space may have been influenced by the prevalence of light brown colours in the environment: there is uncertainty over whether there is a basic term for yellow, and the focus of one contender for this slot seems to be closer to the universal brown rather than the universal yellow.

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## NOTES

<sup>1</sup> The 'town'—Kanye—has the legal status of a village. This is because all settlements on tribal land have the status of villages in Botswana, irrespective of size. The population of Kanye is about 31,300. In Britain, a settlement of such a size would be a town.

<sup>2</sup> A fuller account of the colour vision data and its relationship to other colour tasks will be presented elsewhere.

<sup>3</sup> We have just discussed the aptness of this gloss and we return to it below.

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### Appendix 1:

#### *Terms offered by just one informant*

The terms given in this appendix are rare and idiosyncratic, and in some cases we have not been able to discover a suitable gloss; these cases are indicated by leaving the gloss column blank.

#### (A) Main sample

<i>Term</i>	<i>Gloss</i>
lekatane	wild water melon
bogato	mixed colours (animals)
bongolo	mixed colours (animals)
boseba	
chachadka	
dithupana	mixed colours
kgaka	helmeted guinea-fowl
leitlho la kgomo	eye of cow
makuka nkgwe	pied
pudutswana	brownish
putswana	
pirwana	black (ewe)
pudienaana	white goat

## (B) Maun sample

<i>Term</i>	<i>Gloss</i>
bochurn	
bogubu	
bongolo	mixed colours
bongolwana	mixed colours
bophihs	
bophitswa	very dark brown (m.c. and horses)
boshiga	
boshigana	
bothohdi	speckle
botholwana	bitter apple
gouta	silver
holodi	
sekochi	scotch (i.e. tartan)

## (C) Combined cattle terms.

m. = male; f. = female

<i>Term</i>	<i>Gloss</i>
bogato ee boshampa	fawn with dark vertical stripes
khunwana ee bohala	
kgwana pihadu	white backed and black
nala tshega	red and white, banded round middle (m.)
naana tshega	red and white, banded round middle (f.)
nkgwe ee bogato	white backed & sole of foot
nkgwe ee pihadu	white backed and black
nkgwe ee sathunya	white backed and yellow
ntsho tshwaana	black and pure white (f.)
ntsho tlhaba mecholo	black, dark brown on muzzle (m.)
ntsho tlhabana mecholo	black, dark brown on muzzle (f.)
tshumu kgwana	blazed and white backed (f.)
tshunyana pirwana	black with white blaze (ewe)

## Appendix 2

190 informants were asked to provide a Setswana translation for English terms listed. Frequencies for each response to each English term are listed below.

<b>Black</b>		<b>White</b>	
bontsho	50	bosweu	58
No response/don't know	8	no response/don't know	5
<b>Red</b>		<b>Yellow</b>	
bohhibidu	55	no response/don't know	52
no response/don't know	13	bochele	13
		lephutse	9
		bosetlha	9
		boyellow	5
		botala	2
		marolwana	1
		taeya koko	1
		pink	1

**Blue**

botala	45
no response/don't know	44
laopi	5
bontsho	1

**Brown**

bosetlha	17
no response/don't know	13
borokwa	3
bohunuho	1
bohibidu	1

**Purple**

no response/don't know	44
selaole	1
bosetlha	1
mathubapula	1
maroon	1

**Grey**

no response/don't know	6
botuba	3
bosetlha	1
lephoi	1

**Green**

botala	91
no response/don't know	39
bogreen	1
bopurple	1
boyellow	1

**Pink**

no response/don't know	28
bohibidu	2
bopinkie	2
botokwa	1
bohibidu bophepa	1

**Orange**

no response/don't know	24
lamuni	4
bosetlha	3
botala	1
bohibidu	1
lephutse	1
mathubapula	1
bopinkie	1