

- 2) *Thai*
 roudbuntuk ding roud.
 truck push car.
 'Trucks push cars.'

For this reason, another approach to language classification is useful. Known as **linguistic typology**, it classifies languages according to their structural characteristics, without regard for genetic relationships. Thus, typologists might group together languages with similar sound patterns or, alternatively, those with similar grammatical structures. Typological studies also endeavor to identify **linguistic universals**—that is, structural characteristics that occur in all or most languages. We discuss linguistic typology further in Section 2.

Finally, **areal classification** identifies characteristics shared by languages that are in geographical contact. Languages in contact often borrow words, sounds, morphemes, and even syntactic patterns from one another. As a result, neighboring languages can come to resemble each other, even though they may not be genetically related. Because of space considerations, this chapter will not deal with areal classification specifically; however, borrowing is discussed in Sections 1.2 and 5.1 of Chapter 7.

2 Typological Classification

As just noted, the classification of languages according to their structural characteristics is known as linguistic typology. Typological studies group together languages on the basis of similarities in their syntactic patterns, morphological structure, and/or phonological systems. An important area of research within the study of linguistic typology is the search for linguistic universals. Structural patterns and traits that occur in all languages are called **absolute universals**, while those that simply occur in most languages are known as **universal tendencies**.

Many typological generalizations involve **implicational universals**, which specify that the presence of one trait implies the presence of another (but not vice versa). For instance, languages with fricative phonemes (such as /f/ and /s/) also have stop phonemes (such as /p/ and /t/), although the reverse is not necessarily true.

Another way to analyze linguistic universals is through **markedness theory**. **Marked traits** are considered to be more complex and/or universally rarer than **unmarked traits**. In addition, a marked trait is usually found in a particular language only if its unmarked counterpart also occurs.

A simple example of markedness and its relevance to implicational universals involves vowels and nasality. Nasal vowel phonemes are more complex than oral vowel phonemes, since they allow the airstream to exit through both the nose and the mouth, rather than just the mouth. Cross-linguistically, we find that all languages have oral vowels, but that only some have nasal vowels. (Moreover, even in languages that have both, there are usually far fewer nasal vowels than oral vowels.) Thus, oral vowels are unmarked—they are both more common and phonologically less complex than nasal vowels, which are marked. We can represent this fact with

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the help of the following markedness hierarchy, in which > can be read as 'less marked than' or 'is implied by'.

3) oral vowel > nasal vowel

This, in turn, means that we make the distinction outlined in Table 8.3 between possible and impossible vowel systems in human language.

Table 8.3 Oral and nasal vowels

Oral vowels	Nasal vowels	
yes	no	possible
yes	yes	possible
no	yes	impossible

The following sections present some of the typological generalizations and universals that have been proposed in the areas of phonology, morphology, and syntax.

2.1 Phonology

In this section, we represent all vowel and consonant systems phonemically. This simplifies their presentation; note, however, that the exact phonetic realization of these systems may vary in the individual languages.

Vowel Systems

Languages are often classified according to the size and pattern of their vowel systems. The most common vowel system has five phonemes—two high vowels, two mid vowels, and one low vowel (see Figure 8.1). The front vowels are unrounded, as is the low vowel, and the back vowels are rounded. About half the world's languages, including Basque, Hawaiian, Japanese, Spanish, and Swahili, have such a system.

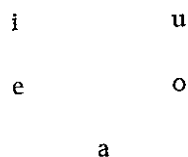


Figure 8.1 The most common vowel system

The majority of the world's other languages have vowel systems with three, four, six, seven, eight, or nine different vowels (disregarding contrasts based on length or nasalization, which can double or triple the number of vowel phonemes). Languages with fewer than three, or more than nine distinctive vowels are rare. Some typical vowel systems are presented in Figure 8.2.

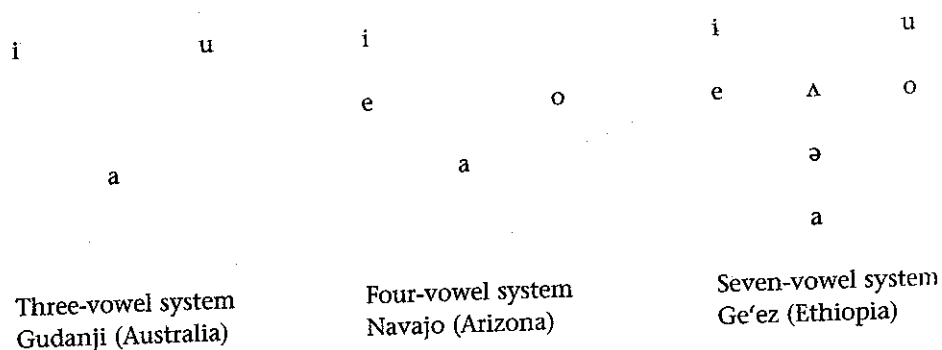


Figure 8.2 Common vowel systems

Analysis of many languages has led to the discovery of a number of universal tendencies pertaining to vowel systems. Some of these tendencies are listed here, along with a description of the most commonly occurring vowels.

- The most commonly occurring vowel phoneme is /a/, which is found in almost all the languages of the world. The vowels /i/ and /u/ are almost as common as /a/.
- Front vowel phonemes (e.g., /i, e, ɛ, æ/) are generally unrounded, while nonlow back vowel phonemes (e.g., /ɔ, o, u/) are generally rounded.
- Low vowels (e.g., /æ, a, ʌ/) are generally unrounded.

Although English has an above-average number of vowels, they all conform to the above tendencies. Thus, English has only front unrounded vowels, all the low vowel phonemes are unrounded, and all of the back, nonlow vowels are rounded. The vowel system of American English is represented in Figure 8.3.

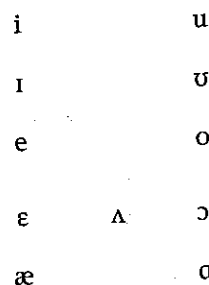


Figure 8.3 The vowel system of American English

The relationship between contrasting vowel types (such as oral versus nasal, and long versus short) can also be expressed in terms of implicational universals, since the presence of one vowel phoneme type implies the presence of another (but not vice versa).

- As already noted, if a language has contrastive nasal vowels, then it will also have contrastive oral vowels. For example, French contrasts different

vowels—as in *long* /lɔ̃/ 'long' versus *lent* /lã/ 'slow'. And it contrasts oral vowels with nasal vowels, as in *las* /la/ 'weary' versus *lent* /lã/ 'slow'. Predictably, French also contrasts different oral vowels, as in *clos* /klo/ 'shut' versus *clou* /klu/ 'nail'. English shows contrasts among oral vowels but does not contrast nasal vowels with oral vowels. There are no contrasts in English like /bɒt/ 'bought' and */bɔ̃t/.

- If a language has contrasting long vowels, then it will also have contrasting short vowels. For example, Finnish has contrasting long vowels, and, predictably, contrasting short vowels (see Table 8.4).

Table 8.4 Finnish vowel contrasts

Long versus long	/vi:li/ 'junker'	/va:li/ 'election'
Short versus short	/suka/ 'bristle'	/suku/ 'family'
Short versus long	/tuli/ 'fire'	/tu:li/ 'wind'

- * The reverse is not necessarily the case. While English has contrasts based on vowel quality (e.g., *meet* vs. *mate*), it has no long vowel phonemes because length is predictable. Its vowels are therefore all considered to be typologically short (see Table 8.5).

Table 8.5 Long and short vowels: short vowels > long vowels

Contrasting short vowels	Contrasting long vowels	
yes	no	possible (English)
yes	yes	possible (Finnish)
no	yes	impossible

Consonant Systems

It is not particularly useful to classify languages according to the number of consonants that they contain, since languages may have as few as six consonant phonemes (as in Rotokas), or more than ninety. (!Kung, a language spoken in Namibia, has ninety-six consonant phonemes.) Nevertheless, typological analysis of consonant systems has produced a number of well-substantiated universals:

- All languages have stops.
- The most common stop phonemes are /p, t, k/. Very few languages lack any one of these, and there are no languages that lack all three. If any one of these three stops is missing, it will probably be /p/; for example, Aleut, Nubian, and Wichita have no /p/ phoneme. The most commonly occurring phoneme of the three is /t/.
- The most commonly occurring fricative phoneme is /s/. If a language has only one fricative, it is most likely to be /s/. It is the only fricative found in Nandi (a language of Kenya) and Weri (a language of New Guinea). The next most common fricative is /f/.

- The vast majority of languages have at least one nasal phoneme. In cases where a language has only one nasal phoneme, that phoneme is usually /n/ (as in Arapaho, spoken in Wyoming). If there are two contrasting nasals, they are normally /m/ and /n/.
- Most languages have at least one phonemic liquid. However, a relatively small number of languages have none at all; for example, Blackfoot, Dakota, Efik (spoken in Nigeria), and Siona (found in Ecuador). English, of course, has two: /l/ and /ɹ/.

Consonant phonemes are also subject to various implicational universals:

- If a language has voiced obstruent phonemes (stops, fricatives, or affricates), then it will also have voiceless obstruent phonemes (see Table 8.6). The reverse is not necessarily true; for example, Ainu (a language of northern Japan) has only voiceless obstruent phonemes: /p, t, k, tʃ, s/.

Table 8.6 Obstruent voicing: voiceless obstruents > voiced obstruents

<i>Voiceless obstruents</i>	<i>Voiced obstruents</i>	
yes	no	possible (Ainu)
yes	yes	possible (English)
no	yes	impossible

- Sonorant consonants are generally voiced. Very few languages have voiceless sonorants; those that do always have voiced sonorants as well (see Table 8.7). For example, Burmese contrasts voiced and voiceless nasals and laterals.

Table 8.7 Sonorants: voiced sonorants > voiceless sonorants

<i>Voiced sonorants</i>	<i>Voiceless sonorants</i>	
yes	no	possible (English)
yes	yes	possible (Burmese)
no	yes	impossible

- If a language has fricative phonemes, then it will also have stop phonemes (see Table 8.8). There are no languages that lack stops; however, there are some languages that lack fricatives. For example, Gilbertese (Gilbert Islands), Kitabal (eastern Australia), and Nuer (southeastern Sudan) have no fricatives.

Table 8.8 Stops and fricatives: stops > fricatives

<i>Stops</i>	<i>Fricatives</i>	
yes	no	possible (Nuer)
yes	yes	possible (English)
no	yes	impossible

- Languages that have affricates will also have fricatives and stops (see Table 8.9). This is not surprising, since an affricate is, in essence, a sequence of a stop followed by a fricative. However, many languages lack affricates altogether. For example, French has fricative and stop phonemes, but no affricate phonemes. In contrast, English has all three consonant types.

Table 8.9 Types of obstruents: stops > fricatives > affricates

<i>Stops</i>	<i>Fricatives</i>	<i>Affricates</i>	
yes	yes	yes	possible (English)
yes	yes	no	possible (French)
yes	no	no	possible (Kitabal)
no	yes	yes	impossible
no	yes	no	impossible
no	no	yes	impossible

LANGUAGE MATTERS Record-Breaking Languages

There are no official records within linguistics, but it's natural to wonder about languages that are "extreme" in some way. Here are some languages that are frequently mentioned for the unusual size (large or small) of their phonological inventory.

- *Fewest consonants*: Rotokas has just 6 consonant phonemes. (A Papuan language, Rotokas has about 4,300 speakers in Papua-New Guinea.)
- *Fewest vowels*: Some dialects of Abkhaz have just 2 vowel phonemes. (This North Caucasian language has approximately 106,000 speakers, mostly in the Republic of Georgia.)
- *Fewest overall number of phonemes*: Rotokas again (11).
- *Greatest overall number of phonemes*: By some counts !Xoo has 77 consonant phonemes, including dozens of clicks, and 31 vowel phonemes. (You can hear a brief sample of !Xoo, which is spoken by about 4,000 people in Botswana, at www.phonetics.ucla.edu/vowels/chapter14/_xoo.html.)

Suprasegmental Systems

Languages can also be classified according to their suprasegmental (or prosodic) type. Languages that use pitch to make meaning distinctions between words are called **tone languages**. (The phonetics and phonology of tone were introduced in Chapters 2 and 3.) As illustrated in Table 8.10, Mandarin has four contrastive tones.

Table 8.10 Tone contrasts in Mandarin

High tone	dā	'build'
Low rising tone	dá	'achieve'
Falling rising tone	dǎ	'hit'
High falling tone	dà	'big'