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The development of a system of braille contractions and abbreviations for the Gujerati language in India

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Thesis

THE DEVELOPMENT OF
A SYSTEM OF BRAILLE CONTRACTIONS AND ABBREVIATIONS
FOR THE GUJERATI LANGUAGE IN INDIA

Submitted by

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TABLE OF CONTENTS

Chapter		Page
I.	INTRODUCTION.....	1
	Purpose of the Study.....	1
	Justification of the Study.....	1
	Scope of the Study.....	5
II.	REVIEW OF LITERATURE AND RESEARCH.....	6
	The Pre-Braille Era.....	6
	Braille in France.....	6
	Braille in England and America.....	11
	Braille in Vietnam.....	14
	Braille in India.....	14
	The Gujarati Alphabet.....	19
III.	PROCEDURE.....	22
IV.	CONTRACTIONS AND ABBREVIATIONS.....	27
	Whole-Word Contractions.....	27
	Part-Word Contractions.....	35
	Abbreviations.....	39
V.	SUMMARY AND CONCLUSIONS.....	44
	BIBLIOGRAPHY.....	45

THE DEVELOPMENT OF
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FOR THE GUJERATI LANGUAGE IN INDIA

CHAPTER 1

INTRODUCTION

Contractions and abbreviations, which enter so largely into the Braille systems used in Europe and America, have shown their immense value as time, energy and space saving devices. The Bharati Braille in India, having come into existence (as a common Braille code for all Indian languages) only recently, is without any contractions or abbreviations. Thus the blind in India are deprived of the benefits of a highly developed Braille system. The writer hopes that this study may possibly form a basis of a contracted Braille system for at least one of the major Indian languages, namely, Gujerati.

Purpose of the Study: The purpose of this study is to develop a system of Braille contractions and abbreviations for the Gujerati language in India.

Justification of the Study: According to Sir Clutha Mackenzie:

The extent to which Brailles have been contracted varies greatly from language to language. Many still use "Full Braille", that is, using a Braille letter for every letter of the visual script; some introduce only a few abbreviations which the reader can soon master; while others reduce their systems almost to cyphers in which the form of the original text is hardly recognizable.

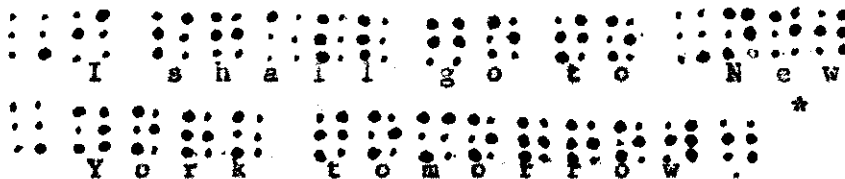
English Braille has four "grades". Grade 1 is fully spelt; Grade 1½, with 44 contractions is an American simplification of Grade 2 Standard English Braille which has 135

contractions. Grade 3 is highly contracted, almost a shorthand and, being too difficult for all save the expert, few books are printed in it.

The first French abbreviated system was that designed by de la Sizeranne in 1883 and contained some 263 contractions. A committee in 1924 brought the number up to 740 and between 1949 and 1951 proposals were made to add about another 340. Spain designed a stenographic system in 1885 and this was revised in 1925 and again in 1939. A substantially different form was designed in Buenos Aires in 1936 and was considerably enlarged in 1944, when the number of abbreviations was increased to close upon 2000. (1)

A uniform Braille code for all the major languages in India came into existence in 1951. This code, named as Bharati Braille, has still to develop systems of contractions and abbreviations for the various major Indian languages. The need for contractions and abbreviations is acutely felt when Braille is compared with print and their value is realized when contracted Braille is compared with full or uncontracted Braille.

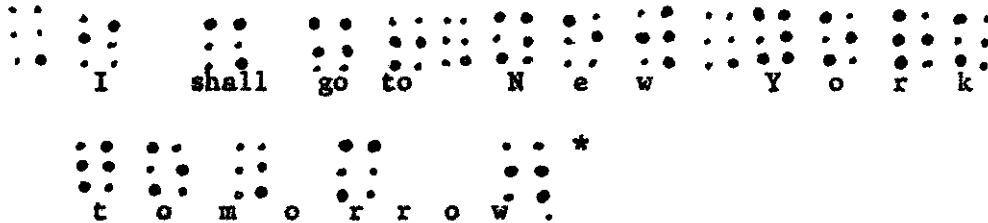
The sentence, 'I shall go to New York tomorrow.', has 25 letters. When written in Grade 1 of Standard English Braille, it makes use of 29 Braille symbols, including the capital sign and punctuation mark.



(1) Sir Clutha Mackenzie, World Braille Usage, Unesco Publication, Paris, 1953, p. 55.

* See note * at bottom of p. 9.

When written in Grade 2 of Standard English Braille, the same sentence makes use of only 19 Braille symbols.



 I shall go to New York tomorrow.

Thus the fingers have only two-thirds as much work to do with contractions as they would if each word were fully spelled out. Thus, contractions and abbreviations not only save space (and correspondingly reduce the cost of special Braille paper), but they also result in a proportionate saving of time and energy.

In addition to the great value of a contracted and abbreviated Braille system in the schools and in the printing of Braille books of academic and non-academic interests, the development of such a system can make a valuable contribution to the development of a regular Braille shorthand system, which, in turn, can open new possibilities of employment of the blind as stenotypists.

It should be mentioned here that Gujarati is one of the 14 major regional languages in India. (2) The number of Gujarati-

(2) S. C. Sarkar, Hindustan Year-book, and Who's Who 1960, M. C. Sarkar and Sons Private Ltd., 14, Bankim Chatterjee Street, Calcutta, India, 1960, p. 3.

* See note * at bottom of p. 9.

speaking blind, estimated on the basis of the 'Report on Blindness in India', published by the Government of India in 1944 (which is the only reliable statistical survey of the blind in India), is 90,000.* (3)

The Gujarati language is derived from the ancient Indian language Sanskrit, from which many other Indian languages are also derived. The structure of the Gujarati language, therefore, resembles, to some extent, the structures of other sister languages like Hindi (which is the national language of India), Marathi, Bengali, etc. (4) It is, therefore, natural to expect that any effort to develop a contracted Braille system in any one particular language may influence and help the development of similar Braille systems for the other Indian languages.

From the above considerations, the development of a contracted Braille system for the Gujarati language is more than justified.

(3) Report on Blindness in India, 1944, Central Advisory Board of Health and Education, Government of India, New Delhi, India, p. 11.

(4) Jawaharlal Nehru, Discovery of India, edited by Robert I. Crane, Doubleday & Co. Inc., Garden City, N. Y., 1959, p. 107.

* This estimate is based on the findings of Sir Clutha Mackenzie to the effect that one person in every 500 of the population in India is blind. The population of the newly formed Gujarat State is estimated at about 16 million.

Scope of the Study: This study is based on the principle employed in the development of the Standard English Braille. It consists of the assignment of a Braille symbol or symbols to frequently occurring letter groups and words.

CHAPTER 11

Review of Literature and Research

The Pre-Braille Era: History has recorded the use of various devices of reading for the sightless. (1) All of them were based on the substitution of touch for sight. Though interesting, none of them was adequate for easy and facile reading.

Braille in France: The credit for developing the present universally accepted system for raised dots for reading by the blind goes to Charles Barbier, an engineer working as a cavalry officer in the French Signal Corps during the early 19th century. His system was primarily meant for sending secret messages to the soldiers along the battle line, but somehow he took it to the National Institute for the Young Blind in Paris in 1820. The system was rejected as impractical by Dr. Guille, the head of the school, but it deeply impressed a young pupil named Louis Braille. (2)

Louis Braille was born in the prosperous village of Coupvray, about 26 miles east of Paris, on January 4, 1809. His father was a harness-maker. A tragic accident changed the course of his life while he was just a child of three years. He slit his eye while playing with

(1) Gabriel Farrell, The Story of Blindness, Harvard University Press, Cambridge, Massachusetts, 1956, pp. 93-96.

(2) Ibid., pp. 96-97.


the sharp tools of his father. Very soon, the infection spread to the other eye and his sight was completely destroyed.

Louis Braille was admitted to the National Institute for the Young Blind in Paris in 1819. He had outstanding abilities, and he made very rapid progress at school. He became a full-time member of the teaching staff at the age of 20. In addition to his favourite subject, Music, he taught History, Geometry and Algebra. Progressive tuberculosis resulted in his death at the early age of 43 on January 16, 1852. He was buried in the earth of the village where he was born, but, a hundred years later, his body was exhumed and brought to Paris to rest among the immortals in the Pantheon.

Barbier's system had three main defects (3) which made it difficult for a blind man to master it. Louis Braille reduced Barbier's 12-dot cell * to one with 6 dots, two vertical rows three dots high. He used the 63 possible combinations of the 6 dots to represent the letters of the alphabet, certain common words, frequent combination of letters, punctuation marks and musical terms, etc. (4)

(3) Ishbel Ross, Journey into Light, Appleton-Century-Crofts, Inc., New York, 1951, pp. 128-129.

(4) Gabriel Farrell, op. cit., pp. 98-99.

* The dots in the Braille cell  are numbered 1, 2 and 3 (left, top to bottom) and 4, 5 and 6 (right, top to bottom).

Braille explained his new system of point writing in a book on teaching music written by him in 1829. In this book, he also gave some suggestions for contractions. 'While intended for ordinary writing,' he states, 'its value for music, especially plain song, is pointed out.' It was, however, not until 1834 that Braille had worked out in detail all of the possible combinations, including his musical notation. (5)

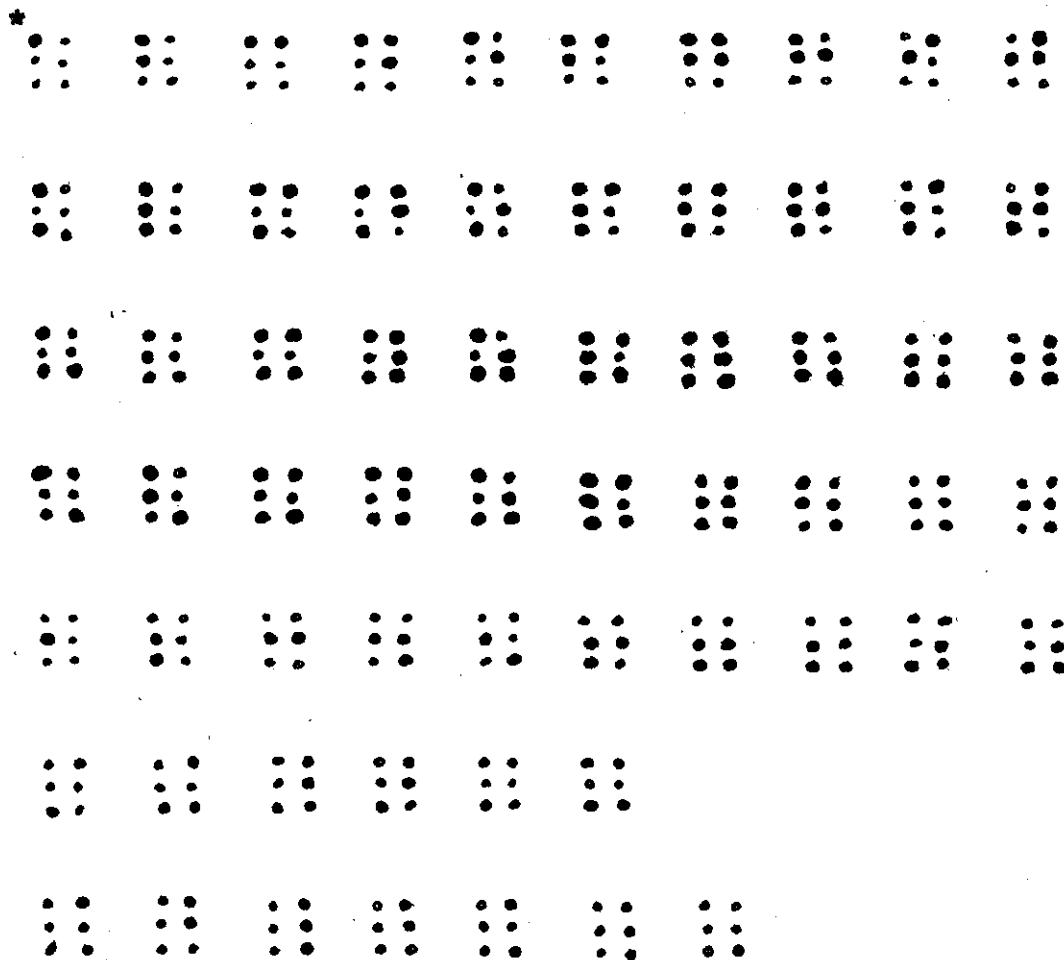
The Braille system did not find favour with the authorities in his own school, but it became popular with the pupils and blind teachers in the school to whom it was introduced in 'off-time'. It was only through their overwhelming insistence that the system was officially accepted in 1854, two years after the death of its inventor. (6)

Advocating his new system of point writing, Louis Braille stressed what he called 'the principle of logical sequence'. He arranged the 63 signs in the seven lines as shown in the chart on the next page. The 10 signs of the first line, formed by using the dots of the upper two rows of the Braille cell and representing the first 10 letters ('a' through 'j') of the alphabet, forms the basis for succeeding lines. The next 10 signs, which occur in the second line and which represent the letters 'k' through 't', are formed by adding dot 3 (the lowest dot in the left vertical row) to the signs of the first line. The remaining letters of the alphabet, plus enough symbols to make the third line of 10, were formed by adding dots 3 and 6 (the dots of the lowest row of the Braille cell) to the signs of the first line. The 10 signs of the

(5) Gabriel Farrell, op. cit., p. 99.

(6) Ibid.

fourth line are formed by adding dot 6 to the signs of the first line. As the French alphabet contains no 'w', it did not find a place in Braille's original system, but was introduced later on to meet the needs of other languages. (7)



(7) Gabriel Farrell, op. cit., p. 99.

* In this chart and elsewhere in this study, dots printed in black represent the actual dots that should be used in each symbol. Red dots are used to indicate the relative positions of the black dots.

Regarding the selection of dots forming the first 10 letters, Gabriel Farrell, in his book, 'The Story of Blindness', writes:

No one is certain how Braille selected the combination of dots for the first ten letters, or why he established the sequence of four lines. W. H. Illingworth, however, points out in explanation that it must be remembered that Louis Braille, was, first of all, a musician, and that what he was originally seeking was a form of music notation that the blind could use in their employment as organists. He writes:

'This view would appear most reasonable, for it is more likely that the four lines had their origin in the requirement of the efficient representation of quaver, crotchet, minim and semibreve, than that a purely arbitrary arrangement of dots for an alphabet and some contractions should excellently and accidentally suit the necessities of musical notes.'

'There are many variations of the Braille alphabet and contraction signs, but only one musical alphabet, and that practically as he made it, still unchanged, in all parts of the world where Braille of every kind is used.'

Louis Braille undoubtedly had music in mind, as Illingworth claims, when he based his form of notation on the principle of logical sequence, but the fact remains that in his first announcement Braille places the writing of music as secondary and it is in its use for 'ordinary writing' that the dot system soon superseded the line type developed by Valentin Hauy and won universal acceptance. But it was not without a struggle, not only between two systems, line and dot, but between two philosophies, one advocated by the seeing, that a type for the blind should be pleasing to the eye, and the other by the blind, who were interested only in securing a type legible to the finger. (8)

(8) Gabriel Farrell, op. cit., p. 100.

Contractions were first introduced in the French Braille in 1883. The original number of 263 was brought up to 740 in 1940 and proposals for adding another 340 were made between 1949 and 1951. (9)

Braille in England and America: The search for a suitable type for reading for the blind started in England perhaps in the early 1820's when the Edinburgh Society of Art offered a prize for the best type for the blind. Most of the competitors for this prize favoured arbitrary systems of forms or dots in place of letters; the prize was, however, awarded to Dr. Fry, an advocate of the traditional line type. The decision was apparently based on the fallacy that the type for the blind should be pleasing to the eye. The various types that were developed between then and 1863, when Dr. Armitage and his associates formed the British and Foreign Blind Association to promote the acceptance of Braille, included both the line types, employing Roman capital letters or their modifications, and arbitrary types, using a stenographic combination of a straight line, a curve and a dot. These types included both the alphabetic and phonetic systems. Two of these types, which were rather widely used, are: Dr. Fry's type employing plain Roman capitals (books were embossed in this type under the leadership of Mr. John Alston of Glasgow) and Dr. Moon's type, using simplified forms of Roman capital letters. The Moon type is still being used by some blind individuals and is the sole survivor of the old line type. (10)

(9) Sir Clutha Mackenzie, op. cit., p. 55.

(10) Gabriel Farrell, op. cit., pp. 101-104.

Dr. Thomas Rhodes Armitage, who was himself a finger reader, was a strong critic of the prevailing principle that books for the blind should be legible to the eye as well as to the finger. Opposed to all the line and the semi-arbitrary systems, Armitage became the most ardent advocate of the dot system of Louis Braille. It was due to his energetic and untiring efforts that the Braille system gained acceptance in all the schools for the blind in Britain and most of the other European countries by the year 1882. (11)

The nation-wide acceptance of the Braille system in America was very much delayed by the old struggle, not only between the various line types, but also between the line and dot, and in the final phase between the various systems of dots. The books written in one type could not be of any use to those using the other types. The blind persons using different types could not exchange letters or views. Ultimately this led to so much confusion and inconvenience to the blind and resulted in so much waste of money and energy that a committee called the Uniform Type Committee, was appointed in 1905 to examine the various existing types and recommend the one that would be the most satisfactory. The committee was convinced of the superiority of Braille over the other systems and recommended to the American Association of Instructors of the Blind in 1916, and the American Association of Workers for the Blind the following year, for acceptance. The committee went a step further and recommended the

(11) Gabriel Farrell, op. cit., p. 104.

acceptance of a few of the simpler contractions incorporated by the British in Grade 2 of 'Revised Braille'. (12)

The British accepted the Braille system, but they had many different ideas about the use of the dots, particularly in the combinations representing signs and contractions, that is, the use of a single symbol for a word or a combination of letters. These, however, were thrashed out by 1905, when a system called 'Revised Braille' was announced. This consisted of three 'Grades': Grade 1, fully spelled words and no contractions; 2, a moderately contracted form; and 3, a highly contracted system, almost approaching shorthand. (13)

The American Uniform Type Committee was not in favour of accepting all the contractions recommended by the British in Grade 2 of the Revised Braille. As mentioned earlier, they accepted only 44 of the simpler contractions and called it Grade 1½, since it fell between Grade 1 and Grade 2. However, efforts for a complete uniformity of Braille usage in the English speaking world were continued. A final agreement was reached between the Americans and English in 1932. According to this agreement the Americans accepted most of the contractions of British Grade 2, while the British gave up some of their contractions and yielded to the Americans on other controversial points. With these adjustments, Standard English Braille came into being in 1932. (14)

(12) Gabriel Farrell, op. cit., pp. 105-117.

(13) Ibid., p. 113.

(14) Ibid., p. 115.

Braille in Vietnam: The Braille system was first introduced in Vietnam in 1897. As there were no contractions or abbreviations in this system, 'full' or uncontracted Braille had to be used until very recently. A valuable contribution to the Vietnamese Braille was made in 1960, when an enthusiastic student at the Boston University developed a series of Braille contractions and abbreviations for her language. It is not known whether this contracted Braille system is officially accepted by the authorities in charge of the education of the blind in Vietnam. (15)

Braille in India: The history of the education of the blind in India is comparatively recent. From the time the first school for the blind was established in India in the eighties of the last century, each school, before it could start, had to draw up or adapt a Braille code for the reading and writing of the language of the area which it served. A number of Braille codes thus came into being, of which the following are the principle ones:

- (1) Shirreff Braille.
- (2) Indian Braille of Dr. Nilkanthrai.
- (3) Tamil Braille of Miss Askwith.
- (4) Mysore and Kannada Code.
- (5) Chatterjee Code.
- (6) Oriental Braille by Rev. J. Knowles and

Mr. L. Garthwaite.

(15) An Thi Tuyet, The Development of a System of Contractions and Abbreviations for Vietnamese Braille. Unpublished Master of Education Thesis, Boston University School of Education, Boston; 1960.

- (7) Shah Braille.
- (8) Sindhi Braille of Mr. P. M. Advani.
- (9) Uniform Indian Braille framed by the Expert Braille Committee of the Central Advisory Board of Education.
- (10) Standard Indian Braille framed by an informal committee under the chairmanship of Lt. Col. Sir Clutha Mackenzie. (16)

It is, perhaps, interesting to know that experiments in India were confined to trying out Braille in various forms, but practically no experiments were made with any of the raised line systems of reading invented for the blind in the West. (17)

Most of the codes mentioned above were based on one or more of the following three broad principles:

- (1) The assignment of common Braille symbols to common sounds between English and Indian languages.
- (2) Adherence to the original sequence of Braille symbols.
- (3) The assignment of related Braille symbols to phonetically related Indian letters. (18)

In one instance, the Braille signs were re-arranged so as to give them both vertical and horizontal symmetry. (19)

(16) Fifty Years of Work for the Blind in India, Ministry of Education, Government of India, New Delhi, India, 1952, p. 5.

(17) Ibid., p. 6 .

(18) Ibid.

(19) Ibid.

As the great diversity in the Braille codes in India naturally resulted in great inconvenience and disappointment to the users of Braille and to authorities responsible for the education of the blind, efforts were made as early as 1902 to evolve a satisfactory common Braille code for all Indian languages. (20)

The first effort was made at the beginning of this century by Rev. J. Knowles and Mr. L. Garthwaite. Their scholarly piece of work was published by the British and Foreign Bible Society in 1902. It was an ambitious scheme and aimed at providing a single Braille code for all oriental languages. It is not certain why, but somehow the scheme did not gain official acceptance. (21)

The question of evolving this common Braille code for all Indian languages was repeatedly referred to the Central Advisory Board of Education of the Government of India, but no concrete step could be taken until 1941. The code drawn up by an Expert Braille Committee appointed by the above-mentioned Central Advisory Board of Education, called the Uniform Indian Braille, was approved by the Government in 1945. (22)

The Uniform Indian Braille, however, was found to be unacceptable to an informal committee formed under the chairmanship of Lt. Col. Sir Clutha Mackenzie later in 1945. This committee came out with another

(20) Fifty Years of Work for the Blind in India, *op. cit.*, p. 6.

(21) Ibid.

(22) Ibid., p. 7.

code called the Standard Indian Braille. As the Expert Braille Committee and the informal committee of Sir Clutha Mackenzie did not find a meeting ground, the question was referred back to the Central Advisory Board of Education in 1947.

In 1948, the Government of India decided to review the question in order to explore if it was possible to frame a Braille code for Indian languages which would maintain the maximum degree of uniformity not only between Indian languages but also with other major languages of the world. The question was, therefore, referred to UNESCO (United Nations Educational, Social and Cultural Organization). UNESCO warmly responded to this suggestion of the Government of India and appointed a Braille Consultant to review the world Braille situation. On the recommendation of the Braille Consultant, UNESCO appointed an Advisory Committee which met in Paris in 1949 and which suggested certain broad principles on which a World Braille could be based. In accordance with the recommendations of this Advisory Committee, UNESCO convened an International Braille Conference in Paris in 1950. In accordance with the recommendations of this International Conference, 'World Braille' came into existence in 1950. The Expert Braille Committee in India evolved 'Bharati Braille', which is the uniform Braille code for all Indian languages, in 1951. (23)

Bharati Braille, in addition to being the common Braille code for all major Indian languages, is in complete agreement with the Sinhalese

(23) Fifty Years of Work for the Blind in India, *op. cit.*, p. 10.

Braille in Ceylon. There is also a very substantial degree of uniformity between Bharati Braille and the Braille system of Malaya. As it (Bharati Braille) is evolved within the framework of the definition of World Braille, it is closely related to other major Braille codes of the world. (24)

India is probably the first country to evolve a single Braille code for such a large number of languages using divergent scripts. India can also take some legitimate pride in initiating the discussion that led to the acceptance of the uniform Braille system on an international level. (25)

With the evolution of Bharati Braille, the first phase of the task of adapting Braille to Indian languages has been completed. Work has now to begin on the second phase, namely, the framing of contractions and abbreviations for the various Indian languages. The Government of India had decided to appoint a committee to examine the question of framing suitable contractions and abbreviations for Hindi, which is the national language of India. It appears that this decision of the Government has not yet been enforced due to some reason. The Government of India intended to start the work for other major Indian languages only after the work of the evolution of contracted Braille for the national language was completed. (26)

(24) Fifty Years of Work for the Blind in India, op. cit., p. 11.














(25) Ibid., p. 5.

(26) Ibid., p. 12.

Coming to the Gujarati language, no systematic effort has so far been made to develop contractions and abbreviations in Braille. This is, of course, equally true for the other Indian languages. At the present, some efforts are being made by enthusiastic workers for the blind to develop suitable contractions and abbreviations for the Gujarati and Marathi languages, but no results have so far been published.






The Gujarati Alphabet: The Gujarati alphabet has 13 vowels and 36 consonants. The Braille symbols representing these vowels and consonants, the English letters whose sounds exactly or very closely resemble the sounds of the Gujarati letters represented by respective Braille symbols and the classification of the letters in accordance with the place of articulation of the sound of each individual letter are shown in the chart on the next page. Where it is not possible to find an English letter whose sound exactly resembles the sound of the Gujarati letter, the letter showing some resemblance is given and this is indicated in parentheses.

Vowels


















Consonants

I. Gutturals










II. Palatals



III. Linguals

IV. Dentals







V. Labials







Palatal



Lingual



Dental



Dental & labial



Sibilants:

Palatal



Lingual



Dental



Aspirate

••
••
••
h

Others:

••
••
(r)

••
••
ksh

••
••
(gy)

The letters of the sixth line ('y', 'r' and 'l') are also known as semi-vowels.

The last three letters of the first five groups together with the semi-vowels and the aspirate are called 'soft consonants'. The remaining consonants are known as 'surds' or 'hard consonants'.

CHAPTER III

Procedure

This study has been based on the principles employed in the evolution of contractions and abbreviations for the Standard English Braille, namely, the assignment of a Braille symbol or symbols to frequently occurring letter groups and words used in the Gujarati language.

The compilation of frequently occurring and common letter groups and words, to which suitable Braille symbols have been assigned in this study, is based on Gujarati dictionaries and a popular form of the Gujarati Shorthand system used by the seeing. (1)

The work of assigning a Braille symbol or symbols to the common words and letter groups used in Gujarati has been rendered a little complicated on account of the following difficulties that the language presents:

(1) The Gujarati alphabet makes use of 49 Braille symbols as it consists of 13 vowels and 36 consonants. Thus a very limited number of Braille symbols are left to be used for evolving contractions.

(2) The form of the adjective varies in relation to the gender (masculine, feminine or neuter) and number (singular or plural) of the noun it qualifies. Thus adjectives like 'my' have to be written in

(1) Harikrishna Vyas, Gujarati Laghulipi, Kumar Karyalaya, Raypur, Ahmedabad, Gujarat State, India, 1954.

five different forms depending upon the gender and number of the noun or pronoun it qualifies. This necessitates the use of five different Braille symbols (for every adjective) in Gujarati as compared to the use of only one Braille symbol to perform a similar function in the English language. The following will illustrate this point:

(In Gujarati)	(In English)	(Gender and number of the noun in Gujarati)
<u>Saro</u> chhokaro	a <u>good</u> boy	masculine singular
<u>Sari</u> chhokari	a <u>good</u> girl	feminine singular * (2)
<u>Sarun</u> chhokaran	a <u>good</u> child	neuter singular
<u>Sara</u> chhokarao	<u>good</u> boys	masculine plural
<u>Saran</u> chhokaran	<u>good</u> children	neuter plural

(3) In some sentences, the verb changes its form in accordance with the gender and number of its subject. In other cases, the verb varies in accordance with the gender and number of its object. The following examples will illustrate these points:

* The feminine plural form for this word is identical with the feminine singular form in Gujarati. See note (2) below.

(2) The form of an adjective or a verb, when it qualifies the plural of a noun in the feminine gender (or a pronoun used for such a noun) is identical either with its form used with the singular of that noun (or pronoun) or with the form used with the plural of a noun (or pronoun) in the neuter gender.

(a) Change in verb form with a change in the gender or number of the subject:

(In Gujarati)	(In English)	(Gender and number of the subject in Gujarati)
Chhokaro <u>gayo</u>	The boy <u>went</u>	masculine singular
Chhokari <u>gai</u>	The girl <u>went</u>	feminine singular *
Chhokarun <u>gayun</u>	The child <u>went</u>	neuter singular
Chhokara <u>gaya</u>	The boys <u>went</u>	masculine plural
Chhokaran <u>gayan</u>	The children <u>went</u>	neuter plural

(b) Change in verb form with a change in the gender or number of the object:

(In Gujarati)	(In English)	(Gender and number of object in Gujarati)
Chhokaro <u>apyo</u>	<u>Gave</u> a boy	masculine singular
Chhokari <u>api</u>	<u>Gave</u> a girl	feminine singular **
Chhokarun <u>apyun</u>	<u>Gave</u> a child	neuter singular
Chhokara <u>apya</u>	<u>Gave</u> boys	masculine plural
Chhokaran <u>apyan</u>	<u>Gave</u> children	neuter plural

* The feminine plural of this word is the same as the feminine singular in Gujarati. See note (2) on p. 23.

** The feminine plural of this word is the same as the feminine singular in Gujarati. See note (2) on p. 23.

(4) Words like 'of', 'from', 'by', 'to', etc., are not written as separate words in Gujarati. * They form a part (and are written at the end) of the word with which they are related. Thus:

(In Gujarati)	(In English)
Amerikana leko	People <u>of</u> America
Gharanga	<u>In</u> the house
Tenathi	<u>By</u> him
Mang	<u>To</u> me

These peculiar characteristics of the Gujarati language, which are common to many other languages in India, present serious difficulties in the development of Braille contractions and abbreviations. Efforts, however, have been made in this Study, to resolve these difficulties to a considerable extent in the following manner:

(1) Certain Braille symbols (like ⠆⠆, ⠆⠆⠆, ⠆⠆⠆, etc.) representing such letters of the Gujarati alphabet which never occur as the first letter of any word in the Gujarati language, are used as initial signs (in this Study) to represent part of a word or whole word, when they are preceded by other letters of the alphabet.

(2) The number and gender of words (verbs and adjectives, which take different forms depending upon the number and gender of the noun or pro-

* The Gujarati equivalent of these words are: 'no' (or 'ni', 'na', 'nan' or 'nan', depending upon the gender and number of the word to which it is related), 'man', 'thi' and 'ne', respectively.

noun with which they are associated) are indicated by the use of different Braille symbols placed immediately before the word in question. It is hoped that this Study will stand the test of scientific reasoning and prove to be of value to the Gujarati-speaking blind persons in India.

CHAPTER IV

Contractions and Abbreviations

A contraction in Braille is a symbol or a group of symbols used to represent either a whole word or a part thereof. It retains its contracted meaning only when it stands alone, that is, when it is not accompanied by any other Braille letter or symbol. In view of the peculiar structure of the Gujarati language, however, the contractions (as well as abbreviations) evolved in this Study, can be followed by suffixes like 'of', 'from', 'to', 'by', 'etc.', which always form a part of the word in the Gujarati language.

Whole-Word Contractions

(1) One-cell contractions: The following letters of the alphabet, when standing alone, represent the whole-word shown respectively against each of them.

<u>Contraction</u>	<u>Dots Used</u>	<u>Meaning</u>
<u>a</u>	1	<u>ane</u> (and)
<u>i</u>	2-4	<u>ityadi</u> (et cetera)
<u>j</u>	3-5	<u>ke</u> (that)
<u>u</u>	1-3-6	<u>upar</u> (on, upon, over)
(cont.)		

(Cont. from p. 27)

<u>Contraction</u>	<u>Dots Used</u>	<u>Meaning</u>
<u>u</u>	1-2-5-6	<u>uitun</u> (on the contrary)
<u>ai</u>	3-4	<u>ie</u> (which)
<u>au</u>	2-4-6	<u>te</u> (he, that)
<u>k</u>	1-3	<u>kahyun</u> (said)
<u>g</u>	1-2-4-5	<u>gaya</u> (went)
<u>(gh)</u>	1-2-6	<u>ghana</u> (many)
<u>ch</u>	1-4	<u>chalya</u> (went, walked)
<u>(chh)</u>	1-6	<u>chhatan</u> (in spite of)
<u>(jh)</u>	3-5-6	<u>jo</u> (if)
<u>(n)</u>	2-5	<u>jara</u> (little)
<u>t</u>	2-3-4-5-6	<u>tene</u> (he)
<u>(th)</u>	2-4-5-6	<u>khub</u> (very)
<u>d</u>	1-2-4-6	<u>men</u> (I)
<u>(dh)</u>	1-2-3-4-5-6	<u>pan</u> (but)
<u>(n)</u>	3-4-5-6	<u>kon</u> (who)
<u>(t)</u>	2-3-4-5	<u>tethi</u> (so)
<u>th</u>	1-4-5-6	<u>thoda</u> (a few, some)
<u>(d)</u>	1-4-5	<u>dur</u> (away)
<u>dh</u>	2-3-4-6	<u>dharati</u> (earth)
<u>n</u>	1-3-4-5	<u>nahi</u> (no, not)
<u>p</u>	1-2-3-4	<u>par</u> (on, over, above)
<u>ph</u>	2-3-5	<u>phkat</u> (only)
<u>b</u>	1-2	<u>badha</u> (all) (cont.)

(Cont. from p. 28)

<u>Contraction</u>	<u>Dots Used</u>	<u>Meaning</u>
<u>m</u>	1-3-4	<u>mate</u> (for)
<u>y</u>	1-3-4-5-6	<u>yogya</u> (suitable)
<u>r</u>	1-2-3-5	<u>rite</u> ('kevi rite' how)
<u>l</u>	1-2-3	<u>lidhe</u> (on account of)
<u>v</u>	1-2-3-6	<u>vari</u> (also)
<u>sh</u>	1-4-6	<u>shum</u> (what)
<u>(sh)</u>	1-2-3-4-6	<u>kam</u> (work)
<u>s</u>	2-3-4	<u>sathe</u> (with)
<u>h</u>	1-2-5	<u>hata</u> (was, were)
<u>ksh</u>	1-2-3-4-5	<u>hum</u> (I)
<u>(gy)</u>	1-5-6	<u>tum</u> (you)
⋮	1-2-4	<u>ek</u> (one)
⋮	1-3-4-6	<u>chhe</u> (is)
⋮	1-3-5-6	<u>ne</u> (to, and)
⋮	1-2-4-5-6	<u>tum</u> (you)
⋮	2-6	<u>enne</u> (he)

(2) Two-cell contractions:

(a) Contractions derived by placing dot 4 before Braille letters or symbols:

Contraction	Dots Used	Meaning
<u>4, s</u>	(4) (1-5)	<u>eva</u> (such)
<u>4, k</u>	(4) (1-3)	<u>kya</u> (where)
<u>4, g</u>	(4) (1-2-4-5)	<u>ganyun</u> (liked)
<u>4, (gh)</u>	(4) (1-2-6)	<u>gher</u> (home)
<u>4, (chh)</u>	(4) (1-6)	<u>chhokaro</u> (boy)
<u>4, j</u>	(4) (2-4-5)	<u>jan</u> (where)
<u>4, t</u>	(4) (2-3-4-5)	<u>tatha</u> (and)
<u>4, (th)</u>	(4) (2-4-5-6)	<u>khabar</u> (news)
<u>4, (dh)</u>	(4) (all six)	<u>pani</u> (water)
<u>4, (t)</u>	(4) (2-3-4-5)	<u>tyan</u> (there)
<u>4, th</u>	(4) (1-4-5-6)	<u>thashe</u> (will be)
<u>4, (d)</u>	(4) (1-4-5)	<u>duniya</u> (world)
<u>4, n</u>	(4) (1-3-4-5)	<u>nathi</u> (not)
<u>4, p</u>	(4) (1-2-3-4)	<u>pramane</u> (according to)
<u>4, b</u>	(4) (1-2)	<u>balak</u> (child)
<u>4, m</u>	(4) (1-3-4)	<u>mare</u> (I, Me)
<u>4, r</u>	(4) (1-2-3-5)	<u>rayhun</u> (remained)
<u>4, l</u>	(4) (1-2-3)	<u>lavyo</u> (brought)
<u>4, sh</u>	(4) (1-4-6)	<u>shabd</u> (word)
<u>4, s</u>	(4) (2-3-4)	<u>stri</u> (woman)
<u>4, h</u>	(4) (1-2-5)	<u>hashe</u> (will be, would be)

(b) Contractions derived by placing dot 5
before Braille letters or symbols:

Contraction	Dots Used	Meaning
<u>5. a</u>	(5) (3-4-5)	<u>ava</u> (like this)
<u>5. u</u>	(5) (1-3-6)	<u>uparant</u> (in addition)
<u>5. u</u>	(5) (1-2-5-6)	<u>umche</u> (high)
<u>5. e</u>	(5) (1-5)	<u>etala</u> (so much)
<u>5. k</u>	(5) (1-3)	<u>kyara</u> (when)
<u>5. (gh)</u>	(5) (1-2-6)	<u>ghanakhara</u> (most)
<u>5. i</u>	(5) (2-4-5)	<u>iyara</u> (when)
<u>5. (gh)</u>	(5) (1-6)	<u>chhokari</u> (girl)
<u>5. t</u>	(5) (2-3-4-5-6)	<u>taraf</u> (to)
<u>5. (th)</u>	(5) (2-4-5-6)	<u>khatar</u> (for)
<u>5. (dh)</u>	(5) (all six)	<u>pura</u> (complete)
<u>5. (t)</u>	(5) (2-3-4-5)	<u>tyara</u> (then)
<u>5. th</u>	(5) (1-4-5-6)	<u>thoda</u> (a few)
<u>5. (d)</u>	(5) (1-4-5)	<u>diyas</u> (day)
<u>5. dh</u>	(5) (2-3-4-6)	<u>dharyun</u> (conceived)
<u>5. n</u>	(5) (1-3-4-5)	<u>nan</u> (name)
<u>5. p</u>	(5) (1-2-3-4)	<u>pita</u> (father)
<u>5. b</u>	(5) (1-2)	<u>baben</u> (sister)
<u>5. m</u>	(5) (1-3-4)	<u>mara</u> (my)
<u>5. y</u>	(5) (1-3-4-5-6)	<u>yuvan</u> (young)
<u>5. r</u>	(5) (1-2-3-5)	<u>rate</u> (at night)
<u>5. v</u>	(5) (1-2-3-6)	<u>vadhara</u> (more)

(cont.)

(Cont. from p. 31)

Contraction	Dots Used	Meaning
<u>5, sh</u>	(5) (1-4-6)	<u>shakyo</u> (could)
<u>5, (sh)</u>	(5) (1-2-3-4-6)	<u>karan</u> (because, reason)
<u>5, s</u>	(5) (2-3-4)	<u>sara</u> (good)
<u>5, h</u>	(5) (1-2-5)	<u>hamanan</u> (now)

(c) Contractions derived by placing dot 6 before Braille letters or symbols:

Contraction	Dots Used	Meaning
<u>6, a</u>	(6) (3-4-5)	<u>apane</u> (we)
<u>6, k</u>	(6) (1-3)	<u>koi</u> (some)
<u>6, j</u>	(6) (2-4-5)	<u>jaladi</u> (quick)
<u>6, (th)</u>	(6) (2-4-5-6)	<u>khas</u> (special)
<u>6, (dh)</u>	(6) (all six)	<u>dahalan</u> (before)
<u>6, (t)</u>	(6) (2-3-4-5)	<u>tame</u> (you)
<u>6, th</u>	(6) (1-4-5-6)	<u>they</u> (become)
<u>6, n</u>	(6) (1-3-4-5)	<u>nahi to</u> (if not)
<u>6, p</u>	(6) (1-2-3-4)	<u>pase</u> (near)
<u>6, m</u>	(6) (1-3-4)	<u>manas</u> (man)
<u>6, v</u>	(6) (1-2-3-6)	<u>ying</u> (without)
<u>6, s</u>	(6) (2-3-4)	<u>sans</u> (in front of)
<u>6, h</u>	(6) (1-2-5)	<u>hoy</u> (is, are)

(d) Contractions derived by placing dots 5-6 before Braille letters or symbols:

Contraction	Dots Used	Meaning
<u>5-6, a</u>	(5-6) (3-4-5)	<u>ava</u> (such)
<u>5-6, u</u>	(5-6) (1-2-5-6)	<u>unda</u> (deep)
<u>5-6, e</u>	(5-6) (1-5)	<u>evada</u> (as....as)
<u>5-6, k</u>	(5-6) (1-3)	<u>kai</u> (any)
<u>5-6, (ch)</u>	(5-6) (1-6)	<u>chuta</u> (free, separate)
<u>5-6, i</u>	(5-6) (2-4-5)	<u>jarur</u> (sure, necessity)
<u>5-6, t</u>	(5-6) (2-3-4-5-6)	<u>tarika</u> (as)
<u>5-6, (th)</u>	(5-6) (2-4-5-6)	<u>khotun</u> (wrong, false)
<u>5-6, (dh)</u>	(5-6) (all six)	<u>patr</u> (letter)
<u>5-6, (t)</u>	(5-6) (2-3-4-5)	<u>tara</u> (your, stars)
<u>5-6, (d)</u>	(5-6) (1-4-5)	<u>dahado</u> (day)
<u>5-6, n</u>	(5-6) (1-3-4-5)	<u>niche</u> (under, below)
<u>5-6, p</u>	(5-6) (1-2-3-4)	<u>parentu</u> (but)
<u>5-6, b</u>	(5-6) (1-2)	<u>bila</u> (other, second)
<u>5-6, m</u>	(5-6) (1-3-4)	<u>mata</u> (mother)
<u>5-6, l</u>	(5-6) (1-2-3)	<u>lavak</u> (suited, fit)
<u>5-6, v</u>	(5-6) (1-2-3-6)	<u>vishe</u> (about)
<u>5-6, s</u>	(5-6) (2-3-4)	<u>sivay</u> (without, except)
<u>5-6, h</u>	(5-6) (1-2-5)	<u>hameshan</u> (always)
⠠⠠⠠	(5-6) (1-3-4-6)	<u>chum</u> (am)

(a) Contractions derived by placing dots
4-5-6 before Braille letters or symbols:

Contraction	Dots Used	Meaning
<u>4-5-6. a</u>	(4-5-6) (3-4-5)	<u>agar</u> (in front, before)
<u>4-5-6. e</u>	(4-5-6) (1-5)	<u>etale</u> (so, therefore)
<u>4-5-6. k</u>	(4-5-6) (1-3)	<u>ken</u> (why)
<u>4-5-6. (chh)</u>	(4-5-6) (1-6)	<u>chhak</u> (completely)
<u>4-5-6. i</u>	(4-5-6) (2-4-5)	<u>ien</u> (as)
<u>4-5-6. (ih)</u>	(4-5-6) (3-5-6)	<u>ioie</u> (want)
<u>4-5-6. (p)</u>	(4-5-6) (2-5)	<u>iate</u> (...self)
<u>4-5-6. (rh)</u>	(4-5-6) (2-4-5-6)	<u>kharun</u> (right, correct)
<u>4-5-6. (dh)</u>	(4-5-6) (all six)	<u>rote</u> (...self)
<u>4-5-6. (t)</u>	(4-5-6) (2-3-4-5)	<u>tem</u> (in that way)
<u>4-5-6. (d)</u>	(4-5-6) (1-4-5)	<u>daramiyen</u> (during)
<u>4-5-6. n</u>	(4-5-6) (1-3-4-5)	<u>nanun</u> (small)
<u>4-5-6. p</u>	(4-5-6) (1-2-3-4)	<u>bachhi</u> (after, afterward)
<u>4-5-6. ph</u>	(4-5-6) (2-3-5)	<u>phari</u> (again)
<u>4-5-6. b</u>	(4-5-6) (1-2)	<u>baju</u> (side)
<u>4-5-6. m</u>	(4-5-6) (1-3-4)	<u>motun</u> (large, big)
<u>4-5-6. y</u>	(4-5-6) (1-2-3-6)	<u>vasar</u> (without)
<u>4-5-6. s</u>	(4-5-6) (2-3-4)	<u>sudhi</u> (until)
<u>4-5-6. h</u>	(4-5-6) (1-2-5)	<u>haye</u> (now)
⠠⠠⠠	(4-5-6) (1-3-4-6)	<u>chhie</u> (are)

Part-Word Contractions

(1) Initial contractions: Contractions used only at the beginning of a word are called 'Initial Contractions'.

The Braille symbols listed below are contractions for 'combined consonants'* which are so common in the Gujarati and most of the other Indian languages. While writing in Bharati Braille, the combination of any one consonant with a second consonant which follows it, is indicated by placing dot 4 before the first consonant. For example, the word 'patr' (meaning 'letter') is written as follows in Bharati Braille:

List of contractions:

Contraction	Dots Used	Meaning
dot <u>5</u> , ch	(5) (1-4)	dot <u>4</u> , ch, y**
dot <u>5</u> , l	(5) (2-4-5)	dot <u>4</u> , l, y
dot <u>5</u> , (d)	(5) (1-4-5)	dot <u>4</u> , (d), y
dot <u>5</u> , n	(5) (1-3-4-5)	dot <u>4</u> , n, y
dot <u>5</u> , p	(5) (1-2-3-4)	dot <u>4</u> , p, y

(cont.)

*'Combined consonants': A group of two or more consonants without any vowel sound between any two of them.

**

stands for

(Cont. from p. 35)

Contraction	Dots Used	Meaning
dot <u>5</u> , <u>m</u>	(5) (1-3-4)	dot <u>4</u> , <u>m</u> , <u>y</u>
dot <u>5</u> , <u>l</u>	(5) (1-2-3)	dot <u>4</u> , <u>l</u> , <u>y</u>
dot <u>5</u> , <u>y</u>	(5) (1-2-3-6)	dot <u>4</u> , <u>y</u> , <u>y</u>
dot <u>5</u> , <u>sh</u>	(5) (1-4-6)	dot <u>4</u> , <u>sh</u> , <u>y</u>
dot <u>6</u> , <u>g</u>	(6) (1-2-4-5)	dot <u>4</u> , <u>g</u> , <u>r</u>
dot <u>6</u> , <u>j</u>	(6) (2-4-5)	dot <u>4</u> , <u>j</u> , <u>y</u>
dot <u>6</u> , <u>(d)</u>	(6) (1-4-5)	dot <u>4</u> , <u>(d)</u> , <u>r</u>
dot <u>6</u> , <u>p</u>	(6) (1-2-3-4)	dot <u>4</u> , <u>p</u> , <u>r</u>
dot <u>6</u> , <u>b</u>	(6) (1-2)	dot <u>4</u> , <u>b</u> , <u>r</u>
dot <u>6</u> , <u>m</u>	(6) (1-3-4)	dot <u>4</u> , <u>m</u> , <u>l</u>
dot <u>6</u> , <u>sh</u>	(6) (1-4-6)	dot <u>4</u> , <u>sh</u> , <u>y</u>
•• ••.....	(1-2-4)	dot <u>4</u> , <u>k</u> (4) (1-3)
•• ••.....	(1-3-4-6)	dot <u>4</u> , <u>(t)</u> (4) (2-3-4-5)
•• ••.....	(1-3-5-6)	dot <u>4</u> , <u>dh</u> (4) (2-3-4-6)
•• ••.....	(1-2-3-5-6)	dot <u>4</u> , <u>s</u> (4) (2-3-4)

(2) Contractions used in the middle of a word:

(a) List of contractions for combined consonants:

Contraction	Dots Used	Meaning
dot <u>5</u> , <u>ch</u>	(5) (1-4)	dot <u>4</u> , <u>ch</u> , <u>y</u>
dot <u>5</u> , <u>l</u>	(5) (2-4-5)	dot <u>4</u> , <u>l</u> , <u>y</u> (cont.)

(Cont. from p. 36)

Contraction	Dots Used	Meaning
dot <u>5, t</u>	(5) (2-3-4-5-6)	dot <u>4, t, y</u>
dot <u>5, (th)</u>	(5) (2-4-5-6)	dot <u>4, (th), y</u>
dot <u>5, d</u>	(5) (1-2-4-6)	dot <u>4, d, y</u>
dot <u>5, (dh)</u>	(5) (all six)	dot <u>4, (dh), y</u>
dot <u>5, (n)</u>	(5) (3-4-5-6)	dot <u>4, (n), y</u>
dot <u>5, th</u>	(5) (1-4-5-6)	dot <u>4, th, y</u>
dot <u>5, dh</u>	(5) (2-3-4-6)	dot <u>4, dh, y</u>
dot <u>5, m</u>	(5) (1-3-4)	dot <u>4, m, y</u>
dot <u>5, v</u>	(5) (1-2-3-6)	dot <u>4, v, y</u>
dot <u>5, (sh)</u>	(5) (1-2-3-4-6)	dot <u>4, (sh), y</u>
dot <u>5, h</u>	(5) (1-2-5)	dot <u>4, h, y</u>
dot <u>5, kah</u>	(5) (1-2-3-4-5)	dot <u>4, kah, y</u>
.....	(2-3-5-6)	dot <u>4, s</u> (4) (1-2-4-5)
.....	(2-5-6)	dot <u>4, n</u> (4) (1-3-4-5)
.....	(2-3-6)	dot <u>4, r</u> (4) (1-2-3-5)
.....	(2-3)	dot <u>4, l</u> (4) (1-2-3)
.....	(1-2-4)	dot <u>4, k</u> (4) (1-3)
.....	(1-3-4-6)	dot <u>4, (t)</u> (4) (2-3-4-5)
.....	(1-3-5-6)	dot <u>4, (d)</u> (4) (1-4-5)
.....	(1-2-3-5-6)	dot <u>4, p</u> (4) (1-2-3-4)
.....	(1-2-4-5-6)	dot <u>4, b</u> (4) (1-2)

(cont.)

(Cont. from p. 37)

Contraction	Dots Used	Meaning
.....	(2)	dot 4, sh (4) (1-4-6)
.....	(2-6)	dot 4, s (4) (2-3-4)

(b) When broad 'a' (dots 3-4-5) is followed by 'anusvara' (dots 5-6) in the middle of a word, it is represented by the contraction (dot 3). For example; the word 'shanti' (meaning 'peace') is written as follows:

sh	a	n	t	i	(uncontracted)
sh	an	t	i		contracted

(3) Final contractions: Contractions used at the end of a word are known as 'Final Contractions'.

(a) As stated earlier, words like 'in', 'of', 'from', 'by', 'to', etc., are not used as separate words in the Gujarati language. They form a part of the word and are placed at the end of such words like a suffix. These words are represented by the following contractions:

Contraction	Dots Used	Meaning
.....	(1-2-4)	<u>an</u> (in)
.....	(1-3-4-6)	<u>thi</u> (by)
.....	(1-3-5-6)	<u>ne</u> (to)

(cont.)

(Cont. from p. 38)

Contraction	Dots Used	Meaning
•••••	(1-2-3-5-6)	<u>no</u> (of)
••••• ...	(5)(1-2-4)	<u>manthi</u> (from)

(b) When the vowels broad 'a' (dots 3-4-5) or short 'i' (dots 2-4) are followed by 'anusvara' (dots 5-6) at the end of a word, they are represented by ••• (dot 3) and ••• (dots 3-6), respectively.

(c) The letter-groups 'to' (or 'ta', 'ti', 'tum', and 'tan') and 'va' ('vo', 'vum', etc.) are represented by the symbols ••• (dots 2-6) and ••••• (dots 1-2-4-5-6), respectively.

Abbreviations

Abbreviations	Dots Used	Meaning
<u>a, g</u>	(1)(1-2-4-5)	<u>agar</u> (if)
<u>a, dot 4, (t)</u>	(1)(4)(2-3-4-5)	<u>atyare</u> (now)
<u>a, (t)</u>	(1)(2-3-4-5)	<u>atishay</u> (too much)
<u>a, th</u>	(1)(1-4-5-6)	<u>athava</u> (or)
<u>a, (d)</u>	(1)(1-4-5)	<u>andar</u> (in, inside)
<u>a, dh</u>	(1)(2-3-4-6)	<u>adhik</u> (more)
<u>a, n</u>	(1)(1-3-4-5)	<u>anek</u> (many)
<u>a, m</u>	(1)(1-3-4)	<u>ame</u> (we)
<u>a, dot 4, r</u>	(1)(4)(1-2-3-5)	<u>arthat</u> (or)

(cont.)

(Cont. from p. 39)

Abbreviation	Dots Used	Meaning
<u>a. l</u>	(1)(1-2-3)	<u>albat</u> (of course)
<u>a. h</u>	(1)(1-2-5)	<u>ahin</u> (here)
<u>a. (kh)</u>	(3-4-5)(4-6)	<u>akhare</u> (at last)
<u>a. t</u>	(3-4-5)(2-3-4-5-6)	<u>atalum</u> (so much)
<u>a. dot 4. p</u>	(3-4-5)(4)(1-2-3-4)	<u>apyum</u> (gave)
<u>a. dot 4. v</u>	(3-4-5)(4)(1-2-3-6)	<u>avyo</u> (came)
<u>a. hyphen. k</u>	(3-4-5)(3-6)(1-3)	<u>avati kale</u> (tomorrow)
<u>a. hyphen. r</u>	(3-4-5)(3-6)(1-2-3-5)	<u>aje rate</u> (tonight)
<u>a. hyphen. h</u>	(3-4-5)(3-6)(1-2-5)	<u>avya hats</u> (had come)
<u>a. hyphen. . . .</u>	(3-4-5)(3-6)(1-3-4-6)	<u>ave chhe</u> (come, comes)
<u>k. k</u>	(1-3)(1-3)	<u>ketlak</u> (a few, some)
<u>k. (t)</u>	(1-3)(2-3-4-5)	<u>karatan</u> (rather than)
<u>k. dot 4. r</u>	(1-3)(4)(1-2-3-5)	<u>karyum</u> (did)
<u>k. h</u>	(1-3)(1-2-5)	<u>kahevay</u> (said)
<u>k. hyphen. r</u>	(1-3)(3-6)(1-2-3-5)	<u>kale rate</u> (tomorrow night)
<u>k. hyphen. . . .</u>	(1-3)(3-6)(1-3-4-6)	<u>kahe chhe</u> (say, says)
<u>g. hyphen. k</u>	(1-2-4-5)(3-6)(1-3)	<u>gai kale</u> (yesterday)
<u>g. hyphen. h</u>	(1-2-4-5)(3-6)(1-2-5)	<u>gava-hata</u> (had gone)
<u>l. hyphen. . . .</u>	(2-4-5)(3-6)(1-3-4-6)	<u>lay chhe</u> (go, goes)
<u>(t). m</u>	(2-3-4-5)(1-3-4)	<u>tame</u> (you)

(cont.)

(Cont. from p. 40)

<u>Abbreviation</u>	<u>Dots Used</u>	<u>Meaning</u>
<u>(d), k</u>	(1-4-5)(1-3)	<u>darek</u> (every)
<u>(d), dh</u>	(1-4-5)(2-3-4-6)	<u>didho</u> (gave)
<u>P, e</u>	(1-2-3-4)(1-5)	<u>palo</u> (that)
<u>P, (chh)</u>	(1-2-3-4)(1-6)	<u>pachhar</u> (behind)
<u>P, (th)</u>	(1-2-3-4)(2-4-5-6)	<u>petha</u> (like)
<u>P, dot 4, d</u>	(1-2-3-4)(4)(1-2-4-6)	<u>padyo</u> (fell)
<u>P, (sh)</u>	(1-2-3-4)(1-2-3-4-6)	<u>purush</u> (man)
<u>P, h</u>	(1-2-3-4)(1-2-5)	<u>pahelo</u> (first)
<u>dot 4, P, r</u>	(4)(1-2-3-4)(1-2-3-5)	<u>prakar</u> (kind, type)
<u>b, (d)</u>	(1-2)(1-4-5)	<u>badale</u> (in place of)
<u>b, dot 4, n</u>	(1-2)(4)(1-3-4-5)	<u>baryun</u> (happened)
<u>b, dot 4, i</u>	(1-2)(4)(1-2-3)	<u>boloyo</u> (said, spoke)
<u>b, h</u>	(1-2)(1-2-5)	<u>bahar</u> (out)
<u>l, k</u>	(1-2-3)(1-3)	<u>loko</u> (people)
<u>l, g</u>	(1-2-3)(1-2-4-5)	<u>lagbhag</u> (approximately)
<u>l, dot 4, v</u>	(1-2-3)(4)(1-2-3-6)	<u>layyo</u> (brought)
<u>v, (kh)</u>	(1-2-3-6)(4-6)	<u>vakhat</u> (time)
<u>v, g</u>	(1-2-3-6)(1-2-4-5)	<u>vagere</u> (et cetera)
<u>v, dot 4, ch</u>	(1-2-3-6)(4)(1-4)	<u>vachche</u> (between)
<u>v, ch, r</u>	(1-2-3-6)(1-4)(1-2-3-5)	<u>vichar</u> (thought)
<u>v, sh, (sh)</u>	(1-2-3-6)(1-4-6)(1-2-3- 4-6)	<u>vishesh</u> (more)

(cont.)

(Cont. from p. 41)

Abbreviation	Dots Used	Meaning
<u>s, (kh)</u>	(2-3-4)(4-6)	<u>sarakham</u> (equal)
<u>s, (gh)</u>	(2-3-4)(1-2-6)	<u>sagharum</u> (everything)
<u>dot 4, s, th</u>	(4)(2-3-4)(1-4-5-6)	<u>sthati</u> (position)
<u>s, dh</u>	(2-3-4)(2-3-4-6)	<u>sadharam</u> (general)
<u>s, dot 4, n</u>	(2-3-4)(4)(1-3-4-5)	<u>samany</u> (ordinary)
<u>s, b, dh</u>	(2-3-4)(1-2)(2-3-4-6)	<u>sambandh</u> (relation)
<u>s, y</u>	(2-3-4)(1-3-4-5-6)	<u>samay</u> (time)

The following symbols may be placed before adjectives and verbs (without leaving a space) to show the gender and number of the word with which they are associated.

- (dots 2-3) show masculine gender, singular number.
- (dots 2-5) show feminine gender, singular number.
- (dots 2-5-6) show neuter gender, singular number.
- (dots 2-6) show neuter gender, plural number.

The form representing masculine gender and plural number is taken for granted when the word is not accompanied by any of these symbols.

When the gender and number associated with any particular word are otherwise clear these symbols need not be used.

As in the case of whole-word contractions, abbreviations retain their abbreviated meaning only when they stand alone, that is, when they are not immediately preceded or followed by

any other Braille letter or symbol. However, to meet the peculiar needs of the Gujarati language, they can be followed by words like 'from', 'in', 'to', 'by', etc., without losing their abbreviated meaning.

Both contractions and abbreviations can be followed by the letter 'o' which changes the singular number of the word to plural.

CHAPTER V

Summary and Conclusions

This study was undertaken with the intention of helping the Gujarati-speaking blind in India.

Contractions and abbreviations, which occur so largely in the English Braille system, have shown their immense value as time, energy and space saving devices. On the other hand, the Bharati Braille in India, which came into existence as the common Braille code for all major Indian languages in 1951, has no contractions or abbreviations. Thus the advantages of a well-developed contracted Braille system are entirely lost to the blind in India.

It is earnestly hoped that the contractions and abbreviations developed in this study will receive official acceptance in due course at the hands of the authorities in charge of the education and welfare of the blind in Gujarat, will prove to be of value to the blind in pursuing their academic and non-academic interests, and will pave the way for undertaking similar studies for other sister languages in the country.

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