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THE ORGANIZATION OF THE BILINGUAL DICTIONARY

Introduction

As is well known, making a dictionary is a time-consuming task. Consequently there is every reason to proceed as efficiently as possible. For example, we will have to (1) prevent the same activities being carried out several times and (2) take care that as much as possible will be built on existing material.

When we look at the usual practice, we note first that bilingual dictionaries differ depending on (1) the language into which translations are made and (2) whether the target language is the native language or the foreign language. In other words, it appears that a French-English dictionary differs in content from an English-French dictionary, and also that the French-English dictionary for English native users differs from the French-English dictionary for French native users. The same holds for any other language pair.¹

Secondly we note that bilingual dictionaries for each language-pair are made separately, whereas starting from a French-English dictionary and an English-Italian dictionary a lot of work may already have been done which might be useful for a French-Italian dictionary.

Lastly we note that monolingual dictionaries have great problems in distinguishing meanings² whereas bilingual dictionaries, on the basis of differences in meaning, attach different translation equivalents to the native language words and in addition must state those meanings of the native-language word explicitly. We see that monolingual dictionaries are in principle made independently of bilingual dictionaries. At the same time, there is a tendency to take the monolingual dictionary as a starting-point for compiling bilingual ones.

I want to try in the following pages to find out (1) why bilingual dictionaries differ depending on both the translation-direction and the native language of the user and in what ways working methods may be made more efficient and more systematic; (2) how bilingual dictionaries can be derived from other language-pairs; (3) how more objective standards may be found for distinguishing senses in monolingual dictionaries, using computers.

Directionality

The difference in content of a bilingual dictionary depending on the direction in which the translation is carried out is caused by the difference in knowledge which the user possesses of the native language and the foreign language. That is why in the process of moving from the foreign language to the native language it is sufficient in most cases to be given a series of translation-equivalents from which the native language user can select the

equivalent appropriate in the given context (cf. Steiner 1977, Al-Kasimi 1983). Entry E₁ is a typical example going from English (the foreign language) to Italian (the mother tongue).

E₁: to look (1) guardare (2) apparire, sembrare, avere
l'aria (3) badare, osservare ...

Moving from the native language to the foreign language, however, such a series of translation equivalents would be insufficient, because when translating into the foreign language the language user does not have the knowledge on the basis of which to select the correct equivalent. As a result, this information must be supplied by the dictionary. This is done, among other things, by adding other words synonymous with the source-language expression, by stating sentence-constructions with which the word in question is combined in that meaning, and by giving examples.

A typical example from an Italian-English dictionary is E₂ from the DIZIONARIO INGLESE-ITALIANO & ITALIANO-INGLESE.

E₂: sembrare (1) (parere) to seem, to appear, to look
(assomigliare) to resemble, to look like
(2) (dare l'impressione) to look like, to sound,
(avere il sapore) to taste like, (al tatto) to feel
like, (al olfatto) to smell like, (all'udito) to
sound like
(3) (pensare, ritenere) to seem, to appear; to
think; (volere, preferire) to like, to wish, to
prefer.

Words such as parere, pensare etc. function as synonyms and expressions such as all'udito, al tatto as shorthand for audible/touchable subjects, objects or adjuncts which typically collocate with the verb in question.

Once we understand the reason why dictionaries differ in directionality, it will also be clear why they differ according to the native language of the language-user: the English-Italian dictionary for the Italian speaker contains too little information for an English speaker and the Italian-English dictionary for the Italian contains more information than is strictly necessary for the English speaker.

In this connection it is interesting to look at bilingual dictionaries which are used in automatic translation systems. Contrary to human translators, machines do not possess the sort of implicit knowledge on account of which (depending on the user's native language) the information given in a bilingual dictionary differs. The implicit knowledge must always be made explicit for dictionaries in automatic translation systems. The consequence is that the production of machine dictionaries is more labour-intensive than that of dictionaries for human use. Therefore the question arises whether, once an Italian-English machine dictionary has been developed, the English-Italian dictionary - being native-language independent - can be derived from it more or less automatically. For this purpose we will have to look up the translation equivalents from the right-hand side (RHS)

of the entry and convert them onto left-hand side (LHS), together with sufficient disambiguating information of the original Italian-English dictionary. By arranging the LHS word alphabetically and by using the LHS word only once, we obtain an English-Italian dictionary. As examples I select those Italian-English entries (E₃ to E₇) from which the English-Italian entry appear may be derived.

- E₃: apparire (1) (mostrarsi visibilmente) to appear
(all'improvviso p. es. nella nebbia) to loom up
(2) risultare, mostrarsi chiaramente) to appear
(3) (sembrare) to look, to appear, to seem
- E₄: comparire (1) (apparire) to appear, to show up
(2) (di pubblicazione) to appear, to be published
(3) (in giudizio) to appear before the court
(4) (far bella mostra, spiccare) to show off
- E₅: parere (1) (sembrare) to seem, to appear, to look like
(2) (costr. impersonale) to think: mi pare che = I think
(3) (come + costr. impersonale) to like, to want: come ti pare
- E₆: presentarsi (1) to present oneself
(farsi conoscere) to introduce oneself
(comparire) to appear (alle autorità)
(2) (offrirsi) to offer
(capitare) to occur
- E₇: sembrare (1) (parere) to seem, to appear, to look
(assomigliare) to resemble, to look like
(2) (dare l'impressione) to look like
(3) (pensare, ritenere) to seem, to appear to think
(volere, preferire) to like, to wish, to prefer

From these the following inverted entry results:

- E₈: to appear (mostrarsi visibilmente) apparire
(risultare, mostrarsi chiaramente) apparire
(sembrare) apparire
(sembrare) parere
(apparire) comparire
(di pubblicazione) comparire
(in giudizio) comparire
(comparire) presentarsi
(parere) sembrare
(pensare, ritenere) sembrare

For an Italian language user the disambiguating information can possibly be omitted, which results in the practical advantage of a less bulky dictionary. For the English language user that information has only to be translated into English.

The example above did not come about automatically, but was constructed on the basis of an English-Italian dictionary via an Italian-English dictionary. The thing that strikes one in the example above is that considerable differences occur when comparing the Italian-English and the English-Italian entry, a phenomenon that is well-known.

- E₉: appear (1) apparire, presentarsi: the town appeared
below us
(2) arrivare, comparire, farsi vivo: he didn't appear
until 6
(3) apparire, comparire, esibirsi: di attori,
cantanti, ...
(4) sembrare, parere: why does she appear so sad,
it appears to me that...

In the inverted version we lack the translation arrivare, esibirsi and farsi vivo. Consequently inverting can make a contribution to the improvement of the bilingual dictionary. In addition a great advantage is indeed gained because the bilingual dictionary from the native to the foreign language must necessarily be of the fuller type; the other types of dictionary can be derived from it with or without additional information for certain user groups. It is evident that a more systematic notation would greatly facilitate the creation of such automatically derived dictionaries.

Impressive as the example may seem, problems occur on account of the lexicographic tradition and the characteristics of one of the languages involved. We distinguish the following cases:

- (a) source and target languages have exactly the same meaning(s), in which case there is no problem:

<u>tè</u> (substance)	=	<u>tea</u> (substance)
<u>tea</u> (substance)	=	<u>tè</u> (substance)
<u>tè</u> (drink)	=	<u>tea</u> (drink)
<u>tea</u> (drink)	=	<u>tè</u> (drink)
<u>tea</u>	=	<u>tè</u>

- (b) the source-language word has several non-synonymous translation-equivalents; no problem if disambiguating information can be added: see the appear example, E₃ to E₉ above.

- (c) the target-language word has no equivalent in the source language, neither as a word nor as an expression; this presents problems, because when inverting the word involved is absent:

(German) Geschwister = (Italian) fratelli e sorelle

- (d) (several) non-ambiguous source-language words have the same translation equivalent; this is a problem because when inverting the disambiguating information may be absent:

(Italian) platano, piatta, aeroplano = (English) plane

- (e) (several) non-ambiguous source-language words have the same, but semantically more abstract, equivalent; similar problem as under (d) above:

(French) rivière, fleuve = (English) river

Computer-assisted multilateral inversion

If bilingual dictionaries can be composed in the way described, which is both more efficient and more consistent than the existing method, the question arises whether even better quality can be achieved by deriving bilingual dictionaries from plurilingual

ones. An affirmative answer would not only be of importance for dictionaries for human use, but also for dictionaries in automatic translation systems. For if it were possible to translate a term from language A into language B given the required disambiguating information, and the synonymous term in language B is translated into language C, then (in accordance with the scheme: if $A = B$ and $B = C$ it follows that $A = C$) the translation of the term in language A can be derived from language C, and we will be able via international working agreements to produce bilingual dictionaries automatically.

As a simple example, take the following English/Italian/German entries on kidney.

E₁₀: kidney (anat) rene
(cibo) rognone
temperamento, temprà

E₁₁: rene (anat) Niere

E₁₂: rognone (cibo) Niere
(Alp) Gletscherhöcker

E₁₃: temperamento Temperament, Wesensart

from which the following English-German dictionary entry will be derived:

E₁₄: kidney (anat, cibo) Niere
Temperament, Wesensart

Strongly polysemous words are more complicated. Thus when we take to appear as an example, we find in the DIZIONARIO SANSONI TEDESCO-ITALIANO ITALIANO-TEDESCO:

<u>apparire</u>	= (mostrarsi visibilmente) erscheinen
<u>apparire</u>	= (risultare) sich ergeben, hervorgehen
<u>comparire</u>	= (apparire) erscheinen
<u>comparire</u>	= (di pubblicazione) erscheinen
<u>comparire</u>	= (in giudizio) erscheinen
<u>parere</u>	= (sembrare) scheinen
<u>presentarsi</u>	= (comparire) erscheinen
<u>sembrare</u>	= (parere) den Eindruck haben, scheinen
<u>sembrare</u>	= (ritenere) scheinen

from which an English-German list of equivalents results automatically:

appear = erscheinen, sich ergeben, hervorgehen, etc.

Monolingual dictionaries try to disambiguate meanings on the basis of synonyms or paraphrasing. It would be purely accidental, certainly for less cognate languages, if for the same collection of meanings in several target languages only one word (form) served as an equivalent. It often turns out that one word with various meanings produces a number of different translations in another language. The fact that in case of related languages a number of meanings may have one common equivalent in addition

to various different translation equivalents does not affect the principle at all. The common equivalent shows that in the respective languages a number of meanings, though different, are considered similar to one another. This phenomenon can be used as a criterion for distinguishing monolingual meanings. Let us take an entry from the DIZIONARIO GARZANTI DELLA LINGUA ITALIANA:

E₁₅: funzionare ... (1) adempiere la propria funzione:
Il meccanismo non funziona
(2) fungere: - da archivista

Let us take the circular character of the definition in Meaning 1 for granted.

In an Italian-English dictionary we find:

E₁₆: funzionare ... (1) to work (anche fig), to function, to operate (di motori ecc) to run;
l'ascensore non funziona = the lift is out of order
(2) (fig) to go right, to work well
(3) (fungere da) to act as

From this it appears that Meaning 1 is further split up into two senses, while one of the two can apparently be further subdivided. The bilingual dictionary supplies the following meanings:

- (1) to be possible: this way it won't work
- (2) to perform the action of a specified subject (agent)
- (3) doing a job as part of a whole
- (4) to be out of order, not doing what normally is done
- (5) to act as

When consulting a Dutch-Italian dictionary, we find from the illustrative example questa medicina non funziona, the further meaning:

- (6) the subject doesn't function as expected (it functions in some other way).

Conclusion

The bilingual and plurilingual dictionary supplies a powerful criterion for distinguishing meanings and providing suitable contexts on the basis of which monolingual paraphrases can be given. A problem that occurs here are words which are split up into several senses while the other language in the pair or group considers them to have indivisible meanings.

The possibility of monolingual 'sense division' and bilingual 'meaning discrimination' has important consequences for a plurilingual automatic translation system. When starting such a system with a separate monolingual and bilingual dictionary, many meanings not distinguished in the monolingual dictionary must be distinguished bilingually, which requires all kinds of tests.

In a system with separate dictionaries the disambiguating tests must be repeated as many times as there are languages

involved, whereas a system in which meanings are disambiguated plurilingually needs only to be enriched with the additional variations from any new language. It is not unrealistic to expect that the increase of these variations will become decreasingly important.

Notes

- 1 A similar point is made in the paper by Kromann et al. in Part II of this volume.
- 2 Cf. the paper by Stock in Part I of this volume.

References

- Al-Kasimi, A.M. (1983) "The interlingual/translation dictionary" in Lexicography: Principles and Practice ed. by R.R.K. Hartmann. London-New York: Academic Press
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