

Block 2

Dictionaries, Computer Dictionaries and Translation

Unit 4

Process of Dictionary-Making

Unit 5

Computer Dictionaries and Online Dictionaries

Unit 6

Utility of Dictionaries in Translation

Introduction to Block 2

‘Dictionary and Lexicography’ deals with aspects like words and the meanings contained in them etc. Lexicography is the science of dictionary making, which deals with the theoretical knowledge of the method and process of making it. Therefore, understanding of the theoretical knowledge about the process of formation of dictionary is also necessary. Computer has a special role in the context of dictionary and lexicography. It is also important for us to know its role in the process of dictionary making. At the same time, due to the development of computer and internet facility, the importance of technological resources like computer dictionary and online dictionary has also increased. This block titled ‘**Dictionaries, Computer Dictionaries and Translation**’ covers these aspects and also explains the utility of dictionaries in translation.

There are three units in this block.

The need and importance of dictionary making in Unit 4 ‘**Process of Dictionary Making**’ has been highlighted. Thereafter, the various steps in the process of dictionary making are explained and aspects such as the role of computers in the process are also highlighted.

Science and technology have presented us with the facilities like computer and internet. Their behaviour and field of use in our life is increasing day by day. The field of dictionary and lexicography has also been included in this. There the use of computer and internet has increased a lot. Hence Unit 5 focuses on ‘**Computer Dictionaries and Online Dictionaries**’. In this, first of all, the meaning of computer and online dictionaries has been clarified by stating the field of computer and its application. In this context the major features/difference between computer and print dictionaries are highlighted. The salient features of online dictionaries and computer dictionaries are also explained. The unit discusses the use of knowledge representation by computers as well as the lexical resources available on computers.

Unit 6 deals with ‘**Utility of Dictionaries in Translation**’. In this, where the interrelationship of translation and dictionaries has been highlighted, their importance and utility have also been underlined. While considering the usefulness of dictionaries, especially bilingual dictionaries, in translation, the rationale for using monolingual dictionaries has also been discussed. Along with this, the usefulness of various types of dictionaries in translation has also been discussed in this unit.

UNIT 3 METHOD OF USING DICTIONARY

Structure

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3.0 Objectives

After reading this unit you should be able to:

- know the role and importance of sign-system in using dictionary;
- gain knowledge of signs and abbreviations used in dictionaries;
- understand about the alphabetical arrangement, grammatical category, usage context, expressions related to them, correct pronunciation, correct spelling etc.in the context of dictionaries; and
- familiar with how to look up words in the dictionary.

3.1 Introduction

In Unit 2 you learned about the different types of dictionaries. You must have been noted that in addition to the dictionary, there are many types of dictionaries, thesaurus, synonyms, etc., whose use proves helpful in the fields of teaching, research, journalism, translation etc. There is no doubt that through the dictionary a common man can acquire language knowledge. Now it's clear to you that at what time it is useful to see which type of dictionary.

The lexicographer adopts a special method while making the dictionary. Keeping in mind the convenience of the user, he explains that method in an 'Introduction' of the dictionary.

Before using the dictionary, we must read and ‘introduction’ part, so that the structure of the dictionary, the special signs used in it and its methods can be understood well. By doing this, it is possible for us to know the required information in the dictionary in less time and easily goes and be able to take full advantage of the dictionary. Keeping all these aspects in mind, information about the method of using dictionary is being given in this unit.

In this unit, while introducing you to the ‘Method of Using Dictionary’, you are also being given the exercise of arranging English words in appropriate alphabetical order. You are requested to do a lot of practice in arranging words in proper alphabetical order keeping in view the technique of using the dictionary in the unit.

3.2 Method and Process of Using Dictionary

There is a definite procedure for using the dictionary. This technique should be used for meaningful use of the dictionary. Its information is especially important for those who do translation work. When we use the terms ‘method of using dictionary’, first of all the thought emerges that what is meant by the word ‘Method’ and is it synonymous with the word ‘Process’ or is there any difference between the two?

3.2.1 Process

‘Process’ is an action, system or methodology, which the lexicographer adopts while making the dictionary. It may be get it done at once and even after passing through many stages. If the ‘process’ is understood in the context of dictionary-making, it can be said that compilation of material from different fields, selection of entry from the material received, its editing-modification, meaning-determination, sequential combination etc. are included. You will study about this process of dictionary making in detail in Unit 4 of this course (MTT-017). In short, it can be said that every dictionary is prepared and presented in a certain process. Like derivation of each word, root word, suffix, equivalent words of other languages, meaning, idioms, examples and giving synonyms in place.

The list of abbreviations is given at the beginning of the dictionary. What would be the meaning of the words kept in brackets, *, +, =, () etc.? What do these signs/symbols indicate - all such information has been clearly given at the beginning of the dictionary. These signs/symbols are used throughout the dictionary. In this way, the lexicographer adopts a special type of process while making the dictionary and maintains it from beginning to end. Due to this uniformity is maintained in the dictionary. This is the process of dictionary making.

3.2.2 Method

In the context of dictionary use, ‘method’ can be taken to mean the specific method or technique that the user adopts to use the dictionary. It can also be called ‘usage method’ in general terms. User accesses the dictionary on the basis of alphabetical method, subject-based, grammatical category etc.

3.2.3 Difference between Process and Method : With Reference to Using Dictionary

After understanding the meaning of ‘Process’ and ‘Method’, the difference between the two would have become clear to you. It is clear from the discussion made in Section 3.2.1 that

‘process’ refers to the construction process which the lexicographer adopts. Similarly, it is also clear from the study of Section 3.2.2 it must be understood that ‘method’ refers to the specific method or technique that the user adopts. Thus, the dimension of difference between the two is that process is related to the creator and method is related to the user.

In the context of the dictionary, both process and method are important. Keeping in view the convenience of the user and the process adopted by the lexicographer to make the dictionary more authentic and scientific, he gives an indication in the ‘Preface’ or ‘Introduction’ of the dictionary. The user understands and uses the method of viewing the dictionary, taking cues from the ‘Preface’. The dictionary is used by a person who has primarily knowledge of the elementary words of a particular language. The meanings of those words (in the form of synonyms) are given in the dictionaries. To use the dictionary, we must have knowledge of at least the elementary words of one language. On the basis of this knowledge, we can learn a set of words in another language with the help of a dictionary. On the one hand, we use the dictionary to know the meaning of the words of our language, on the other hand, we can also use it to know the words of other languages.

3.3 Role and Importance of Sign-System in Using Dictionary

Dictionaries are not limited to words and meanings only. In addition to the word and meaning in the dictionary, many other relevant information is also there. The lexicographer wants to make all this information available to the readers. But, at the same time he has to take care of the size of the dictionary. The dictionary uses notation system and abbreviations to enable the reader to get maximum information related to a particular word in minimum space and at one place. This will help to reduce the size of the dictionary. For proper use of the dictionary, it is necessary that the dictionary user should understand the notation system of the dictionary. At the beginning of the dictionary, some codes and sign/symbol tables are given, in which short signs-symbols are specified for different information.

By knowing the signs-symbols used in the dictionaries, it becomes very easy to know the meaning of a particular word in detail. We can get many information related to a particular word from the dictionary. Now it must have been understood that how important signs-symbols etc. are in the dictionary and how important it is to know them in order to understand the meaning of the words. At the beginning of all dictionaries, a table of signs used in the dictionaries is given. One abbreviations-symbol table of ‘Oxford Advanced Learner’s Dictionary’ is being given as an example so that you can get the information about the abbreviations and symbols properly :

Abbreviations used in the dictionary

<i>Abbr.</i>	abbreviation	<i>AustralE</i>	Australian English
<i>Adj.</i>	adjective	<i>BrE</i>	British English
<i>Adv.</i>	adverb	<i>CanE</i>	Canadian English
<i>C</i>	countable noun	<i>E AfrE</i>	East African English
<i>conj.</i>	conjunction	<i>Inde</i>	Indian English
<i>det.</i>	determiner	<i>IrishE</i>	Irish English

<i>I</i>	intransitive verb	<i>NAme</i>	North American English
<i>n.</i>	noun	<i>NEngE</i>	English from Northern England
<i>pl.</i>	plural	<i>NZE</i>	New Zealand English
<i>PP</i>	past participle	<i>SAfrE</i>	South African English
<i>prep.</i>	preposition	<i>ScotE</i>	Scottish English
<i>pron.</i>	pronoun	<i>SEAsianE</i>	South-East Asian English
<i>pt</i>	past tense	<i>US</i>	English from the United States
<i>sb</i>	somebody	<i>WAfrE</i>	West African English
<i>sing.</i>	singular	<i>WelshE</i>	Welsh English
<i>sth</i>	something		
<i>symb.</i>	symbol		
<i>T</i>	transitive verb		
<i>U</i>	uncountable noun		
<i>v.</i>	verb		

Symbols used in the dictionary

~	replaces the headword of an entry	Opp	shows an opposite
▪	shows new part of speech in an entry	SYN	shows a synonym
►	derivative(s) section of an entry	IDM	idiom(s) section of an entry
●	in headword (af.fect), shows where a word can be broken	PHR V	phrasal verb(s) section of an entry
↔	in phrasal verbs, shows that the object may come either before or after the particle	AW	shows word is from the Academic Word List

English dictionaries will also provide pronunciation cues for words, so that the word can be known at both the phonetic and script levels. In the alphabet of Hindi language, the place of pronunciation of each letter is fixed and the character for each sound is fixed, while it is not so in English language. There are several letters for the same sound and also one letter is used for multiple sounds. You can understand in this way, f (father), ph (phone), gh (rough) sound same in English. Similarly 'ch' used for two sounds, e.g. 'church' and 'chemistry'.

Emphasis also has special importance in English pronunciation. Words with the same spelling also start giving different meanings or meanings due to the difference in emphasis. For example, we can look at the word 'present'. If the stress accentuation is given on first letter (pres-ent) then it will be a noun and it will mean 'gift', but if the second letter (pre-sent) is emphasis then this word will become 'verb' then it will mean 'to present'.

There are many such words in English, whose spelling is different but the pronunciation remains the same e.g. 'birth – berth', 'peace – piece' 'see – sea'. That's why accent marks have special significance.

3.4 Categories of Signs used in the Dictionaries

It has been explained how important the notation system is for the dictionary and how necessary it is to know the notation system to look up the dictionary. We should also keep in

mind that the general notation system is almost the same in all dictionaries, but there are some special symbols which the lexicographer uses according to his convenience. Therefore, it is not necessary that the notation system of all dictionaries is the same. In fact, the lexicographer is free to use these signs, but whatever sign system he adopts, he must give information about it at the beginning of the dictionary. Hence the symbol list of each dictionary is different. Before using any dictionary, the dictionary user must know about its index list.

To understand the symbols of different dictionaries, it should be known that there are many types of symbols. To what contexts are these symbols connected? The symbols used in dictionaries can be broadly classified into three categories - (1) symbols based on printing devices, (2) symbols based on abbreviations; and (3) special symbols. Let us now learn about each of these.

3.4.1 Signs based on Printing Devices

Dictionaries include notation based on typographic/printing devices. Mostly three types of typographic style are seen in the English dictionaries - bold letters (black, thick letters), italics letters; and capital letters (capital letters). The lexicographer uses them for a definite purpose. Usually the original entry is given in black, bold type and the pronunciation is given in italics. For example, 'The Compact Oxford Reference Dictionary' both the original entry and the sub-entry in bold letters while DERIVATIVES and ORIGIN are in capital letters and grammatical information is given in brackets. In this context, see the following entry of the 'The Compact Oxford Reference Dictionary' :

him . **pron** . (third person sing.) used as the object of a verb or preposition to refer to a male person or animal previously mentioned.
- ORIGIN OLD ENGLISH.

It may be noted that the original entry here is 'him' in bold letter. Part of speech 'pron' is also in bold letter while grammatical information (third person sing) is given in brackets. The original source of the word i.e. ORIGIN is in capital letter.

3.4.2 Signs based on Abbreviations

An 'abbreviation' is a shortened form of a single whole word or a group of words or phrase. While writing, it is used to save space and time. It is used for avoiding repetition of long word/s.

It is not possible for the lexicographer to give complete information about the entry in detail. The lexicographer wants to convey maximum information related to the entry to the reader and also wants to avoid detail. The lexicographer uses abbreviations for this and also gives a table of abbreviations in the 'Introduction' or 'Preface' of the dictionary. You will find that most of the English dictionaries use the same abbreviations such as 'e.g.'(example), 'n' (noun), adj. (adjective), pl. (plural), sing. (singular), Zool. (Zoology), Hist. (History) etc.

3.4.3 Special Signs

In dictionaries, symbols are sometimes used in place of abbreviations so that the lexicographer can give more information in a very concise manner. Normal bracket () or angle bracket (< >), dash (-), asterisk (*), bracket [], { } etc. are similar symbols, which are

used by the lexicographer according to their convenience. Father Kamil Bulke has given ‘*’ with feminine words in the English-Hindi dictionary and the ‘>’ symbol is placed before the pronunciation of letters. The ‘~’ symbol indicates the first word of a paragraph.

You can understand this with the help of following example-

Callaghan /kal-luh-han/, (Leonard) James, Baron Callaghan of Cardiff (b.1912), British Labor statesman, Prime minister 1976-9.	E
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You may have noticed that it is in box. In fact, encyclopedic entries are boxed in the Oxford Reference Dictionary and denoted by this symbol. For alternative uses, ‘/ /’ symbol is kept in most of the dictionaries.

Thus we have seen how useful symbols are in dictionaries. They are used by the lexicographer to provide maximum information using minimum space. Mostly the same symbols are used in the dictionaries, but there are also some special symbols, which are used by the lexicographers. At the beginning of each dictionary, there is a list of these. After understanding them, the reader has the convenience of viewing the dictionary proper with complete information.

3.5 Method of Using Dictionary

From what you have studied so far in this unit, you should let it be clear that many types of information are available in dictionaries like root words, spellings, etymology, word-sources, equivalents, grammatical forms, different meanings/shades of meaning, synonyms, antonyms, idioms and proverbs related to them. You can get all these information only when you know the method or technique of using the dictionary.

To find any word in the dictionary, one must first know its exact location, so that one does not have to spend extra time in vain in finding it. Normally, dictionaries of each language are arranged alphabetically and prepared. Therefore, to see the dictionary of any language, it is necessary to have knowledge of the alphabet of that particular language. We will discuss here the method of viewing English dictionaries. First we look at the alphabetical order.

3.5.1 Alphabetical Order

Here we are discussing the method or technique of dictionary use in the context of alphabetical order of English language. We know that to see the dictionary of any language, it is necessary to have knowledge of the alphabet of that particular language. So let us discuss the alphabetical arrangement of the English dictionary.

As you know that English language is written in Roman script, while Hindi is a language written in Devanagari script. Roman is a vowel-based script and Hindi is consonant-based. There is a difference in the number of alphabets of both and their combination in spelling is also different. Vowels in the Hindi alphabet is written independently and also in the form of Hindi word ‘*matra*’ i.e. degree. Degrees can also come on the left or right side of the

consonant letter. Similarly, they are also above or below the consonant letter. In addition, they can also occur in the middle of a consonant. While there are no degree in English. Apart from this, there is also a basis for the difference between the two that in the Hindi alphabet, vowels come first and then consonants. While vowels are transcribed independently in English, they are combined with consonants, not separately.

In comparison to Hindi dictionaries, the maintenance of order of letters of English language in English dictionaries is relatively simple. Entries in the dictionary start from the first letter 'a' and go till the last letter 'z'. The letters of first, second, third place and so on respectively are also taken according to alphabetical order. To understand the alphabetical arrangement of words in a dictionary, let us take an example. Please look at the following words beginning with 'a' in the Compact Oxford Reference Dictionary :

- | | |
|------------------|--------------|
| 1. aardvark | 18. abdomen |
| 2. aaron | 19. abduct |
| 3. back | 20. abel |
| 4. abacus | 21. abelard |
| 5. abandon | 22. abhor |
| 6. abandoned | 23. obey |
| 7. base | 24. object |
| 8. abashed | 25. ablaze |
| 9. abate | 26. abnormal |
| 10. abattoir | 27. aboard |
| 11. abbas | 28. abrade |
| 12. abbess | 29. abridge |
| 13. abbey | 30. absent |
| 14. abbot | 31. abuse |
| 15. abbreviate | 32. abyss |
| 16. abbreviation | 33. acacia |
| 17. abdicate | 34. accede |

If you closely look the above words, let it be first the words of 'aa' (serial number 1 and 2, i.e. 'aardvark', 'aaron') were taken then the words start with 'ab'.

Starting with same letter 'aa' followed by next two letters starting with 'ab' has been taken. There are total 14 words under this (serial number 3 to 16). Therefore, in order to arrange them alphabetically, the order of the third and fourth letters in words starting with 'ab' was also taken into account, like, 'aba', 'abb', 'abc', 'abd', 'abe' etc. On this basis you must have also noticed that 'aba' has eight words 'aback', 'abacus', 'abandon', 'abandoned', 'abase', 'abashed', 'abate', 'abattoir'.

After this the alphabetical order of the fourth place is seen – 'abac'. There are two words made from these – 'aback', 'abacus'.

The alphabetical order of the fifth place, the letter 'k' comes before 'u' in English so the word 'aback' is placed first, than 'abacus'.

In this way, you have seen that in the dictionary, not only the alphabetical order of the first and second place is taken care of, but the alphabetical order is also seen till the third, fourth, fifth, sixth and so on place. The last letter of 'ab' is 'abyss' which includes all the letters till 'y' in the third position. After that words starting with 'ac' were taken. Thus this alphabet is maintained throughout the dictionary.

After knowing about alphabet of English and how to arrange them in dictionary, let us do some exercise. This will help you to arrange the words alphabetically in English.

Exercise-1

Arrange the following English words in alphabetical order from the point of view of the dictionary:

1. copy, copt, cooler, copper, cord, cotton, coolant, cough, co-operative, co-osmic.
.....
.....
2. reparable, repatriate, repair, replication, repatriation, reparative, repetition, reorganization, repatee, repairable.
.....
.....
3. notifiable, notoriety, nourish, notarial, notorious, notification, nought, notability, notional, notation.
.....
.....
4. scald, scallop, scalariform, scallion, scallywag, scalawag, scalpriform, scalable, scalence, scaled.
.....
.....

Now we will consider the grammatical category in dictionaries.

3.5.2 Grammatical category

Just as making of dictionary is an art, in the same way reaching the desired word in the dictionary and finding its contextual meaning is also no less than an art. Etymology, grammatical category and connotations and usages of each word are available in the dictionary. Correct use cannot be done by the dictionary user without getting general knowledge about them. The meaning of any word is determined by its grammatical category (noun, adjective, verb etc.) in the given context.

During translation, it should be completely clear in front of translator that what is the grammatical category and nature of a word, what is its source, otherwise translator may make many mistakes while translating the text. You can understand this more clearly from the following three sentences in English :

1. There is a stone lying on the road.
2. The student will stone the teacher.
3. He is a stone deaf.

The word 'stone' is used in all the above-mentioned three sentences. In the first sentence, the word 'stone' is a noun, which means 'stone'. The word 'stone' in the second sentence is a verb that is related to the verb 'to kill', in the third sentence the word 'stone' is an adjective, which means 'absolutely' (completely).

In this way, you have seen that the words with consonant and syncretism denote different meanings due to grammatical difference. Therefore, it is very important to know the grammatical category while translating the text. Each word in the dictionary is accompanied by its grammatical category and its source. If you understand these signs while looking at the dictionary and take the desired meaning from the different meanings of the word, then the chances of mistakes while translating the text will be reduced. While translating the text, the translator must pay attention to the grammatical category of the word to be translated.

3.5.3 Contextual perspective and other details

There are many such words in every language, which we generally accept as synonyms. But on the ground of use, despite slight differences in the meanings, specific connotations remain attached to them. Only the knowledge of these practical subtle differences can make the translator successful in choosing the appropriate words. Whether the dictionary is monolingual or bilingual, you see that many options are available for a word. While translating the text, you are faced with a dilemma as to which word to choose from so many options. While using the dictionary, it should not be expected that the meaning of the particular word will be directly found and it will be used in translation. This expectation is justified, because other alternatives of words are also given in the dictionary. In such a situation, all the meanings and usages of a particular word have to be looked at carefully and a decision has to be taken as to which meaning and its opposite word would be appropriate in the present context. The basic reason for this is that on the basis of the subject in the dictionary or the use-context, different meanings of the same word are given.

Along with the information of usage-contexts in dictionaries, other words related to the entered word, their subject area, idioms-proverbs etc. associated with that particular word should be included. Apart from this, many dictionaries also contain other information related to various subjects. For examples, in 16 appendices in the Compact Oxford Reference Dictionary, the names of the countries of the world, their capitals, their currency, abbreviations, different states of America, list of Prime Ministers and Presidents of different countries of the world, list of kings and queens of England, alphabet used for the deaf and dumb, list of symbols, scales of weights and measures, list of symbols used in mathematics, metric system, list of chemical elements, music, geography, astrology etc. - a list of related special marks is given. You can take advantage of these when translating.

Similarly Chamber's Twentieth Century Dictionary also, at the end of the dictionary special signs related to music and abbreviations, a list of mathematical symbols with meaning, a list of pronunciations of names used in European ancient texts and the Bible, a list of English Christian names with pronunciation and meaning, references and lists of formal addresses is given. Lists of some American pronunciations and spellings, lists of the Greek and Russian alphabets, and metric systems are also given in this dictionary. These can come in handy

when translating in a variety of contexts. Definition dictionary, Hindi literature dictionary, Linguistics dictionary etc. are subject-based dictionaries. The subject-dictionary gives information about the technical terminologies related to the subject and its various uses, so that the reader can be well-versed in the subject, can bring growth in the field of knowledge by propagating it properly.

Now you must have understood that there is not only the meaning of words in the dictionary, but many other information is also available. You must know how to look up a dictionary to make full use of them.

3.6 Searching word in a dictionary

Most of the dictionaries are alphabetical order, so before looking at the dictionary of any language, it is necessary to have knowledge of the alphabet of that language. This makes it easy to find words. Before looking up a word in the dictionary, one should look at the top of the page of the dictionary. When you open the dictionary, you will see that the first word of that page will be written on the left side of the left page and the last word of that page will be written on the right side of the left page. Similarly, on the header of the right page, the first word of the page on the right side and the last word of the page on the left side will be written, which makes it easy to find the word. Even time is not wasted in vain. You don't even have to look at each and every word.

Some dictionaries give the first and last entry together in the left hand corner of the left page and in the right hand corner of the right page e.g. Compact Oxford Reference Dictionary in both the entries is given together. See page 180 and 181 for examples. It has 'coolant/copper' written on the header in the left hand corner of the left page. Similarly, on the top right corner of the right page, 'coolant/copper' is written. This means that the words starting from 'Coolant to Copper' are on the left page. The words from 'Copper to Corgi' are on the right page. Thus it becomes easy to find the words. If we want to find the word 'Cord', it will be found on the right page. The word 'Cord' comes between 'Copper' and 'Corgi'. And, if we want to find the word 'Cost' then we have to look on the next pages as this page has words till 'cor' only. So instead of looking word by word, we can find the desired word quickly just by looking at the top of the page. In this way, before viewing the dictionary, it is necessary to know the technique of viewing it.

3.7 Let Us Sum Up

After studying this unit you should let it be clear that the method or technique of dictionary use is a component related to the dictionary concept. By knowing the method of using the dictionary, the desired information from the dictionary becomes easy. In order to find the desired word or entry in a minimum time, it is necessary to have knowledge of the alphabetical order of a particular language. Apart from this, information about the introduction/preface, abbreviations, symbols and formats given at the beginning of the dictionary is also required. With this, the meaning and interpretation of the entry can be understood in less time and in totality. The methods or techniques related to the standard pronunciation of noun words etc. are also known from some dictionaries. The transliteration

of a particular word or entry and its pronunciation in a particular language are also clear from the opening statements of the dictionary.

Through dictionaries, the scholar or the user is given alphabetical order of language (entry order), words (new, old, input, foreign etc.), dialect, spelling, etymology, word-source, root word, antonym, idiom-proverb, equivalent term, pronunciation, quotation etc. There is a lot of information related to gnosis, subject, standard/non-standard usage, writing method, history, language-literature and domain knowledge. Before using the dictionary, translator or scholar can take more help from the dictionary if he understands the nature of the dictionary, the instructions for viewing the dictionary in the introduction/preface and the notation system.

3.8 Exercises

1. What do you understand by the method of using dictionary? Explain the difference between process and method in the context of dictionary-use.
2. What is meant by sign system in the dictionary? What is their role in dictionaries?
3. What are the categories of symbols used in dictionaries?
4. What is meant by alphabetical order in the context of dictionary?
5. To the dictionary-user, why it is important to take care of the subject context?

Answers to the Exercises

Exercise- 1

1.	coolant copy	cooler cord	co-operative cosmic	copper cotton	copt cough
2.	reorganization repartee	repair repatriate	repairable repatriation	reparable repetition	reparative replication
3.	notability notional	notarial notoriety	notation notoriety	notifiable noughties	notification nourish
4.	scalable scalene	scalpriform scallion	scalawag scallop	scald scallywag	scaled scalariform

3.9 Suggested Readings

- Tiwari, B.N. Kosh Vigyan, Shabdakar, Delhi.
- 'Anuvad' (research journal), Dictionary Special Issue, Bhartiya Anuvad Parishad, New Delhi January-June 1998 issue.
- Bulke, Father Kamil. English-Hindi Dictionary. New Delhi, Amarkosh, Asian Educational.
- The Compact Oxford Reference Dictionary
- Chamber's Twentieth Century Dictionary

UNIT 4 PROCESS OF DICTIONARY-MAKING

Structure

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Dictionary Making : Need and Significance
- 4.3 Process of Dictionary Making : Different Stages
 - 4.3.1 Material Collection and Selection of Entries
 - 4.3.2 Process of Editing of Entries
 - 4.3.3 Determination and Interpretation of Meanings in Editing Process
 - 4.3.4 Press Copy Making and Printing
- 4.4 Role of Computer in the Process of Dictionary-Making
 - 4.4.1 Material Collection and Selection of Words
 - 4.4.2 Selection of Entries
 - 4.4.3 Editing-Modifications of Entries
 - 4.4.4 Indexing
 - 4.4.5 Concordance
 - 4.4.6 Press Copy-Making and Printing (DTP)
- 4.5 Let us Sum Up
- 4.7 Exercises
- 4.6 Suggested Readings

4.0 Objective

After reading this unit, you should be able to :

- explain the need for dictionary-making;
- know the various stages/steps in the process of dictionary-making;
- acquainted with the methods used to determine meaning in this process; and
- understand the role and uses of computer in dictionary-making.

4.1 Introduction

After going through the previous units of this course, it must be clear to you that what is the meaning and nature of lexicography and lexicology. You have also become aware of the different types of dictionaries. Along with this, you have also become familiar with the dictionary usage technique. After studying these topics related to dictionaries, there will be a natural curiosity in your mind that how dictionary are formed? What are the steps/stages in the process of dictionary-making? What is the role of computer in its making in the modern era? etc.

Dictionary making is a complex and difficult process. This process passes through various stages. Therefore, in the present unit we shall acquaint you with the various steps in the process of dictionary making. Underlining the need and importance of dictionary making, you will find it interesting to know the various steps or stages related to the process of

dictionary making. In today's era, the dependence of human life on computer has become completely. Its use can be seen in every field of life. The field of dictionary making is also not untouched by this. In this unit you will also be made aware of the important role of computer in dictionary making. After reading this, it will become clear to you that how the computer makes this complex and difficult task simple.

But before that it is also necessary to know that what is the need of dictionary making? And what is its relevance in the context of translation studies? When we think about it, we find that dictionary making and translation are actually concomitant activities. The need for dictionaries is indispensable for both language-studies and translation. The dictionary is useful in the study of various subjects. Dictionaries are important tools and equipment in translation. The work of dictionary making is related to the development of language and society. In advanced languages and societies, dictionary making work exists in a more developed form. There is a special combination of dictionary making in linguistic maturity, splendor and prosperity. Keeping this in mind, let us first consider the need for dictionary making.

4.2 Dictionary Making : Need and Significance

Dictionary establishes the importance of words in human life. Complete and detailed knowledge of the word, where it provides mastery in word-use skills, at the same time it gives a detailed explanation of the subject and knowledge. Along with the power of expression, the use of words makes human life cultured and civilized. The dictionary is such a tool that not only provides complete knowledge of words to a human being, but also makes the human brain intellectually developed from the point of view of language-experiment from the acquisition of knowledge.

Dictionary making work is the coordination-place of intellectuality, knowledge and introduction. In its scope, on the one hand, the process of organizing and serializing the linguistic forms established in the social system by intellectual labour and knowledge is included, and on the other hand, the growth of knowledge by the explanation of a particular word, its origin, meaning and usage is included. In this way, dictionary is the controller of both knowledge and system. Basically systematic ordering, scientific observance, independent semantic interpretation, structural expression etc. various aspects of the dictionary play an important role in the contemporary relevance of the dictionary.

Dictionaries are the main sources of information on the proper use of grammatical units of the language, standard spelling, standard pronunciation. By this the person would have gained linguistic proficiency. That's why it is said that dictionaries is a very helpful tool in linguistic proficiency.

The diversity of knowledge has given rise to the diversity of subjects and disciplines. Dictionaries have a special role in maintaining this diversity. The accumulation of basic information related to various subjects has been possible through dictionaries. On the basis of this prevalence, various forms of dictionaries are found. From the point of view of language difference, there are different types of dictionaries like monolingual dictionary, bilingual dictionary, multilingual dictionary, subject-related dictionary etc. You have studied about

these types of dictionaries in detail in the previous unit. Here we want to tell that different types of dictionaries have their own utility and significance. It has already been made clear to you that the monolingual dictionary gives detailed information about the lexical structure, grammar, spelling, pronunciation, idioms, proverbs etc. of the language. Similarly, bilingual dictionaries give birth to the nature of coordination by giving information about word selection, language, literature, culture, social system etc. and also make direct and indirect efforts to remove the fragmentation prevalent in the society through translation work. Dictionaries give information about the terminologies related to the subject and its proper usage. Today the advancement of science and technology has given us new dimensions of development. The dictionary makes available new words and concepts within its limits. The need and usefulness of dictionaries in the acquisition of technical and technology-based vocabulary is not hidden from us.

This is the specialty of the advanced and rich languages of the world that clear, systematic, limited and scientific method has been adopted in the interpretation and representation of each word in their dictionary. They are advanced from the point of view of the meaning and use of their words. Keeping in mind the need and importance of dictionaries, it can be said that dictionaries are a strong medium of formation and preservation of culture.

4.3 Process of Dictionary Making : Different Stages

The process of making a dictionary is a very complex, arduous and long process. In earlier times, by not understanding the need of intellectual-ability, training and principles for this work, it was considered only as a hard work. But with the passage of time, there was a change in the perception towards dictionary making work, as a result of which dictionary making was seen as a fundamental creative work. It was not just a compilation of words and their meanings, it was considered a book based on the knowledge and experience of the lexicographer in terms of the word, its various prevalent meanings, grammatical changes, meaning images, word usage, synonyms, antonyms etc. In such a situation, the dictionary was seen from the point of view of linguistic-use efficiency based on the overall linguisticity of the word of the lexicographer. In this way, the dictionary became synonymous with the lexicographer's keen eye on any linguistic vocabulary.

Dictionary making is not an easy task. Simplifying it would be under-estimating the process of dictionary making. But some scholars take it as a simple task. That's why they say that any good dictionary can be prepared by raising two or four dictionaries. Even though it can be called a beneficial effort from the point of view of commercial benefit, it is not possible that it has any contribution in the richness of the language. In this matter, the views of Dr. K.C. Bhatia and Mr. Yugeshwar, expressed in 'Preface-B' of the book titled '*Kosh Vigyan : Siddhant Aur Prayog*' (Lexicography : Theory and Usage), seem to be meaningful that 'Dictionary work is very easy. By taking words, meaning, grammar etc. from different dictionaries and establishing them in one dictionary, it can be given the name of dictionary. They also give. Apart from the *Hindi Shabd Sagar*, almost all the dictionaries made in Hindi are like this. This simple method cannot lead to the richness of the language. 'Only business can be profitable.' It is true that it may be easy to make a dictionary out of a dictionary, but this process can not be considered appropriate at all.

The process of producing an original dictionary demands the same knowledge, training, and comprehension skills as scientific work. Because in dictionary making process, both the art and science are involved. In the process of dictionary-making, from the initial planning draft to the publication of the dictionary, it is a long process demanding labour, time and intellectual ability. The special thing is that there is no limit to them. Here for your information, want to tell that you will be surprised to know that it took about forty years to prepare the Oxford Dictionary. Similarly, the formation of various important dictionaries may take even longer.

Lexicographic work is a challenging task because it is the responsibility of the lexicographer to present the simple and accurate meaning, form and usage of words, which the reader can easily understand without any effort. Dictionary-making is a very careful task. In this context, famous western scholar M.M. Mathews has written in 'A Survey of English Dictionary' that 'The editing of a dictionary is a work that demands the best care of a capable scholar, but collecting material in slip form can be done by anyone with sufficient leisure. Word hunting is an interesting pastime and the interest which it possesses has led hundreds of voluntary readers to supply hundreds and thousands of slips to the editors'. (p.85)

Recognizing the importance of dictionaries, scholars perform this challenging task according to their ability and capacity. To meet this challenge, it is necessary that the dictionary making work should be divided into stages or phases in a planned manner. Here we will try to understand the whole process by mentioning the main steps in the process of dictionary making.

The process of making a dictionary can be divided mainly into the following steps - (i) material collection and selection of entries, (ii) process of editing of entries, (iii) editing process related to determination and interpretation of meaning; and (iv) press copy making and printing.

4.3.1 Material Collection and Selection of Entries

Material collection and selection of entries are important tasks in the process of lexicography. Selection of entries can be said to be a part of material compilation. To prepare any good dictionary, the work related to the collection of material is expected to be done relatively more seriously.

In the material collection process, **the purpose and form of the proposed dictionary** is first considered. In this context, the framework and policy are determined regarding the proposed base material. What will be the type of dictionary? In the dictionary-making, the purpose of the lexicographer in the creation of dictionary, the pre-determination of the user of the dictionary and the role of the dictionary method of the are important. The dictionary will be monolingual, bilingual dictionary or multilingual dictionary is to be created. From this point of view, policy decisions have to be taken.

When the lexicographer takes such policy decisions, he is required to consider what is the level of the users. The policy has to be adopted after consideration and decision at their level. Along with determining the form and type as well as the size of the dictionary, work related to material collection will have to be done.

After deciding on the base material, the sources of the material to be given in the dictionary has to be considered. There is no single source of material. Can't even be. Under the source, written or oral, published or unpublished, literary or non-literary, contemporary or long-standing, papers, magazines, technical or non-technical language-material has to be defined.

After making a policy regarding the base material of the proposed dictionary, the process of material collection is given a practical form according to the dictionary outline. This material can be compiled in the form of written language or spoken language, such as the published or unpublished material of its available literature has to be compiled to make a dictionary of ancient times or ancient language of a language. Material is compiled from the oldest texts to the modern available books for the historical dictionary. The material for the dictionary should be taken from the best available version of the published material. In the absence of good versions, material should be compiled by editing it according to the principles of textual criticism. This reduces the chances of errors. While compiling material from spoken language, the area should first be determined keeping in view the difference between language and dialect in terms of grammar, form composition or word group. After this, material compilation and information can be collected by asking questions from the indicators, keeping in mind the culture, civilization, environment, business, living conditions etc. from the class-indicator (low, medium, high).

Indexing : After compiling the material from written and spoken language, its word order has to be made. That is, a list has to be made alphabetically of all the words used in a book, litterateur, period, stream or literature. In order to avoid the confusion caused by the heterogeneity in the printed text, language-specific writing method and press related errors, before making the index, the source text should be read thoroughly and necessary amendments should be made in it. The general rule regarding indexing is that the smallest unit (word, form, prefix, suffix etc.) of the language or literature to be indexed should be given.

Traditionally, the card method has been used to index words. Now the help of computer is being taken in this work. Indexing by computer will be discussed in detail in Section 4.4.4 of this unit.

As far as the use of the card method is concerned, for this paper cards are made and each word, prefix, preposition etc. is written or typed symbolically on each card. The size of this paper card depends on the amount of information. Along with writing or typing words, prefixes, etc. on the cards, reference has to be given to the material written on it. After this process is completed, when the card reference of the entire material is also to be given.

After this process is completed, when the cards of the entire content are ready, they are to be sorted alphabetically. By sorting words etc. alphabetically, the frequency of a particular word is known, because all the cards of the number of times any word has appeared in this sequence of cards will be collected in one place. In this way, writing the meaning of each word separately with its contexts will create a dictionary. The same method can also be adopted while preparing a word index (with reference) of the material collected from spoken language. By this process all lexicographical entries related to written or spoken language can be compiled with meaning and their context.

Two types of dictionary entry have been considered. These can be called the 'lemma' (top) and the description part. The first of these i.e. top, is associated with the form of lexical unit. This includes a description of the characteristics of the entry. This description includes heading words, pronunciation and grammatical information. Second part describes the entry. It covers the meaning of the entry and related details. It is also called the interpretation part.

Composition of entry : The stage of composition of entry is important in the process of dictionary making. Entry refers to the linguistic unit that is kept in the dictionary and for which information the dictionary is used. Earlier only free morpheme and other linguistic units like words, idioms etc. were given in the dictionary, but later bound morpheme were also kept.

Mainly words with common root, compound, general meaning (brother-sister etc.) and specific meaning for dictionary making; some specific meaning of the phrase; some usages; antonyms, synonyms, antagonistic antonyms, repetitions; many forms of words in the language; words carrying a specific meaning in certain contexts; each root with its combined root form, specific form; frequency specific usage; out of the code-mixture prevalent in many languages, adopted words in that language (coat, radio etc. in the context of Hindi); prefix; suffixes; context; settlement; idioms; proverbs; specific use etc. entries should be given.

After entry-selection, not all entries selected in the dictionary can be kept as main entries. Some points have to be kept in mind in this regard. There is only one entry in the dictionary for a word with multiple meanings, which often has the same etymology in all the meanings of the word with multiple meanings. Also relatedness in meanings but one meaning is the central meaning. A similar word should not have one entry in the dictionary considering it as a polysemantic word. In this case, the words are given as separate entries in the dictionary and given above one, two, three etc.

4.3.2 Process of Editing of Entries

On the basis of the basic policy decision for dictionary making, the process of entry editing starts after compiling the material and making its index and entry-selection. This process is also not simple in itself, because it also has many dimensions. Under this process, the aspects of alphabetical arrangements, language source, spelling, pronunciation, grammar, etymology etc. are taken.

Alphabetical Arrangements :

The alphabetical arrangements of entries in the process of dictionary making requires a rule, in the absence of which arrangement-order problems may arise. In Roman script, the alphabets are numbered from A to Z. In Hindi, alphabetical order of devanagari script is adopted.

Language-Source

After the entry of the word, the name of the language from which the word is derived, such as Sanskrit, Arabic, Persian or English, is indicated. Hindi's own words can be called *Tadbhava* and *Deshaj* (Indigenous) words. Often it is not considered necessary to show their source in Hindi dictionaries. For this symbolic vocabulary is used like- 'San.' For Sanskrit etc. By doing this, there is ease and confusion can be avoided. One advantage of knowing the source

of the language is that we can better understand the nature of the words derived from a word and remain cautious about word formation.

Spelling

‘Spelling’ is the foundation of the dictionary. Spelling accuracy is an important and essential part of the dictionary. The understanding and use of the correct spelling form of the word depends on the dictionary. Entities with one spelling will be kept in the dictionary as one entry but where more than one spelling of a word is prevalent, which is formed due to multiplicity and regional difference of usage of that word, then the standard word spelling can be given. It also depends on the policy decision taken by the lexicographer that different spellings of the particular word should be included as independent entries, but the meaning should be given along with the prescribed meaning i.e. standard word.

Similar words adopted from English but adapted in Hindi are also worth considering! For example, *technik*-technique etc. As a solution to this, it may be said that this type of adopted and adapted, ie, both forms should be taken and if there is exactly the same meaning, indicating the first in the second, it should be given its meaning with the word of multiple use.

Pronunciation

The pronunciation is given after the top word in the dictionary. Knowledge of pronunciation is essential for word-use, conservation and uniformity. Pronunciation is the basic form of language learning which gives separate existence to the word. The lexicographer shows the standard pronunciation of a particular word in his dictionary by verifying it from various sources. In the words of a language, proper pronunciation of vowels, division of syllables, stress etc. is given under pronunciation. If pronunciation is different from spelling in a language, then there stress, apostrophes play an important role. In relation to the English language, there is a special indications in the pronunciation of stress and omission of letters. As in /Pres-ent / and /Pre-sent), the basis of difference between noun and verb is stress.

In general dictionary, only a prevalent standard pronunciation is given, but in ‘Dictionary of Pronunciation’, regional and social level pronunciation etc. are also marked. Special marks used for pronunciation are given at the beginning of the dictionary, so that proper pronunciation can be known. In pronunciation, letter division is often shown by connecting signs and stress by a vertical or small oblique line before the letter. In a dictionary it is marked in deep black colour. Grammar hints and semantic hints are also given for proper pronunciation in words based on probability. There is a special inclusion of accent marks in linguistic perfection and dictionary utility.

Grammar

Grammar has an essential role in regulating and organizing the language. From this point of view, showing grammatical differences in the dictionary for word-use is an important part of the process of dictionary making. By using the dictionary, students also get grammatical information regarding a particular word. Grammatical hints should accompany the entries in the dictionaries.

‘Abbreviations’ are used to indicate grammatical differences and for those only well-known word-abbreviations used in general form are taken. For ‘n.’ denotes ‘noun’ in these major word-distinctions in English, ‘a’ for adjective,, ‘v’ for verb (v.). Similarly, abbreviations are used for adverb (adv.), preposition (prep.) etc. Somewhere instead of ‘n.’ for noun, abbreviations ‘m.’ and ‘f.’ are kept, which gives the sense of masculine gender or feminine gender of the word ‘noun’. In Roman script, abbreviations are often given in italic face and grammatical abbreviations are also followed by fullstops (.) for the purpose of clarity.

Similarly, in Hindi dictionaries, abbreviations etc. are given along with entries to show grammatical differences. In fact, it is necessary to mention the grammatical subtleties of the language in the dictionary, so that the user gets enough information related to word-use at one place. In this way, grammatical signs are very helpful for the user in complete grammatical knowledge of the word and its proper use.

Etymology:

It means - explanation of meaning by analysis. In etymology, giving the exact form of the root word, its original meaning, the full introduction of the word is given. While giving etymology in the dictionary, it is necessary for the lexicographer to take special care of somethings, such as the information about the basic components of a language should not be given directly in the original language, but the intermediate languages should also be mentioned. Similarly, if the meaning of a particular word has evolved, then it can be indicated by the lexicographer by giving meaning in parentheses along with each step of development. Illustrative words should also be indicated. The task of determining the etymology of Hindi words is very complex, arduous and serious, which requires intense investigation and hard work.

4.3.3 Determination and Interpretation of Meanings in Editing Process

The semantic editing process begins after the selection of entry in the dictionary is edited. While various methods are used in the editing process, the use of pictures and diagrams, quotations and mention of time as well as the use of abbreviations and symbols play special role in this process. Let us now consider these in some detail.

Methods related to Determination and Interpretation of Meaning :

The basic premise of the dictionary concept is words and meanings. If word is body then meaning can be called its soul. The primary purpose of a dictionary is to give the authentic meaning of a word in context. To solve the difficulty of grasping the meaning, the dictionary is developed. The soul of the language means to make sense of the meaning, to determine the meaning, to give knowledge of meaning-difference - the main goal of the dictionary and lexicographers. In bilingual dictionaries, the translator gets help in translation work only on the strength of equivalent meanings of both the languages. In case of more than one connotation of the word, the dictionary plays the role of an important tool in translation in the selection of the appropriate word under the variety of contextual usage. For this reason, interpretation work related to semantic is most important in the process of making dictionary, because usually the user uses the dictionary only to know the meaning.

The importance of meaning in expression is universally accepted. The basic goal of the dictionary is considered to be realization of meaning. Through the dictionary, apart from the known meanings of the known words, the user also gets information about the subtle and deep meanings of the context. In this form, the usefulness of the dictionary in semantic analysis and interpretation is unquestionable. According to the word-power, three meanings of the word have been accepted - denotative meaning, connotative meaning; and sarcasm. Apart from this, social meaning of the word in social context, grammatical meaning on the basis of grammar, stylistic meaning on the basis of style, regional meaning on the basis of regionality etc. can be considered. From this point of view, the interpretation of the meaning of the word is an extremely complex, painstaking and challenging task for the lexicographer.

To clarify the meaning of a word, it is necessary to compare it with other words related to its meaning. Alongwith this, the meaning should be clarified by the use of words from parable sentences and references because the study of the word is possible only from the grammatical structure and the knowledge of its true meaning is possible only through comparison, reference and illustration. Similarly, knowledge of the proper meaning of a word is also possible with synonyms, antonyms or related words. Therefore, an effective dictionary can contribute to linguistic-use efficiency by providing the user with the meanings associated with different contexts of the word.

While giving meaning in the process of dictionary making, the basic policy decisions have to be kept in mind, on the basis of which words were selected for the dictionary. Almost on the same basis, the meaning of selected words should also be selected. At the same time, the meaning of words can be given keeping in mind the level and expectations of the user and the learner. If a bilingual dictionary is being created, then the basis of meaning selection should be bilingual and if it is monolingual then selection of meaning should be done accordingly.

The size and type of dictionary also determine the method of interpretation. If the dictionary is small then only the meaning of root words will be given and if the size is large then the meaning of prefixes, suffixes, morphemes etc. can also be given.

Type of dictionary plays an important role in determining meaning. For example, definitions and antonyms of the meaning of words are given in technical dictionaries, while in other types of general dictionaries, meanings are often given by giving explanation, antonyms, introduction and other information related to usage.

In relation to the meaning of the word, it is also necessary for the lexicographer to keep in mind that the meaning of the word keeps on changing from time to time. That's why the lexicographer will have to determine the meaning by being alert to the conditions of alternation of meaning due to specialization of meaning and extension of meaning.

Generally two methods of giving meaning are adopted in the dictionary. These are:

1. According to the first method, the meaning of the word is given in four ways. Presenting the meaning of the word by giving word, phrase, sentence and definition. In bilingual dictionaries, it becomes necessary to explain the meaning of specific words even when they have synonyms in both the languages. Synonyms of all words

are not found in a monolingual dictionary, so it is easy to give meaning by using phrases. But it is difficult to give sentence description and definition for interpretation. In this way, there is a possibility of overlapping or non-overlapping defects in interpretation.

2. To give meaning in the second method, the meaning contained in the word is presented by adopting synonymous, equivalents, partial, stylistic or regional interpretation etc.

Irrespective of the semantic method, the lexicographer has to keep in mind that difficult words should not be used for difficult synonyms. It is necessary that the language of meaning should be simple, but simplifying the meaning of simple words is possible only upto a limit and is also a challenging task. For multiple meanings, numbers 1, 2, 3 are written, so that the difference in usage can be made the basis.

In the Indian tradition, eight means of 'perception of meaning' have been considered. These are - behaviour, dictionary, grammar, episode, explanation, synonym, introduction and interpretation. By getting the meaning from these eight means and making a dictionary, the user will be able to know the full and comprehensive meaning of the word. To clarify the meaning in the dictionary, sometimes one has to resort to usages. Similarly, such words are also seen in the dictionary, whose true meaning cannot be expressed by synonyms, antonyms, interpretation etc. In a bilingual dictionary, the meaning is clarified by co-use. Linguistic culture also comes in the way of interpretation in bilingual dictionaries, because where many elements of the languages are similar, there are also dissimilarities in them. In this case, pictures and diagrams are helpful in interpretation. From this point of view, the limit of use of the meaning of each linguistic unit is also indicated in the dictionary.

Use of Pictures and Diagrams

In the process of dictionary making, pictures and diagrams act as a supplement to meaning. They are helpful in clarifying the meaning of vocabulary related to those words, subjects and concepts which are unfamiliar or often extinct. From this point of view, pictures and diagrams are helpful and indispensable in the clarity of meaning and speed of understanding. But while making the dictionary, the lexicographer should keep in mind that he should include pictures and diagrams of those words in the dictionary which the user is unfamiliar with. Pictures and diagrams for familiar words can add unnecessary detail to the dictionary.

Symbolic architecture, creatures etc. should be given in unfamiliar vocabulary related to lifestyle, costumes, food habits, customs, scientific instruments, etc. in bilingual dictionaries, so that the target language-speaker become familiar. Even in encyclopaedias, the picture and diagram method is adopted, which prove to be very effective in clarity of meaning, meaning-completion and speed of understanding towards the word. That's why pictures and diagrams play an important role in dictionary making.

Mention of Quotations & Timings

There is also a tradition of giving quotations for clarification of meaning under lexicography. The lexicographer mentions the citation and time in place as per the requirement. There is

also a practice in lexicography to give examples, phrases and idioms of the use of the main word to clarify the meaning of the main word in which the main word has been used to assert its more explicit form.

As far as citation is concerned, various grounds for its selection can be considered - citation of the first use of a particular language of a word; quote given with reference to well-known definition; citation given under the subject; quote given for the meaning-interpretation of mythological and historical words; a quote expressing the shade of a particular meaning, etc.

Citations should generally be given in chronological order. Time i.e. year etc. should be mentioned in the quotation given in relation to the use of words, which makes the quotation useful and authentic.

Use of Abbreviations and Symbols

Abbreviations and symbols have special importance in dictionary making. An attempt is made to include maximum knowledge in less space through abbreviations and symbols. It also affects the size of the dictionaries. Information about these abbreviations is given in the beginning, so that it is possible for users of the dictionary to easily understand the intended meaning. Nevertheless, the effort of the lexicographer should be that for syntactic expression only one word expression should be used in the dictionary. Abbreviations should be used in symbolic form for grammatical signs, subject-signs, use-signs, word-reuse-signs etc. Therefore, in the process of making the dictionary, the lexicographer can determine the abbreviations from the very beginning and for the fulfillment of the objectives related to the dictionary.

In this way, in the entry editing-process in the development of/making the dictionary, the lexicographer can organize and create the dictionary by introducing efficient editing and empirical knowledge on the basis of the mentioned points.

4.3.4 Press Copy Making and Printing

The lexicographer, after editing the entries and editing the definitions and interpretations, prepares and prints the press copy for the publication of the dictionary. Press copy making work is also called 'copy editing'. Press copy making and printing work is actually a very careful task in dictionary making process. This process requires a lot of hard work. Each permutations used in the dictionary, abbreviations, symbols, forms of letters, conjunctions, punctuation marks, grammatical abbreviations, language-source abbreviations, subject abbreviations, features of pronunciation, spelling, features of meaning, usage areas features, registers, cross-references, information and format-design etc. important work has to be printed.

Copy editing is a different type of work from 'Language editing'. In this, not only the grammatical errors of the language and the spelling etc. are rectified by adopting the house-style of the publishing house, but even the complete structural form is prepared. Determining the shape and type of letters in different parts of the book is also an element of copy editing. The work of deciding the adjustment of title page, half title, inner title, copyright page, dedication, table of contents, introduction/preface, index, glossary, original text etc. comes under making press copy.

Press copy making and printing can be expressed through various stages. These are:

1. During this point of view, shaping of dictionary material in press copy production can be considered as the first stage of this process. In this stage, the shape and size of the dictionary has to be finalized before the users. Numbering of pages is also an important part of this process. For this, all the material has to be carefully arranged and presented for easy and simple use of the users.
2. The second stage in this process is the selection of type or fonts. For this, different types and fonts have to be ensured for words, phrases, quotes, descriptions, abbreviations, symbols. Also, it has to be kept in mind that their use should be of the same type from the beginning to the end of the dictionary so that there is no discrepancy in the use of the dictionary.
3. Correct-spelling use in all the dictionary, uniformity of spelling-use, is the third important stage of press copy making or printing. To determine the size, type as well as symmetry in use of various symbols like abbreviations, punctuation marks etc. are also included in this. This uniformity in the dictionary is essential for the success of editing of the dictionary and the success of the user.

Similarly, necessary preamble, introduction, nomenclature, acknowledgment, description of abbreviations and method of citation, letter color-scheme, font scheme, dictionary-related features and other supporting details have to be mentioned for the dictionary are also cover under press copy making. This work makes a significant contribution to the efficiency and speed of the entire dictionary. Alongwith this, the objective of the dictionary, its making plan is also provided to the user. It also underlines the capabilities, limitations and possibilities of use of the dictionary.

Printing :

After making the press copy, the dictionary is sent to the publication department for printing, where all the dictionary contents are composed according to the instructions. After this, the work of checking the proofs related to the publication department, spelling correction is done. This is a very laborious work, which used to take a lot of time. But the use of computers in the field of printing saves a lot of time and labour in the process. It is possible to print directly from the contents stored in the database on disk or floppy.

The dictionary making work is completed by passing through different stages of the process from the collection of dictionary material to the publication of the dictionary. This is a very laborious task and also takes a lot of time. In fact, the process of editing the dictionary is equivalent to an original creation based on the nature of both art and science.

4.4 Role of Computer in the Process of Dictionary-Making

In this era of rapid development and change taking place in various fields of science-technology and society, the role and use of computer is being seen in almost every field of life. If we look at the work related to our life, then we find that computer has an important role in almost all the work related to our life. Government-administration, knowledge-science, education, commerce-trade, engineering, banking, insurance, mass communication,

printing, dictionary making, stock market etc. are the main areas where the use of computers is especially visible. The 'data' or data related to the information stored in the memory of the computer, processing the information at a fast speed, its programmes and software packages play a useful role in various fields of life as per the requirement. In this form, today we are benefiting in various fields from the immense capabilities of computers. Computer world has developed and is developing different software and systems for successful and fast implementation of various tasks.

For language-enrichment and advanced language-use in advanced societies, language-related dictionary-making work is being done on a large scale. From this point of view, the computer is not untouched by the process of dictionary making and is playing an important role in dictionary making. Computer software has developed as some useful systems for labour-intensive tasks such as dictionary making, and other possibilities are being explored. If we trace the history of the role of computers in the process of lexicography, we find that Collins Publishers first used it in 1987. He proved the role of computer in lexicography by computerizing the process of preparing Collins Cobuild Dictionary of English Language. The dictionary makes significant contributions to languages, subject areas and translation work. Individuals and organizations who are aware and loyal towards language, subject-areas and translation work should consider the role of computer in dictionary making work.

When we consider the process related to dictionary making, many questions arise before us. Like, how does the computer help in simplifying this difficult task with its contribution? To what extent and in what form is his role? In what way, in what form and to what extent can the lexicographer take his help in the execution of his work? What are those systems using which computer is very helpful in time, labour and arrangement in editing of dictionary work? And to what extent the dictionary work done with the help of computer can be considered reliable.

Computers are mainly used for word processing and data processing work. Apart from this, the computer can also be used for many other tasks. These functions are known as auxiliary functions of the computer. These auxiliary functions are spell checking, grammar checking, auto correction, character recognition, speech to text, text to speech, and alphabetical sorting etc. Let us learn about their use in dictionary making in the context of all these types of computer work.

As already mentioned in Section 4.3 of this unit that the process of lexicography can be divided into four main stages/steps - (1) material collection and selection of entries, (2) editing of entries; (3) determination and interpretation of meaning related editing; and (4) press copy making and printing.

Before the development of computer, in the process of making the dictionary, the entire work from material compilation to press copy making has been done by the lexicographer. This work is extremely tedious, labour-intensive and time-consuming. In the process of making dictionary, the role of computer is special in the routine work of material compilation, selection of entry, alphabet sorting, use-frequency-counting, spelling, writing, typing,

printing etc. Computers do this laborious work very systematically and in a very short time. The possibilities of errors are also less. The computer does this huge task very quickly, in a few commands. But this does not mean that the role of man in this process becomes negligible.

In fact, in the process of making dictionaries, one has to take shelter of the human mind for the accomplishment of intellectual work. For example, clarifying semantics and different connotations according to the context, giving information about lexical grammatical categories, information related to lexical application, etc. intellectual work is not yet possible with a computer-like device. To accomplish this type of intellectual work, discretion, imagination and decision power of the human mind are required. Despite this, computers have a special role in dictionary making, language transcription, dictionary renewal and lexicographic updating. The ease of making of multilingual dictionary is actually due to the application of computers in this field.

Now let us try to find out in which tasks the computer contributes its amazing ability at different stages of the dictionary making process. In the context of computer, the process of dictionary making mainly has the following steps and functions:

4.4.1 Material Collection and Selection of Words

After determining the form and policy of the dictionary, the work of collecting material from the available literature of that particular language begins. Prior to the development of computers, selected passages relating to the use and meaning of words were quoted in handwritten or typed form with references on separate cards. This was a very painstaking work and individuals and organizations were engaged in it for years. In the process of making dictionary, content compilation and word accumulation through computer OCR (Optical Character Recognizer) system has become very simple. Earlier, the method of entering the compilation material into the computer's stored dictionary was word processing in which the material was typed with the help of the keyboard, which is called 'data entry'. It is like typing on a typewriter. The only difference between these two can be said that the typewriter does not have memory, while the computer is endowed with the ability to save the entered data in its memory.

The way, data entry work on computer also used to take more time than today, but ORC system has played a significant role in lightening up this labour-intensive task as well. OCR in the system recognizes the printed characters like photocopy and stores them in typed form in the memory of the computer. Through this system, the contents of a page can be entered into the computer within a few seconds. In this way computer saves time and labour in material compilation and word accumulation. But here it is important to know that OCR can be accomplished in this way only when the available material is clearly printed.

4.4.2 Selection of Entries

After the material compilation, the work of selection of entries has to be edited on the basis of prescribed criteria. Under this, those words are selected whose meaning is expected in the dictionary. In selection of entry, words are compiled and selected according to the frequency

criteria. The computer is helpful/able to present the lexicon with a single command based on the frequency of the required material.

4.4.3 Editing-Modifications of Entries

After selection of entry, the entry editing-modification process starts. In this process editing-modification of linguistic features (such as grammatical information, spelling, pronunciation, subject and usage area and semantic interpretation of words) such as meaning and various connotations of words, and interpretation, antonyms, synonyms, sentence usage, quotation, illustration, Co-use etc. is done from the point of view. With this work, uniformity in the entries is established and linguistic errors are removed. It is stored in the memory of the computer and finalized before indexing. To remove spelling errors, computer corrects spelling errors using software called 'spell corrector'. Similarly, in the context of Indian languages, the content of one language can be translated into the script of another language by using computer technology like Gistcard. GISTcard (Graphic based Indian standard) is a technology created by Indian Institute of Technology (IIT) Kanpur and developed by C-DAC, Pune.

4.4.4 Indexing

Before the introduction of computers, card method has been used for word-indexing. They have been arranged alphabetically with the help of cards. The skilled lexicographer tirelessly arranged the innumerable cards in alphabetical order. But the computer, lists this complicated work of the dictionary making process with one command. With its help, we get the selected entries in the computer's memory immediately in alphabetical sorting.

Similarly, the entries can be arranged in any other order as per the command. Repetition of words can also be removed from it. It is also possible to calculate the frequency of use of words in the dictionary. This system is very helpful to the lexicographer in dictionary making.

4.4.5 Concordance

The alphabetical order of the words of a language is adopted in the entry index in the general dictionary, which gives the meaning and understanding of the words. But it comes within the scope of the dictionary to determine the semantic categories of the words of a language from the point of view of different meanings, contexts, visible and hidden features, subtle rules related to sentence structure i.e. all linguistic elements. This method of meaning-determination and division is called 'Concordance' in computer language.

The basic words used in a particular language along with their word-containing idioms, contexts and references in one or more texts are called 'Concordance'. The basic functions of an index are to prepare a list of entries, arrange them alphabetically, classify them into meaningful groups, etc. In the sentences given through the index number, knowledge of different meanings of a particular word is obtained according to context. This knowledge is essential to the user for language-use related efficiency and accuracy. This method is also essential for the success and utility of the dictionary. Entries in thesaurus, dictionary of synonyms etc. are divided into meaning groups by concordance.

Before the advent of computers, concordance-based dictionaries were rarely seen. The reason for this has been that preparing a Concordance is a very difficult and complicated task. It demands relatively more time, labour and money. But with the help of computer OCR, rapidly indexing the material stored by it under a special Concordance Programme. The basic functions of a Concordance - such as preparing a list of entries, arranging them alphabetically, classifying them into meaningful groups, etc. are quickly completed for the dictionary. The complete list of sentences is captured on the computer screen and the corresponding word is clearly given on the screen with a gap between each line. Due to the important role of computer, dictionaries or lexicon can be easily edited on this basis. 'Longman Lexicon of Contemporary English' is a lexicon edited by this process.

In this way, the computer plays an important role in determining meaning through Concordance. Although the discretion of the lexicographer is required for the determination of meaning because the contribution of the human-mind remains in the determination of meaning. The computer searches the entire concordance of all sentences and phrases related to the word from the stored material and brings it to the computer screen. In 'Collins Cobuild Dictionary of English Language' (1987) when this method was used for the first time in the process of dictionary making, some surprising results of the usage related to the words in the concordance came to the fore. For example, the number of uses of 'see' in the original meaning of 'seeing', the use of 'see' is seen in secondary meanings e.g. :

- I will see what I can do for you.
- Please see that you complete it today.
- Do you see my point?
- I will see you later.
- I don't see any virtue in it.
- As far as I can see, the scheme will be a flop.
- You saw in the earlier chapter that.....

Through this concordance, different meanings of the contextual usage of 'see' can be seen, due to which it proves helpful to both the lexicographer and the user in determining and interpreting the meaning of the word. In this way, concordance gives special contribution in comparative study, analysis, frequency information of different uses of a particular word. Concordance is an important tool in the study, analysis and translation of a text. The concordance introduces the lexicographer and the user to the lexical meaning and usage practices. That's why it can be said that 'concordance' is very useful and helpful in determining the meaning of the particular word included in the dictionary, illustration for explanation and information related to usage frequency.

4.4.6 Press Copy-Making and Printing (DTP)

As already informed in Section 4.3.4 of this unit, the work of press copy making is also called 'copy editing'. 'Copy editing' is an important task while making press copy. Before the advent of computers, press copy making (copy editing) work demanded double the effort in terms of uniformity, spelling accuracy, planning of symbols etc. But with the help of computer this work can be done easily and quickly. Now all the stored material related to the

dictionary in the computer's database remains in the disk or floppy or pen drive. DTP (Desk Top Publishing) system is especially helpful in editing and printing. We may get the print of Camera Ready Copy (CRC) directly from laser printer. Type setting, page making, spelling, fonts, page numbering, columns, format design, etc. are done by the computer quickly without error.

In this way, computer plays an important role in the process of dictionary. It saves time, labour and money of the lexicographer and editor at various stages of material compilation, selection of entry, entry editing, meaning determination, press copy preparation etc. With the help of computers, dictionary making work is done in a systematic, error free and advanced form with completeness. With the help of various developed computer systems, it has been possible to create a specific dictionary 'Computer Lexicon' and 'online dictionary' for machine (computer) translation.

4.5 Let Us Sum Up

In this unit you have read about the various stages/steps in the process of dictionary making and the role of computer in it :

- The dictionary is such a tool that not only provides complete knowledge of words to man, but also makes the human-mind mature from the point of view of linguistic use by acquiring knowledge and making it intellectual development related to language. In this way, dictionary is the controller of both knowledge and system.
- Dictionary is a strong medium of literature, culture building and preservation.
- The main steps in the process of lexicography can be briefly considered as follows – (a) Material collection and selection of entries, (b) Entry editing process; (c) editing process of meaning determination and interpretation; and (d) Press copy making and printing.
- Under material collection-compilation, the purpose, outline and policy-formulation of the proposed dictionary is done. Considering this as the basis, the material related to that language is given a practical form. It is then compiled in written or typed form on cards in the entry selection process.
- After the entry is selected, its editing process starts. Two forms of this process can be considered - (1) entry editing; and (2) entry interpretation and interpretation.
- Under the entry editing process, arranging the entry alphabetically, language-source, spelling, pronunciation, grammatical category, derivation is shown.
- Meaningful elaboration and interpretation are shown under entry definition and interpretation. While determining the meaning of the entry and while interpreting it, alongwith the meaning of the word, the target meaning, the sarcasm, as well as its various connotations, contextual use etc. are taken. Phrases, quotes, pictures-diagrams and illustrations etc. are also used as per the requirement for clarity of meaning.

- In press copy making and printing, uniformity of abbreviations and symbols (connectors, punctuation, grammar, pronunciation, language source, subject etc.), font size, spelling, meaning characteristics, usage, cross-references, information and format design, printing etc. is done with utmost care.
- In dictionary making, computer is being used as a tool or tool for various purposes.
- The work of material collection-compilation and selection of entries in dictionary making work is done through computer's OCR. Using the system, the printed pages can be entered graphically into the computer's memory within no time.
- In entry-related editing, the computer is capable of editing the work of letter permutation, use frequency-counting, spelling, writing, typing, printing more systematically, error-free and quickly.
- If we consider the role of computer in the context of definitional and interpretive editing of dictionary entries, it can be said that it is not completely possible to determine the meanings and grammatical categories of words according to context. For this, the discretion, imagination and decision power of the human-mind is required. But in this work the computer is indirectly helpful. Using the concordance system, the computer presents the list of all the words found in the material compiled by the concordance immediately as per alphabetical order. Due to this, information related to the usage of words and meanings is very helpful for the lexicographer.
- With the help of computer DTP (desk top publishing) system, the work of editing, modification, printing etc. under the press copy printing work is done in a very short time without error and quickly from the point of view of uniformity.
- With the advent of computers, time, labour and money are saved in dictionary making and the dictionary work is completed quickly in an organized, error-free and advanced form.

4.6 Exercises

1. Throw light on the need and importance of dictionary making.
2. Discuss the various stages or steps in the process of making a dictionary.
3. Throw light on the methods of semantic determination in the process of dictionary making.
4. Explain the role of computer in the process of dictionary making.

4.6 Suggested Readings

- Singh, Surajbhan (2003). Angrezi-Hindi Anuvad Vyakaran, Prabhat Prakashan, Delhi.
- Sethi, Harish Kumar (2009). E-Anuvad and Hindi, Kitabghar, Daryaganj, New Delhi.
- Kumar, Suresh (ed.) (1983). Kosh Nirman: Siddhant Aur Parampara, Central Institute of Hindi, Agra.
- Rohra, Satish Kumar (ed.), (1989). Kosh Vigyan : Siddhant Aur Mulyaankan, Central Institute of Hindi, Agra.

- Tiwari, B.N., (1987). Kosh Vigyan, Shabdkar, Delhi.
- Bhatia, K.C. and Yugeshwar. Kosh Vigyan : Siddhant Aur Prayog.

Dictionaries

- Bulke, Fr. Kamil (2003). English-Hindi Dictionary, S. Chand & Co. Ltd., New Delhi.
- Chaturvedi, Mahendra and B.N. Tiwari (1994). Vyavaharik Hindi-Angrezi Shabdkosh, National Publishing House, Daryaganj, New Delhi.
- Bahri, Hardev (1933). Hindi Shabdkosh, Rajpal & Sons, Delhi.

Research Journals

- ‘Bhasha’, Information Technology and Indian Languages Special Issue, Central Hindi Directorate, New Delhi.
- ‘Gaveshana’, Special Issue on Lexicology in India (No. 93), Central Institute of Hindi, Agra.
- ‘Anuvad’, Dictionary Special Issue (No. 94-95), Bhartiya Anuvad Parishad, New Delhi, 1998.
- ‘Gaveshana’, Special Issue on Dictionaries, Central Institute of Hindi, Agra.

UNIT 5 COMPUTER DICTIONARIES AND ONLINE DICTIONARIES

Structure

- 5.0 Objectives
- 5.1 Introduction
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- 5.10 Exercises
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5.0 Objectives

Until the end of the last century, we understood the meaning of the dictionary to be a reference book, which helps the readers of the language to understand the meaning of difficult words. In the fourth phase of the last century, attempts were made to accomplish various language-related tasks with the help of computers, so a new thinking started on the functions of the dictionary. A computer can use a variety of inputs such as printed text, sound, pictures, movies, etc. Due to this, there was a radical change in the form of dictionaries. It is in the context of these things that we will see in this unit what is the process of making a computer dictionary and what are its functions. After reading this unit you should be able to:

- explain the functions of dictionary;
- introduce various language-related programmes of computer;
- explain the nature and characteristics of a digital dictionary;

- describe the role of computers in linguistic computation;
- introduce the different types of knowledge representation;
- explain the concept of knowledge representation; and
- differentiate between computer terminology and lexical resources.

5.1 Introduction

Computer is a magic box. It can solve complex questions in complex areas such as missile engineering and space flight or weather forecasting very quickly and with near perfect accuracy. It is said that the computer can work many times faster than the human brain. This is especially true in the context of mathematical problems and detailed statistics. But there is one area where computers cannot compete with the human brain. That area is the use of natural languages. This is because a computer does not have a brain of its own. It is a mechanical device, which performs its work according to the stated rules. It does not have any knowledge or thinking of its own. Since then it has been thought that if artificial intelligence is provided to the computer, it will be able to perform linguistic tasks more easily and authentically. Here artificial intelligence means -the same knowledge as we have in the brains of the speakers of the language. In this way, the computer will not only be able to present the most useful dictionary in front of us, but will mark the dictionary parts in such a way that it can be used by itself in programs like translation etc.

5.2 Computer and Areas of its Applications

We have discussed that a computer can perform a variety of tasks. When computers came into existence, they were called ‘number crunching machines’ because they could multiply and divide thousands of numbers in minutes. That too with reliability, while a person used to take hours for this work and the result was also not reliable. Later it was thought that computers could be used for linguistic tasks.

The first linguistic application that computer scientists envisioned through computers was translation. It was thought that through computers, we would be able to do translation work faster and better, which is the biggest need of the modern era. The basis behind this fantasy was the belief in the immense power of the computer. The biggest obstacle in the realization of this imagination was how to provide information about the structure of the language and the meaning of the words to the computer, so that the computer could do this work better.

Why computer needs linguistic knowledge can be explained with the help of an example. There is a Hindi sentence – ‘आनंद घर में नहीं है।’. It can be translated by machine ‘There is no happiness at home’ while the expected translation was ‘Anand is not at home.’ It is a feature of the language that words can be used as names of people and also as common nouns. If we can give this information about word categories to the computer, then it will be able to translate correctly.

In this way, we can say that the information we have regarding the use of language, if it can also become a part of computer programmes, then we will be able to do many language related tasks naturally.

In this context, we will further discuss the applications of computer and see what is the nature of various applications? This information will guide us as to what language resources we will need for language tasks.

5.2.1 Main Functions of Computer

We discussed computer performs operations like addition, multiplication, division etc. on mathematical numbers. Similarly, using the characters of languages like English, Hindi etc., it creates the text of the languages. In these texts, we can edit the text by correcting spelling etc. We call these two functions respectively ‘data processing’; and ‘word processing’.

Data Processing : We discussed that computers solve mathematical problems very quickly. We call this work ‘data’. Data processing is a simple task not only for computers, but also for modest calculators. The cells of the computer’s memory dictionary represent numbers. The computer doesn’t even recognize decimal points. It detects the presence or absence of power in the mines as ‘1’ (one) and ‘0’ (zero) respectively. Decimal digits are represented by this ‘Binary system’. Here we are giving the price of the places. Here are some examples in the decimal system by adding the same value to that digit based on the 1 or 0 in the place. These digits are only up to 255, which requires 8 places in the two-digit system.

Location	8	7	6	5	4	3	2	1	} Decimal Value of Two-Digit
Decimal Value	128	64	32	16	8	4	2	1	
double-digit 1 }		1	0	1	0	1	0	1	= 85
two-digit 2 }	1	0	0	1	1	0	1	0	= 154
double digit 3 }	1	1	0	1	1	0	0	1	= 217

You notice that the two digits above have eight places. In this way, we can represent numbers from 0 to 255 (e.g. 1 = 00000001; 255 = 11111111) with the help of 8 bits for mathematics. By increasing the bits, we can represent even larger numbers.

8 bits is also called a ‘byte’. If we consider a symbol of eight bits (byte) as the symbol of a letter of the language, then out of the total possible 256 symbols, we can symbolize 256 letters of the language in the computer. Where numbers are infinite, the alphabet of a language is often limited. English requires a maximum of 80 characters including 52 letters and punctuation marks. In the available 256 bytes, all the letters of Hindi (about 100), 52 letters of English and similar diacritical marks all come. That is, in the same programme we can do the work of two languages. Now-a-days it is the era of 32 or 64 bit computers. In this we can save lakhs of characters. That is, on the same computer we can work in all the languages of the world. For this system, the system of character writing called ‘Unicode’ (Universal Code) was made the basis. To work globally, we should adopt the system of Unicode.

Word Processing : Working through languages on a computer is called ‘word processing’. We will get a little introduction to the function of word processing here.

When we copy the text by writing by hand, we often need to cut, add, move the object from one place to another for the purpose of editing the text. These tasks are difficult on paper but very easy in computer. Alongwith these, we are giving details of some other facilities available on the computer:

1. **Insert :** It is difficult to add something to the text written on the paper, because there is a lack of space. You can add anything (text, pictures, diagrams, animations, etc.) anywhere on the computer.
2. **Cut :** If we want to delete any written part, then we will select (highlight) it and delete it by giving instructions. If you accidentally cut the part, you can also undo it by pressing ‘Z’ (Control with Z) keys or by clicking on ‘undo’.
3. **Copy and Paste :** If we want any text in another place, that is, if we want to copy it, then we will select (highlight) that part and paste it in another place.
4. **Cut and Paste :** We can cut the selected part from there and paste it at another place.
5. **Find and Replace :** Let’s say you think a name has been misspelled and you want to correct it. To do this, you type the wrong word in the search box, then the computer will bring that word to you. You can then type in a new word to replace it. With the instruction ‘Replace all’, the computer replaces hundreds or thousands of uses of that word in the wrong form in the text simultaneously (within a few seconds).

When a copy of the original manuscript is sent for printing, it also has to indicate the visible form of the text. We call this printing ‘copy editing’. A ‘copy edit’ includes the following – font selection (different fonts/letter layouts for each item), font size (ranging from 6, the smallest for foot notes, etc. to size 72, the largest for posters, etc.), font colour etc. Some of the other features we are giving along with the instruction buttons of the computer are bold, italics, underline, margin (left, right, centre). Even if the text is of 40-50 pages, the computer follows these instructions in a few seconds. Many other similar facilities are available in the computer. You can get their information from self-study.

5.2.2 Secondary Functions of Computer

The programmes we are going to discuss here are called ‘Utilities’ in computer language. We call them secondary functions for the reason that without them also we can do the work of ‘word processing’. In fact this function is not even available in all languages. For example, earlier there was no programme for checking spelling and grammar in Hindi. If these become useful programmes, users working through the language will be of great convenience. Let us have a look at some of the major useful programmes:

1. Spell check :

With this we can find out all the spelling mistakes in the typed text and choose the correct spelling. With the help of this the computer recognizes the wrong words and marks them. With this we can improve the language quickly and accurately. This programme not only

recognizes wrong words but also suggests their correct substitute and if you choose the option then computer can replace the wrong word without typing.

One of the great features of the Spell Check is the ability to correct misspelled words in all places at once with the help of 'Find and Replace'. For example, if we have entered the word 'Romes' in a novel instead of 'Ramesh', then by pressing one key, hundreds of places can be used to correct this word simultaneously. Computer also gives us the facility to enter words like names of people, names of cities etc. in the computer's memory (i.e. in the dictionary located in the computer) so that further spelling of these words can also be checked.

How does the Spell Check programme work? It actually matches the typed words with the words entered in the dictionary inside the computer and marks the words which are new or wrong. This matching is not done in the context of the whole word, but the computer keeps doing it in sequence of each character or alphabet. Due to the quick speed of the computer, this work is done quickly, whereas in matching one word, the computer has to perform hundreds of operations.

2. Grammar Check :

The help of Grammar Check is taken to check the grammatical mistakes of a particular language. This indicates incorrect structures of the particular language. But it can work only when it is prepared in the context of a particular language. That is, if we want to check the grammar of the typed content in Hindi language, then for that Hindi related grammar checking programme should be developed.

It is important to note that the grammar check function is different from the spell check function. But, on the other hand, it is said that spell check without grammar check is not very useful. Similarly, this programme helps in correcting many grammatical errors. This type of programme is working successfully in English language, while there is lack of effective grammar checking program in Hindi.

3. Auto Correct :

It is part of word processor programmes. Suppose people write 'grammar' as 'grammar', then the computer automatically corrects that word and prints it. How does auto-correct work in a computer? It actually matches the typed words with the words entered into the computer and automatically corrects words that are new or misspelled. The computer does the work of self-correction on the basis of pre-set words entered in its memory. This list of pre-determined words is stored in the computer. Apart from this, you can also add your own words to this list. This facility is also available in Hindi. Due to the fast speed of computers, this work is done automatically and typographical errors are reduced.

4. Creating Number Order or Alphabetical Order (Sorting) :

With the help of this we can bring thousands of words in alphabetical order in minutes. Not only words, numbers of different order can also be brought in the correct order with its help. It can also bring numbers and words in reverse order. It takes us a lot of time and labour to do this work on paper and errors also remain. The alphabetical order is determined by the order of the alphabet of the language. Just as the computer naturally presents the numbers 1, 2, 3

etc. in ascending or descending order before us, it can also present the words of the language in alphabetical order in any (i.e. decreasing or increasing) order. But for this, it is very important that the alphabetical order is fixed and the alphabetical order is harmonized with all the keyboards and fonts.

5.2.3 Application Software

We type the text of the language on the computer, make necessary amendments and additions in them, so can't the computer do some other language-related tasks, which are necessary for humans? Computers can compose poems and stories; can be a good tool for teaching language. If we can use computers to translate, then a great need of the modern age can be met. For all these tasks, we have to give specific types of information to the computer. The use of those information by computers is what we call 'artificial intelligence'. That is, he acts in such a way as if he is doing the act after thinking carefully on the basis of the knowledge of the subject.

Playing chess, driving a robot etc. are also tasks accomplished by artificial intelligence. There is no role of language in this. We call the tasks of artificial intelligence related to language as 'Natural Language Processing' (NLP) programmes, because they contain the same kind of language-related tasks that humans behave in a natural and instinctive way. Let us get acquainted with some of these major programmes of natural language processing. One of these is related to 'character recognition' and two to sound and writing. These two programmes related to sound and writing are - (1) reading the written text; and (2) writing down the oral text. In addition, there are programmes for applications related to 'transliteration' and 'translation'. Let us first learn about the programme related to 'OCR'.

(a) Optical Character Recognition (OCR) :

The basis of Character Recognition programme is scanning. Scanning is the process in which the computer recognizes a picture etc. in terms of points of light and digitizes the picture in the computer. Saves from the system in pictorial form (i.e. in the form of picture) or in the form of text. When a computer 'reads' printed or typed (and sometimes handwritten) text, it prints it on the computer screen as text. We can edit this printed text whereas the text in pictorial form cannot be modified or edited in any way. This type of computer programme for recognizing words in text is called 'Optical Character Recognition (OCR)'.

How does this programme work? When we select the option of OCR, the computer recognizes each character of the text one by one and saves them as spoken text (as typed). Character recognition is a different process than scanning a picture or page with a programme scanner. After scanning the printed text, the programme recognizes each character and saves them as characters. Sometimes even the computer makes a mistake in character recognition. Then we can run the 'Spell Check' programme to correct the mistakes.

Why is Character Recognition Programme necessary? What are the benefits of this? Many times the typed work is available on paper, but for some reason it is stored on the hard disk of the computer, C.D. or not found in pen drive. Or publishers have to republish their book many times and the book is available on computer hard disk, pen drive or CD. etc., then re-typing, proof revision etc. of the entire book becomes necessary. In this type of situation, character recognition programme proves to be very useful.

In the English language, this type of character recognition programme is working successfully, which makes it possible to save the text available in English as a picture or text. On the other hand, there is a lack of effective programmes to save the content in the form of text in Hindi. Government organization namely C-DAC had made a character recognition programme, but it is not commercially available for everyone's use.

Let us now look at both the programmes related to sound and writing - reading the written translation and writing the spoken text. The first of these is called 'text-to-speech' and the second 'speech-to-text' programme.

(b) Text to Speech :

The 'Text to Speech' programme reads out the printed text and presents its spoken form (pronounced form). This programme is a good means of providing education to lakhs of blind people of the country. Language students and tourists etc. can take advantage of listening to written material through this. A question may arise in your mind that how is this possible through computer?

The programme takes words from a lexicon pre-recorded in human voice in the computer and presents them as normal reading. That is, if the spoken form of all the words is recorded in the computer, then the character reader can bring their pronunciation and present it. This requires material already written in human pronunciation. Alongwith this, the features of pronunciation are also added to it. If the written text is not in the standard spelling or if a word is not in the dictionary of the computer, then the computer cannot pronounce it. Although, the pronunciation of computer looks artificial, you must have heard the mechanical sound of robots etc. in films. For the execution of natural language like human, we have to give information about proper force, tension etc. It complicates the task. This programme in Hindi has been prepared as an experiment. In some programmes available on the net, you enter some sentences, they pronounce them.

(c) Speech to Text :

This programme listens to the language and presents its written form. While using it, you speak and the computer listens to your language and types it in the form of text. This programme is extremely useful because writers do not have to depend on typists and work can be done at a faster pace. It is often seen that stenographers take dictation but cannot rectify any confusion. When the computer takes dictation, we can immediately see which spoken word it has not caught. In this way, along with speed in work comes quality. It is an indispensable assistant for working on computers in offices. Taking dictation of numerical data for stenographer is a difficult task, when it contains decimals or fractions, then we can also enter data of these numbers in the computer by dictation and can also check it on the computer screen itself.

How does the computer do this work? The computer stores the written form of the language as well as the spoken form. When you speak, the computer matches your speech to the storage. When the match is done, it brings its written form on the screen. In fact, the computer brings out that word in typed form by matching your pronunciation with the

pronunciation of the words recorded in its memory. He does not make mistakes in matching big words like ‘unconsciousness’ because there is no similar word, but in small words like ‘fine’ and ‘pain’, the chances of mistake are more. The basic reason for this is that the computer does not recognize each sound, but tries to capture the entire pronunciation of that word. This goes to prove that getting the pronunciation right is vital to successful use of this type.

We all have individual characteristics of speaking style and pronunciation. Then how can the computer recognize everyone’s pronunciation? For this we all have to train the computer. When we read words from a computer store, the computer copies your pronunciation and intonation/style and matches your pronunciation to the same one a second time. For this reason training is essential for every person who can speak.

The following two programs – Transliteration; and Translation - are related to the translation field. You are studying in translation course. Therefore, you will study these two topics in detail elsewhere. Here we will give their general introduction:

(d) Transliteration :

In this, we present the text written in one language in another script. Transliteration between languages of the same language-family (such as Hindi, Gujarati, Marathi etc.) is easier, but transliteration between languages of two different language-families (such as English and Indian languages, etc.) is a bit difficult.

(e) Translation :

Translation is one of the most important in the field of Natural Language Processing (NLP), because in the modern era there is a daily need for large amounts of translation between major languages of the world. Translation between languages of the same family is relatively simple; the language of Science or Law is relatively easier to translate than colloquial or literary language. If our knowledge of language becomes better, then we will be able to give better instructions to the machine. Translation done through computer is called ‘Computer Translation’. It is also called ‘Machine Translation (MT)’. You will study about this in detail in Block 4 of MTT- 020 titled ‘The Process of Translation’. Here we would like to point out that the research and development in the field of MT so far has ensured that 100% translation is not possible through it. That is why human-machine collaboration is essential. It is because of this collaboration that the concepts of ‘Human-Assisted Machine Translation (HAMT)’ and ‘Machine-Assisted Human Translation (MAHT)’ have become tangible. However, the translation done in both these ways is also not 100% correct. That’s why today ‘Computer-Assisted Translation (CAT)’ is talked about. Overall, it can be said that machine can never replace human. We should see the machine only as our reliable ally.

5.3 Functions of the dictionary

Why do we use dictionaries? Words are signs of meaning in language, they are carriers of meaning. If we do not know the meaning of the word then we will not be able to know the meaning of the sentence in which it is used. Alphabetically arranged dictionaries help us to reach that word and understand its meaning.

How do we identify the meaning from the dictionary? The relationship between word and meaning is very complex in many cases. In fact, the meaning of the word has a wide range, where different shades of meaning are expressed in different situations. We can understand the difference in meaning from English expressions like 'to work', 'useless', 'getting a new job' (project, job) etc. In fact, explaining the meanings of each word through appropriate sentence usages is an effective strategy for making dictionary. Such dictionaries can be given the name 'Dictionary of Usage'. If we do not give 'usage', then the user or scholar of the language will not be able to use the word properly.

The developed form of 'Dictionary of Usage' is the 'Learner's Dictionary'. In the modern era, this dictionary of scholars has become a benchmark for the creation of scientific, useful and purposeful/functional dictionaries from the point of view of dictionary making, because it tries to clarify the meaning of the words by moving away from the traditional method of defining the meaning of the word. It is meant to say that the learner's dictionary does not give semantics in all ways, explains the meaning of similar words, gives appropriate expressions according to the context, presents semantics and word formation in a logical manner, which helps to understand the meaning of the language. Users can pay attention to the meaning at the level of cognition. Due to these features, the 'Oxford Advance Learners Dictionary' of English has become the most popular and most authentic dictionary. The dictionary has become an essential reference book for teachers and writers of the English language.

On the lines of the Oxford Advanced Learner Dictionary, Hindi's '*Chhatrakosh*' prepared by Prof. V.R. Jagannathan is extremely useful for users of the Hindi language. This dictionary is the first Hindi learner's dictionary, which is useful for Hindi teachers, translators and writers. It can be called an essential reference book from the point of view of informing about the nuances of the language. This type of dictionary being like computer software increases its usefulness. This means that it is a treasure trove of features that can be usefully used by people of all levels according to their needs.

Dictionary and Thesaurus complement each other. Dictionaries give the meaning of words, Thesaurus suggests words according to the meaning or idea or feeling. Like in the Thesaurus, all the ideas of language are arranged in about 1000 classes or categories. If you look at the category of 'anger' in the vast category of emotions, you will find all the words related to it. User can choose the appropriate word from them. There is a dearth of thesauruses. He presents all the words related to ideas in one place, but cannot give their meaning there. Before selecting a word, if a person wants to see the meaning and usage context of that word, then he will have to go to the learner's dictionary again. In this context, we can say that for the users or scholars of the language, the co-ordinated form of the learner's dictionary and thesaurus is most useful. This coordinated form is extremely rare in the printed version presented in the book form. You constantly have to keep turning pages to move from one book to another and from one entry to another. Thus, the student can get the perfect combination of dictionary and thesaurus only on computer, because not only he can access the desired material at a faster speed, but also keep in front of him all the provisionally selected entries before the final decision..

5.3.1 Digital dictionary

In the previous section of this unit, we discussed that the quality of reciprocity is the most important requirement of a learner's dictionary. An integrated form of dictionary and thesaurus can serve this purpose. If this form of the dictionary is made in numerical method, then it is easy for the student to consult the dictionary.

There can be two forms of digital dictionary available on the computer. One in which we keep the pages of the entire dictionary as separate images in the computer. We call this the 'PDF' format. Suppose the Dictionary compiled by Hindi Sahitya Sammelan or Kashi Nagari Pracharini Sabha is in 15 volumes (in 4500 pages). If anyone wants to find out 4-5 words than many pages of 15 books will have to be turned. On the other hand, the only advantage of this digital dictionary is that you can open all the pages in seconds. But to have 4500 pages as images we need huge memory and accessing the pages can also take time.

Another way to keep the entire dictionary on the computer is to keep the entries as typed text. It will take less space in terms of memory, we will be able to access words directly, not pages. The third advantage is that related words can be reached by the method of surfing. If while making the entries of this dictionary, we enter the information about the source of the word etc. in different fields, then it will be easy to find the related information. We will discuss this in the next section.

The biggest advantage of digital method is that with printed text, we can make pronunciation, picture, movie, animation etc. as a part of dictionary, which is not possible in printed dictionary.

5.4 What is a Computer Dictionary?

There is a popular saying in English about 'democracy'. It is a government 'of the people, for the people and by the people'. Almost the same thing can be said about the computer dictionary. This dictionary belongs to the computer, is for the computer and is created by the computer itself. In the context of this explanation, we can know about the functions and uses of the dictionary kept in the computer.

5.4.1 Computer Dictionaries and Printed Dictionaries : Salient Features

Computer dictionary is the dictionary of computer. When we say that this 'dictionary belongs to the computer' it means that even though a normal printed dictionary may contain very useful material, it is not as useful in terms of its size and shape as a computer dictionary. The computer dictionary has certain features which are not there in the printed dictionary. You can also call these features/characteristics the 'difference' between a computer dictionary and a normal printed dictionary. These points of difference can be discussed on the following grounds:

1. **Possibility of Continuous Updating:** Continuous development is taking place in the field of knowledge. Due to this a large number of new words are being developed, new meanings are being given to the available words. Therefore, it becomes necessary that they should be included in the dictionary. But printed dictionaries, especially

voluminous dictionaries, can be said to have this limitation that they cannot be modified and expanded in the context of new words and new meanings of words, until the situation of reprint comes. Some printed dictionaries are never revised due to practical difficulties. Due to the continuous variability of language, continuous updating of the dictionary is essential. This can only happen in the context of a digital dictionary. If we wish, we can make necessary amendments daily. The process is simple and time-saving. Also it is low cost. Thus, it can be said that adding new words, modifying and editing available words in a computer dictionary is simple and time-saving as compared to printed dictionaries.

2. **Possibility of Quick Availability/Access** : Searching for a word in printed dictionaries, especially large vocabularies printed in several parts, is laborious and time consuming. In a computer dictionary, we can not only quickly access the word, but also quickly look up all the words with cross-references.
3. **Ability to Search for Information** : The biggest feature of numerical method is - search. Suppose we want to find out how many times the word 'lotus' appears in a 200 page novel, which is impossible in a printed book. The computer will tell in a second where that word has appeared. Suppose we want to know where 'lotus' appears as the subject. This search cannot be done on the basis of typed text, but for this we have to write a parsing programme. Suppose we want to know how many synonyms are there for 'fire'? We can search for alternatives through design of a computer-generated dictionary programme. We have to set the space to show synonyms, antonyms etc. with each entry while making the entries. Then all words related to the word with the entry can be found. We will discuss this in detail in the next section.
4. **Limitlessness of Size** : There is a limit to printed dictionaries in terms of size. They can be monolingual, bilingual, trilingual, quadrilingual. But it is not possible to include countless languages in this sequence. But the specialty of computer dictionary is that a large number of languages can be included in it and their synonyms can be kept.

5.4.2 Role of Computers in Dictionary-Making

While discussing the 'Role of Computer in Dictionary-Making Process' in Section 4.6 of Unit 4 of this course it was stated that computer is also used as a tool for dictionary making. It has also been told that computers are used for word-storage and editing-revision, indexing and concordance. In this unit we will discuss here that the making of computer dictionary can be done effectively by a computer.

Before discussing this, it would be necessary to know how the dictionary is formed in the traditional way. The determination of entries and the collection of the particulars given under each entry are two major tasks in the making of a traditional dictionary. Entries must contain information such as meaning, usage, source of the word, synonyms, antonyms, idioms, cross-references (references to other related words) etc. Lexicographers usually collect all this

information in cards and give the book shape to the dictionary by putting the cards in alphabetical order. This work is very labour-intensive and there is a possibility of mistakes in many places. The greatest difficulty is to find out the various meanings of the word. We cannot do this work on the basis of memory. Extracting all the meanings from the books after reading them, recognizing new meanings and entering them in proper place etc. is a very difficult task.

To perform this work in a systematic manner, we get the biggest help from the computer. For this we need to have a collection of natural language texts. This collection can be of written language, also of oral language. Let's say that our dictionary will eventually consist of 5 lakh words. To know the different meanings of all these words, we would need a huge collection. Good computer dictionary analyze about 20 million (about 50,000 pages) of material from a variety of sources, such as literature, journals, science topics, everyday practice, etc.

'Concordance' programme related to words brings to us all those sentences in which there are various contexts of its use. We can analyze all these usages together and finalize it as an entry. Similarly, from the point of view of meaning, the details of many other features can also be known immediately. We can also analyze the characteristics of related usages in the concordance programme itself.

Another purpose of the Concordance is to determine the 'lemma'. Let's take an example of the any verb which has many forms in Hindi. Lexicography considers root form of the very and all the rest as derived from it. Lexicology considers any one of these as the word of the main entry (i.e. the lemma) and interprets the meaning of all the other words within it. The dictionary identifies a base form of related words and executes the meaning of all the words under it. We can call this process 'lemmatization'. 'Lemmatization' is an essential part of the process of making any computer dictionary.

What is the need of the lemma? Many traditional dictionaries do not adopt the process of analyzing the meaning of related words. They treat the visible forms of words as separate entries to indicate their meaning. In this way, the 'design' of the dictionary helps us to create the dictionary correctly, also provides the facility to view the information of the created dictionary in the desired way.

If the 'design' is more deep and well thought out, the more the utility of the dictionary will increase. Due to its design, in a computer dictionary, we can refer to the context of the use of literary words, abuse, curse, blessing etc., along with the meaning of the words. Then type the name of the context used in the search condition, then you can also see all the words of that context. It will be mandatory to set aside a separate place for the mention of such usage areas in the design layout.

The concept of lemma indicates the scientific method of dictionary making. The basis of this concept is the semantic analysis of language through words. It is believed that computer lexicon should be based on semantic analysis, only then we can take full advantage of it in programmes like spontaneous machine translation etc. We cannot imagine smooth translation from bilingual dictionaries based only on semantic equivalence.

When we identify all the forms of the word through concordance and determine their lemma, then we also concord/index all the words that are part of the lemma and analyze their meaning. The machine (computer) places before us all the forms of the lemma and we can see their applications in a systematic way and include their information in the entry.

Now we can consider another aspect of dictionary making by computer. Some computer software manufacturers have created programmes for dictionary making. When you enter your information in it, then the computer dictionary takes shape. But if you want to create a dictionary according to your wish, then you should prepare your own programme. We shall call this aspect the ‘design of the computer dictionary’. This design controls both the size and ‘functionality’ of the dictionary.

5.4.3 Dictionaries for Computers

The title is a bit shocking to us, because we tend to view computers as a tool, not as a consumer. Before this discussion, we need to know how computer works related to language. Let’s say we have a nice programme for spell checking. He will catch the misspelling of words. He recognizes different forms from them by comparison. But he will consider ‘that boys goes’ as correct, because all the three words are spelled correctly, with only grammatical error. Computer does not know language like humans, only follows rules.

In the past few decades, artificial intelligence has begun to be incorporated into computer programmes. The computer can now play the game ‘chess’. For this he has to take stock of the situation, calculate the consequences of three-four moves possible for him and choose the most suitable move. In this process, the computer introduces the same type of intelligence as humans do.

The computer translates with the help of given grammatical rules and bilingual dictionaries. So if we say ‘The Man is pregnant’, the computer will produce its translated form in another language. But if we can add to our dictionary the information that the word ‘pregnant’ refers only to women or to females animals, then the computer will not translate the sentence, but will mention that the sentence is incorrect. In this way, the dictionary kept in the computer will not be just a collection of information, but its meaning and usage characteristics will be mentioned in such a way that the computer can use it properly in the execution of its other programmes. This is what we call the system of keeping lexical resources in the computer in a machine readable form.

Why is there a need to give the knowledge of the dictionary to the computer? In this context, we can discuss some programmes in which the computer can use this knowledge. We talked about spell checking programmes. There is another similar programme known as ‘grammar check’. We can keep grammatical information related to words in the computer, but we cannot mention nouns as subject or verb in the dictionary. Almost all noun words can come in the form of a subject or an object. To identify the causal relation of words, we will need a programme called ‘Parser’. The Parser can do three things - it can recognize the form of the original word by recognizing the forms of the words; can recognize the categories of words (like noun, pronoun etc.); and can identify the function of words in a sentence and indicate

their relation to each other and inform the formation of various phrases. Only by using this information related to the word, the computer can complete the work of grammatical or stylistic checking, translation etc.

Not only for computers, advanced dictionaries of languages also need to provide grammatical information. We have already mentioned that the main purpose of the dictionary is to list all the possible usages of the word, so that we can get the knowledge of the meaning according to the context. In this way, the grammatical information related to the word is also important in determining the meaning. The learner or user of the language wants to know where the use of which word is appropriate. We know that some adjectives come before nouns, but cannot come as predicate adjectives in verb phrases. As :

The immense wealth of the state	--	The wealth of the state is immense.
His pure conduct	--	His conduct was pure.
Smooth motion	--	Motion is smooth.

Now-a-days, grammatical information is also being given in good dictionaries. e.g.

Leisured people

Adjclassif: ATTRIB

(Source: *Collins Cobuild English Language Dictionary* (1987), Collins, UK)

Here 'ATTRIB' means that the word is not used as a predicative adjective. When printed dictionaries can provide grammatical information, it is essential for computers to do the same.

Another programme in which the computer makes use of its knowledge of semantics is called an 'Query' programme. In the query program, the computer has to recognize the question asked, and after recognizing it, the correct answer has to be given. For example, 'What time is Super Fast train arriving?' In response to this, 'at half past ten' or 'at ten twenty', the answers are relatively simple, 10.30; 10.20 etc. can be spoken on the basis of numbers. A truly successful query is one where the computer can respond to the situation with logical inference. There is a famous example in this context :

The text is:

All three went to the restaurant. Ordered food. Been sitting for a long time. Then went out after getting irritated.

Question to computer - Have all three eaten the food?

Computer answer - No.

The computer guessed the answer based on semantics.

In the case of eating, the following expressions would have been - payment of bill, being satisfied, completing the meal.

In the event of not eating - getting irritated, angry, dissatisfied with the service, being sad about the delay.

That is, we are giving the same type of knowledge to the computer, which is there in a normal person. The computer is reasoning in the same way that we humans do. Such a knowledge-rich computer can perform linguistic tasks naturally and easily. We call the process of giving this knowledge to the computer, that is, making linguistic information available for the use of the computer.

Before learning about ‘Knowledge Representation’ in the context of computer dictionary, it would be worthwhile to consider online dictionaries.

5.5 Online Dictionaries

Along with computer dictionaries, online dictionaries are also often used. It has been clarified in Section 5.4 that the computer dictionary is actually of the computer, for the computer and created by the computer itself. Now let us try to know what is online dictionary and how it is different from computer dictionary.

5.5.1 What is an Online Dictionaries?

Online dictionaries are also often discussed along with computer dictionaries. In the context of computer dictionary, it has been told in Section 5.4 of this unit that this dictionary belongs to the computer, is meant for the computer and is created by the computer itself. Online dictionaries is also basically computer dictionary, but the special thing is that we can use these dictionaries through internet. That is, to use online dictionaries, it is necessary to have an internet connection. While using it, the user has to go to the website. For this, the user needs to know how to use the website. Although this facility can be used with general computer knowledge.

5.5.2 Online Dictionaries and Computer Dictionaries: Salient Features

As a result of the discussion made so far, in conclusion we will see what kind of dictionaries are suitable for computers or on computers. In this context, first of all we would like to see what is the difference between Online dictionaries and computer dictionaries.

We have discussed in Section 5.4 of this unit that digital dictionaries have four characteristics – quick access to words, facility to be updated from time to time, facility to find required information and limitlessness of size. However, these features form the basis of the difference between the two as compared to the traditional printed dictionaries. But these are common features of both computer dictionaries and online dictionaries. That is, these characteristics are of computer dictionary as well as of online dictionary. In the light of these characteristics, overall it will be said that computer dictionaries and online dictionaries have the quality of reciprocity, while printed dictionaries lack this type of reciprocity.

Here we also have to keep in mind that in terms of properties such as instant access to words, facility to update from time to time, facility to find required information and no limit of size, the computer dictionary and the dictionary available on the internet have similarities. But functionally there is a slight difference between the dictionary located on the computer and the dictionary available on the internet. The basis of the difference is that the computer dictionary is located on the computer (also called offline dictionary), but for the dictionary

available on the internet, the computer must be equipped with internet facility. In the absence of internet connection, it is not possible to use the dictionaries available on the internet. Online dictionaries may also be available free of cost and can be used after paying a certain amount.

In fact, the topic of discussion is that what kind of digital dictionaries are available. Hundreds of dictionaries are available in English. All dictionaries have their own characteristics.

The important thing is that the digital dictionary created on the computer can be used in other programmes as well. This content in the form of a dictionary is called 'Computer lexicon'.

Let us now move on to the process of making linguistic information available for use by the computer i.e. 'Knowledge Representation'. Learn about But before that it would be appropriate to ask the following self-examination questions.

5.6 Knowledge Representation

Section 5.4.3 of this unit on 'Dictionaries for Computers', we have explained that a computer with knowledge can perform linguistic tasks naturally and easily. It is actually making available linguistic information for the computer to use, which we can call giving knowledge to the computer. 'Knowledge Representation' is the process of making linguistic information available for computer use.

'Knowledge Representation' is a vast topic in itself, which is a major part of the field of Natural Language Processing (NLP) from the point of view of language. In terms of computing, knowledge management, knowledge engineering etc. are developed in the fields. In the context of knowledge representation, we will discuss here only those topics, which are related to the field of words and meaning.

As discussed above, the purpose of Knowledge Representation is to put the linguistic objects in such a form that the computer, i.e. the programmes run by the computer, also get the necessary knowledge about the language. In this way, in the field of language computing, we move away from 'data base' (data accumulation) towards 'knowledge accumulation'. 'Knowledge accumulation' is actually a replica of the knowledge set accumulated in the human brain. We know that only birds fly, humans cannot fly. In the computer, if we associate the verb 'fly' with birds, then the computer can misjudge 'he flew to the office' by inference. The complexity of the language is that we can also say 'he is flying' in an idiomatic sense, the computer can also see that a word like 'flying' can also come in an idiomatic sense, figuratively to humans. The question is how do we keep these information or materials in the computer. In other words, the question is what is the methodology for knowledge representation?

We will discuss only four types of knowledge representation here. Two of these are related to the 'function of words in sentences' and two are related to 'semantics'.

5.6.1 Knowledge Representation : Syntactic

The first is logic. Logic is being able to make inferences and draw conclusions in the context of statements. For example, there are two statements. There is a saying - 'Animals have four

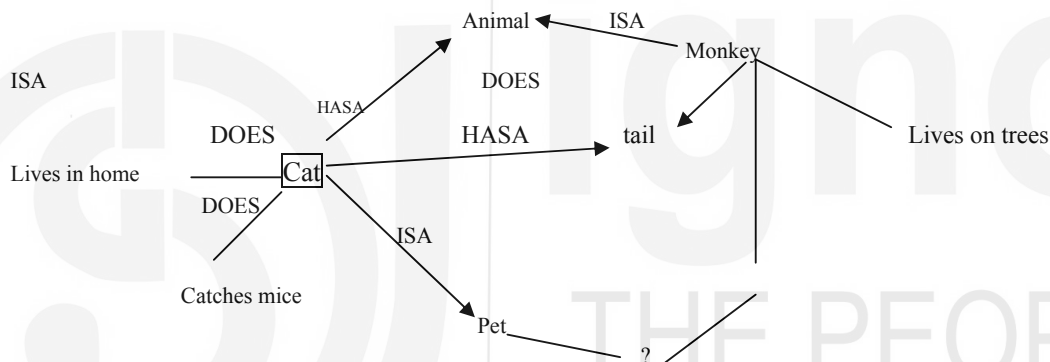
legs.’ Then there is another statement - ‘X is an animal.’ In the context of these two statements, all the animals that come in the category of ‘x’ (such as elephant, lion, deer etc.) will have the characteristic of having four legs. Man is not an ‘animal’ in this sense, he is a ‘creature’. ‘Predicate logic’ is the dominant form of sentence analysis in the modern era; Boolean algebra is a major tool for linguistic operations. You can get their introduction from ‘internet’.

The second major type of Syntactic knowledge representation is the ‘Parser’, which interprets the properties of forms, words, and phrases by analyzing their functions.

5.6.2 Knowledge Representation : Semantics

We will discuss here the technique of keeping words in the form of knowledge accumulation in the computer in terms of their composition and meaning.

The first type in this is ‘Semantic network’. To understand this, we are presenting a diagram, which is as follows:



We can discuss three types of relations of each object with other objects in the language. These relations are – what she is, what qualities she has; and what she does. For example,

- Salmon is a fish. (ISA)
- Cat has a tail. (HASA)
- Kite /Eagle flies. (DOESA)

These three relations of words reveal its meaning like a woven net. The relation ‘is’ (ISA) indicates its place in the order of things, the relation ‘is attribute’ (HASA) indicates the characteristics, the relation DOESA refers to all the functions of that object. All animals have the same characteristic of has four legs. That’s why if we keep increasing the network as mentioned above, then we can see the meaning of the words on a wider scale.

There are some drawbacks of Semantic Network. For example we can’t show absent relation like ‘Monkey is not a pet.’ This is where predicate logic comes to us as a means of filling this gap.

Another type of word and semantic representation is ‘WordNet’. It is also a network, which organizes the words of the language into ‘SYNSET’ (Set of Synonyms) and presents the relations between them in a hierarchical manner. Let us try to understand this by taking the example of an Synset :

- ‘good’ - good opportunity to plant tomatoes. (good time)
 ‘appropriate’ - appropriate time for social changes (time is ripe)
 ‘proper, good’ - proper to start work (the right time)

You can see that we can consider these three words as a synonymous set from the point of view of usage context. It is also noteworthy that the same set of English synonyms appears in Hindi as well, because semantic arrangements are universal across languages.

‘WordNet’ presents a set of synonyms of four types of words. These words are noun, verb, adjective and adverb. Synonyms set consists of words of close-synonyms; at the same time, co-usages are also taken in the context of use such as the use of Hindi word ‘Sagar’ to indicate the abundance or vastness of the quantity - ‘Vidyasagar’, the word ‘Sagar’ etc. If a word has different meanings, then we keep them in different sets of synonyms.

We can see the relation of different synonym sets to other sets in three major arrangements in ‘WordNet’. These are :

a) ISA Relation : ‘Lion is an animal.’ - In this sentence ‘lion’ is a ‘member noun’ (hyponym), the animal is a ‘class noun’ (hypernym). All members of the class (lion, deer, cow etc.) are class ‘co-ordinate terms’ of the ‘class name’. In this context, we can mention that class synonyms have some common characteristics, which we can call their HASA relation. An example of this is being given further.

b) HASA Relation : ‘The cow has two horns.’ - In this sentence ‘cow’ is a holonym, and ‘horn’ is a meronym. Meronym ‘horn’ applies to all the words of member names like cow, deer, goat etc.

class/animal/-/member/



c) Relation of Synonymy and Antonymy : It is the combined form of both mentioned above. We can denote a synonym by ‘is the same as’. Antonym indicates the opposite meaning. For example,

- the sense of Hindi word ‘Ishwar’ is synonymous with ‘God’.
- ‘Theist’ is a antonym for ‘Atheist’. (not quite the same)
- The well is deep. (The well has depth.)
- The pond is shallow. (The pond doesn’t have depth.)

Having considered the context of knowledge representation, let us now consider its use by computers.

5.6.3 Use of Knowledge Representation by Computer

For the use of computers, we can name linguistic information as ‘Ontology’, because in this various aspects related to the meaning of words are presented in a logical manner and the

computer can recognize these arrangements and use them. In Ontology, we get information about classes (generic nouns) and their expressed form. Then we see the relation between the class and its members (e.g. animal; cow). All properties of a class are properties of its members. The general characteristics of a class are inherited by its members, such as the characteristic of the 'four-legged animal' applied to all animals. Then the interrelationships of all the words are specified in the manner described above. In this context, we can say that the lexical reference in Ontology is more systematic and useful than the general thesaurus and has less scope for ambiguity.

An international organization has been established for the creation of resources for language related tasks in computers, named W3C (unified organization 'www Consortium'). This organization has listed four main features of OWL (Web Ontology Language). Let us look at all four of them :

1. We can organize all the words of the concepts of language into classes and sub-classes. For example, the words 'animal - bird - pigeon' etc. form a series of class names and member names. This is the primary basis for the accumulation of knowledge of the language.
2. Then let us describe the characteristics of classes and class members. Classes have shared characteristics. Each member of a class has a unique characteristic of its own, which distinguishes it from all other members. All the characteristics of a word make up the meaning of that word.
3. Class and class member are generic words, abstract concepts. Objects existing in real life are manifestations of those classes or sub-classes. This may also have its own specific symptoms. For example, 'A dog has four legs, but Ramesh's dog Moti has only three legs.' If we use a Hindi sentence 'Ramesh Ghar Gayi', which is a wrong sentence, because an attribute of the class 'man' is 'masculine'. Here the expressed form 'Ram' or 'John' is always masculine, because gender indicates ISA relation, not HASA relation. Hence 'This cow is not an animal.' is always wrong.
4. The last characteristics are 'Operations'. Let us talk of two sets in the context of human beings - 'Indian' (i.e. all the people of India) and 'African'. Another 'man' and 'woman'. From these we can create subclasses like 'African men', 'Indian women' etc. Both the sets bring their own characteristics, from which the characteristics of the subclass can be known.

With the help of Ontology, the computer will be able to use these words unambiguously in translation, inquiry etc. related programmes.

5.7 Computer and Lexical Resources

In Section 5.6 of this unit we discussed that the process of organizing Natural Language Resources i.e. linguistic units for various linguistic programmes is called 'Knowledge Representation'. In 'Knowledge Representation', the meaning and grammatical

characteristics of words are adjusted for use by computer programmes in a variety of ways. For this reason, we will not be able to say them ‘Semantic Net’ or ‘WordNet’ etc. We call dictionaries, word lists, dictionaries of multi-word expressions, thesauruses, wordnets, semantic nets, etc. as ‘Lexical Resources’.

The development of lexicographic resources is the goal of those who do linguistic work in computers. With these lexical resources, there is a possibility of use them in the context of language testing, analysis of language composition, translation, language teaching, ‘enquiry’ etc. programmes of information-communication etc.

Now we will discuss some of the dictionaries or lexical resources available on the computer. on the internet. If you search by name Hindi dictionary, you will find hundreds of dictionaries like, www.hindi-dictionary.net, www.babylon.com, en.bab.ladictionary etc. The last two are truly multilingual dictionaries and give the meaning of a given word in the other language depending on the chosen source language and target language. There is a lack of usages in these, there is a limit of words.

Some of the dictionaries available on the Internet are free, while many dictionaries can be obtained by paying a fee. www.shobdkosh.com contains the usages and co-usages of the word. Similar to all usages, English equivalents etc. are also available. As soon as the characters are typed, many words appear in the drop down menu. His translation can be seen. There are also uses of words. But there is a lack in these too.

Now, we will discuss ‘Wordnet’ and ‘Thesaurus’ in the context of other lexical resources.

‘Hindi Wordnet’ (Hindi wordnet : www.cfilt.iitb.ac.in) : Prof. Pushpak Bhattacharya created this site. It contains 92456 words and 36910 synonyms. 23636 Synonym sets are related to each other. There are hundreds of rare words in the name of synonyms. Collection of word has been painstakingly done.

‘Thesaurus’ : Arvind Lexicon ‘arvindlexicon.com’ is the largest thesaurus. Its free version contains 85000 words and 73000 English synonyms in 8500 entries. If there are three meanings of a word, then all the equivalents and English words come to the fore. Each synonym is associated with a hyperlink and on clicking it, it comes up with its meaning as in the original entry. Many synonyms are rare. If you look at the depth of meaning, derived words and the convenience of quick search, it is a very useful tool. It is a true bilingual thesaurus; there are no usages in it like a learner’s dictionary.

We discussed that computer dictionary can be a combination of usage and thesaurus. The same effort has been made in ‘Chhatra Kosha’(learner’s dictionary) available on www.hindi-dictionary.com. It explains semantics with usage and provides quick access to thesaurus-like etymologies and related words.

5.8 Let Us Sum Up

Computer solves mathematical problems, keeps track of company’s accounts. We call this task ‘data processing’. Editing of language-lessons on computer also works, we call it ‘word processing’.

We can do many other things related to language through computers. This field is named 'Natural Language Processing' (NLP). The computer can type by listening to the spoken language, it can 'hear' the written language by reading it. He can read our written text and correct spelling and grammar mistakes. To do all these tasks, the computer needs the vocabulary and grammatical rules etc. of the language. With the help of the same resources, the computer completes many tasks like translation, writing poetry, answering the questions asked, etc. Computer's ability to do this work is named 'Artificial Intelligence' in Computer Science.

What is the basis of 'artificial intelligence'? The dictionary (i.e. list of words) kept in the computer is just data. We have to put words and expressions into the computer in such a way that it can recognize the features of word usage and sentence structure. That is, if linguistic resources are in a machine-readable state, the computer can use that information in a variety of programmes. We call the system of keeping the elements of language in the computer 'Knowledge Representation'.

We can put the words of the language in two ways. One of these types is to keep the word in the computer in the form of a 'WordNet', in which the interrelationship of the words is clarified. For example, 'Animal' and 'Cow' are the names of the class and class members. There is a relation between 'cow' and 'horn'. We can also clarify these types of words through the 'Semantic Net'. Another way of storing words in a computer is to store words as a 'dictionary'. The dictionary mainly provides grammatical information about words. It tells how the word is formed, which grammatical class the word belongs to, such as noun, pronoun, adjective, and what kind of relationship that word has with other words in the sentence etc. In this way, we create a programme called 'Parser', which analyzes the sentence i.e. to identify the compositional relations of the words. On the basis of this analysis, we are able to complete the work of grammatical checking, translation etc. of the language.

'Knowledge Representation' is logic. This argument is based on our knowledge of the world, such that 'the elephant flew' is a false sentence, because 'flying' is not a characteristic of animals. This knowledge of reality is the basis of lexical resources like semantic net. We refer to processes like synonyms, antonyms etc. in dictionaries. They actually reveal the logical nature of meaning. Sentences with synonyms convey the same meaning and sentences with antonyms convey the opposite meaning like 'I am good' = 'I am fine', 'This house is good, but that house is bad'. In the context of knowledge representation, we can say that both words and syntax are essential for computers and in this unit we have focused on words.

In what form is the dictionary kept on the computer so that it can use it itself? If the dictionary is kept in printed form, then it will not be of computer use. We have to keep only the dictionary containing logical, meaningful analysis in the computer. In this context, we have to keep the dictionary in the form of 'Wordnet', 'Semantic Net' etc., in which class-members, organ-organ relations, antonyms-synonyms, co-uses etc. should have all the characteristics. We would like to call these resources 'Lexical Resources' instead of calling them dictionary, because their purpose and functions are diverse.

There are many types of dictionaries. Dictionaries of Synonym and explanatory dictionaries are of general category, as they do not show how the word is used in a sentence. 'Learner's Dictionary' explains the meaning of the word with its use in the sentence. From this point of view, this dictionary is useful not only for learners, but also for computer programmes like machine translation, creative writing etc. Both these types of dictionaries are suitable for the knowledge of the meaning of the word used, but it is not possible to choose the word according to the thoughts. Thesauruses give us a variety of options, but the usage context is not clear. Computer dictionaries can be an effective combination of learner's dictionaries and thesauruses, as computers allow quick access to desired information with ease of word search.

In this unit we have also explained the difference between traditional printed dictionary and computer dictionary. We have seen that digital dictionaries have four characteristics – quick access to words, facility to update from time to time, facility to find required information and no limit of size. It can be said that digital dictionaries are endowed with the property of mutuality, while printed dictionaries lack mutuality. Along with this, it has also been clarified that in terms of the characteristics of the digital dictionary, there is similarity between the computer dictionary and the dictionary available on the net i.e. online dictionary, but from the functional point of view, there is a slight difference between them. This difference can be seen in terms of internet connection. The computer dictionary is located on the computer, but for the dictionary available on the net, there should be internet facility on the computer. Some of the dictionaries available on the internet are free, while many dictionaries can be obtained by paying a fee. Today, dictionaries of many languages are available on the internet. If we consider the English language, we find that there are hundreds of dictionaries available on the net. All dictionaries have their own characteristics. At the end of the unit, we have also discussed 'WordNet' and 'Thesaurus' in the context of lexical resources.

In fact, the development of lexical resources is the ultimate goal of those who do linguistic work in computers, because it is from these resources that authentic material can be used in many areas such as language testing, analysis of language composition, translation, language teaching, 'inquiry' etc.

5.9 Glossary

Digital : Not only the text stored (data etc.) from the computer's two-digit system, sound images etc. can also be entered through digital method.

Computing : Processing tasks performed using computers.

Knowledge Representation : The storage of knowledge in the form of information for its use in a computer.

Knowledge base : Computer stored information in the form of knowledge.

Artificial intelligence : Computer's efficiency in tasks such as playing chess, which appears as if the computer is 'thinking'.

Surfing: Moving from one website or web-page to another site or page on the internet.

Index : An ordered list of words that appear in the text.

Concordance : A list of all the usages of a word in a text.

Reasoning : Reasoning in a logical manner.

Aggregate Set: A set of objects.

Interactiveness : A way to ‘communicate’ with the computer.

5.10 Exercises

1. Throw light on the main and secondary functions of computer.
2. Give an introduction to the major programmes of Natural Language Processing related to the field of translation.
3. Write a note on ‘Functions of Dictionary’.
4. What is Computer Dictionary? What is the difference between Online dictionary and Computer dictionary?
5. Write an essay on ‘Knowledge Representation’.
6. Throw light on ‘Computer and Lexical Resources’.

5.11 Suggested Readings

- Malhotra, Vijay Kumar, 1996. *Computer Ke Bhashik Anuprayog* (Linguistic Applications of Computer), Vani Prakashan, Delhi.
- Sethi, Harish Kumar, 2009. *E-Anuvad Aur Hindi* (E-Translation and Hindi), Kitabghar, New Delhi.
- Allen, James, 1995 (Indian edition 2003). *Natural Language Understanding*, Pearson Education, Delhi.
- Jurafsky, Daniel & James H. Martin, 2000. *Speech and Language Processing*, Pearson Education, Delhi.
- Coppin, Ben, 2004. *Artificial Intelligence Illuminated*, Narosa Publishing House (P) Ltd, New Delhi.

UNIT 6 UTILITY OF DICTIONARIES IN TRANSLATION

Structure

- 6.0 Objectives
- 6.1 Introduction
- 6.2 Inter-relationship between Translation and Dictionaries
- 6.3 Importance and Utility of Dictionaries in Translation
- 6.4 Rationale for Using Monolingual Dictionaries in Translation
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 - 6.6.10 Dictionary of Idioms and Proverbs
 - 6.6.11 Dictionary of Literature/Encyclopaedia
 - 6.6.12 Computer Dictionaries and Online Dictionaries
- 6.7 Use of Dictionaries in Translation : Limitations
- 6.8 Let Us Sum Up
- 6.9 Exercises
- 6.10 Suggested Readings

6.0 Objectives

After going through this unit, you should be able to :

- know the inter-relationship of translation and dictionaries;
- outline the importance and utility of different types of dictionaries in context-related translation;
- understand the justification for the use of monolingual dictionaries in translation;
- know which dictionaries are required when and where in translation of various subjects; and
- discuss the limitations and possible solutions of dictionaries in the context of translation.

6.1 Introduction

From the study done so far, it must have become clear to you in relation to dictionaries that the meaning of the word 'dictionary' is often formed in two ways - on the basis of etymology and on the basis of prevalent meaning in the process of determination of meaning. We want to

tell you that depending on the popular meaning and usage of the word, the deviation of meaning is an important component of the meaning. In this unit we will study about the utility of dictionaries in translation. In this context, first of all it is necessary to know the interrelationship of translation and dictionary. In the light of this interrelation, you will be able to understand the usefulness of dictionaries and importance of using dictionary and other types of dictionaries in translation. You will also be able to know the utility of different types of dictionaries in context of translation.

Dictionaries and other types of dictionaries prove to be the main means of the translator in translation. Since translation is the conversion of text from one language into another, dictionaries of the source language and the target language are useful in translation. If seen from this point of view, bilingual dictionaries are needed in translation. In such a situation, the question arises that what is the justification for the utility of monolingual dictionaries in translation. This question has also been considered in this unit and it has been told how monolingual dictionaries prove useful in translation.

Along with this, it has also been told in this unit which dictionaries are needed when and where in translation of text related to various subjects like humanities, sciences, social sciences, technology, medicine etc. The unit also introduces you to the limitations and possibility solutions of dictionary in the context of translation.

After going through the unit presented in this way, you will be able to understand the importance of dictionaries in authentic translation and their proper use. Let us first know what is the need of dictionary in translation and why.

6.2 Inter-relationship between Translation and Dictionaries

In translation, the content of one language is presented in another language. But the work of the translator is not merely transfer of words of the text available in the source language into the target language. Translation should include semantics as well as the original intent of the statement. To fulfill this purpose, the translator's own language-knowledge etc. is also necessary. The translator accomplishes this task on the strength of his memory. But there is a limit to the memory power of the translator, so the translator also needs different types of tools to complete his work well. One such important tool is 'dictionary'. Dictionary is actually a major part of the translation infrastructure.

The field of translation is very broad and complex. Its scope ranges from general statements to esoteric subjects. On the one hand, where there are disciplines related to law, administration, literature, social sciences etc. on the other hand, there are disciplines related to various branches of knowledge like medicine, engineering, technology, astronomy, astrology, space science etc. In fact, in this subject (translation) with diverse subjects, the translator should have special authority on both the source and target languages, along with his ability, skill, subject-knowledge etc.

There are two aspects of the translator's special authority on the language. Its first aspect is 'language knowledge', which means that the translator must have a good grasp of the semantics of the source language. On the other hand, the other side of the translator's special authority on the language is related to understanding the implication of the particular word.

These two aspects of language-knowledge are called ‘Abhidhartha’ (connotative meaning) and ‘Nihitaarth’ (denotative meaning) respectively. Correct knowledge of these is an essential condition of translation. Along with this, the translator should also take care of linguistic usages i.e. referential use of language and emotive use. In fact, a translator has a detailed understanding of both the source and target languages, only then he can do the extremely difficult task of finding equivalents in both the languages. For this, dictionary is the helpful tool of the translator.

There are different types of dictionaries. You have read about these types in detail in Unit-2. It can be said that these dictionaries are - dictionary, technical terminology, definitional dictionary, dictionary of legends/myths’, ‘thesaurus’, dictionary of synonyms, encyclopaedia etc. These types of dictionaries are needed in translation. In section 6.6 of this unit, we will study their different uses and importance in the context of different types of dictionaries.

In the first unit of this Course itself, you have studied that ‘Dictionary’ is a book in which words and their meanings are given in alphabetical order. But from the point of view of usages (register) and application, the meaning of ‘word’ keeps on changing. It is extremely helpful and necessary to understand the change of meaning in translation. Different types of dictionaries are required to understand the semantic separation of the same word. These different types of dictionaries are of specific nature. In short, they can be called ‘Context-relative Dictionaries’.

Here a question may arise in your mind that what is meant by the basic concept of ‘Context-relative Dictionary? Whether this is a special type of dictionary? Language is broadly used in two ways in the context of disciplines. These usages are - (1) Emotive use of language; and (2) Denoting the popular meaning of the word or the meaning applied in various disciplines.

1. Emotive Use of language means - sarcasm use of words. In this type of usage, there is an understanding of superficial and deep meanings of the same word, echoes of semantics and many layers of meaning. For example, consider the following line from a love poem by the English poet Robert Browning - ‘My moon is everybody’s moon.’ If we understand the meaning of the whole poem properly, it will be known that in this the poet does not only want to convey the beauty of the word ‘moon’, but also wants to indicate the infidelity of his beloved. It is meant to be said that depending on the context and context, a common meaning denoting word can also have a deep-serious meaning.

If seen in this way, the purpose of ‘Context-relative Dictionary’ is not only to give different synonyms of a word, but also to clarify the meaning of that word in various contexts.

2. The second usage of language is to denote the prevailing meaning of the word or the meaning applied in various disciplines. This type of language is used in banking, commerce, administration, law-justice etc. which has often become stereotyped.

‘Context-relative dictionaries’ underlines the above two types of usages of language.

In translation, different types of dictionaries are used according to the context. Keeping this in mind, different types of dictionaries have been prepared at the government and non-

government level. In Unit-2 , you have also studied the tradition of dictionary making. Here we would like to tell you that the tradition of making special dictionaries related to the context is the gift of modern times. But the tradition of making traditional dictionaries is ancient. From the study done so far, it must have become clear to you that the lexicography originated in India about 3000 years ago. ‘Vedic Nighantu’ is the first dictionary of the world. ‘Nighantu’ has been prepared in the form of a list of synonyms by selecting difficult words from Vedic literature. The words of Yasak, the Nighantu-maker, prove that many such texts were prepared. But only one Nighantu or dictionary is available today. About eighteen hundred words are compiled in this dictionary (Nighantu). These words include both name and title. Yasak has also written a detailed commentary on this Nighantu. In this way, the tradition of the dictionary is very ancient in Indian literature or Western literature.

Today different types of dictionaries are available, which are required from time to time in translation. Consideration is necessary from the point of view of the utility of the dictionaries which are most needed in translation. But before discussing this, let us consider the importance and utility of dictionaries in translation in general.

6.3 Importance and Utility of Dictionaries in Translation

When we consider the importance and utility of dictionaries in translation, we find that this the question is also closely related to the ‘type of dictionary’. Broadly speaking, it can be said that the use of the dictionary from the point of view of etymology, standard spelling, grammatical category, standard pronunciation, meaning, standard usage, introduction, synonymy, ambiguity and antonyms of words of one language in other languages etc. is to make ‘half-known’ to ‘completely-known’ and to solve doubts. That is, different types of dictionaries have different usages. It is meant to say that there is one use of the dictionary, then the encyclopaedia, the subject dictionary (such as economics dictionary, linguistics dictionary, psychology dictionary etc.) is the second and the dictionary of usage is the third. Similarly, if there is one use of the technical terminology/definitional dictionary, then there is another use of synonym dictionary and Aphoristic Sentences dictionary, or there is one use of etymology dictionary, then something else of pronunciation dictionary.

Similarly, the use of ‘Thesaurus’ can also be seen. The use of thesaurus has become very important in modern times. With the advancement of modern science, technology, engineering, technology and medicine, the use and importance of thesaurus has increased. ‘Thesaurus’ contains words of various categories. Meaning, synonyms, antonyms, concepts and uses of these words are given. In fact, thesaurus is a huge ‘synonymous dictionary’. The translator has to find different types of meanings for the words presented in the translated text. ‘Dictionary of Synonyms’ helps the translator to find the correct and accurate meaning. ‘Pronunciation dictionary’ helps in transliteration. The ‘Encyclopaedia’ and ‘Definitional Dictionary’ provide detailed and specific information on the subject matter concerned. Similarly, ‘Dictionary of Literature’, ‘Dictionary of Legends/Myths’, ‘Idioms and Proverbs dictionary’ etc. help in translating the specific usages of the source language into the target language. It is clear that different types of dictionaries have special importance in translation.

For the use of translators, he requires the bilingual dictionaries related to the most important source and target languages. For example, Hindi-English, English-Hindi, Sanskrit-Hindi, Urdu-Hindi etc. dictionaries.

Before the development of computers, we used to see all types of dictionaries in printed form only. But the development of computers has made the dictionaries available in digital form as well. Due to this, new dimensions have been opened by the use of computer dictionary by the translator. In fact, we can use computer science in many fields, such as education, medicine, office, banking, mass communication, business, stock market, engineering etc. The potential of computers is limitless. Different types of software and systems have been developed for all these. In determining the meaning, the translator gets enough help in finding the meaning of the words. Computer is also helpful in deciding in which new or old meanings the word has been used in the language .

In fact, the utility of different types of dictionaries is unquestionable. When the specific concepts of the translated subject are unclear to the translator, then he has to take the help of dictionary to understand them and keep or create their equivalent.

When the translator does not know the exact meaning of a difficult word in the source language, then s/he should take the help of monolingual dictionaries for its information. In fact, the use of a monolingual dictionary is necessary to ensure the proper meaning of that particular word in a particular context. The use of monolingual dictionaries is particularly necessary in the translation of literary and cultural works, as they contain relatively unfamiliar vocabulary.

Bilingual dictionaries are used to search for equivalent words in the target language. The translator makes the most use of them.

While translating the source text related to Science, technology, engineering, medicine and other professional subjects from the source language to the target language, it is necessary to use bilingual dictionaries so that the correct translation from standard dictionaries can be done.

Sometimes the translated material replaces the standard form of the source language, or uses sub-languages or dialects in addition to the standard form. This is especially the case in literary works. In order to determine the equivalent of such usages, it becomes necessary for the translator to understand their precise meaning. In such a situation, the study of related language variant (sub-language) or dialect dictionaries is not only useful for the translator, but also essential.

The translator must have authoritative knowledge of the source and target language. Only then he can do translation work well. But along with this, the translator is also expected to have an understanding of the cultures of both the languages because it is natural that the culture of different language areas is not the same, they differ from each other. Due to this cultural difference, it is not very easy to convey the concept expressed in one language to another language. Sometimes the cultural context of the source language composition is not very clear to the translator. In addition, sometimes it is necessary to convey the long-standing cultural tradition underlying the idioms and language usages used in the source language text

to the target language audience i.e. to introduce it in the translation. In such situations, cultural dictionaries related to the area of the source language prove helpful to the translator. In the translation of the literary works which are associated with the mythological stories of different regions or with the reference of mythology, the related dictionary proves to be a better tool for the translator.

Many alternatives can be found for a word. This does not mean that they are all equivalent on the ground of synonymous meaning. The reality is that there is a subtle difference of meaning in each of those synonyms. Similarly, for one word in the source language, many times there are many equivalents in the target language. In such a situation, it becomes necessary for the translator to understand the precise and subtle meaning of the particular word in the source language so that he can choose the appropriate equivalent for it in the target language. For this, 'Thesaurus' and 'dictionary of synonyms' prove to be very useful means for the translator. In fact, the utility of different types of dictionaries is indispensable for authentic translation.

6.4 Rationale for Using Monolingual Dictionaries in Translation

Having learned about the inter-relationship of dictionary and translation, let us now consider the use of dictionary in the context of language. From the point of view of language, there are two types of dictionaries - monolingual dictionaries; and dictionaries of bilingual or more languages. It has been explained in Section 6.2 of this Unit that the context-relevancy of dictionary is related to the emotive use of language and applied meaning in various disciplines. From this point of view, we can also call the dictionaries as Linguistic dictionaries and other than linguistic dictionaries. These dictionaries are a major part of the translation infrastructure.

As the title suggests, 'linguistic dictionaries' are related to language. When we talk about language, then along with language, style is also added to it. Thus it is natural that Linguistics dictionary is related to various aspects of language and style. Linguistic dictionary is a general dictionary. In this, not only dictionary, synonym dictionary, idiom-proverb dictionary, antonym dictionary, Aphoristic Sentences dictionary, story dictionary etc. are all included. The special thing is that they can be monolingual as well as bilingual. The aspects of the language and style of a particular language can also be included in these and also of two languages.

From the study done so far in relation to dictionaries, it must have become clear to you that the alphabetical collection of words of the same language and drawing of their various connotations in the words of the same language remains contained in the monolingual dictionary. In this, the meanings of the same language-specific are also given. In this, along with the different meanings of the word, their grammatical categories (like noun, pronoun, verb, adjective, number etc. are also given. Apart from this, it sometimes also contains quotations to explain the different meanings of the word depending on the different usages of the word. At the beginning of the dictionary, some sign tables are also given, in which abbreviated signs are specified. With the inclusion of all these, the content related to the language and style of the particular language is made available to the users through a

monolingual dictionary. These monolingual dictionaries are very useful for language-specific learners. Here the question arises whether translators need monolingual dictionaries ?

During translation task, the content of one language (i.e. source language) is presented in another language (i.e. target language). In this transference, the dictionary related to the source language and the target language proves helpful. Therefore, it is often assumed that a bilingual dictionary i.e. related to the language and style of the source language and which provides synonyms for that language style in the target language style proves helpful to the translator. For this reason, it is assumed that there is no use of a monolingual dictionary in translation. Let us first of all consider this aspect whether the translator also needs monolingual dictionaries during translation or not.

In the context of translation, the necessity of monolingual dictionaries is unmistakable and essential. Researching the different meanings of the same word in a particular language is an important requirement of a monolingual dictionary. More deep and detailed meanings of special words are available to us in a monolingual dictionary, which prove to be helpful to the translator in proper understanding. In this, the quotes that may have been given to make the meaning of the words more clear, can help the translator to better understand the meaning of the particular word. This makes the meaning of the translator more clear and definite. Thus it can be said that the need for monolingual dictionaries in translation is also unmistakable.

6.5 Usefulness of Bilingual Dictionaries in Translation

After knowing about the justification of using monolingual dictionaries in translation, it must have become clear to you that the translator also often needs monolingual dictionaries. Let us now find out what is the utility of bilingual dictionaries in translation.

Bilingual dictionaries (dictionaries related to target language and source language) are most useful from the point of view of translation. On the basis of bilingual dictionaries, translation of common vocabulary and complex vocabulary of the source language is done in the target language. That's why the utility and importance of bilingual dictionaries is more than that of monolingual dictionaries.

When a translator engages in translation, s/he presents the content of one language (source language) into another language (target language). Thus, translation is concerned with two languages. During the translation work, the translator needs bilingual dictionaries related to these two languages. The way translation is related to two languages, similarly bilingual dictionaries are also related to two languages. In a bilingual dictionary, the meaning, pronunciation and usage of the words of a particular language are given in the context of the other language. Of these, the language in which the meaning, pronunciation and usage of words are included is the source language and the second language in which their meaning, pronunciation and usage-context is given is the target language. In this way, the meanings and usages of the words of both the languages are included in bilingual dictionaries.

Here you can think that which will be the first language of the dictionary and which will be the second language? You have to keep in mind that the first language in these dictionaries can be either the source language or the target language. The main thing in these is that words belong to one language and their meaning and usage remain in another language. For

example, for the establishment and application of the Official Language i.e. in the translation of official literature, the context of mutual translation of English-Hindi is most important. English-Hindi and Hindi-English dictionaries will come under this category of bilingual dictionaries as translation aids in this work.

Bilingual dictionaries should be used keeping in mind the different nature and use of the source language and the target language, the translator should translate according to the nature and structure of the language in which the translation is being done, so that the fluency of the language can be protected in the translation.

While translating, the translator should also keep in mind whether the word chosen in the target language for a word in the source language is giving the correct meaning or not. For example, there is the following sentence in English:

‘I am quite confident in my assertion’.

Here the English words ‘confident’ and ‘assertion’ need special attention. To know the Hindi equivalent of these words, the translator will take the help of a bilingual dictionary. Many meanings of these two words will be available in the bilingual dictionary. In such a situation, the translator will have to choose the appropriate word to translate. He will make this choice only on the basis of the preceding context because the context will determine the accuracy of the word. The dictionary shows the meaning of a particular entry as well as its pronunciation. At the same time, in the context of different grammatical categories, its synonyms are also given and other words formed from it are also known.

It is meant to be said that an entry in any general dictionary gives an understanding of the general meaning and practical meaning of a particular word and at the same time the translator also gets to know what is the expanded form of that word i.e. what are the words made up of it and what are their other-language equivalents. So much and detailed information in the context of a single word in a bilingual dictionary proves to be helpful in the translation work of the translator. Therefore it is accepted that the utility of bilingual dictionaries is the basic factor of translation.

Bilingual dictionaries are not only helpful in translation work, their usefulness and importance in vetting of translated text is undeniable. You will study in detail about vetting in Block 2 of MTT- 20 of this programme. Here we want to give you brief information that the word ‘vetting’, which literally means - to see again. When translated material is checked against the original, it means that it is being revisited. The person who does the work of checking the translated material is basically a translator, but s/he is senior and more experienced. The Vetter also takes the help of bilingual dictionaries while revisiting the translated text. With the help of these s/he checks whether the selected synonym/word of the target language is correct or not.

Bilingual dictionaries are extremely useful for the knowledge of parallel semantics in both the languages, to search for the correct meaning of both the languages from the source language to the target language and vice-versa. Some dictionaries are also multilingual like, Sanskrit-Hindi-English dictionary, Hindi-English-Urdu dictionary etc.

Bilingual dictionaries of foreign languages are also helpful in translation. In these dictionaries, equivalent words of one language are given in more than one language in the same dictionary.

Some bilingual dictionaries are also two-way i.e. in the first half of the same volume, synonyms etc. from one language to another language are given, and in the second half of the volume, synonyms etc. from second language to first language are given. For example, Larousse Pocket Dictionary French-English in the first half of dictionary and the latter in English-French Dictionary. Similarly, in the 'Longenscheidt Universal Italian' is related to Italian-English and English-Italian dictionary published in the same volume.

6.6 Types of Dictionaries : In the Context of Utility

After studying section 6.4 and 6.5 of this Unit, it would be clear to you that translation requires monolingual and bilingual dictionaries. You already know that there are different types of dictionaries. You have studied about these types of dictionaries in detail in Unit 2 of Block 1 of this course (MTT- 017). While considering the utility of dictionaries in translation, we find it necessary to look at their usefulness in the context of different types of dictionaries. Therefore, in this part (Section 6.6) of the Unit we are considering different types of dictionaries in terms of their utility in translation. Let us first consider the use of Language-variant or dialect dictionaries in translation.

6.6.1 Language-Variant/Dialect Dictionaries

Section 2.4.4 of Unit-2, you have read that language variant or dialect dictionary refers to a particular dialect or sub-language related to the standard language. Sub-language or dialect dictionary contains collection of words and usages of sub-language or dialect with meaning. Although the use of dialects or regional-spatial words remains in standard dictionaries, but they also have a limit. Whereas Sub-language/dialect dictionaries focus entirely on the words and usages of a sub-language or dialect i.e. excessive words and usages of sub-language or particular dialect are found in them.

Hindi is not only a language, but a language-group. The sub-languages/dialects of Hindi include Braj, Awadhi, Bhojpuri, Magahi etc. Words and uses of sub-language or dialects are found in literary works. These types of words and usages are found a lot in regional fiction. For example, Phanishwarnath Renu's Hindi novel 'Maila Aanchal', Srilal Shukla's 'Raag Darbari', Rahi Masoom Raza's 'Aadha Gaon', Rangeya Raghav's 'Kab Tak Pukarun' and Nagarjuna's 'Balchanma' can be seen, in which regionalism (localism) can be seen. For the translation of this type of regional fiction, the utility of language-variant/dialect dictionaries is self-evident. For example, the translation of Phanishwarnath Renu's novel 'Maila Aanchal' will require Bhojpuri and Maithili dictionary. Similarly, the novel 'Parawar Braj Ko' composed in Brajbhasha can also be mentioned, for whose translation the utility of Brajbhasha dialect dictionary is useful.

In fiction and other works too, the words of dialect related to regional customs, agriculture etc. come many times. To find the correct meaning of these words, the use of the dialect dictionary is beneficial.

‘The English Dialect Dictionary’ edited by Joseph Wright is important in English dialect dictionaries. This dictionary is published from Oxford University Press, Oxford. Similarly, dictionaries of Hindi dialects (Braj Bhasha, Awadhi, Bundeli, Bhojpuri etc.) are also useful and valuable.

6.6.2 Dictionary of Slangs

In Section 2.4.5 of this unit, you have learned that a special type of dictionary is also related to slang. In fact, in colloquial language sometimes profanity, vulgar language or degenerate words are used. However, the use of slang words is not considered appropriate in formal occasions or in good writing work because it is those words whose meaning is not clear from the vocabulary and usage of standard language. Such usages are also found in conversations between different languages users. Such non-standard word-uses in any language are called ‘Slangs’. The special thing about the use of such words is that their use is actually a part of the use of the informal language. There are many words of abuse in the use of informal language. These types of words are often not explained in standard dictionaries, because the meanings derived from these slang usages are not based on their lexical meaning but on the practicality of a particular society. Generally, these usages are not found in standard, elegant and sophisticated language, but such usages are definitely used in a particular society, in a particular class and in the language used by a particular caste. Such usages are found more in a kind of sloppy zonal literature.

If the words of the informal language are also found in the material to be translated, then the translator faces the problem of keeping their equivalent synonyms in the target language. In such a situation, it becomes necessary for the translator to first understand this type of vocabulary properly and then translate it correctly into the target language. In fact, for the translation of slang usages, the translator has to take support of slang dictionary. If slang dictionaries are available in the source language, the translator should take the help of these to understand the pragmatic meaning of current word usage used in the translated material.

In fact, dictionaries of slangs are useful for parallel translation in the source language as well as in the target language. But these types of dictionaries are usually not available. In English such a dictionary is available as ‘A Dictionary of Slang and Unconventional English’, which was prepared by Eric Partridge. But there is a complete lack of formation of this type of dictionaries in Hindi.

6.6.3 Glossaries/Technical Terminologies

It has been explained in Section 2.8 of Unit 2 of this course that ‘Glossary of Technical Terminologies’ are developed on the basis of a specific point of view. These are also called ‘Glossary of Technical Terminology’. These glossaries focusing on different disciplines like humanities, social sciences, science and technology, media, law etc. are generally prepared subject-wise. While translating the subject-specific content or to know the synonyms of the knowledge-specific terms encountered in the translatable material, the translator takes the help of glossaries of technical terms. For example, ‘Administrative Glossary’ proves useful to the translator while translating material related to administration. Similarly, if the translator is translating legal material, he should use ‘legal terminology’ to find the equivalent of the

technical terms related to law. It means glossaries of technical terms are very useful for translation of material related to various disciplines like science, law, commerce etc.

The technical terms used in various fields of science subjects (Physics, Chemistry, Biology, Botany etc.) are indicative of specific knowledge. In such a situation, knowledge of the specific vocabulary of those subjects is expected. Hence, the formation and use of technical terminologies proves to be an essential tool for translation. Similarly, the requirement of application in translation of technical terminology dictionaries related to various disciplines like Science, Commerce, Poetry, Law, History, Geography, Philosophy, Astrology, Management, Mathematics, Space Science, Medical Science, Technology, Administration etc. are inevitable. There can be monolingual dictionaries of this type, in which the meaning of some technical terms are clarified, but the translator should keep in mind that bilingual or multilingual dictionaries related to the subjects are more helpful for translation.

Due to the usefulness and importance of glossaries of technical terminologies in the field of knowledge literature writing and translation, the work of making glossaries has been done at the state level from the 'Commission for Scientific and Technical Terminology' (CSTT) to the Ministry of Law and the Lok Sabha Secretariat and is being done. In addition, a number of glossaries has been developed at the individual and institutional level. At the individual level, scholars have published English-Hindi 'Manaviki Paribhashik Kosh' (Glossary of Technical Terminology of Humanities) in different volumes by selecting the vocabulary of literature, philosophy, psychology etc.

Keeping in mind the utility and importance of glossaries, the CSTT of Government of India has published a 'Comprehensive Glossary of Technical Terms' related to Humanities, Science and Technology, Medicine etc. In these glossaries, equivalents of English words in Hindi and other Indian languages have also been given. Through such glossaries etc., Hindi equivalents of those conceptual and technical words of English are easily found, which are self-defined. The special thing is that these words are standard in themselves. This brings uniformity at the level of use of technical terminology.

The Supreme Court of India has also given a decision that at all India level the terminology developed by the CSTT should be used. In this way, the Court has given a meaningful direction to eliminate anarchy in the field of technical terminology by establishing the compulsion to use the glossaries developed by the Commission and to ensure the use of uniform standard terminologies everywhere in all fields of knowledge.

In order to underline specific sciences, in addition to comprehensive glossaries of technical terms, glossaries related to specific disciplines (subjects) were also published separately. In these glossaries, many synonyms have been given in Hindi for the same technical term in English. Taking the help of these glossaries, the translator has to select related and relative terms of the subject-area. This process of terms selection should lead to the use of correct and accurate terminological synonyms. For this work, the translator should also take help from the subject expert.

The Government of India has prepared authoritative glossaries. In these (1) Comprehensive Glossary of Technical Terms : Humanities (in two volumes), (2) Comprehensive Glossary of Technical Terms : Sciences (in two volumes) (3) All India Radio Dictionary (4) Legal Glossary (5) Glossary of Administrative Terms (6) Income Tax Glossary etc. are noteworthy.

6.6.4 Thesaurus

In Section 2.8.1 of Unit 2, you have read about definitional dictionary that it contains definitions of defined words along with their equivalents. In this way the definition of a particular word is fixed in the dictionary. The ancient grammarians and poets of India have made basic foundations in this field. Panini, Yasaka, Bhartrihari etc. have indicated to fix the definitions of specific words used in specific disciplines.

There are many such words used in the field of knowledge like science and law, whose correct meaning is not found in ordinary dictionaries (monolingual or bilingual). In such a situation, taking the help of the definitional dictionary of the related subject becomes very important for correct translation. For example, let's take the terminology related to the field of 'law'. 'Dacoity', 'Robbery' etc. used in the field of law and justice are such words, whose meaning is certain and for these crimes there are different sections in the Indian Penal Code and there is a provision for different punishments. For a clear understanding of the meaning contained in such words, the translator can take the help of 'Dictionary of Definitions'.

Through the definitional dictionary, the concept of the definitional word becomes clear. That's why dictionaries of definitions are called 'Conceptual dictionaries'. In this type of dictionaries, the development and deep meaning of specific concepts related to Poetry, Astrology, Religion, Philosophy etc. are clarified. For example, the words 'Catharsis', 'Peripeti', 'Hamertia', 'Recognition' etc. of western poetics are such type of concepts. Concept dictionaries are needed for the translation of such concepts and the meaning and coverage of the associated word are also required in the format of the translation. The above subjects (Poetry, Philosophy, Astrology etc.) have different conceptual dictionaries and their usage is also context-relative.

The Commission for Scientific and Technical Terminology has defined the terms related to Physics, Biology, Home Science, Mathematics, Geography, Geology, Applied Sciences, Computer Science and Information Technology, Chemistry, Medicine, Botany, Psychology, Commerce, Defence, Quality Control, Linguistics, Public Administration. The Commission has published definitional dictionaries in the subjects of History, Education, Philosophy, Sociology, Library Sciences, Journalism, Agriculture, Engineering, Archeology and Arts. In addition to these, the Commission has also prepared the International Legal Definitional Dictionary as well as Dramaturgy, Film and Television Definitional Dictionary. In English 'Dictionary of World Literature', 'Dictionary of Literary Terms' – Joseph T. Shipley; A Glossary of Literary Terms – M.H. Abrams etc. are some notable texts of this type.

6.6.5 Thesaurus

You have already learned about 'Thesaurus' in Section 2.8.2 of Unit 2 of this course. It has become clear to you that the word 'Thesaurus' in Latin means 'treasury'. In the Oxford English Dictionary it has one meaning is dictionary or encyclopaedia. The second meaning is

- 'A collection of concepts or words arranged according to sense.' In fact, 'thesaurus' is a special method of collections of the same meaning-denoting words, in which the application of those words is underlined by collecting together many words which give the impression of roughly the same meaning and in terms of use in them. The subtle differences are clarified.

'Thesaurus' is very important in the field of translation. Since in the thesaurus, the separation of the subtle connotations of many synonyms related to a particular word is underlined, therefore the selection and application of context-relative authentic words in the language-transfer work (i.e. translation) done on the basis of equivalent connotations is easy. From this point of view, the importance of parallel dictionary in translation is self-evident. To clarify its importance, here we want to give an example. Suppose a word comes in front of the translator while doing translation work - 'deceit'. This particular word has different meanings in different contexts. If you take a good dictionary and see its meaning in it, you will find many meanings in it, but for the selection of its exact opposite word, you will have to work with thesaurus only. Under the word 'deceit', 'scandal', 'scam', 'forgery', 'fraud', 'cheating', 'deceiving', 'embezzlement', 'misappropriation' etc. various connotations and opposites are implied. In such a situation, the translator will have to present the translation by selecting the context and context-relative words.

Thesaurus appears to be dictionary of synonyms. The usage-field of thesaurus is wider than that of dictionary of synonyms, while dictionary of synonyms is related to literature. The difference between the two can be explained with the help of an example. For example, there are many opposites of the same word, but in official use or in the sense of application of the Official Language, all the forms of the same word cannot be 100% monosemantic. Using the other pattern in place of one can also be disastrous. For example, the English words 'advance', 'grant', 'relief', 'subsidy', 'aid', 'assistance' appear to be roughly equivalent to the Hindi word 'raahat' or 'madad'. But the thing to note is that despite being synonymous, all these cannot complement each other in terms of precise application. It is meant to say that the contribution of 'thesaurus' for the accurate choice and application of words in the context of official use and translation is continuous and relative. 'Thesaurus' is a special synonym dictionary for official use and translation. 'Thesaurus' is such a synonym dictionary in which the separation of various subtle connotations related to a word is clarified on the basis of application, which helps in context-related word-selection in translation.

6.6.6 Dictionary of Synonyms

You have already come across the concept of dictionary of Synonyms in Section 2.3.3 of Unit 2 of this course. On the basis of that information, it must have become clear to you that 'Dictionary of Synonyms' proves to be the source of various equivalents or synonyms of words. You have also been told that antonyms are also given in them. That's why lexicographers sometimes add antonyms to the title of these types of dictionaries.

In the previous Section 6.6.5 of this unit it has been explained that in spite of being similar to thesaurus, there is a subtle difference between these two types of dictionaries. The field of application is the basis of the difference between them. Since dictionary of synonyms is more related to use in the context of literature, therefore, it is mostly used while creating original literature and translating literary works.

Different forms of the same word are compiled at one place in the dictionary of synonyms. At the time of translation of literary works, the translator takes into account the subtlety of the style and meaning of the original. During translation, he keeps style, semantic-subtlety and aesthetic in view. The translator has to choose the word-form relative to the context.

6.6.7 Dictionary of Stories/Legends/Myths

In Unit 2, Section 2.8.4, you have studied that Legends and Myths contain information on religion, spirituality and mythological-cultural information. Similarly, the '*Katha Kosh*' (Dictionary of Stories) contains stories prevalent in a particular society and culture.

The use of 'Dictionary of Stories' remains mandatory for translation of literature and especially poetry into any other language. They are especially used when translating text from languages belonging to different cultures. The basic reason for this is that when the source language text is translated into the target language, usually such intertexts are not available parallel in the target language, nor is their meaning clear to the reader of the target language. In such a situation, it becomes mandatory for the translator to take the support of the 'Dictionary of Stories' so that s/he can clarify the meaning of that story in the footnotes in the translation.

The same situation is also with the dictionaries of legends/myths. Thesauruses of myths are useful in literary translation, and especially poetry translation, in order to accurately transfer the myths of the source language to the target language.

The applicability of dictionary of myths in the context of translation is also unquestionable. The contexts of religion-philosophy and legends remain in 'Dictionary of Legends', which is helpful in understanding and correct translation of religion-philosophy related literature and pre-historic contexts.

6.6.8 Dictionary of Aphoristic Sentences

You have already read in Unit 2 on 'Types of Dictionaries' that beautiful and effective statements are called 'Aphoristic Sentence'. For example, 'Where ignorance is bliss, it is folly to be wise.' or English poet John Milton's saying that 'It is better to reign in hell than serve in heaven'

Dictionaries of Aphoristic Sentences are also sometimes helpful in translation. Such types of dictionaries are available in Hindi also. If any Aphoristic Sentences is given in the material to be translated, its translation can be found in the aphoristic sentences dictionary. This will bring uniformity in the translation of the aphoristic sentences or gnome, the quality of the translated content will also increase.

6.6.9 Dictionary of Pronunciation

Dictionary of Pronunciation has special relevance in translation. During translation, many such situations arise when the translator has to use it. For example, when without giving the meaning of a phrase/word, the transfer of its script has to be presented, then the pronunciation dictionary proves helpful. While transliterating noun words like name and object etc. dictionary of pronunciation proves helpful. Similarly, in the case of interpretative translation

(simultaneous translation), it is necessary for the entire interpretation-work to present the standard pronunciation of words in both the source and the target languages. In these situations, the translator has the support of the pronunciation dictionaries of the source and target languages. Hence the need for a pronunciation dictionary becomes self-evident. In addition to pronunciation dictionaries, bilingual or monolingual dictionaries contain indications of authentic pronunciation.

6.6.10 Dictionary of Idioms and Proverbs

There is no fundamental difference between idioms and proverbs. Often proverbs are considered as idioms and idioms as proverbs. Sometimes it is difficult to draw a distinction between the two. The range of idioms is greater than that of proverbs and sometimes the same idioms are available not only in exclusive Indian languages but also in non-Indian languages. The use and scope of a proverbs is limited. Proverbs and idioms are deeply related to folk experience, country, caste and culture.

In the context of literary translation, the use of proverbs and idioms related dictionaries is essential and useful. During the process of translating an idiom or proverb used in the source language text, the effort should be to find parallel idioms or proverbs in both languages and not to translate the same. Many idioms are found in Hindi and English which are similar in meaning and usage in both the languages. The difference between them is only of the script.

If parallel idioms and proverbs are not found even after searching, then they should be translated. In such a situation, the translator takes the support of the dictionary of idioms-proverbs. If these dictionaries are bilingual, then the translator has great convenience and if they are monolingual, then with the help of them, the translator can understand the meaning of the particular idiom-proverb of the source language and find the equivalent idiom-proverb in the target language or translate it.

6.6.11 Dictionary of Literature/Encyclopaedia

Dictionary of Literature does not have a lot to do with translation because in this the definitional vocabulary of the criticism of a particular language and its definition etc. are given. This dictionary is especially useful in understanding literary concepts. The applicability of technical terminologies of literary criticism is limited only to the translation of the contents of literary subjects.

Like a dictionary of Literature, an Encyclopaedia is also not directly related to translation.

But this does not mean that dictionary of literature and Encyclopaedia have no role in translation. In fact, from the point of view of translation, they are useful only in a limited context. They can sometimes be used for mere knowledge enhancement or for finding a specific term. We can also say this in such a way that from the point of view of subject and context, this type of dictionaries can prove to be useful from time to time.

6.6.12 Computer Dictionaries and Online Dictionaries

In Unit 5 of this course, you have studied about Computer dictionaries and Online dictionaries in detail. In this section of the unit, the usefulness of Computer dictionaries and Online dictionaries in the context of translation is discussed.

Computer dictionaries and Online dictionaries are basically the same type of dictionaries, which are available in digital or electronic form. The only difference is the mode of availability. Computer dictionary exists on our desktop in the form of software and Online dictionary is available on the computer only after the facility provided by the Internet. Therefore, in the context of the utility of translation, instead of considering them separately, they are being considered together and synonymously.

Computer dictionary is used in machine translation. The concept of machine translation (computer translation) gained momentum during the 1950s. After this, emphasis was placed on the need and usefulness of preparing electronic dictionaries and related software. In fact, two meanings of computer dictionary are accepted - (i) Computer dictionary; and (ii) Electronic dictionary and software.

- (i) **Computer Dictionaries** : Computer Dictionaries can be called usage definitions of words (A to Z) related to the use of computers. For example, ADP = Automatic Data Processing, BIOS = Basic Input Output System. A dictionary of about four thousand such words has been prepared. This dictionary is useful for working on computer but it has no direct relation with machine translation.
- (ii) **Electronic Dictionaries and Software**: An electronic dictionary also means that all the synonyms for a word of the same language appear simultaneously on the computer screen. Many such dictionaries are available on computers. For example, Oxford Talking Dictionary; Cambridge Talking Dictionary etc. Similarly online dictionaries are also available.

Computer and Online dictionaries are useful only in that they allow the human translator to choose the exact equivalent according to his context and without the hassle of searching for the equivalent of a particular word in bulky or many-volume printed dictionaries. But their availability requires basic infrastructure like computer, internet connection etc. Not only they are used by human translators, they also prove to be an important tool in Machine Translation (computer translation). Computer is playing a revolutionary role in the field of translation. This has made it possible to translate by computer. This effort of computer would not have been tangible without computer dictionary etc. Using them, 'software' has also been prepared for Computer-Aided Translation (CAT), but this effort is just like entering the ocean.

6.7 Use of Dictionaries in Translation : Limitations

From the study done so far, you must have been clear about the relation between translation and dictionaries. You have also come to know the importance of dictionaries in translation. To further clarify this importance, we have also considered the utility of different types of dictionaries in the context of translation. It is clear by now that the utility and role of dictionaries in translation is indispensable. In this part of the unit, we would like to point out that despite this indispensability, there are certain limitations in the use of dictionaries.

The fundamental reason for the limitations of the use of dictionaries in translation is that we all deal with one language or the other. Each language keeps the culture of its language-society in itself. There is emotional use of language in literature also. Because of this

emotional use of language, sometimes a single word or phrase conveys multiple meanings at the same time. The cultural vocabulary of literature is associated with myths, images, signs-symbols, traditions and the caste consciousness of the society. In general, language is also considered as a constituent element of culture-society.

In the context of translation, it is a complex problem to convert the contexts of literature-culture and social sciences into correct equivalent terms. This difficulty in translation increases further in the context of foreign languages like Hindi-English, Hindi-French etc., because the cultural difference between the two languages (source and target language) is huge. In such a situation, it becomes inevitable for the translator to take the help of other dictionaries related to both the languages, yet sometimes the translation remains limited. This fact can be understood with the help of an example. For example, based on the Indian caste system, caste-specific terms, environmental terms (food, clothing, housing, transport etc.), socio-cultural terms (e.g. in English 'skirt', 'nighty', 'lounge suite', 'uniform' etc.), sports terminology ('cricket', 'hockey', 'tennis' etc.) as well as religious terminology (such as 'Baptism of Blood', 'Resurrection', 'Redemption' etc.) dictionaries can be helpful only up to a point in translation.

Generally, the use of dictionaries is only in the search of equivalent expressions (from source to target language) of literature, society and culture related terms. Various dictionaries solve our problem by knowing the correct meaning of the words of the source language and searching for its equivalent meaning in the target language. In the translation of disciplines related to law, commerce, banking, science, technology and medicine etc., the use of specific glossary of technical terminology is absolutely necessary. Different dictionaries should be used in translation of subjects related to literature, culture, social sciences and humanities. But their use also has a limit. In fact, there are broadly two types of compositions in our literature. These are:

- (1) Expression and style dominant compositions (compositions related to literature-culture etc.); and
- (2) Compositions based on facts and texts (compositions related to law, commerce, science etc.).

The problem of translation of scientific literature is of technical terms. Although you will study in detail about the concept and dimensions of technical terminology in the next two blocks of this course, but here we want to explain how technical terms create problems in translation in the context of the limitations of the use of dictionaries in translation. We can say that words are of three types from the point of view of use - (1) General, (2) Quasi-technical; and (3) Technical Terms. Bilingual dictionaries (related to source and target language) can be used for translation of common words, but for translation of semi-technical and technical terms, only subject-related glossaries should be used so that the quality and authenticity of the translated text should be maintained.

In this way we can say that the use of dictionaries is an indispensable factor for translation but dictionary also has its limitations in cultural-literature and sociological lexicon because

there a specific technical terms represents the entire culture of the source language and the same synonyms, but an equivalent word is not available in the target language. In such a situation, while translating from the word closely related, an explanation of the esoteric or hidden meaning of that word is required in the footnote.

6.8 Let Us Sum Up

It must have become clear to you from the study of this unit that the dictionary is an important component of a translator's tool. Different types of dictionaries are helpful in translation work directly or indirectly. In this unit, the utility of different types of dictionaries in the context of translation has been highlighted.

Dictionaries are very useful for understanding language i.e. meaning of words, usage, expressions and concepts and for conveying meaningful and accurate meaning. This utility of dictionaries in the context of language has also taken the context of translation. All types of dictionaries are useful for learning-teaching, training and practical work of translation (translation from source to target language). While translating, the translator uses different types of dictionaries according to the required context. Dictionaries are related to language as well as non-linguistic (subject etc.). They prove to be useful tools for the translator. From the point of view of subject and context in translation, different types of dictionaries are useful from time to time. The reality is that when specific concepts related to the translated subject are unclear to the translator, then s/he has to take the help of dictionaries. Then different types of dictionaries prove to be their helpers. The utility of dictionaries is indispensable for authentic translation, it is self-evident .

We also have to keep in mind that in spite of being an indispensable factor for translation, there are also limitations of dictionaries in cultural-literature and sociological terms. But in spite of these limitations it can be said that the study of all types of dictionaries can be helpful in translation. In fact, due to the utility of different types of dictionaries for their respective languages and translation teaching-learning, training, and practical work, many dictionaries have been done, is being done and will continue to be done in Hindi and non-Hindi Indian languages and foreign languages and their dialects. As languages develop and improve, new dictionaries will keep coming into existence.

6.9 EXERCISES FOR EXERCISES

1. Explain the inter-relationship between translation and dictionary.
2. Explain the concept of context-relative dictionary.
3. Why are monolingual dictionaries needed in translation?
4. Explain the utility of bilingual dictionaries in translation and vetting.
5. In addition to the meaning of the word, what kind of information is given in a good dictionary? Explain
6. What are the limitations of using dictionaries in translation? Discuss with examples.

6.10 Suggested Readings

- Tiwari , B.N. Kosh Vigyan (Lexicography), Shabdkar, Delhi.
- Kumar, Suresh (ed.), 1983, Kosh Vigyan : Siddhant Aur Parampara (Lexicography: Theory and Tradition) , Central Institute Hindi, Agra.
- Rohra, Satish Kumar (ed.) , 1989, Kosh Vigyan : Siddhant Evam Mulyaankan Kosh (Lexicography: Theory and Evaluation), Central Institute of Hindi, Agra.
- ‘Anuvad’ (Research Journal) , Issue 94-95 (Kosh Special Issue), January-June 1998, New Delhi, Bhartiya Anuvad Parishad.
- ‘Gaveshna’ (Special issue on Lexicology in India), Issue 93, January-March 2009, Central Institute of Hindi, Agra.



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