

**DEVELOPMENT OF ALGORITHM FOR TESTING THE INFLUENCE OF
INDO-ARYAN LANGUAGES UPON A LANGUAGE,
WHICH IS IN THE PROCESS OF STANDARDISATION**

By

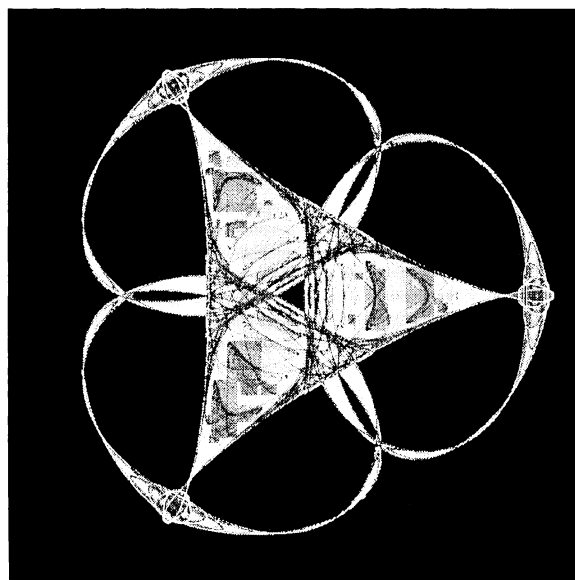
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DEVELOPMENT OF ALGORITHM FOR TESTING THE INFLUENCE OF INDO-ARYAN LANGUAGES UPON A LANGUAGE, WHICH IS IN THE PROCESS OF STANDARDISATION

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After discussing different techniques for standardisation process, here we have made an attempt in the direction of finding the impact of words of Indo-Aryan origin upon Kumauni by using statistical and mathematical process.

Key works : Analysis of variance/tests of significance/ upper hypergeometric cumulative probability

INTRODUCTION

Language, in the most important device of socialization, has about 3000 classes so far as the whole world is concerned. The numbers of words in each language are different, which in the case of our language (under the process of standardisation as reflected in our earlier works [1] & [2]) have been speculated to exceed fifty thousand by Ruwali [6]. The influence of Indo-Aryan languages has been contemplated on this language by its workers like Ruwali [5] and Pokharia [4].

What is their over all impact and whether it can be proved mathematically ?, has been the subject of concern for us and its has laid the foundation of present paper. We have tried to evolve an algorithm for this purpose, which can be used for the same purpose in case of any language.

STATISTICAL FRAMEWORK

It has been observed that Kumauni has quite a similar words of Gujrati and Marathi origin (two prominent Indo-Aryan languages). On the basis of alphabetic counts, computed for the first vowel, the analysis of variance table can be set up as given below :

Source of Variation	Sum of squared deviations	d.f.	Variance
Between Varieties	418	2	209.0
Within Varieties	6704	10	670.4
Total	7122	12	593.5

From which the value of

$$F = 3.20$$

Which is less than the tabulated value of F at 5% level of significance. It leads to accept the null hypothesis that there is no difference among the chosen words and so this approval can be extended further for further rigorous mathematical tests. This conclusion has been derived on the basis of similar tests conducted for words starting with other vowels and consonants.

TEST BY THE APPLICATION OF HYPERGEOMETRIC DISTRIBUTION

Based on eleven philological features, we can construct table (I), showing the presence or absence of such features for words starting with vowels

Table –I

No. of feature	Kum.	Sk.	Guj.	Sin.	Mar.	Ben.	Nep.
1.	--	--	--	--	+	+	--
2.	--	--	+	--	+	--	--
3.	+	--	--	--	+	--	+
4.	+	--	--	--	+	--	--
5.	--	--	+	--	+	--	--
6.	+	+	+	--	--	--	--
7.	+	--	--	+	+	--	--
8.	--	--	+	--	--	--	--
9.	--	--	+	--	+	--	--
10.	+	--	--	--	--	+	+
11.	--	--	--	--	+	--	--

Abbreviations : Kum. = Kumauni, Sk.= Sanskrit, Guj = Gujrati,

Sin. = Sindhi, Mar. = Marathi, Ben. = Bengali, Nep.= Nepali.

Test of significance of the data of above table can be examined with the help of formula given in the book of Johnson & kotz [3] for probabilities of obtaining at least R common features. The results have been compiled in table II.

Table – II

	n ₁	n ₂	R	P(R)
Kum. - Sk.	5	1	1	0.95
- Guj.	5	5	1	0.97
- Sin.	5	1	1	0.95
- Mar.	5	8	3	0.65
- Ben.	5	2	1	0.90
- Nep.	5	2	2	0.78

Abbreviations as for table (I)

N in the present case = 222

Results in the above table have been given upto two significant figures and they exhibit the fair degree of influence of Indo-Aryan languages upon kumauni. Words of foreign, Indo-Dravidian and local origin have also made significant impact upon kumauni and that can be tested by using similar techniques. Our this work propounds the fact that migration and contacts are guiding factors of languages and their development through ages.

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