1 Introduction

1.1 The phonemic principle

An important feature of all human languages is that the meaningful utterances that we use to communicate with each other verbally are made up of a small number of building blocks, a handful of sounds, consonants and vowels, that, by themselves, are meaningless. Thus, for instance, in the Spanish word *sopa* ‘soup’ we recognize four distinct sounds of phonemes, *s-o-p-a*. These are the same sounds that, in different orders, are used to produce the words *paso* ‘step; I pass’ and *sapo* ‘toad’. It is important to realize that these sounds do not possess any meaning in themselves. The Spanish word *sopa* means ‘soup’, but the sound /s/ does not mean anything. Although *sopa*, *paso* and *sapo* all use the same four sounds of the Spanish language they do not share any feature of meaning. The crucial thing about phonemes is that they are contrastive. If we replace a phoneme in a word with a different phoneme – or change the order of phonemes in the word – we don’t have the same word anymore.

Individual languages, of course, vary in the specific sounds that they use, but the number of contrastive sounds in a language is always small, if we consider the number of words, the size of the vocabulary that is constructed by putting together these consonants and vowels in different combinations. In Spanish there only five vowel phonemes and fewer than twenty consonant phonemes – the exact number depends on the dialect. English has a slightly larger consonantal inventory (twenty-four or so) and more than twice as many vowel phonemes as Spanish.\(^1\)

\(^1\) The number of phonemes in Spanish comes close to the cross-linguistic average of 25 (Maddieson 1984). Extreme cases are the Amazonian language Pidgí (Brazil), with only 10 phonemes, including 7 consonants and 3 vowels, and, at the other end of the spectrum, the Khoisan language Xiù (Southern Africa), with 119 phonemes (Trask 1996, under ‘Phoneme system’).
In addition to segmental phonemes, consonants and vowels, languages may also have contrasts of meanings among words that depend on suprasegmental or prosodic features, such as word-stress and tone. In Spanish, word-stress is contrastive or phonemic, as we can see from the fact that *paso* ‘step; I pass’, with stress on the first syllable, and *pasó* ‘he passed’, with stress on the second, are different words: changing the position of the stress produces a concomitant change in meaning.

Unlike, for instance, Chinese or Yoruba, on the other hand, tone is not lexically contrastive in Spanish. Whether we say *pan* with a falling tonal contour or with a rising contour, we still have the same word meaning ‘bread’. In both Spanish and English we may use a rising contour to ask a question (¿*Quieres pan*? ‘Do you want bread?’) and a falling contour in a statement (*Quieres pan* ‘You want bread’), but this is purely a matter of intonation and, unlike the position of the stress, does not affect the identity of words.

1.2 Sounds and symbols: orthographic and phonemic representation

Alphabetic writing is based on the possibility of identifying the contrastive sounds or phonemes of the language. In an ideal phonemic orthography there would be a one-to-one relationship between letters and phonemes: each letter would represent a different phoneme and each phoneme would be written with a different letter. Of course, actual alphabetic orthographies, used in real languages, depart from this ideal to a greater or lesser extent for all sorts of reasons, which we briefly address in Appendix B for Spanish.

In the conventional orthography of Spanish, there is an almost perfect correspondence in one direction, from written form to pronunciation: generally, there is only one possible way to read a given sequence of letters. Exceptions are very few indeed (see next section). Anyone who has learned the sound values of Spanish letters and letter combinations can accurately ‘sound out’ any word or text written in Spanish, even without knowing the meaning of the words. Unlike English speakers, Spanish speakers never have to consult the dictionary to verify the pronunciation of a written word that they have not seen before (unless it is perhaps a foreign proper name or a word from another language).

In the other direction, from sound to letter, there are more difficulties. It is not the case that native Spanish speakers always know how to spell all words. The same sound or sound combination can be spelled in two or more different ways in several instances.

Since in this book we will be concerned with pronunciation, we need a more accurate way of representing sounds than that provided by standard
orthography. There are also other reasons for using a different transcription system from ordinary orthography – a phonetic alphabet. Regional varieties of Spanish differ in aspects of pronunciation, but these differences are often hidden under a common spelling system. In addition, we will be comparing the sounds of Spanish with the sounds of English, and occasionally with those of other languages, for which purpose we need a common way to represent sounds which is independent from the spelling conventions of each of these languages. For these reasons we need to use a phonetic alphabet.

When we talk about phonemes, we will put them between slanted lines in order to indicate clearly that we are making reference to phonemes, not to conventional orthography. Thus, for instance, we may say that a phonemic transcription of Spanish 'halo' is /ˈalo/, since the h is not pronounced; it does not represent any phoneme at all. We will also, for instance, transcribe 'house' and 'cheese' as /ˈkása/ and /ˈkése/, respectively, in order to make clear that these two words start with the same phoneme, in spite of the fact that different letters are used to represent this sound in the conventional spelling.

Notice also that in our phonemic transcriptions we will mark word-stress even when this is not indicated in conventional spelling, according to the orthographic rules, since, as we already know, word-stress is phonemic in Spanish.

With minor adaptations, the symbols that we will use in our phonemic transcriptions are those of the International Phonetic Alphabet or IPA (see table on p. xix). Some of the symbols of this alphabet are ordinary letters of the familiar Roman alphabet. We are following the IPA, for instance, in using /k/ to represent the initial consonant of 'house' and 'cheese' as /ˈkása/ and /ˈkése/, respectively, in order to make clear that these two words start with the same phoneme, in spite of the fact that different letters are used to represent this sound in the conventional spelling.

Because Spanish orthography follows the phonemic principle to a great extent, as we said, our phonemic representations in general will not differ greatly from the way words are normally spelled.

1.3 More on Spanish orthography

1.3.1 Letters with more than one phonemic value

Although reasonably effective, Spanish orthography has some non-phonemic aspects. There are only a couple of cases where the way a word is pronounced is not completely predictable from the spelling. One is the pronunciation of the letter x in a few proper names, such as México (where it has a very different value from, for instance, that in taxi). The other case is presented by some sequences of vowels where, as we shall see in detail in Chapter 5, some speakers make a contrast not reflected in the orthography, so that, for instance, duelo has
two syllables, due-lo, but due-to has three, du-e-to. Leaving these minor details aside, there are no ambiguities in letter-to-phoneme correspondences.

1.3.2 Phonemes spelt differently in different contexts

There are more complications in the other direction; that is, in the phoneme-to-letter mapping. Some phonemes are written with different letters depending on the context. Thus the phoneme /k/ is written as gu before e and i as in queso /keso/ 'cheese', quiso /kiso/ 's/he wanted', and with the letter e in other contexts, as in casa /kasa/ 'house', cosa /kosa/ 'thing'. Cuba /kuba/ (the letter k is also used in a few technical and foreign words, such as kilo).

Similarly /g/ is written as gu (with silent u) before e and i, as in guerra /gerta/ 'war', guisa /gisa/ 's/he cooks'. To indicate that the u is pronounced after a diereisis is used in standard Spanish orthography, as in agüita /agüita/ 'water, dim.', cigüeña 'stork'.

There are some other minor complications. The letter y is used to represent the vowel /i/ in the conjunction y 'and' and is also used after a vowel in word-final diphthongs, but not in diphthongs in the middle of the word, so that the same sequence of sounds is written in one way in rey 'king' and in a different way in reina 'queen'. This is a minor rule of spelling that can be easily remembered.

Spanish has two r sounds (or rhotics): a strongly trilled /r/, as in guerra /gerta/ 'war', roca /rokka/ 'rock', honra /honra/ 'honor', and a tapped /ɾ/ as in pero /pero/ 'but'. These two sounds only contrast in word-internal intervocalic position (that is, between two vowels inside a word), where the trill /r/ is written as rr and the tap /ɾ/ as r. Notice, however, that a single r is also used to represent the trill in positions where there is no contrast, because the tap is not found there in any words; that is, word initially (roca, rey) and after the consonants /n/, /l/ and /s/ (enredo 'tangle', alrededor 'around', israelita 'Israeli').

1.3.3 Phonemes spelt in more than one way in the same context

The real thorny details of Spanish spelling however – those that create problems for school children and other writers – have to do with the fact that in a few cases the same phoneme is spelt in different ways in exactly the same context.

a) To begin with, the same sound is written in three different ways in dije 'I said', gente 'people' and México. Following the conventions of the IPA we will represent this sound – 'a hard aitch' as in Scottish loch and in German Buch (or, in more technical terms, which we will learn later, a voiceless velar fricative) – as /χ/ everywhere in phonemic transcription: /dιxe/, /χεntel/, /mεxiko/. In the standard Spanish orthography the letter x represents
1.3 More on Spanish orthography

A voiceless velar fricative only in a few names such as México and Oaxaca. Aside from such names, the letter j is always used in /xel/, /xo/, /xu/ (jarro ‘jar’, jota ‘a dance; letter j’, juzgar ‘to judge’). The phonemic sequences /xel/, /xel/, on the other hand, are written with j in some words (as in jefe ‘boss’, jinete ‘rider’, jirafa ‘giraffe’, paque ‘page, servant’) and with g in some other words (as in gesto ‘gesture’, genial ‘genial’, girar ‘to turn around’, página ‘page of a book’), without any immediately obvious reason for the choice. This, in fact, represents one of the main challenges for Spanish-speaking children learning to write in their language. The Spanish poet Juan Ramón Jiménez (1881–1958) proposed to do away with what for him was an absurd complication of the orthography and wrote /xe/, /xi/ always with j, as in his Antología poética (more conventionally spelt antología). This orthographic reformation was also adopted in Chile for some time, but since nobody else followed suit, the Chileans finally gave it up. One just has to memorize which words are spelled with ge, gi and which with je, ji.

b) Spanish orthography distinguishes between the two letters b and v. For (most) Spanish speakers, however, this orthographic distinction does not have any reality in their pronunciation: beso and vaso are pronounced /bɛso/ and /bɑso/, respectively, with the same sound. Similarly, the different spelling of the underlined sequences in combate ‘s/he fights’ and conversa ‘s/he converses’ is purely a matter of orthographic convention, since they are pronounced in exactly the same way.

c) Nowadays, the great majority of Spanish speakers pronounce orthographically, yeso ‘plaster’ and llama ‘flame; s/he calls; llama’, in exactly the same manner, /jɛso/ and /jɑma/. This is yet another case where the same phoneme is spelt in two different ways in different words. There was a time, however, when this orthographic distinction was a phonemically real one, and, in fact, there are still speakers both in Spain and in the Andean region of South America who pronounce the sound spelt y differently from the sound spelt with a double ll. For these speakers, ll represents a phono-

2 Bilingual speakers whose other native language has a sound /v/ such as some English-Spanish speakers in the USA and some Catalan-Spanish bilingual speakers in Majorca and other areas, may have this phoneme in their Spanish, though. Some school teachers, especially in Latin America, also insist on artificially introducing a distinction in pronunciation between orthographic v and b as a way to aid in the memorization of the standard spelling of words.
Knowing which words are spelled with $y$ and which with $ll$ is thus another source of orthographic problems for most Spanish speakers.

d) Most speakers of Peninsular Spanish have a phonemic contrast between $/s/$ and $/θ/$, a sound similar to that in English think, thorn (a voiceless interdental fricative). Standard Spanish orthography offers a straightforward representation of this phonemic contrast: $/s/$ is written as $s$, in *sopa* ‘soup’, *casa* ‘house’, and $/θ/$ is written as $c$ in the sequences $ce$, $ci$, as in *centro* ‘centre’, *circo* ‘circus’, *Cecilia* (Cebilia), and as $z$, elsewhere, as in *casa* ($k$āθa) ‘hunt’, *zapato* ($θ$apátoθ) ‘shoe’, *zona* ($θ$óna) ‘zone’, *zurdo* ($θ$úrdo) ‘lefthanded’, *pez* ($p$eθ) ‘fish’, *piscina* (pisθína) ‘pool’. (The only anomaly is presented by some technical terms and proper names where the sequences $ze$, $zi$ are used instead of $ce$, $ci$, as in *zinc* ($θ$íνθk), *zigzag* (θíθg), *enzima* (enθíma) ‘enzyme’ – compare with the homonymous *encima* (enθíma) ‘above’ – Zenón, *zeppelin*.) In standard Peninsular Spanish there are a number of $/s/$-$/θ/$ minimal pairs, that is, pairs of words that differ only in that one member of the pair has one phoneme and the other has the other: *ves* ($θ$ebes) ‘you see’, *vez* ($θ$ebɛθ) ‘time’; *sien* ($θ$iθɛn) ‘temple, side of the head’, *cien* ($θ$iθɛn) ‘a hundred’; *sima* ($θ$iθma) ‘abyss’, *cima* ($θ$íma) ‘summit’; *sebo* ($θ$ebɔθ) ‘lard’, *cebo* ($θ$ebɛθ) ‘bait’, *abrásə* ($θ$ə bɾɛθ) ‘it burns’, *abraza* ($θ$ə bɾaθaθ) ‘s/he hugs’, etc.

Speakers from all of Latin America, as well as the Canary Islands and parts of Andalusia, however, lack this phonemic contrast. For them, these words all contain the same phoneme, $/s/$: *sopa* ($θ$ɔθap), *kásə* ($θ$ɔθap) (both *casa* and *caza*), *θentɾoθ*, *θirkɔθ*, *θesθiθal*, *θapáθol*, *θónaθ*, *θúrdɔθ*, *θeθboθ* ‘bait’, *θbrasə* (θi bɾɛθ) ‘it burns’, *θbrəθaθ* (θi bɾaθaθ) ‘s/he hugs’, etc.

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Other than these relatively few complications, conventional Spanish orthography is phonemic.

The phonemes of the Spanish language are listed in Table 1.1, along with their representation in conventional orthography. The terms used to group these phonemes in classes will be explained in later chapters.

1.4 Phonemes and allophones

We noted above that Spanish, like all human languages, uses a rather small number of contrastive building blocks of sound or phonemes. A given phoneme is not always realized in the same way, however.
### 1.4 Phonemes and allophones

**Table 1.1 (Part I) Spanish phonemes and orthographic correspondences (General Latin American Spanish).**

<table>
<thead>
<tr>
<th>Phoneme</th>
<th>letter</th>
<th>examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vowels</td>
<td>/a/</td>
<td>a casa /kasa/ 'house'</td>
</tr>
<tr>
<td></td>
<td>/e/</td>
<td>e mesa /mesa/ 'table'</td>
</tr>
<tr>
<td></td>
<td>/i/</td>
<td>i, y pino /pinoo/ 'pine', y /i/ 'and'</td>
</tr>
<tr>
<td></td>
<td>/o/</td>
<td>o copa /kopaa/ 'cup'</td>
</tr>
<tr>
<td></td>
<td>/u/</td>
<td>u cuña /kuna/ 'cradle'</td>
</tr>
<tr>
<td>Plosive consonants</td>
<td>/p/</td>
<td>p pelo /peelo/ 'hair'</td>
</tr>
<tr>
<td></td>
<td>/b/</td>
<td>b, v boca /boka/ 'mouth', vaca /baka/ 'cow'</td>
</tr>
<tr>
<td></td>
<td>/t/</td>
<td>t toro /togo/ 'bull'</td>
</tr>
<tr>
<td></td>
<td>/d/</td>
<td>d dama /dama/ 'lady'</td>
</tr>
<tr>
<td></td>
<td>/k/</td>
<td>c, qu, k capa /kapa/ 'cape', queso /keso/ 'cheese', kilo /kilo/</td>
</tr>
<tr>
<td></td>
<td>/g/</td>
<td>g, gu garra /gara/ 'claw', guerra /gerta/ 'war'</td>
</tr>
<tr>
<td>Affricate consonants</td>
<td>/ʃ/</td>
<td>ch chico /ʃiko/ 'boy; small'</td>
</tr>
<tr>
<td>Fricative consonants</td>
<td>/ʃ/</td>
<td>s foca /ʃoka/ 'seal'</td>
</tr>
<tr>
<td></td>
<td>/s/</td>
<td>s, c(c,i), z saco /sako/ 'bag', cena /senaa/ 'supper', escena /esenaa/ 'scene', azul /astul/ 'blue'</td>
</tr>
<tr>
<td></td>
<td>/x/</td>
<td>j, g(c,i), x' jota /jota/ 'a dance', gente /xente/ 'people', mexicano /mexikoano/ 'Mexican'</td>
</tr>
<tr>
<td>Nasal consonants</td>
<td>/m/</td>
<td>m mes /mes/ 'month'</td>
</tr>
<tr>
<td></td>
<td>/n/</td>
<td>n nada /nada/ 'nothing'</td>
</tr>
<tr>
<td></td>
<td>/ɲ/</td>
<td>ɲ año /ANGO/ 'year'</td>
</tr>
<tr>
<td>Lateral consonants</td>
<td>/ʎ/</td>
<td>l loco /loko/ 'crazy'</td>
</tr>
<tr>
<td>Rhotic consonants</td>
<td>/ɾ/</td>
<td>r coro /koro/ 'choir'</td>
</tr>
<tr>
<td></td>
<td>/rr/</td>
<td>rr, r coro /koro/ 'circle', rosa /rosaa/ 'rose', honro /onoa/ 'honour'</td>
</tr>
</tbody>
</table>

Additional notes:

* The letter x normally (but not always) represents the group /ks/: taxi /tanksi/.
* Orthographic h does not represent any phoneme (it is silent): harina /aɾinna/ 'flour'.
Introduction

*Table 1.1 (Part II) Phonemic contrasts found only in some dialects.

<table>
<thead>
<tr>
<th>Sounds</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>/θ/ vs. /θ/</td>
<td>Only in Northern-Central Peninsular Spanish (northern and central Spain)</td>
</tr>
<tr>
<td></td>
<td>cena /θeˈnaθ/, escena /θeˈθeθ/, azul /θoθal/</td>
</tr>
<tr>
<td>/s/</td>
<td>saco /θakoθ/ 'bag'</td>
</tr>
<tr>
<td>/ʃ/</td>
<td>Only in parts of Spain, the Andean region and Paraguay</td>
</tr>
<tr>
<td></td>
<td>yuya /θaθjaθ/ 'that s/he/I go'</td>
</tr>
<tr>
<td>/ʃ/</td>
<td>valla /θaθlaθ/ 'fence'</td>
</tr>
</tbody>
</table>

sounds may depend on factors such as which other sounds it is in contact with, whether we are speaking fast or slowly, and the degree of formality in the speech situation. In fact, it is much closer to the truth to state that the same sequence of phonemes is never pronounced in exactly the same manner, not even in two repetitions of the same word by one speaker. For our purposes, we can safely ignore much of this variation (which is, on the other hand, very important for speech recognition engineers). Nevertheless, some aspects of variation are both systematic within a language and not necessarily found in other languages. It is with these linguistically significant aspects of variation in the realization of phonemes that we need to be primarily concerned.

Consider for instance the Spanish word candado 'lock'. In terms of phonemes we could write this as /kandadio/. Native Spanish speakers, however, pronounce the two instances of the phoneme /d/ in this word in quite different manners. For the first /d/, the tip of the tongue makes firm contact with the root of the upper teeth. This is what we will call a plosive or oral stop consonant; a dental plosive, since the contact is with the teeth. For the second /d/, on the other hand, there is no such firm contact. The tip of the tongue only approaches the teeth without adhering to them. Its articulation is that of an approximant consonant (see 8.2.2). In fact, between two vowels (and in some other contexts that we shall specify), Spanish /d/ is much more similar although not completely identical – to the English th sound in words such as though, gather, brother (not the one in think!). We will use the symbol [θ] to represent this sound. We say that plosive [d] and approximant [θ] are two variants of the phoneme /d/ in Spanish. Notice that we use brackets [ ] to represent allophones. We also use brackets in the transcription of whole words and sequences, when we go beyond phonemic distinctions to include

3 In many books on Spanish phonology, this sound is classified as a 'fricative'. As explained in 8.2.2, the term 'approximant' is more accurate for the continuant allophones of /b d g/ in Spanish, whereas the English sound in though, gather, etc., is a fricative.
non-contrastive, allophonic details. We may say that the word /kandado/ is normally pronounced [kandado], with two different allophones of /d/.

We have just said that all sounds are influenced by their environment, giving rise to allophonic variants. The amount of allophonic detail that we include in a phonetic transcription of an utterance will depend on which aspects of pronunciation we want to emphasize. A phonetic transcription that includes a lot of non-contrastive detail is called a narrow phonetic transcription, whereas a broad phonetic transcription only includes a few details of particular interest.

In our example, /kandado/, the first vowel would often present some nasalization under the influence of the following /n/. We could note this by including a nasalization diacritic over this vowel, [˜a]. The phoneme /n/ would also normally modify its articulation becoming dental before dental /d/. This could also be indicated with a dental diacritic, a little tooth, under the segment, [n]. Finally, in the ending /-ado/ the approximant allophone of the phoneme /d/ is often given a very short duration, which we can indicate by means of a smaller superscript [’]. A narrower transcription of a typical rendition of /kandado/, including these details, would thus be [kænd’o] (we do not include the dental diacritic under [d] because this sound is always dental in Spanish). In general, our phonetic transcriptions will be fairly broad, among other things because, in this book, we are mostly interested in describing those features of Spanish pronunciation that will be common across speakers and contexts, rather than being interested in the minute details in which two renditions of the same sentence are different, for instance.

Going back to our example, Spanish speakers are not generally aware that they pronounce /d/ in two different ways, plosive [d] and approximant [ð], depending on the context. These are two systematically different, but non-contrastive, pronunciations of the same phoneme /d/. One reason why Spanish speakers may not be aware that they do not always pronounce /d/ in the same manner is that a word-initial /d/ will be pronounced as a plosive [d] in some contexts, including after a pause and after /n/, as in con días /kon días/ ‘with days’, pronounced [konías], and as an approximate consonant [b] in other contexts, including after a vowel, as in para días /para días/ ‘for days’, pronounced [paraðías]. The difference between [d] and [b] is not contrastive in Spanish, but it is nevertheless systematic. A pronunciation such as [lado], with a plosive [d], cannot be something different from [lādo], but it would be a funny way to say lado /lādo/ ‘side’. Chances are that one would not be misunderstood by producing the wrong allophone, but only someone who is not a native speaker of the language would pronounce [lādo] instead of [lādo] in non-emphatic speech.
The sounds [d] and [ð] are two allophones of the phoneme /d/ in Spanish which are found in complementary distribution: one allophone, [d], occurs in certain environments (after pause, /n/ and /l/) and the other in all other phonological contexts (in the most widespread standard pronunciation).

To repeat, two allophones of a phoneme are said to be in complementary distribution when they occur in different contexts: one allophone occurs in a given environment or set of environments and the other is found elsewhere.

The Spanish phonemes /b/ and /g/ also have plosive [β], [γ] and approximant [β], [γ] allophones in complementary distribution, as we can see in examples such as ambos [´aβos] ‘both’, envía [emβía] ‘s/he sends’ vs sube [sαβe] ‘s/he knows’, lava [lαβa] ‘s/he washes’, for phonemic /β/, and tengo [tεγo] ‘I have’ and lago [lαγo] ‘lake’, for /γ/. We will study this phenomenon in detail in Chapter 8.

English has two rather similar (although not identical) sounds to the two allophones of Spanish /d/, as in dough and though, respectively, but in English these are distinct phonemes. As we see, two sounds that are allophonic realizations or variants of the same phoneme in one language can be separate phonemes in another language.

To give another example comparing Spanish and English, in English there is a contrast between a phoneme /s/ that occurs in Sue, rice, and another phoneme /z/ in words such as zoo, ride. The existence of these minimal pairs shows that /s/ and /z/ are indeed distinct phonemes in English. Both sounds also occur in Spanish, but with a very different status: the sound [z] is simply a possible realization of /s/ before certain consonants (before voiced consonants) as in desde /dεzde/ [dεzde] or [dεzde] ‘from’, mismo /mismo/ [mismo] or [mismo] ‘same’. It does not occur anywhere else in the language. We conclude that in Spanish the sound [z] is not a distinct phoneme, but only an allophonic variant of the phoneme /s/ in a specific environment.

Let us consider one more example of two sounds that are simple allophones of the same phoneme in Spanish but different phonemes in English. Many Spanish speakers (for instance in Andalusia, the Caribbean and Peru) pronounce final -n as in pan ‘bread’, atún ‘tuna fish’, with the final sound found in English...
1.4 Phonemes and allophones

Table 1.3 Phonemic status of the sounds [s] and [z] in English and Spanish: two separate phonemes in English but two allophones (variants) of the same phoneme in Spanish.

| English: two distinct phonemes, /s/ and /z/ |
| Phonemes |
| /s/    | Sue, price, rice |
| /z/    | zoo, prize, rise |

Spanish: [z] is an allophone of /s/ |

| Phonemes | Allophones  | Contexts |
| /s/      | [z]         | before a voiced consonant: desde, mismo, rasgo |
| /s/      | [s]         | elsewhere: saco, ese, pasta, dos |

*king, song:* that is, with a velar nasal, whose IPA symbol is [ŋ]: [pán], [atín]. Other speakers (for instance in Mexico City, Buenos Aires and Madrid) pronounce the same words with final [n], the final sound in English *kin, son:* pan [pán], atín [atín]. Everyone pronounces panes [pánes] ‘loaves of bread’, atunes [atúnes] ‘tuna fishes’ with [n]. In English, replacing final [n] with [ŋ] may give rise to a difference in meaning, as in *kin vs king.* In Spanish this is never the case; the velar nasal sound [ŋ] is an allophone of the phoneme /n/, which some speakers use in word-final position. For speakers who pronounce /pán/ as [páŋ], but /pánes/ as [pánes], the two sounds [n] and [ŋ] are allophones of /n/ in complementary distribution, since the two sounds occur in different contexts: [ŋ] occurs word-finally and [n] before a vowel.

We have considered several cases in Spanish where allophones are found in complementary distribution. It is also possible for allophones to be in free or stylistic variation. This is the case when the same speaker may pronounce the same phoneme in exactly the same phonological context in more than one way depending, for instance, on the degree of formality in the interaction. In many Spanish dialects, both in southern Spain and in large areas of Latin America, the phoneme /s/ has another allophone, [h], before a consonant and at the end of a word, so that *este /ész/ ‘this’ may be pronounced [éhte] and los amigos /los amigos/ ‘the friends’ can be realized as [loñamíyoh]. This phenomenon, which is known as aspiration of /s/, is one of the main aspects of dialectal variation in the Spanish-speaking world (see 9.2.5.2). For many, if not most, speakers of Spanish who aspirate /s/ at the end of a word or before a consonant, this is in fact a variable rule. These speakers may pronounce los ata ‘s/he ties them’ as [loñáta] on one occasion and say [losáta] a few seconds later. In general, the less formal the context the greater the likelihood that /s/ will be aspirated (or left unpronounced).
1.5 Phonology and phonetics

Traditionally the study of the sounds used in human communication is divided into two subdisciplines, phonology and phonetics. The discipline of phonology is primarily concerned with the contrastive units of speech (phonemes) and the patterns in which they are arranged and distributed in different languages. For instance, when we say that /s/ and /z/ are two different phonemes in English and that, furthermore, this pair of segments differs in a feature (the voiceless vs voiced contrast) which is also used systematically to distinguish a whole series of pairs of consonants in this language (/f/ and /v/, /θ/ and /ð/, /p/ and /b/, /t/ and /d/, etc.), we are doing phonology.

The field of phonetics, on the other hand, deals with the physical aspects of speech sounds. The description of the gestures with the tongue, lips and other articulators involved in the production of different speech sounds is known as articulatory phonetics. With the help of appropriate technology (nowadays mostly software programmes), it is also possible to study the physical characteristics of the sound waves of the different consonants and vowels used in the languages of the world. This is the realm of acoustic phonetics.

Although, in practical terms, it is difficult to study phonology without at the same time being concerned with phonetic aspects and vice versa, phonology and phonetics remain two separate fields, each with its specialized journals, academic positions and so on. In general, phonologists are mostly concerned with providing models of speakers' mental representations of the sound system of their language (which very often lends phonological analysis a markedly speculative character). For this purpose they employ abstract symbolic systems, which have reached a high level of sophistication. The emphasis in much phonological theorizing is on issues such as simplicity, elegance and economy in the formalism used in the description. Phoneticians, on the other hand, are more concerned with developing experimental methodologies that may provide them with more accurate knowledge of all aspects of speech, and employ statistics to deal with the variable nature of actual pronunciation. In recent years, a school of thought known as Laboratory Phonology has attempted to bridge the gap between the two disciplines of phonetics and phonology. The present writer is particularly sympathetic towards these endeavours.

In this book, phonological and phonetic aspects will be presented together. In our presentation of Spanish pronunciation, we will incorporate the results

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4 For Spanish, good examples are Alarcos (1965), as a representative of the school known as European or Praguean Structuralism and J. Harris (1969, 1983), representing Generative Phonology.
5 The Laboratory Phonology perspective is summarized in Pierrehumbert, Beckman and Ladd (2001). See also Bybee (2001) for a largely compatible view.
of many decades of work on Spanish phonology and phonetics, although, on the one hand, we will avoid all unnecessary phonological formalism and, on the other, we will not discuss the details of specific experiments in Spanish phonetics.

As indicated in previous sections, we will use two types of representation: phonemic transcriptions, representing the contrastive units of the language, and phonetic transcriptions, which will be broader or narrower depending on the aspects that we want to emphasize but, naturally, will never include every detail of pronunciation, since that is simply not do-able with an alphabet.

Some linguists include morphophonological rules and alternations in the domain of phonology, whereas other linguists are of the opinion that these phenomena are better treated as part of morphology, a separate branch in the study of language that deals with the structure of words. Examples of morphophonological rules in Spanish are plural formation (e.g. *palo-s* 'stick-s' vs *sol-es* 'sun-s') and the vowel/diphthong alternations shown in examples such *puedo/podemos* 'I can / we can', *puerta/portal* 'door/doorway', etc. In this book the main morphophonological rules of Spanish will be considered in Chapter 12, separately from purely phonological phenomena, as already noted in the preface.

A widespread assumption among linguists is that the division of labour between phonology and phonetics (or between phonologists and phoneticians) is based on a parallel distinction between two kinds of structure in the object of study, the sounds of human language: a phonological structure and a phonetic structure. In this view, the units of the phonological level would be contrastive, categorical and learned, whereas the phonetic level would contain noncontrastive, gradual and universal entities. Many noncontrastive aspects of pronunciation, in this view, would be a consequence of the physical properties of the systems involved in oral communication, the articulatory and auditory systems. These aspects would thus be expected to be automatic and universal.

As we already know, some subphonemic, allophonic, aspects of pronunciation are clearly language-specific (i.e. are found in language A but not in language B). These phenomena would fall within the purview of phonology to the extent that they can be understood as giving rise to distinct phonetic categories. For instance, the allophonic phenomenon of aspiration of /s/ found in some Spanish dialects can be conceptualized as transforming the expected sound (if the process did not exist) [s] into a different sound [h], a distinct allophonic category. This can be interpreted as the operation of a phonological rule /s/ → [h] applying in certain contexts and certain styles. Similarly, the fact that in Spanish the consonants /b/, /d/ and /g/ are realized as the approximant consonants [β], [ð], [ɣ], respectively, is a language-specific phenomenon of
allophony that could be expressed by means of a rule replacing one symbol by another and would thus fall within the domain of phonology. Other more specific details of pronunciation, which in this view are seen as physiologically conditioned (hence universal) and as not producing distinct allophonic categories, are relegated to the domain of phonetics. For instance, in the production of the phoneme /k/ the tongue is further back when followed by a vowel articulated more towards the back of the mouth, and is more fronted before front vowels. The reader can verify this by observing the position of the tongue in the production of /k/ in car key. The same effect can be observed in the Spanish example caqui /cáki/ ‘khaki’. To the extent that this is an automatic, universal effect, it would fall outside of phonology and within universal phonetics.

Some phonologists distinguish three levels of representation: an underlying phonological level, consisting of phonemes, or sometimes other more abstract entities; a surface phonological level, broadly similar to a broad phonetic transcription, where the main allophones – those that are judged to constitute distinct phonetic categories – are represented; and a phonetic level, which would include noncategorical allophonic details, assumed to be largely predictable and universal, and whose study is beyond the scope of the discipline of phonology.

This distinction between the phonological and the universal/automatic phonetic levels, however, now appears less clear than some years ago. Let me clarify with an example. In many languages vowels tend to be somewhat longer before voiced consonants than before voiceless consonants. In English, for instance, the vowel of mad is longer than that of mat and the vowel of bid is longer than the vowel of bit. This is a predictable, noncontrastive, feature: the greater length of the vowel in mad and bid is predictable from the fact that the following segment is /d/ and not /t/. Furthermore, we still have the ‘same’ vowel. It is not the case that this results in a contrast between short and long vowels in English. The effect is gradual, not categorical. Lengthening of vowels before voiced consonants (or shortening before voiceless consonants) is also found in other languages and it is possible to find a physical explanation for this phenomenon. From all of this, we may conclude that this is a phonetic effect: noncontrastive, automatic, gradual and universal. However, it turns out that although in French, another language that has been studied in this respect, vowels are also longer before voiced than before voiceless consonants, the difference in duration between vowels in these two contexts is systematically smaller in French than in English (Mack 1982; Keating 1984). Therefore, we have to conclude that speakers of English and French must learn to produce the appropriate difference in duration between vowels in these two contexts in their particular language. The effect has a physical basis, but the details of
its implementation are language specific and are part of what speakers need to learn in order to acquire a native 'accent'. Going back to the other example above, differences among languages are also likely to be found in the degree to which /k/ coarticulates with following vowels (in fact in the coarticulation of velars we find differences even among Spanish dialects) even if the presence of some degree of coarticulation is to be expected in any language.

In more general terms, there is very little evidence for a level of universal phonetics, which would allow someone to have a perfect, native-like, pronunciation once he or she had mastered the phonemes and phonological rules of the language. This is perhaps bad news for some users of this book but it is probably better to be upfront about the difficulties involved in acquiring native-like pronunciation in a second language. The fact is that it is rarely if ever the case that two analogous sounds are pronounced in exactly the same way in two different languages. Sometimes the difference is rather obvious, as in the case of English /t/ and Spanish /t/ (see Chapter 8). In other cases, the difference is more subtle, but generally it is still there. Acquiring a native accent in a second language involves learning to control many fine details of pronunciation in which the language you are learning differs from your native one. Most of this learning must be unconscious and can only be obtained by exposure to native speech.

The good news, on the other hand, is that most of these details of pronunciation do not affect communication in any significant manner. All phonemic contrasts and the most important allophonic details of Spanish pronunciation will be explained in this book, and salient differences with respect to English will be emphasized. This includes both those differences where transfer from English may affect comprehension and most of those which may result in a strong foreign accent. Mastery of this information should prove beneficial to readers interested in improving their pronunciation of Spanish.

1.6 The International Phonetic Alphabet: advantages and shortcomings

The community of researchers interested in the study of the sounds of speech communication, through the International Phonetic Association, has developed an alphabet, known as the International Phonetic Alphabet or IPA, whose goal is to allow for the transcription of the sounds of any language in a way that will be unambiguous and readily understandable to all phoneticians, whether or not they know the language in question.

The existence of this alphabet is very convenient. In principle, it permits anyone who has mastered this alphabet to read IPA transcriptions in any language with a certain degree of accuracy, that is, making all distinctions that are
linguistically relevant to native speakers of the language. It also allows for the ready comparison of the sound systems of different languages and dialects. For these reasons, in this book the alphabet that we are using for our transcriptions is the IPA, with some minor modifications noted immediately below.\(^6\)

In works dealing only or mainly with one language, authors sometimes modify certain aspects of the IPA that may be particularly inconvenient for the language under study. Here we will also deviate from the IPA in a couple of minor respects. Firstly, IPA uses the symbol [r] to represent an alveolar trill as in *perro* and a different symbol [ɾ] to represent the alveolar flap of *pero*. For the transcription of Spanish this is especially confusing, since, given the conventions of Spanish orthography, a transcription such as [pero] immediately suggests the word *pero* 'but', instead of *perro* 'dog', which is what it is intended to represent. To avoid this problem we will add a diacritic, a bar above, to the symbol for the trill. We thus transcribe *perro* 'dog' as *[pêrô]* and *pero* 'but' as *[pêɾo]*, reserving the symbol [r] for a rhotic of unspecified character.\(^7\)

The other modification of the IPA that we adopt is that word-stress will be indicated with an acute accent on the stressed vowel, [kásə] 'house', instead of using a vertical line immediately before the stressed syllable, ['kása], as required by strict application of the IPA norms. For Spanish this makes things much more clear, especially concerning stress contrasts in sequences of vowels.

To indicate *glides* (as in the bolded sounds in *pienso* 'I think', *peine* 'comb', *suelo* 'floor', *aula* 'classroom'), the IPA alphabet offers two choices. One is to use the symbols [j] and [w]: [pjénso], [péjne], [swéló], [áwla]. The second choice, which we adopt here, is to indicate the fact that the sounds in question form a syllable with an adjacent vowel by means of a subscript diacritic: [pjénso], [péjne], [swéló], [áwla].\(^8\)

A separate problem is that the IPA sometimes has distinct symbols for differences in pronunciation that are not contrastive in the language under study. In these cases a choice must be made among two or more alternatives. For instance, in Spanish the pronunciation of *y* in words such as *yeso* and *mayo* (and also of *ll* for most speakers) can range from a sound similar to that in English *Yale* to a sound that resembles that in English *jail*, even leaving aside more radically different pronunciations of this phoneme, as are found, for instance, in Argentinian Spanish. The IPA provides at least four symbols [j],

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\(^6\) Rather than using some other phonetic alphabet, such as that of the *Revista de Filología Española*, which was specifically created for the transcription of Spanish and emphasizes the differences that one may find among Spanish dialects.

\(^7\) Following a proposal to the International Phonetic Association in Whitley (2003).

\(^8\) In the system of the *Revista de Filología Española* different symbols are used for prevocalic and postvocalic glides: [pjénso], [swéló] vs [péjne], [áwla].
[j], [ŋ] and [dʒ], signifying differences in degree of constriction. In Spanish, the sounds represented by these four IPA symbols are all in ‘stylistic variation’. Whereas for the transcription of individual tokens either by the same or by different speakers all four symbols may indeed be employed, when we are only interested in representing the phoneme or in offering a ‘typical’ phonetic transcription, one of the symbols must be chosen. We will transcribe yeso as [jέso] when no particular dialect is being considered.

The case where the language makes more contrasts along a certain phonetic dimension than those for which there are separate IPA symbols is less problematic, since it can be solved by using diacritic marks added to the basic IPA symbols.

Finally it is important to keep in mind that when comparing languages we can never really speak of strictly identical sounds, only of analogous sounds (Pierrehumbert, Beckman and Ladd 2001).

**EXERCISES**

1. Do all Spanish varieties have the same number of phonemes? Explain in detail.

2. Provide minimal pairs for the following phonemic oppositions in Spanish:
   /p/-/b/, /t/-/d/, /k/-/g/, /n/-/ɲ/, /r/-/ɾ/.

3. Is it possible to find minimal pairs contrasting /n/ and /ɲ/ in Spanish? Explain.

4. In Spanish the bolded letter is essentially the same sound in lado, polo, mal, sol. In English on the other hand, we find quite different sounds in light, low, on the one hand, and ball, pal, on the other. Is this a phonemic contrast in English? How would you explain the difference between English and Spanish in this respect?

5. Provide an exhaustive list of cases where the same phoneme is written in more than one way in standard Spanish orthography, giving examples.

6. Give five minimal pairs demonstrating that the position of the word-stress is phonemic in Spanish.

7. Are the sounds [b] and [β] in phonemic contrast in Spanish?