

# What is a Target Language in an Electronic Dictionary?

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## Abstract

In a printed bilingual dictionary, one of the languages acts as the source language and the other the target language. In an electronic dictionary, where both languages can be made equally accessible, the relationship between the two languages is much more complicated. This paper will discuss the consequences of this multiple access in bilingual lexicography. The focus will also be on the target language vocabulary, when it is made as accessible as the source language. The point of departure is the Swedish vocabulary presented in the multilingual online-only resource *ISLEX*, where Icelandic is the source language and Swedish one of the target languages. While the Icelandic vocabulary in *ISLEX* is carefully selected and representative of the Icelandic lexicon, the Swedish vocabulary consists of a rather arbitrary selection of the Swedish lexicon, revealing unfortunate equivalent lacunae, i.e. the absence of words of frequent occurrence and central to colloquial Swedish. Some implications of multiple access for the typology of bilingual dictionaries will be discussed.

**Keywords:** bilingual e-lexicography; multiple access; source/target language; equivalent lacunae; dictionary typology

## 1. Introduction

In a printed bilingual dictionary, the function of the two languages is clear: one acts as the source language (SL) and the other the target language (TL). The TL is in all aspects subordinate to the SL. This is the case for the TL vocabulary provided in the dictionary, the examples given to illustrate the usage of the headword, collocations, idioms etc. There are no TL units in the dictionary that are not motivated by specific qualities of the SL and all information about the TL is accessed only through the SL. While the lexicographic description necessarily takes either of the two languages in question as a point of departure for the information provided, an electronic dictionary can offer the user equal access to units of both languages. For the user, the function of the two languages is not as clear-cut as in the printed dictionary since the distinction between the SL and the TL is partly neutralized. The TL occurs as a lexical component in its own right. This has changed the very basis of the bilingual lexicography.

This paper first discusses some of the differences between printed and online bilingual dictionaries, focusing on the concepts of source language and target language. Then the multilingual *ISLEX* online-only resource is presented and the Icelandic and Swedish vocabularies, respectively, are described. One consequence of the accessibility of the target language for bilingual lexicography is the equivalent lacunae occurring in

the Swedish vocabulary in *ISLEX*. The typology of bilingual dictionaries is also discussed and modified.

## 2. Bilingual dictionaries on the Internet

In a printed, bilingual dictionary, the lemma selection and the description of the lemmas and equivalents are adjusted to a well-defined user group. The users are taken to be *either* mother tongue (L1) speakers of the SL, using the dictionary for encoding tasks, *or* mother tongue speakers of the TL, using the dictionary for decoding texts in the foreign SL (Figure 1). The L1 users are expected to have good knowledge of their mother tongue, while their skills in the foreign language (L2) are taken to be insufficient. The description of the source language is adapted to the users' skills and needs, and so is the description of the equivalents. It is, of course, the L2 that is provided with an elaborated description, adjusted to the role as the source or target language, respectively.

Source Language in relation to user's mother tongue		Target Language in relation to user's mother tongue	User's activity
L1	>	L2	encoding
L2	>	L1	decoding

Figure 1: The functions of the languages in the dictionary, related to the user's mother tongue and activity

Many of the bilingual dictionaries now available on the internet are simply digitalized versions of existing printed dictionaries, i.e. *p-dictionaries* rather than *e-dictionaries* (Fuertes-Olivera & Bergenholtz, 2011), and are thus subjected to the same restrictions in accessibility as their printed predecessors. In dictionaries conceived and edited as an online-only resource, the material in the dictionary database can be accessed in far more elaborated ways, which makes the relationship between the two languages much more complex than it is in a printed dictionary. Both of the languages can be made mutually accessible, and both can serve L1 and L2 users alike. Users consulting the dictionary for decoding a text in L2 need a comprehensive set of words and fixed phrases in that language, while for encoding tasks they also need elaborated information regarding the morphological, syntactic and pragmatic features of the L2 units.

In order to fulfil the needs of L1 and L2 users alike, both languages in a bilingual e-dictionary should provide a comprehensive stock of lexical units, as well as a detailed description of these units. This entails a theoretical as well as methodological challenge for the bilingual e-lexicography regarding the coverage and description of both languages.

### 3. Source Language and Target Language

One aspect of the multiple accessibility of the target language in an e-dictionary is the target language itself. While the subset of the source language lexicon presented in a bilingual dictionary is carefully selected, the target language representation is subordinate and reactive to the source language. In the printed dictionary, the target language only appears as an answer to a query concerning a source language unit, and the target language features are focused upon only in relation to that specific source language unit. The inevitable lemma lacunae, i.e. SL units absent in the stock of lemmas, are due either to the lexicographer's rational consideration, estimating these lemmas as too peripheral or special to be included in that particular dictionary, or unintentionally caused by random lapses of the lexicographer. The lemma lacunae rarely affect a complete structurally defined, coherent subgroup of the lexicon.

When the target language is also accessible, a new lexicographic phenomenon emerges, i.e. the equivalent lacunae. Unlike the lemma lacunae, the equivalent lacunae can be extensive and they can affect a clearly definable subset of the lexicon. When all the lexical information presented in both of the languages can be accessed, the dichotomy between the source language and the target language is technically neutralized. This raises the question asked in the title: what is a target language in an electronic dictionary? As will be illustrated below, multiple and equal access to the two languages featuring in a bilingual electronic dictionary results in great demands on new theories and new methodology in bilingual lexicography.

### 4. The *ISLEX* Dictionaries

The multilingual *ISLEX* e-dictionaries were launched on the internet in November 2011. The source language is Icelandic and the mainland Scandinavian languages Danish, Norwegian Bokmål, Norwegian Nynorsk and Swedish are the target languages. Recently, Faroese was added as a target language, and the compilation of an Icelandic–Finnish version is now in progress. All the languages treated in the *ISLEX* dictionaries can be considered as “small” languages, varying from 50,000 speakers of Faroese and 320,000 Icelandic speakers to 8,500,000 speakers of Swedish. Hence, as is often the case with bilingual dictionaries of “small” languages, the main objective of the *ISLEX* dictionaries is to serve as many users in as many linguistic activities as possible. All the Icelandic material in *ISLEX*, i.e. lemmas, examples, fixed phrases and idioms, is provided with equivalents, paraphrastic explanations or translations into the Scandinavian languages. The *ISLEX* project, including its technical aspects, has been presented at several international conferences, e.g. EURALEX 2008 (Sigurðardóttir et al., 2008) and LREC 2014 (Úlfarsdóttir, 2014).

The Icelandic editors at the University of Iceland were in charge of the overall planning and management of the project. The Scandinavian partners were The Society for Danish Language and Literature in Copenhagen, The University of Bergen, Norway and The University of Gothenburg, Sweden. From the outset, *ISLEX*

was planned as an online-only resource, and the opportunities offered by the electronic technique were well utilized in the planning, editing and development of the dictionary. The ISLEX content is set in an object-relational database, which was designed, developed and is now being maintained, and also elaborated further, in Iceland. The editorial environment of the dictionary and the user interface were also designed in Iceland.

From this database alone, different dictionaries are now generated. They are published online and can all be accessed free of charge. The website addresses, [www.islex.is](http://www.islex.is), [www.islex.dk](http://www.islex.dk), [www.islex.fo](http://www.islex.fo), [www.islex.no](http://www.islex.no), [www.islex.se](http://www.islex.se), respectively, lead to the homepages of the individual dictionary. The meta-language shown in the entries is determined by the country suffix, which means that [islex.dk](http://www.islex.dk) generates Danish, [islex.se](http://www.islex.se) Swedish, etc. Also, the language constellation offered initially in the search process is generated by the suffix, [.dk](http://www.islex.dk) leads to the Icelandic–Danish dictionary. The users can, however, easily change both the meta-language and the language combination and they can also view all the target languages simultaneously (Figure 2). The dictionaries have been very well received by the target user groups (Úlfarsdóttir, 2014) as well as by reviewers (Sanders, 2013).

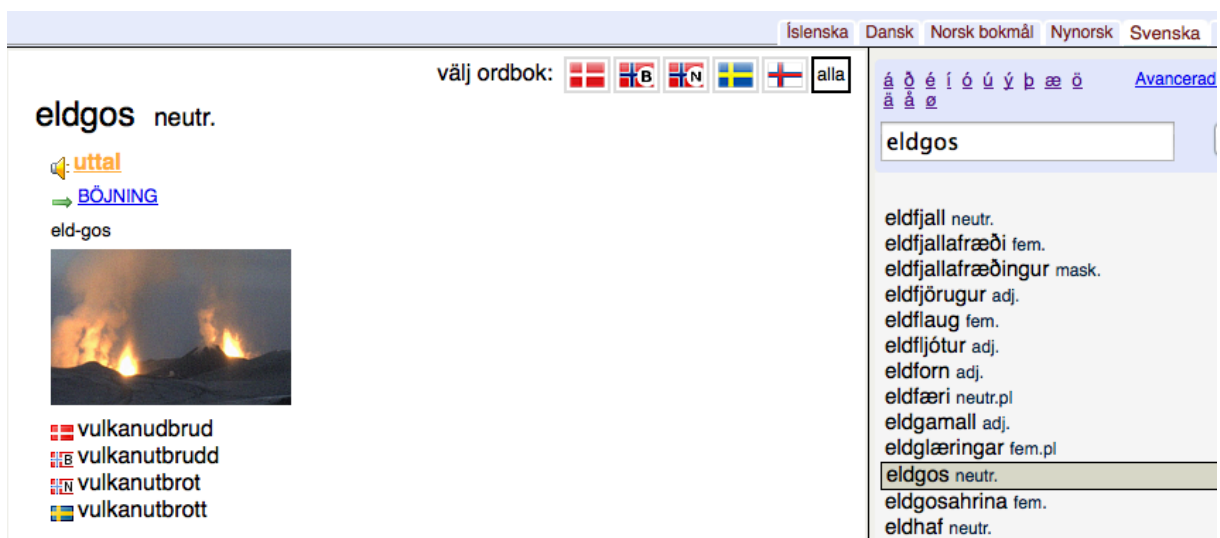


Figure 2: The result of the query for the lemma *eldgos* (‘volcanic eruption’) with equivalents in Danish, Swedish and the two Norwegian varieties

Icelandic is, however, always one of the languages offered to the users, more precisely in the capacity of source language.

In the *ISLEX* dictionaries, the multiple search options offered by the electronic technology are well employed. The user can search not only for the Icelandic lemmas but also, by using the free text search, for all other Icelandic lexical units and strings of text occurring in the dictionary. Also, the equivalents can be searched out, as well as every word or string of text, occurring in the translations of the Icelandic material.

Technically, the *ISLEX* dictionaries are thus not only bi- or multilingual but also biscopal or bidirectional, since both languages are equally accessible.

Another objective of the *ISLEX* project is that the dictionaries should be multifunctional, i.e. they are supposed to serve Icelandic users as well as the Scandinavian ones, in decoding and encoding activities alike. In terms of traditional bilingual lexicography, and in the ways the dictionaries were edited, Icelandic is the source language and the point of departure for the lexical description of the Scandinavian languages. The lexicographic representation of each of the Scandinavian languages is therefore subordinate to the Icelandic material, since it is the Icelandic headword that is provided with equivalents or paraphrased. The same goes for the fixed phrases and idioms. Although all the examples of usage and the fixed phrases are presented in all the languages, the Scandinavian versions are translations of the Icelandic ones, which in turn are intended to illustrate language specific features of the Icelandic lemma rather than illustrating contrastive aspects of the languages in question.

The established notions of *source* language and *target* language should be reconsidered and distinguished with respect to the lexicographic perspective on the one hand and the user perspective on the other. In the case of *ISLEX*, the lexicographic status of Icelandic is that of a *main* language, since it makes the basis of the lexicographic description also of the Danish, Norwegian and Swedish languages. The lexicographic status of these languages is therefore *subordinate* to Icelandic – the user’s activities left aside. From the user’s point of view, the Scandinavian material is just as accessible as the Icelandic material. The *search* (rather than *source*) language can thus be one of the Scandinavian languages as well as Icelandic. Depending on the user’s lexicographic activities, decoding or encoding text, and depending on which of the languages is his or her mother tongue, the *search* language can be L1 or L2. To emphasize the distinction between the lexicographic perspective and the user perspective, I will here use *main language* (ML) referring to Icelandic and *subordinate language* (SuL) referring to a Scandinavian language in a lexicographic perspective. When the user perspective is in focus I will use *search language* and *target language* respectively. The abbreviations SL and TL will henceforth relate to the user perspective only, standing for *search language* vs. *target language*.

*ISLEX* is primarily intended to support the Icelandic users in (1) expressing themselves in a Scandinavian language, i.e. for encoding purposes. Icelandic is then the SL and the users L1 while the TL is their L2 (ML/SL/L1 > TL/L2). The Icelandic users are also supported in (2) decoding texts in any of the Scandinavian languages presented in the dictionary, by looking up an SL unit in L2 in order to find an Icelandic TL unit (ML/TL/L1 < SL/L2). Furthermore, the dictionary is intended to serve Scandinavian users in (3) decoding Icelandic texts (ML/SL/L2 > TL/L1) and – with certain reservations – in (4) producing texts in Icelandic (ML/TL/L2 < SL/L1) as illustrated in Figure 3. The angle bracket illustrates the direction of the search in

relation to the user’s mother tongue.

User’s L1	User’s activity	ML in relation to user	Search direction related to user’s mother tongue	SuL in relation to user
1 Icelandic	Encoding	L1	>	L2
2 Icelandic	Decoding	L1	<	L2
3 Dan/Nor/Sw	Decoding	L2	>	L1
4 Dan/Nor/Sw	Encoding	L2	<	L1

Figure 3: In the electronic dictionary, the main language and the subordinate language are equally accessible, ML as well as SuL is L1 to some users and L2 to others and ML and SuL alike are consulted in encoding as well as decoding activities.

Henceforth, I will focus on the Icelandic–Swedish dictionary in *ISLEX*, i.e. *islex.se*. The Icelandic users consulting *islex.se* for decoding a text in Swedish should need a comprehensive Swedish vocabulary; single word units as well as fixed phrases. When consulting the dictionary for encoding tasks, users will also need elaborated information regarding the morphological, syntactic and pragmatic features as well as the selectional restrictions and constructional preferences of the Swedish units. The Swedish user has the same needs but the other way around, i.e. an extensive Icelandic lemma list for decoding Icelandic texts and generous information regarding the formal features of the Icelandic units for encoding tasks. Adjusting the lexical description of each of the languages to the needs of an L2 user, the description of both languages runs the risk of suffering from a rather heavy overload of information, at least from the L1 user’s point of view. That problem is, indeed, a technical as well as a lexicographic one.

## 5. The Icelandic Vocabulary in *ISLEX*

Icelandic is the point of departure for the lexical description of Swedish as well as for all the other languages in *ISLEX*. The entries are based on an Icelandic lemma, which in turn can be a single- or multi-word unit. The lemma is completed with adequate information regarding its grammatical, syntactic, phraseological etc. features. Recorded pronunciation of the headwords, single word units as well as multi-words units, is also added.

The Icelandic material in *ISLEX* consists of ca. 50,000 lemmas, 30,000 exemplifying sentences and 14,000 collocations, idioms and fixed phrases of different kinds (Úlfarsdóttir, 2013). All this material is carefully selected with respect to adequacy and representativeness in relation to the Icelandic lexicon and to the manifold

objectives of the dictionary. The emphasis lies on the modern Icelandic lexicon and a great many of the lemmas make their very first dictionary appearance in *ISLEX*. Words denoting culture-specific phenomena in Iceland of today as well as some words central to the medieval Icelandic saga literature are also included. Thus, words such as *æðarvarp* ‘area where eider ducks nest’, *þorramatur* ‘traditional Icelandic late winter food’ and *landnámsöld* ‘Age of Settlement’ are lexical entries in *ISLEX* (the English translations are given in Hólmarsson, Sanders & Tucker (1989), s.v. *æðarvarp*, *þorramatur* and *landnámsöld*). The same applies to a number of words denoting parts of the Icelandic traditional women’s costume, traditional Icelandic food and other folkloristic phenomena. There is, similarly, a number of words denoting the traditional or typical Icelandic professions farming and fishing. Also, the vocabulary related to the Icelandic landscape with volcanoes, lava fields and glaciers is included, and neologisms, words and phrases related to the Icelandic banking collapse in 2008 are also added. Albeit far from a complete coverage of the Icelandic vocabulary, systematic, unintentional lemma lacunae are not to be expected in *ISLEX*.

## 6. The Swedish Vocabulary in *islex.se*

The Swedish vocabulary is, unlike the Icelandic one, not the result of a carefully conducted and well-conceived selection process. While there are ca. 50,000 Icelandic lemmas in *ISLEX*, the number of unique Swedish equivalents in *islex.se* amounts to ca. 41,000 (Úlfarsdóttir, 2013). As can be expected, these 41,000 equivalents constitute a somewhat arbitrary selection of the Swedish lexicon. Not only is the coverage of the Swedish lexicon inferior to the coverage of the Icelandic one in numbers of lexical items, but the degree of representativeness in terms of basic words among these 41,000 is also rather insufficient compared to the number of Icelandic lemmas. In a printed dictionary, neither the number nor the representativeness of the target language is a problem – the number of unique equivalents has not yet become a sales argument like that of the input lemmas.

One reason for the quantitative discrepancy regarding Icelandic lemmas and the Swedish equivalents lies in the structural differences in the lexical systems of the two languages. These differences are reinforced by the lexicographic status of the languages, Icelandic being the point of departure for the description of the Swedish language, rather than because of accessibility, whereby Icelandic is the source language and Swedish the target language. That distinction is indeed neutralized in the e-dictionary with multiple search options. However, Icelandic is the language that conducts the lexical description of the Swedish language. There is no incentive for the Swedish lexicographer to insert Swedish words or phrases unless they are triggered by the Icelandic units or by phrases illustrating the use of these units. This imbalance results in a considerable amount of what can be labelled as equivalent lacunae, i.e. TL words – in this case Swedish words, which – unlike the case in the printed dictionary – actually were directly accessible if they only were included in the *ISLEX*

dictionary.

Two types of systematic equivalent lacunae will be discussed below. One of these is due to discrepancies in word formation strategies in the two languages, the other type is due to the very subject of *ISLEX*, namely the Icelandic language, nature, culture and society – not the Swedish language, nature, culture and society.

### 6.1 The Swedish *-era/-iera* Verbs as Equivalents in *islex.se*

One systematic difference between Icelandic and Swedish concerns the policy towards loanwords. In Swedish there is a generous attitude towards loanwords, and a significant part of the lexicon consists of words and word formation elements of West-Germanic or Greco-Romance loans. In Icelandic, on the other hand, the modern international vocabulary, based on Greco-Romance elements, is scarce and there is a reluctance to include such words in Icelandic (Vikør, 1993: 211). Also Greco-Romance prefixes like *in-*, *multi-*, *re-*, *un-* and the like are seldom used in Icelandic word formation, while they are incorporated in the productive material in Swedish. The same goes for the suffixes, *-tion*, *-era* etc., originating in the classic languages and productive in the Swedish word formation system. The Swedish reverse dictionary (Allén & Sjögreen, 2007) contains 2038 Swedish verbs derived from Greco-Romance stems through any of the suffix variants *-era*, *-iera*, *-fiera*, *-ficera* etc. (Hannesdóttir, 2014). Of these 2038 verbs, 1071 are included in the largest printed Swedish–Icelandic dictionary (*Svensk-isländsk ordbok*, 1983). In this dictionary of 60,000 lemmas, where Swedish is the source language, the stock of lemmas is composed with the same users in mind as *islex.se*, i.e. Swedes and Icelanders. It is also intended to be multifunctional and serve Icelanders as a decoding dictionary and Swedes as an encoding dictionary. Of the 1071 verbs included in this Swedish–Icelandic dictionary, 360 occur as equivalents in *islex.se*. Quite a great number of the verbs in the reverse dictionary, as well as those in the Swedish–Icelandic dictionary, are rather peripheral in the Swedish lexicon as such. Many of the verbs are, however, of frequent occurrence and central to the colloquial Swedish of today.

A more relevant object of comparison regarding the Swedish lexicon of today is the Swedish lemma stock of the bilingual learning dictionaries in the *Lexin* project, a series of dictionaries between Swedish and the languages of some of the largest immigrant groups in Sweden. The bilingual dictionaries are based on the printed monolingual Swedish dictionary *Svenska ord* (1984; 1992; 1995). In 2011, the fourth edition of the Swedish dictionary was launched online. The material in *Svenska ord* is the point of departure for selecting the Swedish lemmas and their lexicographic description for all the bilingual dictionaries. The database contains ca. 28,000 lemmas (Hult et al., 2010). Today there are 15 different *Lexin* dictionaries available online while another five dictionaries are available only in printed form. As presented on the homepage of *Lexin*, the dictionaries are specially adapted for use in the teaching of Swedish as a second language. They therefore contain only the most common Swedish



words. Swedish is the source language in the early printed dictionaries and it is still the basis for the target language description as new dictionaries between Swedish and the languages of new immigrant groups are edited and appearing as online-only resources. In these dictionaries, as well as the ones that have been digitalized and published online, both languages, i.e. the lemmas and the equivalents, are equally accessible.

It appears that a number of the 700 *-era/-iera* verbs that do not occur as Swedish equivalents in *islex.se* are included as Swedish lemmas in *Lexin*. Among those we find *associëra* ‘associate’, *devalvera* ‘devalue’, *figurera* ‘appear, figure’, *fingera* ‘simulate’, *fixera* ‘fix, determine’, *imponera* ‘impress’, *initiera* ‘initiate’, *koncentrera* ‘concentrate’, *konversera* ‘converse’, *moralisera* ‘moralize’, *precisera* ‘specify, clarify’, *ruinera* ‘ruin, destroy’ and *socialisera* ‘socialize’, and a fair number of other verbs. *Lexin* is considerably smaller than *ISLEX* but explicitly concentrates on the most common and basic words in Swedish.

Equivalent lacunae as those in *islex.se* are significant when a target language has been made just as accessible as the source language. All the verbs mentioned here are included as lemmas in the somewhat larger Swedish–Icelandic bilingual dictionary, aimed at the same user groups as *islex.se*. They should definitely, one way or another, be included in the Swedish vocabulary presented in *ISLEX*.

## 6.2 The Swedish *-era/-iera* Verbs Occurring at Free Text Search in *islex.se*

A free text search through the Swedish material in *islex.se* for *-era/-iera* verbs occurring in the translations of examples and other illustrative material but not as equivalents, gives another 132 verbs in addition to the 360 (Hannesdóttir, 2014). Even if lexical items occurring only in the Swedish translations lack information regarding the morphological features added to the Swedish equivalents, the presence of them in the translations is far better than no occurrence at all.

The total of almost 500 *-era/-iera* verbs in *islex.se* is still less than half the number of such verbs listed in the printed, larger, Swedish–Icelandic dictionary. When the lexical systems of two languages are confronted in the way they are in the bilingual dictionary, the discrepancies with respect to the way various concepts become crystallized, established, denoted and lexicalized in the two languages in question become clear. The verbs discussed here all share the semantic feature of denoting highly abstract actions. They all represent concepts so well established in the Swedish speech community that they have become lexicalized in form of a single word. The absence of a lexical representation of these concepts in the Icelandic lemma list in *ISLEX*, might partly be due to the word formation strategies of Icelandic, blocking loanwords of this kind and preferring domestic derivational suffixes to Greek and

Latin ones. The denotations of concepts, if established at all, might therefore be lexicalized in form of multiword units and phrases rather than single words (Hannesdóttir, 2014). Of the 13 above-mentioned *-era/-iera* verbs, present in *Lexin* but absent as equivalents in *islex.se*, only three occur in free text search through the translations of Icelandic phrases or examples: *imponera*, *koncentrera* and *konversera*. Six of the word stems can be recognized in participles or nouns, as e.g. *fixerad* ‘fixed’, *moraliserande* ‘moralizing’ and *precision*.

### 6.3 Culture Specific Words in *islex.se*

As aforementioned, the Icelandic society and culture is the subject of description in the *ISLEX* dictionaries. While the coverage of the culture specific, Icelandic vocabulary is quite sufficient for the decoding Swedish users, the number of Swedish culture specific words occurring as equivalents is rather poor. These words denote concepts that are not established and therefore not lexicalized in Icelandic.

A significant number of words denoting Swedish food and feasts lacking in *islex.se* are treated in *Lexin*, such as e.g. *kräftskiva* ‘crayfish party’, *nypon* and *nyponsoppa* ‘roship’ and ‘roship soup’, *surströmming* ‘fermented Baltic herring’ and *kavring* ‘dark, sweetened rye bread’. The printed Swedish–Icelandic dictionary includes four of these five words, i.e. all those mentioned except *kavring*. In *Lexin* we also find words related to the Samic culture: *sametinget* ‘the Sami Parliament’, *samekultur* ‘Sami culture’ and *renhjörd* ‘reindeer herd’. This field is poorly represented not only in *islex.se* but also in the printed Swedish–Icelandic dictionary. The few words that actually are included as lemmas or sublemmas in the printed dictionary are compounds with the *Lapp* element rather than *Same*: *lappdräkt* ‘Samic costume’ etc.

Words for common Swedish phenomena absent in *islex.se* but included in *Lexin* as well as the Swedish–Icelandic dictionary are e.g. *semestra* ‘spend one’s holiday’, *sommargäst* ‘holiday visitor’, *vinterbona* ‘prepare for winter conditions’, *hötorgskonst* ‘kitsch art’, *kullersten* ‘cobblestones’ and *bostadskö* ‘housing queue’ (the English equivalents and paraphrastic explanations from [www.ne.se/ordböcker](http://www.ne.se/ordböcker)).

Words such as these are common and frequent Swedish words, likely to turn up in Swedish texts and they should definitely be among the Swedish words presented in a bilingual, bidirectional and multifunctional dictionary such as *islex.se*.

## 7. Consequences of Multiple Accessibility for the Bilingual Lexicography

The entire process of dictionary making – bilingual as well as monolingual – has been revolutionized by the computerization of the process and the alternative digital publication forms. The discussion concerning how lexicography has benefitted from technological developments is dominated by the monolingual perspective, and not much has been said regarding bilingual e-dictionaries. However, many of the points at

issue concern general features in mono- and bilingual lexicography alike. Thus, the advantages brought about by the technical improvement have facilitated the lemma selection process and the selection of good examples; these moments are now based on large corpora and powerful search tools (Kilgarriff et al., 2008; Trap-Jensen, 2013). The scantiness in the description of the semantic, pragmatic, morphological etc. features of the lexical units are no longer called upon since the space is not the same issue in the electronic format as it is in the printed dictionary. And the lexicographer's work does not necessarily concern one specific lexicographic product but rather a database from which a number of dictionaries can be produced with a number of alternatives regarding presentation and visualization of data. The opportunities offered by the rapid technological developments are far from being utilized optimally. One main problem is that the lexicographers have not kept pace with the opportunities offered by the technological progress.

The reversal of bilingual dictionaries has been at stake for quite some time. The reversal projects hitherto reported in the lexicographic literature, first and foremost aim at printed dictionaries (i.e. the OMBI project: Maks, 2007; Martin, 1996; 2007). In bilingual e-dictionaries, where all the material in both languages is made equally accessible, some new criteria should be taken into consideration already in the planning phase of the project. In order to avoid massive equivalent lacunae of the kind discussed above, the point of departure must be a representative selection of not only the main language but of the units representing the subordinate language too. Also the selection of examples should be "chosen entirely on the basis of their translations" (Atkins & Rundell, 2008: 507). The examples must be contrastively sound, not only in order to avoid causing problems of ambiguity in one of the languages but also, as far as possible, focusing the deviations in usage in the two languages.

The ISLEX database maintains high technical standards. It was, from the outset, designed as an online-only resource. The software solutions chosen at the beginning of the project are flexible and, from the editorial point of view, well adapted to its purpose. The different fields, defined for the different types of data categories designed for the Scandinavian languages, can be expanded, added or omitted at the discretion of each one of the Scandinavian lexicographers. As is often the case at the planning stage of a dictionary project, there were more questions than answers, and there are certainly some shortcomings of the dictionaries. Some, e.g. the equivalent lacunae discussed above, can be attributed to specific linguistic features. Others should rather be ascribed to the theoretical aspects of bilingual lexicography as it developed from the late 20<sup>th</sup> century, based on lexicographic practice established during centuries of bilingual dictionaries being published in printed form. The roles of the languages involved were then given once and for all as illustrated in Figure 1.

First and foremost we were not aware of what impact multiple accessibility would have on the dictionaries. Actually, the question of access to the data and presentation

alternatives was not at stake until quite late in the editing process. The lexical description of the material in *islex.se* is strongly based on the theory of the different functions of the two languages included in a bilingual dictionary; one being the source language and the other the target language. This distinction is consequently based on directionality and accessibility being restricted to one of the languages and it is, as well as the terms themselves, outdated in the bilingual e-dictionary. Here, I have used the terms *main* language vs. *subordinate* language, focusing on the criteria for lexicographic description rather than the access criteria. However accessible, the representation of the subordinate language will in many respects depend on the main language. This calls for methodological development of the bilingual lexicography.

What is now provided by *ISLEX* is an efficient and well structured database and an adequate lexicographic description of the Icelandic lemmas. The selection of the Icelandic material is strictly language specific, i.e. neither the lemmas nor the examples are selected considering the contrastive aspects actualized in the bilingual dictionary. It should be borne in mind, however, that *ISLEX* is conceived not as a bilingual but as a multilingual dictionary. One and the same Icelandic material in the *ISLEX* database is intended to provide a representative basis for bilingual dictionaries between Icelandic and a number of other languages. Technically, the *ISLEX* e-dictionaries make good use of many of the technical possibilities offered by computer science and language technology. From a lexicographic point of view, it is indeed made by the book on bilingual lexicography. The problem is that the traditional view on bilingual lexicography is long since outdated.

## 8. Conclusions

What then is the target language of an electronic dictionary? In terms of accessibility, the distinction between source language and target language should not be relevant at all. As discussed in this paper, both languages in the bilingual e-dictionary can be equally accessible. In terms of lexicographic status on the other hand, it still seems suitable that one of the languages is made the point of departure for the lexicographic description. As the lexical description does not have to do with accessibility, I have chosen to use the term *main* language rather than *source* language. The real challenge for bilingual e-lexicography is to develop methods for an adequate description of the language subordinated to the main language, a description where a suitable stock of lemmas is presented and the grammatical, semantic, combinatorial and pragmatic features of these lemmas are accounted for. The description of the Swedish language in *islex.se* is not yet there.

What has become obvious reviewing the process of editing *ISLEX* as well as the resulting product itself is that the theories and methods of bilingual lexicography do not keep up with the development in computer science. The lexicographers must loosen their grip on several traditional notions established long ago. In particular, the lexical description of the languages should be based on the multiple accessibility at

hand in e-dictionaries rather than on the restricted accessibility of printed dictionaries. Much more information is available in e-dictionaries, and the creative user looks up whatever we generously make accessible. We must take the consequences of our generosity by furnishing the lexicographic material offered with as much relevant information as possible, whether the user is a speaker of the main language or of the subordinate language.

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