

answers to exercises

[6]

Section 2 (The Vocal Tract)

- The *lungs* supply the air for almost all speech sounds. Air passes from them into the *bronchi*, one from each of the two *lungs*, and these two airstreams merge in the *trachea*, a short tube situated in the lower part of the neck. On top of this is a valve known as the *larynx*. Here the supply of air to the throat and mouth is controlled by opening or closing the *glottis* – the gap between the two *vocal folds*. In ordinary quiet breathing the *glottis* is open; for swallowing it is closed in order to protect the *lungs*. A noteworthy evolutionary adaptation in humans allows voice to be produced by positioning the *vocal folds* in such a way that passage of air between them causes them to vibrate.
- (a) [z] voiced; [θ] voiceless; [b] voiced; [p] voiceless; [ð] voiced; [s] voiceless.

(b) [f] voiceless; [v] voiced; [t] voiceless; [d] voiced; [k] voiceless; [g] voiced; [ʃ] voiceless.
- pin (vl), bin (vd)

fail (vl), yeil (vd)

toll (vl), dole (vd)

gin (vd), chin (vl)

zoo (vd), sue (vl)

wreathh (vl), wreathe (vd)

either (vd), ether (vl)

Aleutian (vl), allusion (vd)
- zeal, racer, eyes, scares, angle, duck/tug, bigger/picker, lunch, juice/choose, joke, thy, confusion.
- See Fig. 6.
- (a) the velum: here it is pressed against the wall of the pharynx and is closing off the nasal cavity. The uvula “dangles down” below this point of closure.

(b) the pharynx: the projection on the left is the epiglottis, an appendage at the top of the larynx, which rarely if ever has any function in speech.

- (c) the tip of the tongue, closing against the alveolar ridge (upper front teeth shown at far left).
- (d) the tongue, with root to the right and tip to the left.
7. lips, tongue, velum, uvula.
8. (a) FALSE (correct answer: the larynx)
 (b) FALSE (correct answer: the velum)
 (c) TRUE
 (d) TRUE
 (e) FALSE (correct answer: the alveolum).
9. trachea, larynx, glottis, oesophagus, velum, alveolum/alveolar ridge, pharynx.
10. the *vocal tract* runs from the lungs to the lips; the *upper vocal tract* (also known as the *supra-glottal tract*) is the part situated above the larynx (including the nasal cavity). *Oral tract* is an alternative term for the mouth cavity (from the top of the pharynx to the lips). The *nasal tract* is the same as the nasal cavity.
11. See Fig. 6.

Section 3 (Vowels)

N.B. [aɪ] [eɪ] [ɔɪ], [aʊ] [eʊ] may, in broad transcription, also be written [ai] [ei] [oi], [au] [eu].

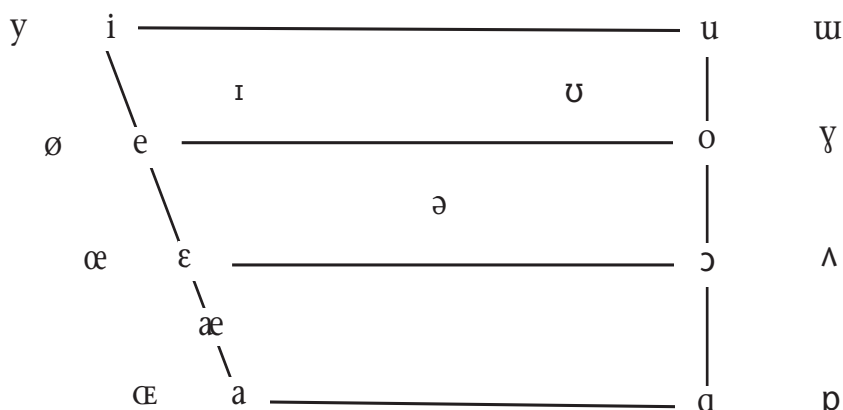
12. (a) [ɑ] (b) [i] (c) [u].
13. (a) FALSE (it is *low front*)
 (b) TRUE
 (c) FALSE (it is *high back*)
 (d) FALSE (it is *low back*)
14. (a) [i] is close
 (b) [u] is close
 (c) [a] is open

15. (a) low = "tongue flat"
 (b) open = "wide oral cavity"
 (c) front = "tongue advanced"
 (d) high = "surface of tongue raised towards hard palate"
 (e) back = "tongue retracted"
 (f) close = "narrow oral cavity".
16. (a) London
 (b) they guide you like the cardinal points of a compass
 (c) it provides a framework for the vowels of any language
17. See Fig. 15.
18. Correct yourself, or consult your tutor.
19. bête [ɛ]; foule [u]; premier [ə, e]; patte [a]; été [e]; rose [o]; prêt [ɛ]; pré [e];
 dehors [ə, ɔ]; sortie [ɔ, i]; petit [ə, i]; sous [u]
 sehen [e, ə]; Hände [ɛ]; wenden [ɛ]; ruhen [u]; Sonne [ɔ]; Sohn [o]; hatte [a, ə];
 Vater [ɑ]; Tier [i]; See [e]; wahr [ɑ]
 ser [ɛ]; amigo [a, ɔ]; hombre [ɔ]; hoja [ɔ]; cabo [a, ɔ]; verde [ɛ, e]; clase [e]; hemos
 [e, ɔ]; grande [a, e]; salir [i].
20. Monitor yourself, or consult your tutor.
21. Rounded: fou, cru, rose; hoch, Sohn, früh; loco, tu, lo
 Unrounded: tête, patte, prêt, pré; Reh, Hand, Tier, wahr; ser, verde, cara, si.
22. [u] high, back, rounded
 [e] mid-high, front, unrounded
 [ɛ] mid-low, front, unrounded
 [a] low, front, unrounded
 [ɔ] mid-low, back, rounded
 [ə] mid, central.
23. pu [y], pou [u], pis [i], voulu [u, y], lugubre [y, y], fourrure [u, y]
 Ufer [u], über [y], Mühe [y], Fuß [u], Füße [y], Zypresse [y], Statue [u].

24. foule, lune, boudier, fumer, vous, vu, fou, fut, ou/où, eu
Hügel, Mut, Kuh, süß, fühlen, Huhn, Nudel.
25. [y] high, front, rounded
[e] mid-high, front, unrounded
[ɛ] mid-low, front, unrounded
[ø] mid-high, front, rounded
[i] high, front, unrounded
[œ] mid-low, front, rounded
26. (a) TRUE
(b) TRUE
(c) FALSE
(d) TRUE
27. French, German.
28. bonheur [œ], soeur [œ], deux [ø], milieu [ø], jeune [œ], stupeur [œ],
peut-être [ø].
Söhne [ø], völlig [œ], Körper [œ], mögen [ø], köstlich [œ], Goethe [ø], töten [ø].
29. peur, meurt, ceux, deux, su, cru, air, né
höre, helle, Tür, Kellner, liegen, können, viele.
30. seul, fameux, hideux
Vögel, gönnen, Höhle.
31. (a) R(eceived) P(ronunciation)
(b) digraph
(c) small capital *i*, turned *v*, reversed open *e*.
(d) Southern British vowels are more centralized, i.e. the tongue position is less extreme.
32. Because London is the capital of the UK.
33. hand [æ], car [ɑ], alphabet [æ, ə], foot [ʊ], butter [ʌ], further [ɜː, ə], roar [ɔː],
swan [ɒ], wish [ɪ], monkey [ʌ], some [ʌ], cough [ɒ], enough [ʌ], yawn [ɔː], pull [ʊ],
knowledge [ɒ].

34. [hələʊ].
35. leaf, leave, but, bat, boot, look, cod, cord, good, country, second, stomach, except, bosom, habit.
36. foot [fʊt], fast [fɑːst], fast [fɑːst], up [ʊp], cap [kæp], off [ɔːf], cross [krɒs].

37.



38. A vowel is any speech sound in which there is free passage of air above the glottis. *Pure vowel* and *monophthong* both refer to vowels with unchanging tongue position. During the articulation of a *diphthong*, the tongue moves from one position to another. A *digraph* is a group of two letters representing a single monophthong.
39. (a) face: [fjɛːs] [j] represents the first sound of *yacht* (see 3.09).
 (b) face: [fɛːs]
 (c) so: [sɒ]
 (d) bean: [bɛɪn]
40. bough [aʊ], aisle [aɪ], toe [əʊ], buy [aɪ], weigh [eɪ]
 though [əʊ], buoy [ɔɪ], soap [əʊ], town [aʊ], same [eɪ]
41. tidal, climber, noise, fellow, choir, flower, product, eiderdown, catalogue, missile, telephone.
42. (a) It represents a sequence of two separate vowels.
 (b) *mein* [aɪ], *neu* [nɔɪ] or more exactly [ɔɪ] (lips rounded throughout), *Haus* [haus] (back [ɑ] rather than front [a]).
 (c) in *peu* the spelling *eu* represents [ø] and in *soeur* the *oeu* represents [œ] – a monophthong in each case. English *high* contains a single diphthong [aɪ], with a gradual transition from [a] to [ɪ]; French *hai* ("hated") contains a sequence of two monophthongs [a + i], with a very rapid transition from one to the other (see also 3.09).
43. In the case of [iə] the tongue movement is towards the centre of the vowel area; in the case of [aɪ] and [aʊ] it is from a lower (more open) to a higher (more close) position.
44. cord, card, cared, repertoire, Salisbury, courtesy.

45. good (shorter), food (longer)
card (longer), cad (shorter)
pet (shorter), paired (longer).

46. From shortest to longest:
beak, bead, bee [bɪk, biːd, bi:]
boot, food, do
cart, carve, car
caught, call, caw
hearse, heard, her

Vowels are shortest before a voiceless consonant ([k, s, t], etc.); longer before a voiced consonant ([d, l, v], etc.); longest when no consonant at all follows.

47. This one is for self-correction!

48. [sɑ] cent, sans, sang, (tu) sens, (il) sent.

[sɛ̃] cinq (sometimes: e.g. in *cinq cents*), saint, sein, sain, seing, (tu) ceins, (il) ceint.

49. Europe, new, pursue, beauty, behaviour, failure, union, duty, onion,
piano.

50. yacht, feud, manure, pursue, year, quite, quaint, womb, what, queen, queue.

51. wet, (to) whet (e.g. someone's appetite).

52. German has [j] only, as in *das Jahr*. Spanish has both [j] and [w], as in *tiene* and *bueno*.

Section 4 (Consonants)

53.

bilabial	dental	alveolar	velar
p b	t̪ d̪	t d	k g

54. [b] is a *voiced bilabial* consonant
[k] is a *voiceless velar* consonant
[d] is a *voiced alveolar* consonant
[t̪] is a *voiceless dental* consonant.

55. voiceless alveolar: [t]
voiced velar: [g]
voiced dental: [d̪]
voiceless bilabial: [p]

56.

	(2) bilabial	(4) lab-dent	(6) dental	(1) alveolar	(5) post-alv	(3) velar
stop				t		g
fricative	β			z	ʃ	x γ

57. [z] [d] both voiced alveolar. [z] fricative, [d] stop.
 [s] [d] both alveolar. [s] voiceless fricative, [d] voiced stop.
 [t] [k] both voiceless stops. [t] alveolar, [k] velar.
 [v] [g] both voiced. [v] labio-dental fricative, [g] velar stop.
 [b] [β] both voiced bilabial. [b] stop, [β] fricative.
 [v] [β] both voiced fricative. [v] labio-dental, [β] bilabial.
 [b] [v] both voiced. [b] bilabial stop, [v] labio-dental fricative.
 [s] [ʃ] both voiceless fricative. [s] alveolar, [ʃ] post-alveolar.

58. *loch* (Scots), *back* (Liverpool), *Haughey* (Irish).

59. [ɛkstrə]

60. It's bilabial like [b], and fricative like [v].

61. *laughs clothes heathens patience oath worthless thumb
 fashion closure luscious beige usual charade luxury.*

62. [keɪk] [bukeɪ] [bæŋpaɪps] [əuðz] [nɔ:] [sæʃ]
 [pleɪzə] [eɪzə] (or eɪʒə) [brɛθ] [brɪ:ð] [fəʊtəʊ] [fɪzɪks]
 [wɔ:mθ] [θiətə] [ðəʊ]

63.

	bilabial	lab-dent	dental	alveolar	Post-alv	palatal	velar	uvular	pharyngeal	glottal
stop	p b		t̚ d̚	t d			k g	q ɢ		ʔ
fricative	β	f v	θ ð	s z	ʃ z	ç	x ɣ		ħ ʕ	h

64. A glottal stop would replace the [t] of *daughter*, *butter*, or *glottal*, notably in London (Cockney) and Glasgow pronunciations. Glasgow has [r] at the end of the first two words of course. So: [bʌʔə(r)] [dʌ:ʔə(r)].

65. *Uvula* is a noun; *uvular* is an adjective. As in: “uvular sounds involve the uvula”. Just like *peninsula* and *peninsular* (“the Peninsular War was fought in the Iberian Peninsula”).
66. [x] German, Spanish
[ç] German
[ʔ] German
[q] none of these languages
[h] English, German.
67. They differ in *place of articulation* (dental in French, Spanish and Italian, alveolar in English and German) and in *aspiration* (present in English and German, absent in French, Spanish and Italian).
68. [waɪ tʃu:z] = *why choose?* [waɪt ʃu:z] = *white shoes*.
69. *Tuesday stew tube Christians educated June/dune*.
Before [u] the sequence [tj] is often reduced to a single-unit affricate [tʃ] in British English. Sometimes in American English the [j] is omitted but the [t] retained, e.g. [tuzdi] for *Tuesday*.

70.

bilab	lab-dent	dental	alveolar	post-alv	pal	velar	uv	phar	glot-tal
			ts dz	tʃ dʒ					

71. In French [tʃ] is found only in words borrowed or adapted from other languages (*match, putschiste*). It occurs in German in *deutsch, Quatsch*, etc. [dʒ] doesn't occur in either language.
72. [kx]. Much as though imitating gunfire.
73. (a) English *t* in *tar*: stop, fricative, affricate, aspirated, unaspirated, alveolar, dental, palatal, velar, voiceless, voiced.
- (b) French *qu* in *quand*: stop, fricative, affricate, aspirated, unaspirated, alveolar, post-alveolar, dental, palatal, velar, voiceless, voiced.
- (c) French *d* in *donne*, Spanish *d* in *dar*: stop, fricative, affricate, aspirated, unaspirated, alveolar, post-alveolar, dental, palatal, velar, voiceless, voiced.
- (d) Spanish *ch* in *muchacho*: stop, fricative, affricate, aspirated, unaspirated, alveolar, post-alveolar, dental, palatal, velar, voiceless, voiced.
- (e) Spanish *j* in *trabajo*, German *ch* in *Koch*: stop, fricative, affricate, aspirated, unaspirated, alveolar, post-alveolar, dental, palatal, velar, voiceless, voiced.
- (f) German *z* in *Zeit*: stop, fricative, affricate, aspirated, unaspirated, alveolar, post-alveolar, dental, palatal, velar, voiceless, voiced.

74. *chew midget lecture jerk jeer nature suggestion watch.*
75. [ədventʃə] [raɪtʃəs] [laundʒ] [ɪʃju] (or ɪʃju)
 [lʌntʃən] [kwɛstʃən] [rɛtʃɪd] [nɒrɪdʒ] (or nɒrɪtʃ)
 [dʒu(w)ɪʃ] [kʌltʃə] [bʊtʃə] [mə:tʃənt] [tʃiə]
76. French. Only in words borrowed or adapted from English, e.g. *le smoking, faire du forcing, un brushing.*
- Spanish. Spelt *n* but pronounced [ŋ] in *cinco, inglés, naranja*, etc. (i.e. velar [ŋ] before another velar consonant).
- German. *ng* in *Finger, lang*; *n* in *Prunk, hinken*.
77. What really happens is that they pronounce these words with an alveolar [n] instead of a velar [ŋ]. “g” relates not to the sounds, but only to the spelling – where it would indeed have to be omitted in order to represent this pronunciation. But there are no g’s to be dropped in actual speech.
78. *invalid*. In words like these the nasal takes on the same place of articulation as the immediately following consonant – economy of effort really – so [n] becomes labio-dental before [v]. To get the effect you should say *invalid* at normal conversational speed.
79. (a) *ten people* [m], (b) *unclear* [ŋ], (c) *unveil* [ŋ]. Same phenomenon of “assimilation” as in exercise 78.
80. tongue, longing, kangaroo, anchor, chunk, strength, anxious
81. [læŋgwɪdʒ] [naitɪŋgeɪl] [æŋgə] [æŋgzaiətɪ] [hʌŋ] [ɛnɪθɪŋ] [dɪŋgɪ]. Many speakers have [i], not [ɪ], at the end of *anxiety, dinghy*.
82. Irish, Welsh.
83. [miəw], [miwk] (or even [miwʔ] with a glottal stop).
84. island, yellow, eagle, measles, failure, lewd, awful, Welsh, Oswald.
85. [brɪ] [fu:li] [pɒsɪbɪ] [leɪdɪ] [hændɪd]
 [splaɪs] [həʊbən] [bləʊ] [kəʊtɪd] [flaɪ]
 [welθɪ] [ɛθəɪ] [li:ə] [ɡɪmlət] [ʌɡli].
- Some speakers have [i], not [ɪ], at the end of *lady, wealthy, ugly*.

86. The *r* and *l* sounds.
87. Places: alveolar and uvular.
Manners: trill, fricative, flap and approximant.
88. Rhotic: Edinburgh, Dublin, Preston, Bristol, Southampton, Chicago.
Non-rhotic: Cardiff, Manchester, Brighton, Sydney, Basildon.
89. “Intrusive” because there is never an *r* in the spelling, and rhotic speakers don’t have an *r* at the end of *Russia*, etc. when these words stand alone.
The *r* in *drawing*, etc. is due to the analogy with the much larger group of words like *pour*, *roar*, *bore*, etc., where all speakers have an *r* before the following vowel.
90. Such speakers would use a flap [r] between the two vowels of *very*. And they might even use a trill [r] at the beginning of a word like *rather*.
91. rut, root (or *route*), rear, roar, furry, hurry, eerie, dairy, diary, mirror.
92. [ɹɔiət] [ɹu:d] [ɹæŋ] [æɹəu] [fjɔ:ɹɪ] or [fjuɹɪ]
[daʊɹɪ] [ɡɹɪŋs:ɹɪəs] [tɹɛzəɹɪ] [ʌmbɹɛlə] [bə:θɹaɪt].
- For convenience, [r] could be used instead of [ɹ], provided it’s noted that it doesn’t represent a trill in such cases.
93. As the glottis is closed, the vocal folds can’t vibrate, so voicing is physically impossible.
94. Voiceless nasals occur only as occasional variants of voiced nasals, and therefore don’t have special symbols.
95. [l] is for clear *l*, [ɫ] for dark *l*.
96. A uvular flap is too rare a sound to warrant a special symbol.
97. [p] [b] [t] [d] [k] [g] [f] [v] [θ] [ð] [s] [z] [ʃ] [ʒ] [h] [tʃ] [dʒ] [m] [n] [ŋ] [l] [r].
98. [ʔ] [ç] (see 4.06) [ŋ] (see 4.09) [ɫ] [ɹ].
99. (a) *French*: [p] [b] [t] [d] [k] [g] [f] [v] [s] [z] [ʃ] [ʒ] [m] [n] (see 4.09) [l] [ʀ]
plus, in more detailed transcriptions:
[t̪] [d̪] (dentals)
[m̥] (voiceless [m], see p. 57)
[ɹ̥] [ɹ̥] [ɹ̥] (approximant, voiceless and voiced fricative *r*)
and, in words borrowed from other languages:

[tʃ] [ŋ] (see Exercises 71 & 76).

(b) *German*: [p] [b] [t] [d] [k] [g] [f] [v] [s] [z] [ʃ] [ç] [x] [h] [ts] [tʃ] [m] [n]
[ŋ] [l] [r]

plus, in words borrowed from other languages:

[ʒ] (*die Passage*)

and, in more detailed transcriptions:

[ʒ] [ʒ̥] [ʒ̄] [ʔ].

(c) *Spanish*: [p] [b] [t] [d] [k] [g] [f] [θ] [s] [x] [ʎ] [m] [n] [ɲ] [l] [r]

plus, in more detailed transcriptions:

[β] [ð] [z] [ʎ] [r].

Section 5 (Transcription)

Features revealed by the narrow transcriptions (see the works listed in Section 6 for further information).

French:

(1) The common tendency to pronounce [ə] and [ɔ] with a fronted tongue position, as [ɛ̞] and [ɔ̞], so that they come to resemble [ø, œ].

(2) The dental articulation of [t], [d] and [n], as [t̪] [d̪], [n̪]

(3) The various pronunciations of *r* (see 4.11).

(4) The devoicing of [m] to [m̥] when a preceding sound is voiceless (*isthme*).

(5) The insertion of [ə] to break up groups of consonants. So [fɛ**bl**kə] in *plus faible que* becomes [fɛ**bl**əkə].

(6) The omission of [ə] in certain other circumstances, especially in rapid speech (e.g. *est l(e) plus étendu*).

(7) The tendency in rapid speech to make adjacent consonants “agree” in respect of voicing: thus *type de* pronounced [tibdə] rather than [tipdə]. Similarly in *l’ouest du continent*. In this case the [t] at the end of *ouest* may merge with the [d] (*oues’du*), causing the [s] to become a voiced [z], so as to match the [d] of *du*, which now immediately follows it.

(8) Tendencies (6) and (7) are seen operating together in the case of *de* in *aucun de ses partenaires*: [ə] is omitted, and [d] devoices to [t] as it now adjoins the voiceless [s] of *ses*.

(9) The way in which liaison consonants are pronounced as though they belonged to the following word (which in fact they do, phonetically). So *plus étendu* is [ply zetãdy].

German:

- (1) The aspiration of voiceless stops [p, t, k] before stressed vowels.
- (2) The reduction of unstressed [e] to [ə].
- (3) The various pronunciations of *r* (see 4.11).
- (4) The reduction of certain very common words in rapid speech, illustrated here by *und* and *haben*: [ʊn], [ha:m].
- (5) Another feature of rapid speech is the omission of [ə] from *Richtungen*, and the assimilation of the final [n] to the [ŋ] which now precedes it.
- (6) The variation in the length of vowels according to their position.
- (7) The insertion of a glottal stop [ʔ] before vowels at the beginning of words.
- (8) The pronunciation of the *eu* diphthong: [ɔʏ] (with lips rounded throughout).

Spanish:

- (1) The fricative articulation of [b, d, g] as [β, ð, ɣ], except at the beginning of words (when not preceded by a vowel) and after nasals.
- (2) The dental articulation of [t], [d] and [n], as [t̪] [d̪], [n̪].
- (3) The fact that in some positions in a word [e] may have a more open variant, approximating to [ɛ].
- (4) The relatively open articulation of [o] – often more like [ɔ].
- (5) The voicing of [s] to [z] before a voiced consonant (*misma*).
- (6) The elision of a vowel in rapid speech when followed by a similar vowel (*de ese*).

Practice transcriptions from French, German and Spanish.

French.

ãtrətjẽ ʒeneral dy mapetɔfɔn. plaz laparɛj syr yn syrfas dyr e plat pur kil swa bjẽ
drwa. nə pa lese de sede, de pil u de kasɛt ã kɔtakt avɛk lymidite, la plyi, lə sabl,
a la lymjɛr dirɛkt dy solɛj u dã de zãdrwa sysɛptibl də kɔnɛtr de tãperatyr eløve
kɔm a prɔksimite daparɛj də ʃofaʒ u dã de vwatyɾ gare o solɛj. manipyle tuʒur lə
sede ã lə tənã par le bɔr e lə rãʒe dã sa bwat aprɛ lyzaʒ, la parti ẽprime turne vɛr
lə o.

German.

'algəmeinə 'pflɛ:gə des ka'sɛtəndɛks. di 'anla:gə auf ainə 'hartə 'e:bənə 'flɛçə 'ʃtɛlən,
'damit zi niçt um'kirpən kan. tsede:s, batə'ri:ən unt ka'sɛtən fɔr 'foiçtɪçkait, 're:gən,
zant unt di'rɛktər 'zɔnən,ʃtra:lun 'ʃytsən unt niçt an 'ɔrtən 'aufbɔwa:rən, an 'de:nən ɛs
tsu 'ho:ən tɛmpərə'tu:rən 'kɔmən kan (tsum 'baɪʃpi:l in dɛr 'nɛ:ə fɔn 'haitsunən oder in
ainəm in dɛr 'zɔnə gə'parktən 'auto). di tsede: ste:ts am rant 'halten unt na:x gə'braux
'vi:dər in di 'ʃaxtəl 'le:gən, um zi fɔr tsɛr'kratsən unt ʃtaup tsu 'ʃytsən.

Spanish.

manteni'mjento xene'ral del mapɛ'tofono. u'βike el apa'rato en una super'fiθje 'ðura i
'plana ðe tal ma'nera ke no se in'kline. no es'ponga el apa'rato, los θeðe, los bate'rias,
las 'pilas, ni los ka'setes a la ume'ðað, la 'luβja, la a'rena, o a la luθ di'rekta ðel sol
o ðe'xarlos en lu'ɣares 'donde o'kuren 'altas tempera'turas, 'tales 'komo θerkan'ias de

apa'ratos de kalefak'θjon o en auto'moβiles estaθjo'naðos en el sol. 'sjempre ay'wante el θeðe para el 'borde i 'γwardelo en su es'tutje ðes'pwes del uso, para eβi'tar ke se 'raje i se en'suθje.