

# **Thinking Spanish Translation**

A course in translation method:  
Spanish to English

Second edition

**Louise M. Haywood  
Michael Thompson  
Sándor Hervey**

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In me

To Ian  
Jon an

## 12 Scientific and technical translation

In so far as all texts can be categorized in terms of genre, there is no reason why one particular genre should be singled out for special attention rather than any other. However, since technical translation is a far more marketable skill than literary translation, and since most language students are, owing to their lack of training in science or technology, in awe of ‘technical’ texts, we consider it worthwhile to devote a separate chapter to problems confronting the translator of texts in this genre. By ‘technical’ translation we mean especially the translation of empirical/descriptive texts written in the context of scientific or technological disciplines. As a matter of fact, any specialist field, from anthropology to zymurgy via banking, history, numismatics and yachting, has its own technical register, its own jargon, its own genre-marking characteristics, with which translators should be familiar if they are to produce convincing TTs in the appropriate field. This is as true of scientific and technical translation as it is of any other specialized field: a look at a hobby magazine, or a review of a rock concert, or the sport or business pages in the paper quickly confirms this. Take, for example, the opening sentence of an article from the leading Spanish press agency, EFE, published by the sports newspaper, *Diario As*:

María José Rienda, la española que más pruebas ha ganado de la Copa del Mundo (seis), se mostró ayer ‘orgullosa y feliz’ por haber vuelto a esquiar seis meses y una semana después de lesionarse de gravedad la rodilla derecha.

(EFE 2007: 53)

The general meaning of ‘pruebas’, ‘proof/test/trial’, could lead the translator unaware of the word’s technical sense of ‘race’ to mistranslate it in this context.

Technical translation illustrates three points in the translation of all specialist texts particularly well. First, the translator must be just as familiar with technical terms and genre features in the TL as in the SL. Second, specialist and technical texts have clearly defined skopoi, as discussed in Chapter 4, and the identification of ST and TT skopos will influence the translator’s priorities. ST and TT skopos may overlap, but will not necessarily do so. For example,

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technical manuals and even recipes give detailed information and instructions, and failure to convey these may lead to accident, malfunction or letdown. Legal STs, on the other hand, may be translated to have the full force of law – such as within the European Community – or merely for information. Third, the problems met in translating specialist texts are mostly no different from those met in translating in any other genre, specialized or not. Textual variables are textual variables, particularizations are particularizations, whatever the genre and whatever the subject matter; and the relative merits of literal and communicative translation need to be considered in translating any text. Nevertheless, the very fact that technical texts are at the far extreme of unfamiliarity for many language students makes them especially valuable illustrations of all these points. There are three reasons, then, for devoting a chapter to technical translation: first, because it probably offers the widest field of employment for translators; second, because it is often so unnerving for language students; and third, because it is so exemplary of issues crucial to translation methodology.

A notable generic property of technical texts is that they are seldom aimed at complete non-specialists. Thus, in subject matter and comprehension, the typical technical ST is not easily accessible to most native SL speakers, let alone to those who have learnt the SL as a foreign language. There are three main reasons for this relative inaccessibility. One is lexical and the other two are conceptual. All three can be illustrated from the following text, the abstract of an archaeological paper by Duccio Bonavia, to which we shall refer in our discussion:

### *La importancia de los restos de papas y camotes de época precerámica hallados en el valle de Casma*

Se hace una revisión crítica de los datos existentes sobre el hallazgo de papa (*Solanum tuberosum*) y camote (*Ipomoea batatas*) en contexto precerámico del Área Andina Central. Se concluye que las únicas evidencias a las que se puede dar validez científica, corresponden a los especímenes excavados en el yacimiento de Huaynuma del valle de Casma (costa Nor-central peruana), con una antigüedad aproximada de 2.000 años a. d. C.

(Bonavia 1984: 20)

### Lexical issues in technical translation

There are three sorts of lexical problem arising from the specialized use of technical terms. First, there is the obvious problem of terms not used in everyday, ordinary language, which are, therefore, unfamiliar to the lay translator. The text given above contains an example of this problem. A term such as ‘precerámico’ is instantly recognizable as belonging only to a specialized scientific context. Without specialist knowledge, therefore, translators

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cannot guess the exact meaning of the term or make a reliable guess at its correct TL rendering. Of course, ‘preceramic’ (or ‘pre-ceramic’) is a likely candidate, but its appropriateness, as well as whether the word should be written with or without a hyphen, can only be established by dictionary or database research, or by consultation with an archaeologist.

The second problem is that of terms that have ordinary uses familiar to the translator, but which in the ST are manifestly used in some other, technically specialized, way. That is, the familiar senses of the terms do not help, and may even hinder, the translator in finding an appropriate rendering of their technical senses. The ST above contains a simple example of this in the phrase ‘revisión crítica’. In its ordinary usage, Spanish ‘revisión’ could easily be taken to mean simply English ‘revision’ (in the sense of ‘modification’); however, in context this rendering is inappropriate and misleading. What is at issue is a critical reviewing of a certain body of evidence. Thus, ‘revisión crítica’ is more accurately rendered as ‘critical review’.

Almost any science or technology has such lexical pitfalls. Medicine, for example, is rich in these. Anyone familiar with medical terminology will instantly gloss ‘soplo cardíaco’ as ‘heart murmur’, but the translator not used to medical texts may find the phrase puzzling at first sight. Similarly puzzling in a medical context is ‘estenosis’ (which has nothing whatever to do with shorthand typing), which is used as a technical term referring to ‘narrowing of the arteries’.

Third, a term may have an ordinary, everyday sense that is not obviously wrong in the context. This is the most dangerous sort of case, because the translator may not even recognize the term as a technical one, and carelessly render it in its ordinary sense. For example, ‘hallazgo’, in the archaeological text above, is glossed in a standard 1988 dictionary as ‘finding, discovery; find, thing found’. The right technical translation in the archaeological context (where reference is to vestiges indicating the former presence of potatoes and yams) certainly lies well within the range of meanings implied by the dictionary glosses; but the translator needs experience or advice in order to have the confidence to select ‘traces’, and in the present context this is clearly preferable to the available alternatives such as ‘finding’ or ‘discovery’. Likewise, a translator in a hurry might (especially if arts-trained) translate ‘las únicas evidencias’ (in the same text) either as ‘the only evidence’ or as ‘the only proofs’, where an archaeologist might expect ‘the only findings’.

As these examples show, access to technical dictionaries and up-to-date databanks is indispensable for translators of technical texts. However, not even these source materials can be guaranteed to keep the translator out of difficulties. For one thing, technical texts are liable to be innovative – why publish them unless they make some new contribution? This means that dictionaries and databanks must always lag slightly behind the most up-to-date use of technical terms. Second, even the best source materials do not necessarily give a single, unambiguous synonym for a particular technical term, so that the translator may still have to make an informed choice between

alternatives. Finally, even established technical terms are sometimes used loosely or informally in technical texts, in which case it may be misleading to render them by their technical TL synonyms. All of this suggests that the normal limitations on the use of dictionaries apply also to technical translation, but in a particularly acute form. That is, translators can only select the appropriate TL terminology from a range of alternatives offered by the dictionary if they have a firm grasp of the immediate textual context and of the wider technical context. The problem is not lessened, of course, by the awkward fact that some of the context may remain obscure until the correct sense of the ST terms has been identified. This brings us to the two conceptual reasons why technical texts may be difficult to translate.

### **Conceptual issues in technical translation**

The first type of conceptual problem is caused by failure to understand the background assumptions and knowledge taken for granted by experts in a science, but not shared by non-specialists and not explicit in the ST. This is a point that can be illustrated from the following: 'el ozono que en los cielos antárticos protege la vida de las letales radiaciones ultravioleta' (*Enciclopedia Universal Ilustrada* 1993: 45).

The phrase 'protege la vida de las letales radiaciones ultravioleta' is potentially ambiguous. Purely syntactically, it may be construed either as meaning 'protects the life of lethal ultraviolet rays' or as 'protects life from lethal ultraviolet rays'. This ambiguity is almost certainly not present for the author or for the informed SL reader who is aware of the function of the ozone layer. It is this awareness, that is to say a piece of technical knowledge, which effectively neutralizes the syntactic ambiguity in question. Yet the translator still has to choose between 'protects the life of' and 'protects life from'; the wrong choice would seriously mislead the TL reader, and would damage the translator's reputation (and possibly the author's too) in the eyes of an informed readership. In this instance, of course, few translators are likely to be so ill informed as to make the wrong choice. In short, translation problems like this are generally easily resolved by any TL speaker with a basic grasp of the technical discipline in question. In more difficult cases of a similar kind, however, non-specialist translators may reach a conceptual impasse from which no amount of attention to syntax or vocabulary can rescue them. In that case they have only two options: study the technical field in which they are translating, or work in close consultation with experts.

The most intractable problems in technical translation arise in translating the development of new ideas. In such an instance, even a basic grasp of background knowledge may be insufficient to save the translator from a conceptual impasse. This is the second conceptual reason for inaccessibility in technical texts. What one might call the 'logic' of a discipline – methods of argumentation, the development of relations between concepts – is normally specific to that discipline. There may therefore be translation problems that

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hinge crucially on that logic. It may transpire that the translator is quite unable to solve a conceptual problem of this nature, and that the only alternative is to consult either an expert or, if necessary (and if possible), the author of the ST.

Even in less advanced texts, the translator may face serious conceptual difficulties in grasping the 'logic' of a discipline, in particular the relationship between concepts. This is illustrated in the following extract drawn from a section of an article by Felipe Cantera Palacios on the pros and cons of using cooling to desalinate seawater: 'Uno de los mayores problemas que se plantean en este sistema de conversión reside en la separación de los cristales de hielo y la salmuera' (1971: 268).

Without a grasp of desalination processes in general, and of the particular refrigeration technique discussed in the text, student translators cannot be absolutely sure whether, in the above sentence, the problem is how to *prevent* the separation of ice crystals, or whether the problem is how to *achieve* this separation. What is more, the use of 'y' in the ST creates another uncertainty: do both the ice crystals and the brine (salmuera) need to be separately extracted from some third substance, or is the important thing to extract the crystals from the saline solution? According to different understandings of these issues, student translations vary between:

- (a) One of the main problems posed by this conversion system resides in the fact of the separation of the ice crystals and the brine.
- (b) One of the main problems requiring solution in this conversion system resides in the separation of the ice crystals from the brine.
- (c) One of the main problems for this conversion system resides in separating off the ice crystals and the brine.

The decision as to which of these alternatives is the appropriate one hinges, of course, on one's understanding of how desalination systems work: the technical expert will know without hesitation that the problem referred to is how to find a way of extracting the ice crystals from the surrounding saline solution. (Indeed, a further reading of the article makes this relatively clear in context.)

Experience in Spanish will tell the translator two things: first, there is in general a strong chance that 'reside en la separación de' should not be literally rendered as 'resides in the separation of', but will require some form of particularization, while ST 'y' may need to be particularized as 'from'; second, the essential evidence for the appropriate particularizations must be sought in the wider context, more precisely in terms of the internal 'logic' of the ST and of its subject matter. (The only real internal evidence, a subsequent description in the ST of how the problem referred to has been solved, merely underlines the importance of context.) But, while the context strongly hints at a particular interpretation, the 'logic' of the ST is so dependent on technical

knowledge that even the closest and most sensitive linguistic analysis is bound to be less reliable (and less cost-effective) than a brief consultation with a technical adviser. Trying to ‘crack’ a technical text on the basis of linguistic experience alone is valuable for honing one’s translation skills, and fun as a challenge; but delivering a *dependable* technical TT usually requires consultation.

To summarize thus far: the non-specialist is not sufficiently equipped to produce reliable technical TTs guaranteed to be useful to technical experts in the target culture. Prospective technical translators must acquire as soon as possible some degree of technical competence in the field in which they intend to work. Training technical translators usually has this as its main target. Such training cannot be general, however: an academic degree in a science and a qualification in a foreign language is an ideal background for a technical translator. However, not even people with this kind of qualification can expect to keep abreast of research while at the same time earning their living as translators, and they will sooner or later come up against problems that can only be solved by consulting technical experts.

These remarks about the need for consultation are not to be taken lightly. They raise the important question of the responsibility – and perhaps the legal liability – of the translator. There is a difference here between literary translation and technical translation. It is not that literary translators are not held responsible for their published TTs, but that the practical implications of mistranslation are seldom as serious for them as for technical translators, whose mistakes could cause financial damage or loss of life and limb. This is another respect in which technical translation is exemplary, bringing out extremely clearly a golden rule which is in fact essential to all translation: *never be too proud or embarrassed to ask for help or advice.*

Even after every precaution has been taken in translating, it is often necessary for the translator to attach a legal disclaimer to the TT. Here is a disclaimer from the US Department of Education’s translation of the 1997 Individuals with Disabilities Education Act (IDEA ’97):

#### *Spanish text*

##### *Salvedad en español*

El Departamento ha hecho todo lo posible por garantizar la fidelidad de esta traducción de las regulaciones de la Ley de la Educación de Personas con Discapacidades de 1997 (1997 Individuals with Disabilities Education Act). En caso de existir una contradicción entre cualquiera de los términos de esta traducción en español y la versión en inglés de las regulaciones, regirá la versión oficial en inglés. La versión oficial de estas regulaciones es la versión que fue publicada por la Office of the Federal Register en el Código Federal de Regulaciones (Federal Code of Regulations) en 34 C.F.R., Partes 300 y 303 (1999).

*English text**Disclaimer in English*

The Department has made every effort to ensure the accuracy of this Spanish translation of the 1997 Individuals with Disabilities Education Act regulations. In the event of any inconsistency between any terms in this Spanish translation of the regulations and the English language version of these regulations, the official English language version of the regulations shall control. The official version of these regulations is the version published by the Office of the Federal Register in the Code of Federal Regulations at 34 C.F.R. Parts 300 and 303 (1999).

(US Department of Education 2003)

Interestingly, even the translation of the disclaimer from Spanish to English contains a grammatical error that could have legal consequences in certain situations: a legal disclaimer should read 'shall take precedence'. The spectre of legal liability is a reminder that even the minutest error of detail on any level of textual variables is typically magnified in a technical text. This is not surprising, given that matters of factual correctness rank maximally high in empirical/descriptive genres. Some such errors are in the category of *faux amis* – banal, but no less potentially embarrassing, like, for example, the DE's mistranslation of 'regirá', above; or when, in a financial text, translating 'acción' as 'lawsuit' or 'legal action', as opposed to 'share' or 'stock(s)', could at the very least cause confusion.

Much more dangerous (and more likely, if the translator is not a specialist) is confusion between closely similar technical names. Consider, for example, the many minutely differentiated prefixes and suffixes that can be attached to the root 'sulph':

per-	sulph	-ate
bi-		-ite
de-		-ide
hypo-		-onate
hydro-		

Obviously, the slightest error in affixation here will constitute a major factual error, whereas, in non-technical language, slight differences in affixation may often go unnoticed. For example, in Spanish, there is a fine but clear distinction of meaning between the verbs 'colorar' and 'colorear' or 'colorir'. 'Colorar' might well be used in the specific sense of 'to dye', whereas 'colorear/colorir' could mean 'to take on a colour/ colour up'. In translating technical texts, the difference between the two terms would have to be scrupulously observed. In non-technical texts, however, the translator may choose to render either term as (among other options) 'to colour', prompted more by considerations of idiomacticity, genre and register than by those of literal accuracy. Similarly,

there is only a relatively subtle difference in English between ‘defrock’ and ‘unfrock’, between ‘levitating’ and ‘levitation’, or, in popular usage (increasingly, if confusingly), between ‘disinterested’ and ‘uninterested’. In literary texts one can, to some extent, base such choices on questions of euphony or style. But that temptation must be resisted absolutely in translating technical terms.

Again, in a literary text, choosing the wrong synonym is, at worst, a stylistic infelicity; but in a technical text it might create a serious misnomer showing ignorance, thus undermining the reader’s confidence in the text. For example, it is not immaterial, in a given chemical context, whether vanilla is referred to by its trivial name ‘vanilla’, its technical name ‘vanillin’, its old systematic name ‘4-hydroxy-3-methoxybenzaldehyde’, or its empirical formula  $C_8H_8O_3$ . Similarly, ‘heat’ and ‘thermal energy’ are, to all intents and purposes, referentially synonymous: yet the choice of one or the other in technical contexts is not a matter of indifference to a physicist.

Some parts of technical texts may be expressed with mathematical precision. Indeed, they may actually be formulated in mathematical symbols, in which case they only need a modicum of effort in translation. Mathematical formulae cannot always be literally transcribed, however. Two of the elementary things to note in this respect are the mathematical use of the comma on the Continent, whereas US and British conventions require the use of a decimal point, and the use of a point or period to separate thousands, rather than the comma, employed in many Spanish-speaking countries (but not Mexico, Puerto Rico, the Dominican Republic, and some Central American countries.) In these cases, the important thing is for the TT to achieve, relative to the conventions of the TL, the same standard of mathematical precision as the ST.

Having said this, we should not forget that even the driest technical text is bound to have more informal passages – perhaps introductory, parenthetical or concluding remarks in ordinary, even colloquial, prose. Such passages pose another kind of problem for the technical translator, for it is here that the technical author may let personality intrude, or even deliberately cultivate a persona. Thus, although technical translators are chiefly accountable for the literal and factual content of the ST, they cannot always remain insensitive to such stylistic ploys as register, connotation, humour, polemic and so on. The TT should at least not spoil, cancel or contradict what is to be read between the lines in the ST. The overall register of the text – if only the question of pompous versus casual style – is also a matter of concern. To this extent at least, no text can avoid being the result of stylistic choices. In short, as we suggested at the beginning of this chapter, technical translators should not see themselves as having nothing in common with, for example, literary translators. On the contrary, because problems of style affect all texts, all translators have problems and methods in common. To this we must add that, while ‘factuality’ in a text may on the face of it appear antithetical to ‘style’, the cult of factuality is in itself a kind of style, and may on occasion even be a carefully cultivated pose manifested in excessive use of technical jargon.

The relationship between accuracy and style is not always straightforward. There is – as with any text – the problem of what to do if the ST is badly written, ungrammatical, or even factually deficient. Should the deficiencies of the ST be reflected in the TT or should they be ironed out? This is a general and controversial issue. In our view, translators are not in principle responsible for ‘improving’ defective STs, but it may be strongly advisable, perhaps even necessary, in the case of technical texts – or indeed any empirical/descriptive or prescriptive text – because the paramount concern is factual accuracy. If there is any ambiguity, obscurity or error in the ST, and it is potentially misleading or dangerous, there is every reason to keep it out of the TT – if necessary (as ever) after consultation with the author or an expert. Failing that, the translator may feel the need to append a translator’s note to the TT calling attention to the deficiency in the ST.

The technical translator’s paramount concerns, therefore, must be accuracy and conformity with the requirements of the genre. In so far as the requirements of the genre imply style, register is also important: the wrong tonal or social register may alienate the reader or undermine confidence in the TT or even in the author of the ST. Consider the following extract from an ST on the use of the polymerase chain reaction (PCR) method to identify the presence of DNA sequences from genetically modified organisms in food samples:

En la PCR, los pequeños fragmentos de ADN complementario se llaman cebadores y se utilizan por pares. Estos cebadores se diseñan para hibridarse con sitios de reconocimiento de la secuencia complementaria en hebras opuestas del gen de interés.

(Querci 2007a: 4)

Here is the published TT:

In PCR, the small complementary DNA pieces are referred to as primers and used in pairs. These primers are designed to hybridize to complementary sequence recognition sites on opposite strands of the gene of interest.

(Querci 2007b: 4)

The ST authors have chosen straightforward syntax to convey their message; an excellent strategy given the fact the ST is designed as a training manual. However, although their lexis also appears simple it is actually highly technical and convention bound. The translators have opted for a faithful approach rather than a communicative approach. Take, for example, the phrase ‘los pequeños fragmentos de ADN complementario’. Although the TT rendering ‘pieces’ occurs in a limited proportion of the technical literature, more usual and accurate collocations include ‘fragments’ or ‘specific regions’. Since ‘fragments’ is widely used in the technical literature, there is no clear

argument against its use in this context. ‘Fragments’ needs no adjectival qualification, but if that were deemed necessary, ‘short’ not ‘small’ is the usual collocation. When qualifying ADN, ‘complementario’ has a specific technical meaning as English ‘cDNA’. ‘Complementary’ or ‘cDNA’ is produced in a different reaction – reverse transcription PCR – whose starting material is RNA not DNA. In the ST, however, ‘complementario’ is used in its everyday adjectival sense of ‘complementary/follow-up’. Here it simply refers to the presence of the target sequence on the DNA primer being described. The adjective is later used more clearly in its everyday sense in the phrase ‘secuencia complementaria’, ‘the complementary sequence’. Given that the target readership is control laboratory personnel who need training and support to carry out PCR, an exegetical but technically phrased translation is required; such as ‘short single-stranded DNA fragments’. Consequently, our edited first sentence reflects the straightforward syntax, realized through grammatical transposition, but achieves a convincing (and accurate) TL technical collocation: ‘PCR uses pairs of short single-stranded DNA fragments, referred to as primers.’

The second sentence of the ST begins with the demonstrative adjective, ‘estos’, which is used in the SL to refer to something which is immediately relevant to the discussion, and has just happened or been mentioned. In the case of technical texts, it is used to ensure greater cohesion and prevent ambiguity. TL demonstrative adjectives may be used in a similar but not identical way to signal cohesion when two nouns or nominal phrases are referentially equivalent. Since the *cebadores* in each noun phrase are not identical but refer to type, there is a loss of cohesion, raising the questions: are the primers mentioned in the second sentence specific ones? Are they the same (also specific) primers described in the first sentence? Are they a second, as yet unmentioned, set of primers, or are they primers of this type in general? The replacement of the demonstrative adjective with the adjective ‘such’ signals that the identity between the two phrases is of type (this kind of primer, primers consisting of pairs of single-strands of DNA). ‘To hybridize to target sites’ is a calque on ‘hibridizar con sitios de reconocimiento’, which is inappropriate for the protocol being described. In the TL, it is employed to describe Northern Blotting, which uses radioactive probes. Further, in the TL the indirect object is not usually expressed explicitly, and the verb tends to be nominalized. By **nominalization** we mean the use of a noun which, in the same language or in a TT, could be replaced by an expression not containing a noun; in this instance, ‘designed for hybridization to’ is a nominalization of ‘designed to hybridize to’. Nominalization is a typical feature of technical texts. Here, for discussion, is a sentence from the ST on DNA and an alternative formulation without nominalization:

Por otra parte, la determinación de la identidad genética permite la segregación y la trazabilidad (preservación de la identidad) a lo largo de la cadena de distribución de las plantas GM.

Por otra parte, el determinar la identidad genética de las plantas GM permite segregarlas y trazarlas (preservar la identidad) a lo largo de la cadena de distribución de las plantas GM.

Returning to the two-sentence ST under discussion, the TL favours the technical verb 'to anneal' for 'hibridizar con sitios de reconocimiento'. 'Anneal' refers, in genetic engineering, to the whole process by which the primer strands bond with the template DNA to form a double strand. The ST is only accurately translated by a hyponym. This example points to the complexity of lexical issues in technical translation; even a technically trained translator who was not familiar with the protocol discussed in the text could easily produce an inaccurate TT without consultation with appropriately trained experts. The TT translator's rendering of the final phrase of the ST produces a banal calque whose technical sense is lost: 'de interés' is broadly equivalent to TL 'target'. If technical precision were called for then a translator of this passage might opt to employ the phrase 'the target DNA', or to avoid ambiguity 'the target sequence'. Consider two TTs of the second ST sentence:

Such primers are designed for hybridization to complementary sequences on each of the strands of the target DNA.

Such primers are designed to anneal to complementary sequences on each of the strands of the template DNA.

Earlier in this discussion, we suggested that in technical translation factual accuracy was a more important concern than stylistic considerations. From that point of view, each of the TTs given above offers a plausible version of the ST. The use of simple syntax, and occasionally less precise technical lexis does not undermine the ST, but rather conforms to its function as a teaching manual. In our opinion, assuming that the ST shares the specific purpose of the TT, that is to train laboratory staff, then stylistic considerations should be borne in mind when developing a strategy, and, consequently, we feel that the first of the two TTs offered above is preferable.

Before embarking on the Practical, it will be useful to note some of the characteristics of technical texts in English. First, the language is usually informative, and often includes expressions denoting purpose or role, and explanations of method or process. Second, in accounts of experiments or research programmes, the passive is used extensively, which keeps the style impersonal. The same is true of Spanish technical texts, although passive 'se' may be used instead of the true passive (structured on 'ser' + past participle) as in the DNA text cited above; both forms are generally rendered with the passive in English.

Another typical feature of technical texts is the frequent use of compound nouns (e.g. 'website design', 'stability problems', 'mouse port') and indeed of nominalization in general. English uses compound nouns (NNs) with a

higher frequency than Spanish, which tends to use a preposition to couple two nouns (NPNs); for example, the appropriate technical translations of 'punto de fusión' and 'calor de evaporación' are 'melting point' and 'evaporation heat', respectively. However, care should be taken since translation of ST NPNs by TT NNs is often not mandatory and can even introduce ambiguity. Consider, for example, 'calor de fusión', which is conventionally translated as TL NPN 'heat of fusion' or 'heat of melting', depending on the processes being outlined. The context of the STs given here is the article by Felipe Cantera Palacios on cooling as a method of water desalination, mentioned above, and consequently 'melting' is indicated. Another example of such ambiguity can be found in the machine translation of 'difusión anual de resúmenes y documentos técnicos' as 'annual summary and technical document dissemination': are only the summaries annual? Are only the documents technical? (Aymerich 2001: 33).

The examples we have been looking at illustrate the features of scientific and technical language that Pinchuk neatly categorizes as follows:

- 1 [Technical language] is specialized and tends to become more and more specialized in contrast to the versatility of ordinary language. [Everyday] language tends towards liveliness and multiplicity of meaning, but the controlled language of science is manipulated in the direction of insipidity and colourlessness.
- 2 It seeks the most economic use of linguistic means to achieve standardization of terms and usage.
- 3 It seeks to avoid ordinary language associations and endeavours to define terms accurately.

(Pinchuk 1977: 165)

As Pinchuk points out (246–51), before embarking on a translation it is important to ascertain whether the work has already been translated. He provides a list of organizations that have registers of available translations, including Aslib (The Association of Special Libraries and Information Bureaux). And of course technical translation, like translation in any genre, requires familiarity with SL and TL material of a similar type, to serve as a source of information and as a stylistic model. The translator may well need some time to find the information sought (e.g. concepts or lexis). Useful sources of information include monographs, abstracting and indexing journals, periodicals, yearbooks, textbooks, encyclopaedias, standards and trade literature, theses and dissertations. Increasingly the internet is being used for up-to-date information. Some organizations keep databases containing centrally agreed translations of technical expressions; such as the European Commission's multilingual termbank, IATE (Interactive Terminology for Europe, <http://iate.europa.eu>). These databases are continually added to, and translators are expected to conform to the agreed renderings, in the interests of organization-wide consistency and clarity. Rapid innovation in science and technology

means that there is often a time lag between the coining of a new term or the expansion in the meaning of an established one and its appearance in even the most rigorously maintained databases. Translators in all fields are also making increasing use of translation memory software, which allows rapid checking in their own records and in those of organizations for previous translations of similar material. And when all else fails, fellow translators can be consulted through online forums.

Some of our examples in this chapter were drawn from the text on p. 212 ('La importancia de los restos de papas'). In preparation for Practical 12, the problems it poses should be analysed, and a translation attempted. The exercises in Practical 12 will show that, apart from the lexical and conceptual problems outlined above, technical translation is not essentially different from most other sorts of prose translation: as long as specialist help can be called on (and students should be strongly encouraged to enlist the aid of their own technical advisers), there is no reason why technical translation in most fields should be more daunting than translation in any other genre.

## Practical 12

### 12.1 Technical translation

#### *Assignment*

- (i) You are translating the following ST for publication in a survey of recent research on medical pedagogy.
- (ii) Discuss the strategic decisions that you have to take before starting detailed translation of this ST, and outline the strategy you adopt.
- (iii) Translate the second and third paragraphs of the ST ('Material y métodos' and 'Conclusiones') into English.
- (iv) Explain the main decisions of detail which you took.
- (v) Discuss the published TT, which will be given to you by your tutor.

#### *Source text*

Estableciendo las bases del proceso Enseñanza/Aprendizaje de la Estomatología para alumnos del último nivel de la currícula de Odontología, y en especial de la Asignatura Patología y Clínica Estomatológica, se ha diseñado este estudio. El mismo se ha llevado a cabo teniendo en cuenta los siguientes *Objetivos*: 1) La observación del desempeño de los estudiantes en un hospital público, en donde han realizado su trabajo en terreno. 2) Un relevamiento de las lesiones y enfermedades que se han presentado con la observación y guía por el personal docente y la resolución de los casos clínicos.

**Material y Métodos:** los alumnos del nivel quinto de la Asignatura de Patología y Clínica Estomatológica de la Facultad de Odontología de la