

Color terms (Berlin & Kay 1969)

Gleason, H. A. (1961). *Introduction to descriptive linguistics*. New York: Holt, Rinehart and Winston:

There is a continuous gradation of color from one end of the spectrum to the other. Yet an American describing it will list the hues as red, orange, yellow, green, blue, purple, or something of the kind. There is nothing inherent either in the spectrum or the human perception of it which would compel its division in this way. (p. 4)

Nida, Eugene A. (1959). Principles of translation as exemplified by Bible translating. In Reuben A. Brower (ed.), *On translation*. Cambridge: Harvard University Press.

The segmentation of experience by speech symbols is essentially arbitrary. The different sets of words for color in various languages are perhaps the best ready evidence for such essential arbitrariness. For example, in a high percentage of African languages, there are only three “color words,” corresponding to our *white*, *black* and *red*, which nevertheless divide up the entire spectrum. In the Tarahumara language of Mexico, there are five basic color words, and here “blue” and “green” are subsumed under a single term (p. 13).

Berlin, Brent, and Paul Kay (1969). *Basic color terms: Their universality and evolution*. Berkeley: University of California Press.

- Translation was too easy; suspicions aroused.
- Did experiments with speakers of:

—Arabic (Lebanon)	—Hungarian (Hungary)	—Swahili (East Africa)
—Bulgarian (Bulgaria)	—Ibibio (Nigeria)	—Tagalog (Philippines)
—Catalan (Spain)	—Indonesian (Indonesia)	—Thai (Thailand)
—Cantonese (China)	—Japanese (Japan)	—Tzeltal (Southern Mexico)
—Mandarin (China)	—Korean (Korea)	—Urdu (India)
—English (US)	—Pomo (California)	—Vietnamese (Vietnam)
—Hebrew (Israel)	—Spanish (Mexico)	

- Determined “basic color terms” for the speaker’s language.
- Gave each speakers a grid covered with color tiles and asked them to mark:
 - focus of color (most basic example)
 - boundaries of color term (what could under any circumstances count)

Results:

1. A total universal inventory of eleven basic color categories exists {white, black, red, green, yellow, blue, brown, purple, pink, orange, gray} from which the eleven or fewer basic color terms of any given language are always drawn.
2. Surprisingly, if a language encodes fewer than eleven categories, there are strict limitations on which categories it may encode:
 - All languages contain terms for **white** and **black**
 - If a language contains 3 terms, then it contains a term for **red**.
 - If a language contains 4 terms, then it contains *either green or yellow* (not both).
 - If a language contains 5 terms, then it contains terms for both **green** and **yellow**.
 - If a language contains 6 terms, then it contains a term for **blue**.
 - If a language contains 7 terms, then it contains a term for **brown**.
 - If a language contains 8 or more terms, then it contains terms chosen from {**purple, pink, orange, gray**}.

For eleven colors there are $2^{11} = 2048$ possible sets, but only 22 (1%) occur.

(1) white < red < green < blue < brown < purple
black < yellow < pink
orange
gray

3. Color *foci* were reliable, crosslinguistically, across informants, across trials. Color *boundaries* were extremely *unreliable*...

Basic color term.

- a. Monolexemic (non-compositional). Its meaning is not predictable from the meaning of its parts.
bluish, lemon-colored, salmon-colored, the color of the rust on the car
- b. Its signification is not included in that of any other color term.
crimson, scarlet (<red)
- c. Its application is not restricted to a narrow class of objects.
blond

- d. Psychologically salient. Appears early in lists of colors, has stable reference across speakers and occasions of use, appears in the ideolect of each speaker.
bluish, lemon-colored, salmon-colored, the color of the rust on the car, crimson, scarlet, blond
- e. If something is doubtful (hasn't yet been eliminated):
- i. Same distribution as uncontroversial basic terms.
*reddish, greenish, *aquaish.*
 - ii. Shouldn't also be the name of an object
gold, silver, ash (note: *orange* wasn't doubtful)
 - iii. Shouldn't be a recent foreign loan-word
 - iv. Shouldn't be morphologically complex
blue-green

Evolution.

Berlin & Kay (1969) suggest that:

- adding or losing a color term must follow the hierarchy
 - no known cases of historical development *losing* a color term exist.
 - (1) could be taken temporally as an “evolutionary order.”
 - Historical reconstructions suggests that newer terms are further right.
- Number of color terms seems to correlate with technological development, degree of isolation, “cultural complexity.” (Probably: where useful)
 - Magnus (1880)¹ did a study testing perception of color and found no differences: Re: Ovaherero/Damara (South-West Africa), citing a missionary's report:
“Insofar as the color table coincides with the colors of livestock, i.e., of cattle, sheep, and goats, there is no difficulty in naming colors. They cannot name colors which do not pertain to livestock, especially blue and green, although they can distinguish the colors from each other and can name them with foreign words if necessary... [t]here is no meaningful difference in color sense to be found between the somewhat civilized and the entirely uncivilized. The uncivilized can also distinguish the colors, but can not name green and blue and find it very comical that there should be names for these colors.”

¹ Magnus, Hugo (1880). Untersuchungen über den Farbensinn der Naturvölker. Jena. Fraher.

Examples. Black, White, Red, Green, Yellow, Blue, Brown

BW	Jalé (New Guinea) ‘brilliant’ vs. ‘dull’
BWR	Tiv (Nigeria), Australian aboriginals in Seven Rivers District, Queensland.
BWRG	Ibibo (Nigeria), Hanunóo (Philippines)
BWRY	Ibo (Nigeria), Fitzroy River people (Queensland)
BWRYG	Tzeltal (Mexico), Daza (eastern Nigeria)
BWRYGU	Plains Tamil (South India), Nupe (Nigeria), Mandarin?
BWRYGUO	Nez Perce (Washington), Malayalam (southern India)

Problematic cases (for order, not inventory); further study needed.

- Catalan: status of *black* as a basic color term is not clear.
- Mandarin: conceivable that *gray* is a basic color term, ‘ash’.
- Cantonese: has BWRGYU, *pink, gray*, but not *brown*. Pink, blue, gray more recent?
- Japanese: Internal reconstruction make *blue* older than *green*.
- Vietnamese: Lacks *blue*, but has BWRGY *pink purple brown* and *gray*.

Why eleven?

Why this order?

Consider color spaces (Page A)

Vowels (Crothers 1978)

Studying a large set of languages (209, areally and genetically balanced)

- phonetically, vowel quality is determined in large part by two *formants* (component frequencies) F₁ “fundamental frequency” and F₂.
- Can define a vowel space (Page B)
- Five-vowel systems are the most common

Universals:

1. All languages have /i a u/.
2. All languages with 4 or more vowels have /i/ or /e/.
3. Languages with 5 or more vowels have /e/. (*1/163)
They generally also have /ɔ/. (*9/163)
4. Languages with 6 or more vowels have /ɔ/ (*2/108)
and also either /i/ or /e/ (generally /i/). (*1/108)
5. Languages with 7 or more vowels have /e/ and /o/, or /i/ and /ə/. (*4/68)
6. Languages with 8 or more vowels have /e/. (*3/40)
7. Languages with 9 or more vowels generally have /o/. (*5/22)

Defines a hierarchy (Page B).

Other universals:

8. A contrast between five basic vowel qualities is the norm for human language, and in general the most common systems are those that have close to this number of basic vowels.
9. The number of height distinctions in a system is typically equal to or greater than the number of backness distinctions. (fairly rough)
10. Languages with 2 or more interior vowels always have a high one.
11. The number of vowels in a column of interior vowels cannot exceed the number in the front or back columns (low vowels excluded).
12. The number of height distinctions in front vowels is equal to or greater than the number in back vowels.
13. There is a tendency for high and low vowels of a short vowel system to be more central than the corresponding long vowels.
14. The number of vowels in a nasal vowel system is equal to or smaller than the number in the oral vowel system. (exceptionless)
15. If a nasal vowel system is smaller than the corresponding basic vowel system, it is most often a mid vowel (front, back, or both) that is missing from the nasal system.

- Random selection of vowels from attested distinguished vowels?
no, at best 10% of the possible combinations are attested systems.

Vowel dispersion.

- Vowels are arranged in the space to cover it and provide maximal perceptual distinctness. (they 'tend to disperse evenly in the available phonetic space.')
- Predictions look pretty good (Page C), though not perfect.

Why is 3 the minimum? Why is 5 the most popular?

Functional explanations...?