VERONICA LAWSON

The Language of Patents

A Typology of Patents, with particular reference to Machine Translation

1. Introduction

A typology study of patents – an attempt to define what is different about the language of patents – was part of the author's feasibility study on the machine translation of patents, performed for the Commission of the European Communities.[1])

This very abridged report of the study, published by permission of the Commission, will outline the purpose and contents of a patent and the various types of patent translation (part 2), before identifying the typical international patent structure (part 3). An introduction to patent style in part 4 is followed by a more detailed analysis in part 5, dealing primarily with translingual features.

1.1 *The objectives of the study*

The study was intended to show how far typical patent features recur, not merely within the patents of a given country, but across the boundaries of the 3 languages concerned in the study, German, French and English (De, Fr, En). While most of the patents considered were from France, the Federal Republic of Germany and Britain (FR, BRD, GB), attention was also given to other patents in these languages, particularly United States patents.

A study was needed because in computer-aided translation the most intractable problems have usually derived not from the subject field of a document, but from the document type: technical terms are relatively easy to feed into the system, but most translation errors occur in function words or are stylistic. They are the things which the professional translator usually translates without thinking, and which therefore receive little attention, if any, in conventional dictionaries or term banks.

One consideration, then, is that if the style and syntax of a document type (in this case, patents) are fairly consistent across language boundaries, this should facilitate computer-aided patent translation. Another consideration is that if the style, syntax and macrosyntax are *highly* consistent both within and across language boundaries and are also distinct from those of other documents, certain special programming may be worthwhile. This would enable the system to identify the text, or portion of text, and to translate accordingly.

2. Background to Patents and their Translation

2.1 *The purpose of patents*

A reminder of what patents are, or at least of what they are not, has been given by a writer of patents, Mr. E. W. E. Micklethwait. Here he was speaking of the patent claim, but his statement is equally true of the patent which includes that claim.

> "The test of a claim is not whether it produces a pleasant sensation, reminiscent of silk dresses rustling in the Mediterranean moonlight, or a symphony conducted by Toscanini, or whether it produces an unpleasant sensation, like a visit to the headmaster's study, or the putrefying corpse of a leprous polecat (although such sensational claims may occasionally be encountered). The test of a claim, as of anything else, is fitness for its purpose . . ,"[2])

Patents are intended to be an incentive to innovation. The patent system and philosophy vary from country to country, but essentially a patent is a temporary monopoly which rewards an inventor, not so much for making his invention as for disclosing it. A *patent specification* may seem to be only an unusually clumsy technical document, but in fact it is a legal document: a social contract which describes the invention in such a way that the public can use it when the patent dies, but which, until that time, gives the patentee as large and safe a monopoly as possible. The patent specification includes a *description* and *claims*. The extent of the monopoly is defined by the claims. However, the claims may be interpreted in the light of the description, and so the description, also, must be written with the possibility of a legal dispute in mind. The patent will include *bibliographic data* (notably a search report) and perhaps *drawings*. Usually a brief *abstract* is supplied "as a scanning tool for purposes of searching"[3]), that is, not for legal reasons but purely for information. The language of the abstract may, however, differ little from that of the claims if it is written by a patent practitioner (patent attorney/agent/engineer etc.).

2.2 *Types of patent translation*

These, discussed in detail in the study, may be summarised as follows.

The owner of an application or patent may need to translate it for legal reasons, either as a basis for a new application in a foreign country, or for filing at a patent office.

Translations for others may begin as soon as a specification is published, whether it is a recent application published primarily for information, an accepted application published for opposition, or a granted patent. They are required either for *legal purposes* or for *information*, for a wide range of users, including even management and production personnel.

3. The Basic International Patent Structure

Individual patent writers naturally vary, as do technologies and the needs of patentees. However, possibly because international patenting is so extensive, a basic international patent structure is discernible in a large majority of GB, FR and BRD patents and indeed in many other Western European and North American patents.[4]) "Flags" (stereotyped phrases) and changes in style (word frequency; phrasings typical or untypical of "normal" language) tell readers rapidly in what section of the document they are. The tendency towards harmonisation is likely to increase, particularly in view of the Patent Cooperation Treaty and European Patent Convention, which came into force on 1 June 1978 and created "international" applications and regional European applications respectively.

The following outline of the basic structure uses the terminology of the Patent Cooperation Treaty, where available and acceptable. Sections may start with headings like those given here, but are usually signalled only by the stereotyped "section flags" (see part 5.2, "Structure markers"). Not all sections will appear in a given patent, but *within its description* those which do occur can be expected to conform to this sequence. Less common sections are written in brackets.

A typical description exhibits a classic reiterative, or theme-rheme, pattern. Each section constitutes the theme for the next section, in one of up to 5 stages in a progression from the general to the particular: Title - Technical Field - Background Art - Disclosure of Invention - Detailed Description (6 stages if the Drawings are counted).

3.1 *Title of the invention*
Bezeichnung der Erfindung
Titre de l'invention

3.2 *(Formal introduction or heading)*
This may include the patentee and other details.

3.3 *Technical field*
Technisches Gebiet
Domaine technique

Frequently a phrase such as "The invention relates to", introducing the title or the "prior-art portion" of the main claim.

3.4 *Background art*
Stand der Technik
Technique antérieure

A description of *what is known* (the "prior art"), as an aid to "the understanding, searching and examination of the invention"[5]). This section may *cite documents* reflecting the state of the art, with bibliographic details, and indicate *disadvantages.*

3.5 *Disclosure of invention*
Darstellung der Erfindung
Exposé de l'invention

This can be expected to "disclose the invention, as claimed, in such terms that the technical problem (even if not expressly stated as such) and its solution can be understood, and state the advantageous effects, if any, of the invention with reference to the background art"[6]). A typical statement of the *problem* (from an actual British application) reads: "The object of the invention is to provide a method of making a glove which on the one hand is inexpensive and on the other hand is light and supple." The *solution* will often quote or refer to the characterising part of the independent claim or claims and possibly those of dependent claims. *Advantages* may be given for each claim quoted.

3.6 *Brief description of drawings*
Kurzbeschreibung der Zeichnungen
Description sommaire des dessins

A *list of the figures* in any drawings. The equivalent in a chemical patent is a *brief introduction of the examples.*

3.7 *Detailed description of the invention*
Ausführliche Beschreibung der Erfindung
Description détaillée de l'invention

A "specific" or "particular" description of "at least one way of carrying out the invention claimed, using examples where appropriate and referring to the drawings, if any"[7]).

3.8 *(Industrial applicability)*
(Gewerbliche Verwertbarkeit)
(Possibilités d'exploitation industrielle)

How the invention can be applied, if not already clear.

3.9 *(Comment on scope)*

For example, "Various modifications may be made within the scope of the inventive concept." This, if included, usually ends the description.

3.10 *Claims*
Ansprüche
Revendications

Older French patents have instead a Résumé, which may be similar to a set of claims, but which fulfilled the function of an abstract.

3.11 *Bibliographic data*

Details of the application (including references cited against it - the search report/Recherchenbericht/Rapport de recherche) and details of parties concerned with the application may precede or follow the description and claims. The trend is towards a separate front page bearing the bibliographic data and possibly an abstract; alternatively, the search report may conclude the document. The recent specifications use the INID numerical codes to identify the different data.

3.12 *Abstract*
Zusammenfassung
Abrégé

A clear, concise account of the technical disclosure, intended to be "an efficient scanning tool, making it possible to assess whether there is a need to consult the patent document itself"[8]). It can appear in the patent and/or in a separate publication.

3.13 *Drawings*
Zeichnungen
Dessins

The drawings sometimes bear isolated words. Occasionally they may be accompanied by a list of reference signs and of the features denoted by them (e.g. in an Offenlegungsschrift).

4. Introduction to patent style

A few of the more striking general features of patent style will now be listed. Although the variation between patent writers is large, typical features can readily be discerned.

4.1 *Formal style*

Patents are impersonal. There is a relative absence of personal pronouns and of references to people, and verbs normally appear only in third-person forms. Although patents supply "technical teaching", they avoid direct instructions: where a manufacturer's manual uses the imperative ("Secure lead to terminal") or an impersonal infinitive construction ("X ist mit Y zu verschrauben" or "X mit Y verschrauben"), patents use the passive (En, De, sometimes even Fr) or impersonal constructions (Fr "l'on" or "on"). Patents avoid the informal, although they may relax a little when evaluating the background art or (rarely) the advantages of the invention.

4.2 *Mixed "modes of discourse"*

Evaluative, classificatory, descriptive, narrative – many sections of a patent combine at least two of Kinneavy's modes of discourse[9]). There will be classification, description and evaluation of first the background art, then the invention; description of the invention or its constituents and narrative about how it operates or is made; and so forth.

4.3 *Present tense*

The present tense is the norm, with occasional use of the perfect when appropriate. In chemical and similar examples, Fr and De retain the present, where En prefers the past. The reproduction of En usage in Fr may offend; a Fr application may have different tenses from its GB parent. The opposite case – the use of a Fr-style present tense in an En example – is probably less likely to disturb. In contrast to some other legal documents, patents avoid the future tense, except occasionally in a "functional" claim or the detailed description ("so that in operation X will move Y").

4.4 *Long sentences*

Sentence length, while varying with the draftsman (rather than the country), is often remarkable in the claims. A main claim can easily be over 200 words long. This is to eliminate doubt as to where the monopoly ends: what follows a full stop might be thought inessential. Long sentences are also found where claims are quoted: in the "disclosure of invention" section, often in the "background art" section and occasionally in the abstract.

These long sentences can be very complicated, perhaps especially in En and De. Some German writers make frequent use of "Verschachtelung" (extended attributes). All 3 languages use numerous dependent clauses.

4.5 *Vocabulary part small, part vast*

Although the sentences are often complex, the syntactic structures used seem fairly limited in number, and the vocabulary of adverbs, of adjectives (other than geometrical or chemical adjectives)[10]), and even of verbs is surprisingly small considering the range of subjects covered: anything capable of industrial application. There is, of course, a vast vocabulary of technical nouns and noun expressions. This is an area in which term banks should have much to contribute. Some vocabulary details will be found in part 5.

4.6 *Lists*

Lists, both horizontal and vertical, are a major feature. They may appear as tables, particularly in chemical patents. Note that, in stark contrast to the practice in most technical texts, tables and figures are not captioned in patents, apart from the bare title "Table I" or "Fig. 2".

The claims are a special case of list. They are effectively (or even actually) the predicate of a sentence beginning "What is claimed is", even where their heading is only "Claims", "Revendications", "Patentansprüche" etc. Lists within claims are also common. They are usually lists of ingredients (i.e. mainly nouns) or of actions (finite verbs, gerunds, verbal nouns); but in the case of the "Merkmalsanalyse" or feature-table style there is a list of features, not necessarily all expressed in the same part of speech. This style of claim is the subject of guidelines issued by the German Patent Office and is common in North America.

4.7 *Symbols*

A final striking feature of patent style is the plethora of numbers and other symbols. These begin with the bibliographic data and continue throughout, with line, column and page numbers, reference signs, quantities, units of measurement, claim numbers, table and figure titles, structural formulae and so on. They sometimes cause problems.

5. Patent-Specific Features

"Nothing difficult about the language of patents. Every managing director understands them. He knows, 'My patents are valid, yours are not!'"

- patent practitioner[11])

"Simpler language of patents desirable."

- information experts[12])

The more patent-specific features of patent style fall into 3 groups. The first group represents the first interest quoted above (the legal user):

1) language largely peculiar to patents.

The next group represents the other interest quoted (the information user):

2) language typical of patents but not confined to them – the language of technical description.

The last group provides signposts for all readers:

3) structure markers (major "section flags" and minor "repeaters" which lead the reader through the patent).

5.1 *Language largely peculiar to patents*

"'*Broad* but *exact'*, one patent agent says 'which is much harder than broad and vague'. Be broad and vague, and you may include known technology along with the invention; be *narrow* and exact, and you may throw out part of the invention."[13]) This language – the notorious "patentees" – is a hotchpotch, not so much of odd terms as of odd usages. They seem unrelated, ugly, pointless. Yet almost all prove to have one of two origins:

1) The need for *breadth* (to make it as hard as possible for a potential infringer to circumvent the patent). Example: the use of the semiprimitive "fastening means" rather than "pin".
2) The need for *precision* (to define the invention unambiguously relative to what is already known). Example: "the sheet metal member comprises two said second portions and respective cams".

This section is intended to *identify* the odd usages and terms. It does not give the reasons for them, which may be patent laws, regulations, court decisions or merely legal opinions. Though few of the features mentioned are universal, all are common.

5.1.1 *The need for breadth*

5.1.1.1 *Patent "semi-primitives"*

A patent "semi-primitive" is halfway to a semantic primitive. It arises from the combination of a *patent generic noun* or broad term (what Moskovich[14]) terms a patent "pronoun") – "means", "device", "system" – with a *function indicator.* The latter is usually a gerundive or verbal noun:

"fastening means"
"correction device"

but may be an adjective:

"resilient means"

or even a concrete noun, though this is deprecated by some:

"switch means".

Common *patent generic nouns* include:

device	dispositif	Einrichtung
member	organe	Organ
apparatus	appareillage	Vorrichtung

Some of the numerous possible *function indicators* follow, with examples of context:

fixing/fixation/fastening means/moyens de fixation/Verschlußmittel
securing device; dispositif d'immobilisation
locking/blocage/Blockier-
interlocking/verrouillage
retenue/retaining/Halte-
organe de liaison/connecting member/Verbindungselement
stop/Anschlag/arrêt
a mechanism for rotating . . .
a rigid bent sheet metal member
a pressure-responsive device
a temperature-sensitive element
guide means/moyens de guidage/Führungsmittel
Tragvorrichtung/support/bearing member

Phrases containing "moyen(s)", "Mittel" or "means" are particularly common.[15]) A Canadian main claim containing "means establishing fluid communication" and 7 other "means" phrases, totalling 15 occurrences, is not exceptional.

5.1.1.2 *Other broad forms*

A selection of other broad words and phrases often found in 2 or more of the 3 languages will be given in list form. It must be remembered that these are preferred by some draftsmen in some situations, but are not universal.

- "*comprising*", "comportant", "including", "comprenant", rather than "consisting of".
- "*or the like*", "oder dgl. ", "ou similaire", rather than "etc", "and so forth", "usw.".
- "*fluid*", not liquid (not in De).
- "*container*", "vessel", "Behälter", rather than "cup", for example.
- "*box-like* structure", not "box".
- "*limb*", "Schenkel", where "arm" or "leg" would be too narrow.
- "rotatable", "drehbar", "*capable of* rotating", "*adapted to* rotate" or "*which can* rotate", not merely "rotating". Likewise "interlockable", "mateable"; "connectible" for "connected". (This misuse of "adapted" is said[16]) to have led, in a patent relating to henhouses, to a claim for perches of special construction "on which the chickens are adapted to sit.")
- "*a plurality of*", "Vielzahl", "Mehrzahl" (to cover 2 or more), not "several". However, "mehrere" and "plusieurs" also appear.
- "*being/étant*" or other present participle, or "*wobei*", all to avoid implying a causal connection (". . ., X being provided with"; "a pin being located in the hole and projecting from the wall").
- "*substantially*", meaning "approximately", "generally", "broadly"; also, "essentiellement", "sensiblement", "environ", "im wesentlichen".
- Frequent use of "*manner*" ("extending in the manner of a wall"; "manière", "façon"; "in bekannter Weise".

5.1.2 *The need for precision*

- *Definition* of terms: a term may be briefly defined, to restrict its meaning within the patent.
- "*Said*": Note that the definite article can be a connector in patents, in that it is often – not always – used only if its noun has already occurred or can safely be taken for granted. However, some writers prefer not to rely on this, but write "the said" or "the aforesaid" ("ledit") or even "said" alone, omitting the article altogether. Occasionally "genannt" is used in a similar way. Phrases like "a said conductor" are also found.
- "*which*", "welcher", "et qui" are used often: ". . . a respective rib projecting from the side face, which rib is . . .", instead of, say, "the said rib being"; "into which channels the pins can be inserted".
- "*respective*": "a respective rib".
- "*extending*", "sich erstreckend".
- *further definition of "face"*, "end", "side" etc: "end face", "face supérieure", "Längsseite".
- Frequent use of "*known*", i.e. reference to prior art, especially for example in BRD where to distinguish the novel from the known is an official requirement.
- Unusual *explicitness* in general: "The pivot is a bent-over portion of the said first portion"; "a rib provided on *and projecting from*".

5.2 *Language typical of but not peculiar to patents*

This (mainly individual words, not phrases) appears to be the normal language of *technical description*, except in respect of word frequency. Only a few examples will be given.

To save space, certain concepts will be given in only one grammatical form, for example a verb form ("connect"), although they often occur in other forms ("connection", even "connectible").

Some of the more notable aspects are:

5.2.1 *Construction*

- names of major objects (especially apparatus and machines) ("reactor", "moteur", "Pumpe")
- their parts and details, especially
  - containers
  - openings
  - passages.

5.2.2 *Function*

- function proper ("mélanger", "Schalten", "dichten", "control", "neutraliser", "combustion"), in which an important subgroup is forms of association ("bloquer", "abut", "fit", "solidarisé", "mount", "engage", "verbinden", "Kraftschluß").
- variables ("Temperatur", "flow", "dépression").
- nature ("mechanisch", "federnd", "pharmaceutical", "antiprotozoal", "nutritif", "thermodurcissable").

5.2.3 *Substances*

names of chemicals and materials ("Äther", "Kunststoff", "titane", "fluid", "air", "hydrocarbure").

5.2.4 *Geometry, motion, position*

A large number of mainly geometrical indicators ("sinusoïde", "tronconique", "trapezförmig", "Kreis", "circumference", "axis", "parallel", "elongated", "block", "rampe", "rétreint"; "rotate", "transverse", "orientation", "left", "forward", "relative", "déplacement", "tournant", "terminale").

5.2.5 *Degree* of a variable

("zumindest", "légèrement", "approprié", "predetermined", "high"/ "low", "konstant").

5.2.6 *Properties* of an invention or the prior art

("saving", "reliable", "simplicité", "précision", "sauber", "ökonomisch", even, in a patent drafted by a private inventor, "kostenlos").

5.2.7 *Names etc.*

Proper nouns, addresses, Trade Marks.

5.2.8 *Non-verbal features*

Layout, punctuation, order of patent sections. (It has been questioned whether these non-verbal features are part of language, or belong in part 5.2 at all, but the author inclines to the view that most things which affect meaning are part of language, and that, for example, layout has developed as a visual representation of the rhythm and macrosyntax of text.)

5.3 *Structure markers*

The underlying structure of a patent is almost invariably signalled by recognised structure markers. These show the reader at a glance where he is in a patent, and they may be major or minor.

5.3.1 *Major markers: "section flags" (or "openers")*

These open various sections of the patent. The technical field may be signalled by "Die Erfindung betrifft"/ "L'invention est relative à"/ "The invention relates to"; the background art by "Es ist bekannt"/ "On sait que"/ "Conventional"; the disclosure of the invention by "Erfindungsgemäß"/ "L'invention a pour objet"/ "According to the invention"; and so on.

5.3.2 *Minor markers: "repeaters"*

Certain words or figures occur with more frequency in particular sections. For example, reference numerals appear only in the detailed description or in claims; properties like "simplicité" occur often in the discussion of the background art and of the invention's advantages; "preferably" or "bevorzugt" are commoner in the recital of sub-claims.

6 **Conclusion**

The typology study of patents reported here was performed only to determine linguistic characteristics of patents which affect machine translation. However, it is felt that the regular patterns and the similarities between English, French and German patents revealed by the study may be of interest to translators and to specialists in other fields. Certainly the author appreciated the opportunity to take a fresh look at what had been her bread and butter for many years, for when this notoriously dull text type was studied for the purpose of that still less loved thing, machine translation, the results were unexpectedly interesting. Perhaps there is substance in the view that machine translation, precisely through its failures, may be, of all processes, the most revealing about language and the way it works.

Notes and References

1) LAWSON. V. (1980): *Final Report on EEC study contract TH-21* (Feasibility study on the applicability of the SYSTRAN system of computer-aided translation to patent texts), Commission of the European Communities, CETIL/205/80. In particular: LAWSON, V. (1979): *A Typology of Patents, or: The Language of Patents with particular reference to computer-aided patent translation (CAPT);* annex I of Final Report on EEC study contract TH-21.

The views expressed in these documents and the present paper are not necessarily those of the Commission of the European Communities.

2) MICKLETHWAIT. E.W.E. (1946): "Brushing up our Drafting" in proceedings of Chartered Institute of Patent Agents, London (18 Dec. 1946).

3) Patent Cooperation Treaty (PCT), Rule 8.3.

4) The typical patent structure is also found in utility models (Gebrauchsmuster). The structure may be absent (rarely) if a private inventor files a very informal document.

5) PCT.Rule 5.l.ii.

6) Ibid., Rule 5.l.iii.

7) European Patent Convention. Rule 27.1.f.

8) World Industrial Property Organization (WIPO): *ICIREPAT Manual*, ST. 12/A(E), General guidelines for the preparation of abstracts of patent documents. 6.

9) KINNEAVY, L L. (1971): *A theory of discourse: the aims of discourse*, Englewood Cliffs. N.J., Prentice-Hall, 1971.

10) Colours are very rarely mentioned.

11) Personal communication from patent practitioner who prefers to remain anonymous.

12) Conclusion of all expert groups consulted in Starkloff, B. et al. (1978): *Investigation of the present and future use of patent literature*, CEC DG XIII (1978), EUR 5952 EN.

13) F.A. CLIFFORD, quoted in Lawson, V. (1978) Patents, the translation of a social contract, The Incorporated Linguist, 17, 2 (1978).

14) MOSKOVICH, W., and CAPLAN, R. (1979): Distributive-statistical techniques in linguistic and literary research, in proc. 1978 *Computers in Literary and Linguistic Research*, Birmingham, Ass. f. Lit. & Ling. Computing (1979). Part 5.2 of the present study has drawn on Moskovich.

15) What this study calls a patent "semi-primitive" is so convenient that patent professionals may even use it in speech ("wife means", "winter coat means").

16) BBOULY, H. G., 18 December 1946: reported in proc. of Chartered Institute of Patent Agents, 1946/47; London (1947).