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Differences in the Growth Rates of the Three Major Religious Groups of India

THE results of the 1971 Census of India showed that the proportion of Hindus in India decreased during the period, 1961-1971; the growth rate of the Hindus being lower than the national average. The Muslims and Christians registered higher growth rates thereby showing increase in their proportions. Studies by Pethe (Pethe, V.P., 1973) and by Visaria(Visaria, L., 1974) examined the situation and have concluded that the differences being mainly due to natural increase (conversion and international net in-migration being negligible) need not produce demographic imbalances in the near future, as, Muslim fertility, which is higher than that of the Hindus at present, shows signs of decrease. But apart from this hypothetical question of numerical superiority in the distant future, there is a social-cum-ecological problem of immediate importance which is not evident on the national level but emerges when the district level growth rates of the religious groups are considered,

It is the wide variation in the growth rates of the religious groups in the different districts which suggests an ecological imbalance. Extremely high or low growth rates—some greater than 1000 percent and some negative—cannot be due to differences In the birth and death rates alone. If religious conversion can be ruled out as being insignificant, the variations in the growth rates indicate that heavy inter-district migration was present in some districts during the period, 1961-71 and that migration was selective with respect to religion. The districts with extreme growth rates, therefore, present favourable/unfavourable

residential situations which is a socio-political problem. Hence it is necessary to investigate whether the growth rates of the different religious groups were mutually related and if so, what was the nature of the interaction. Further, as the religious compositions of the States of India are different, the pattern of growth of the religious groups within the States could also be different. These problems are investigated in this paper.

Method

The relationship among the growth rates could be studied by correlating the rates. But it has been observed that the growth rates of the religious groups show wide variation. In many cases the smallness of the size of the population has been responsible for both very high rates and very low rates. Further it is well known that the rate of change of population size is a function of its numbers. In a multi-population interacting situation, the absolute size of a group is more important than its relative size or its rate of change. Hence it would be appropriate if the growth rate of a group could be conceived as a function of the population size of the interacting groups. Thus, r_i, the rate of growth of the i-th group can be expressed as

$$r_i = f(P_1, P_2, \ldots, P_i, \ldots, P_n)$$

where P_i, $(i = 1, \ldots, n)$, is the population size of the i-th group. For most cases where the population is closed to migration and is subject to a growth that is near stable, a linear function is adequate. In this study therefore, r_i, is taken as

$$r_i = a + bP_1 + cP_2 + \ldots$$

where $a, b, c, \ldots$ are constants. These constants can be estimated as the partial regression coefficients of a multiple regression equation.

For this study, multiple regression equations for the total population and for the Hindu, Muslim and Christian populations are derived on an all India basis as well as at the State level using the district as the unit. The district level data are available from the published results of the Indian Census of 1971. (In the case of States with fewer than seven districts the analysis is not carried out.)

Thus, $$r_t = a_t + b_{tH \cdot MX} + b_{tM \cdot HX} + b_{tX \cdot HM}$$

corresponds to the growth rate r_t, of the total population in relation to the

Hindu (H), Muslim (M) and Christian (X) populations and the set

$$r_h = a_h + b_{hH \cdot MX} + b_{hM \cdot HX} + b_{hX \cdot HM}$$

$$r_m = a_m + b_{mH \cdot MX} + b_{mM \cdot HX} + b_{mX \cdot HM}$$

$$r_x = a_x + b_{xH \cdot MX} + b_{xM \cdot HX} + b_{xX \cdot HM}$$

represents the three regression equations for the growth rates r_h, r_m, r_x of the Hindus, Muslims and Christians, respectively. The partial regression coefficients, b's, suggest the pattern of interaction and the extent of influence.

Interpretation

Since the study of the interactions requires the simultaneous comparison of all the partial regression coefficients of the set of three multiple regression equations, it would be appropriate to describe briefly the types of relationships that can arise and their interpretation (Keyfitz, N., 1968).

The regression coefficients $b_{hH \cdot MX}$, $b_{mM \cdot HX}$, and $b_{xX \cdot HM}$ represent the influence the sizes of the Hindu, Muslim and Christian population have on their own growth rates and can be called their autonomous rates (A-rates). For closed populations that are growing under conditions approximating stability it is known that the largeness of their size has a lowering effect on the growth rates. Thus for populations satisfying the above condition, the A-rate would be negative. A positive value then, indicates that natural growth under stability alone is not responsible for the growth.

The partial regression coefficients relating the growth rate of one group with the size of the second after controlling the variations in the size of the remaining groups can be visualised as the interdependent factor of the growth rate (I-rates). Thus, for example, $b_{hM \cdot HX}$ suggests the changes the growth rates of the Hindus will have in relation to the population size of the Muslims in the districts had the Hindu and Christian populations been the same throughout. A positive $b_{hM \cdot HX}$ indicates the tendency of the growth rates of Hindus to be high in those districts where the Muslims are in large numbers. But a negative value would mean that the presence of a large number of Muslims would lower the Hindu growth rate. This relationship probably indicates the outmigration of Hindus from the district which is a case of selective out-migration.

It is evident that the signs of the *A-and I*-rates are important in the interpretation of results. The interaction between groups will, therefore, be reflected by the particular combination of the signs of the rates. Thus a negative A-rate with a positive I-rate indicates that the growth rate of a population increasing under conditions of constant birth and death rates, tends to increase further in the presence of large numbers of the second group. If this relationship is mutual, *(a)* in the chart given at the end, the interaction, in ecological terms, is 'symbiotic' and depicts a mutually benefiting system. If the X-rate is positive and the /-rate is negative, it suggests the tendency of the second group to retard the growing tendency of the first. If the same relationship is observed for the second group also, *(b)* in the chart, the situation is one of 'competition'. But if instead, the second group has positive I-rate and a negative ,4-rate, (c) in the chart, the second group is at a disadvantage. This is similar to the 'prey-predator' set-up in a two species interacting situation in nature. In the pcrsent case where population growth over different regions is compared, the situation *(c)* suggests selective migration of one of the groups. There can also be situations almost similar to *(c)* where one of the groups is at a disadvantage but may not agree completely to 'prey-predator' situation (d in the chart). Here the first group has a chance to grow while the second tends to decrease further, which again is a case of selective 'push' of the second group from the area. If all the signs are positive, then it is a case of complete 'additive symbiosis'. When all the values are negative, the situation is one of mutual transfer of population which can lead to singte-gtoup-dominated districts.

The above arguments can be extended to three-group-interacting situations.

Results

The results of the analysis of the data are presented in 3 sections: {1} pattern of growth of the total population of India and the States in relation to the size of Hindu, Muslim and Christian populations, (2) the pattern of growth of each religious group separately, and (3) the interaction of the groups within the States.

1. *Total Population.* The influence of the population size of each group on the growth rate of the total population of the States as measured by the partial regression coefficients and the multiple correlation coefficients can be studied from the figures of Table 1 .* The coefficients show that the population size of

*All tables are given at the end of the text.

the Hindus has generally tended to decrease the population growth in India as a whole as well as in many of the States. Of the 18 States considered, 11 States have negative regression coefficients. States of Jammu and Kashmir, Kerala, Punjab, Mysore, Manipur, Haryana and Rajasthan exert positive influence. It can be verified that, excepting for Mysore, Haryana and Rajasthan, all the other States have large number of persons from other religious groups and are not Hindu-dominated. This indicates therefore that Hindu population of many of the Hindu-dominated States is stable and so has a lowering effect on the overall growth rate of the total population.

The size of the Muslim population on the other hand, has tended to increase the growth rate of the total population at the national and State levels. Negative coefficients were obtained only in seven States which include Uttar Pradesh, Mysore, Assam and Maharashtra where Muslims are in large numbers. But States like Jammu and Kashmir, Kerala and Bihar where also there are large number of Muslims, have positive rates which indicates that districts that had large number of Muslims have registered higher growth rate than for the total population. To some extent, Muslim migration to districts of Muslim concentration could be responsible for their higher growth.

The population size of the Christian has virtually no influence on India's population growth. However, in the State-wise analysis, it is seen that 9 States have negative coefficients and 9 have positive coefficients. But all the States with positive coefficients, except Kerala, have only very small number of Christians.

2. *Religious Groups*

HINDUS. The partial regression coefficients relating the growth rates of the Hindus to the population size of Hindus, Muslims and Christians in the different States of India are presented in Table 2. It can be observed that at the all India level and in 12 States, the Hindus have negative X-rates. Those that have positive rates are Hindu-dominated States except Punjab. As demographic transition of the Hindu population in Mysore, Orissa, Maharashtra and Rajasthan is unlikely, in-migration of Hindus into the districts of these States is a possible reason for the positive *A*-rates.

On considering the I-rates, though we find that population size of Muslims had a negative influence on Hindu growth rates on an all India basis, at the

State level the inverse relationship is observed only in a few States. The Christian population also exerts a lowering effect on the Hindu growth rate only in a few States.

On the basis of these findings it can be stated that the presence of large number of Muslims and Christians in any district has not considerably reduced the growth rates of the Hindus of the district in most of the large States of India.

MUSLIMS. The X-and I-rates of Muslims as represented by the partial regression coefficients arc given *in* Table 3. The A-rates of Muslims for India is negative. But at the State level 10 of the rates are positive. As stated earlier, increase in population due to decrease in death rates and/or migration has to account for the positive ,4-rates. The 10 States include Jammu and Kashmir, Kerala, Bihar that have large numbers of Muslims and so, the positive rates suggest a rapid increase in the Muslim population.

The I-rates in relation to the population size of the Hindus show that negative values are observed only in seven States and at the national level. Of these only Orissa is Hindu-dominated. In all other States, Muslims are cot in negligible proportions. The I-rates with respect to the Christian population also show that the presence of Christians has helped to increase the growth rates of the Muslims. Only in 7 States the partial regression coefficients *bmx • HM* are negative and these are not States where Christians are in unusually large numbers.

From the *A*-and I-rates of Muslims, it is dear that the tendency for Muslim population to increase in size is present in many States.

CHRISTIANS. The negligible influence of the Christian population on its own growth rate on an all India basis is evident from Table 4, which gives the partial regression coefficients. In 13 States the A-rates are negative. Positive influences are observed in those States where Christians do not form large numbers.

The I-rates show that the size of Hindu population has a negative effect on the Christian growth rate in as many as 12 States. These States include Kerala, Tamil Nadu and Manipur where Christians are in large numbers. In 7 States, the Christian growth rates find a lowering influence from the presence of Muslim population. States like Jammu and Kashmir, Tamil Nadu, Uttar Pradesh, and Madhya Pradesh, where Muslims are in large numbers, come under this group. Thus we find that the Christian growth rates faced more nega-

tive influences than either the Muslim or Hindu growth rates. The overall negative values also suggest that there has not been much shift in the Christian population and the few moves they might have made are to these districts where Muslims are in large numbers.

3. *Interactions within the States.* The growth patterns of the individual religious groups were discussed above. Their interactions within the Slates are investigated in this section. In Table 5 only the algebraic signs of the partial regression coefficients are presented so as to facilitate interpretation. The extent of the influence can be obtained from the previous tables.

From Table 5 we find that the 'average Indian district' presents an interacting pattern that is entirely different from an 'average district' of any State of India. The Hindu and Muslim A-rates as well as the I-rates are all negative. The mutually lowering I-rates, as described earlier, suggest the transfer of Hindu population from areas where Muslims are in large numbers and *vice versa,* on the assumption that religious conversion is negligible even if it exists. The Hindu and Muslim growth rates are almost unaffected by the presence or absence of Christians. But at the same time, the size of the Hindu and Muslim populations exerts a negative influence on the growth rate of Christians. (The extent of influence can be estimated as the difference the corresponding partial regression coefficients will make on the intercepts 'a's.) The interacting pattern, therefore, shows that although there are no indications to believe that any one community is growing at the disadvantage of the other, it is likely that redistribution of population of certain religious groups has occurred between some districts so that these districts had a tendency to become single community dominated ones. A similar finding was observed in an earlier study on a different aspect of distribution of religious groups (Ramakumar, R., 1976).

A study of the interactions within the States shows no evidence of a common pattern. At one extreme, we have an additive symbiotic situation as in Kerala, and at the other end we have the prey-predator situation prevailing in Andhra Pradesh and Uttar Pradesh. In Andhra Pradesh, it is the Muslims who are at a disadvantage while in Uttar Pradesh it is the Christian population that is subject to the lowering influence by both Hindus and Muslims. In Andhra Pradesh, for example, the Hindu group is positively influenced by the population size of Muslims and Christians and the population size of Hindus in turn positively affects the Muslim and Christian growth rates. But within the state, the interaction between Muslims and Christians is one of mutually lowering the growth

rate of the other, which indicates that Muslim and Christian migration has been selective in the districts of Andhra Pradesh so that the districts preferred by Muslims and Christians are different.

The States of Bihar and Assam alone have similar interacting situations. In these states Hindu growth rates have increased in those districts where Christians and Muslims were in large numbers but not so in the opposite direction; the growth rates of Muslims and Christians were lowered in those districts where Hindus were present in large numbers. At the same time, the presence of Muslims and Christians in large numbers has helped to increase their growth rates. Thus, we have again a situation of Hindu-Non-Hindu polarisation in the districts of Bihar and Assam.

In Punjab, it is a situation where the Hindus have grown faster wherever they were in large numbers and have reduced growth rates where other religious groups were in large numbers. The interacting pattern among Muslims and Christians was one of additive symbiosis. When we know that in Punjab, all the three communities considered here are minority groups, the consolidating tendency among the Hindus particularly, is, again an indication of selective movement of population.

The interacting patterns show that the relationships between growth of the three religious groups not only differ within the States but also among the States. It is not possible to identify any one community as being at a disadvantage in all the States. But the overall pattern is for growth rates in the districts to be heavily influenced by selective migration.

If the religious groups are compared two at a time more varied patterns of interactions emerge. The classification of the States according to the type of interaction and the interacting groups are presented in Table 6 which provides in summary form the situation in the States of India during the period 1961-1971. It is clear that all forms of interaction existed in India but migration between districts appears to be the most important form of relationship. There are 9 instances of mutual migration and their distribution shows (see Table 6') that no two communities are particularly affected by this type of adjustment. Mutually migrating tendency between Hindus and Muslims is observed in Himachal Pradesh, and Uttar Pradesh, between Muslims and Christians in Jammu and Kashmir, Manipur, Himachal Pradesh and Tamil Nadu and between Hindus and Christians in Andhra Pradesh, Gujarat and Madhya Pradesh.

If the population compositions of these States are taken into consideration, it becomes evident that religious polarisation has occurred in those States where **the** groups were present in substantial numbers.

When the single group movements are studied we find that the maximum number of cases are among the Hindu-Christian interacting situations. Of the 13 instances in this category, in 9 cases Christian growth has been at a disadvantage. And in all these cases Christians do not form substantial numbers. **On** the other hand, States where Christians were in large numbers their growth rates have increased and Hindu growth rates have declined. **In** the Hindu-Muslim context, where 10 instances of single community movement is observable, only in 4 cases Muslim growth had a lowering influence because of the Hindu population and in 6 cases it was the Hindu growth that was lowered. This kind of balance is maintained in the case of Muslim-Christian migration also.

In the symbiotic interacting situations maximum number of cases is seen to be between Muslims and Christians, and then between Hindus and Muslims. Least number of cases is observed among Hindu-Christian combination. Additive symbiosis exists in the Hindu-Muslim interacting situations in two States and in the Muslim-Christian situation in one State only.

It can be observed that symbiotic situations are prevailing in States where respective population sizes are small, while migration pattern occurs in the larger States with large number of districts. Since district level population size is not very large, particularly of minorities, a few thousand migrants of a particular community moving out from a district where they are in small numbers to a district where they are in large numbers can considerably decrease the population growth at the place of origin and correspodingly increase the growth at destination. The differences so created far exceed natural growth.

Conclusions

The influence of the population size of the three religious groups on the population growth at the district level on the national and State-wise bases shows a differentiating pattern with population size of the Hindus contributing to the decrease in population growth, of Muslims contributing to the increase in growth and of Christians showing a negligible influence. The growth rates of the Hindus have not been reduced at the district level by the presence of a **large** number of Muslims and Christians in most of the large states of India.

Muslims, however, show a clear tendency for increase in size. Christian growth rates faced more negative influence than either the Muslim or Hindu growth rates. It cannot be stated that any one community is growing at the disadvantage of the others, but the tendency for single-community-dominated districts to emerge is present. The modal pattern of interaction was one of 'push' exerted by one community against another and *vice versa*, and this has resulted in the religious polarisation seen in the districts of many states. Religious considerations have influenced the demographic process with selective migration being a potent factor in effecting changes in the growth rates, which explains the extreme high and low values of the growth rates of certain communities in some of the districts, which cannot be accounted by natural increase alone. The interacting patterns of the different States are not similar, and hence demographic imbalances are possible in many of the States. The prey-predator situation in Andhra Pradesh and Uttar Pradesh can be contrasted with the additive symbiotic situation in Kerala.

References

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CHART—SOME TYPES OF POPULATION **INTERACTION** BETWEEN GROUPS *I & II*

(a) *Symbiosis*

	1	II
I	–	+
II	+	

Additive Symbiosis

	I	II
I	+	+
II	+	+

(b) *Competition*

	I	II
I	+	–
II	–	+

Two group migration

	I	II
I	–	—
II	–	–

(c) *Prey-predator*

	I	II
I	+	–
II	+	–

(d) Single-group migration

	I	II
I	–	+
II	–	–

TABLE 1-PARHAL REGRESSION COEFFICIENTS RELATING THE GROWTH RATES OF THE TOTAL POPULATION TO THE POPULATION SIZE OF HINDUS, MUSLIMS AND CHRISTIANS AND THE SQUARE OF THE MULTIPLE CORRELATION COEFFICIENT

States	*-t*	$b_{tH \cdot MX}$	$^{b}tM\text{-}HX$	$^{b}tX \cdot HM$	$R^2_{t(HMX)}$
India	28.782242	-0.002012	0.001744	0.000000	0.041305
Andhra Pradesh	22.346252	-0.002218	0.020819	-0.005825	0.430458
Assam	50.370636	-0.007480	-0.000602	-0.076430	0.250500
Bihar	26.422714	-0.002037	0.002773	-0.004073	0.355796
Gujarat	31.001556	-0.001161	0.004160	-0.020347	0.013517
Haryana	28.005172	0.003776	0.022261	-1.490767	0.207478
Himachal Pradesh	20.424042	-0.000466	-0.072357	-4.158802	0.157962
Jammu & Kashmir	17.890228	0.062192	0.014105	-2.127683	0.711433
Kerala	0.985001	0.009762	0.023804	0.007086	0.801263
Madhya Pradesh	26.554701	-0.000723	0.075155	-0,021049	0.367590
Maharashtra	27.138584	-0.001206	-0.007063	0.078024	0.414053
Manipur	- *3,447571*	0.932816	-7.825025	0.624271	0.905174
Mysore	21.020584	0.002501	—0.010750	0.032974	0.217353
Orissa	23.836867	-0.001269	0.057987	0.066237	0.471033
Punjab	21.257217	-0.001085	-0.006860	0.015519	0.017444
Rajasthan	26.210743	0.000437	0.002906	0.599315	0.037618
Tamil Nadu	28.411392	-0.001710	0.006762	-0.010908	0.072668
Uttar Pradesh	21.811218	-0.002830	-0.002152	0.970490	0.303489
West Bengal	23.672982	-0.000665	0.004754	0.064795	0.208345

TABLE 2—PARTIAL REGRESSION COEFFICIENTS RELATING THE GROWTH RATES OF THE HINDUS TO THE POPULATION SIZE OF HINDUS, MUSLIMS AND CHRISTIANS AND THE SQUARE OF THE MULTIPLE CORRELATION COEFFICIENT

States	a_h	$b_{hH \cdot MX}$	$b_{hM \cdot HX}$	$b_{hX \cdot HM}$	$R^2_{h(HMX)}$
India	43.016144	−0.008567	−0.002349	0.000000	0.026681
Andhra Pradesh	21.012524	−0.001760	−0.019258	0.007925	0.409211
Assam	53.977203	−0.010861	0.000223	0.012788	0.206155
Bihar	21.581711	−0.000903	0.001593	0.005086	0.073809
Gujarat	31.784821	−0.002320	0.016614	−0.053432	0.042384
Haryana	35.161324	−0.001210	0.013375	−0.715569	0.070069
Himachal Pradesh	6.508415	−0.000351	0.376643	14.835607	0.464201
Jammu and Kashmir	72.494064	−0.342072	−0.012637	36.783997	0.362145
Kerala	1.668030	0.013264	0.005266	0.004881	0.387557
Madhya Pradesh	26.460256	−0.000504	0.068866	−0.041932	0.353182
Maharashtra	25.892736	0.000040	−0.011969	0.074679	0.393532
Manipur	1456.669678	−29.607162	244.780106	−17.285522	0.989914
Mysore	19.636887	0.003346	−0.014270	0.022656	0.188358
Orissa	20.630290	0.000137	0.042374	0.041637	0.191356
Punjab	−9.326979	0.042392	−0.061487	−0.069887	0.308267
Rajasthan	25.248283	0.000318	0.009015	0.654743	0.051170
Tamil Nadu	23.359467	−0.000702	0.011986	−0.011966	0.043399
Uttar Pradesh	21.519943	−0.003189	−0.004565	1.107295	0.326076
West Bengal	25.010966	−0.001516	0.004601	0.105722	0.255207

TABLE 3-PARTIAL REGRESSION COEFFICIENTS RELATING THE GROWTH RATES OF MUSLIMS TO THE POPULATION SIZE OF HINDUS, MUSLIMS AND CHRISTIANS AND THE SQUARE OF THE MULTIPLE CORRELATION COEFFICIENT

States	a_m	$b_{mH \cdot MX}$	$b_{mM \cdot HX}$	$b_{mX \cdot HM}$	$R^2_{m(HMX)}$
India	71.256348	−0.014723	−0.022027	−0.000000	0.0238
Andhra Pradesh	28.532913	−0.000625	0.014724	−0.018459	0.1650
Assam	12.985687	−0.084884	0.027202	2.652490	0.9182
Bihar	34.330994	−0.001859	0.002608	0.047156	0.6204
Gujarat	35.243088	−0.002958	−0.021401	0.229577	0.0508
Haryana	23.735441	0.032766	−0.074328	−0.697417	0.1176
Himachal Pradesh	403.840332	0.093034	−12.419571	−330.029141	0.2719
Jammu and Kashmir	14.663495	0.031911	0.023070	−5.402816	0.5191
Kerala	−5.775406	0.011054	0.035936	0.028354	0.7194
Madhya Pradesh	32.551482	0.005074	0.008626	0.030360	0.0902
Maharashtra	37.587005	0.000940	−0.034224	0.130799	0.3163
Manipur	1246.760498	49.773300	−437.109375	−14.955263	0.8380
Mysore	32.191406	0.003832	−0.050628	0.159290	0.7104
Orissa	151.779950	−0.054102	0.468711	0.178973	0.3725
Punjab	−0.959661	0.005746	0.770112	0.417525	0.2053
Rajasthan	31.236113	0.000644	0.072239	−1.218443	0.0781
Ta ilNadu	52.949371	−0.001508	−0.026766	−0.041152	0.1371
Uttar Pradesh	38.178101	−0.004776	−0.013212	0.402705	0.0446
West Bengal	18.215996	0.001211	0.008539	0.001170	0.2611

TABLE 4-PARTIAL REGRESSION COEFFICIENTS RELATING THE GROWTH RATES OF CHRISTIANS TO THE POPULATION SIZE OF HINDUS, MUSLIMS AND CHRISTIANS AND THE SQUARE OF THE MULTIPLE CORRELATION COEFFICIENT

States	a_x	$b_{xH \cdot MX}$	$b_{xM \cdot HX}$	$b_{xX \cdot HM}$	$R^2_{x(HMX)}$
India	106.827621	-0.033294	0.151797	-0,000000	0.042669
Andhra Pradesh	32.609985	-0.002312	0.029379	-0.023944	0.065644
Assam	73.854638	-0.019179	0.012207	-0.160228	0.749066
Bihar	65.472748	-0.051847	0.579862	-0-177425	0.414863
Gujarat	8187943	-0.000649	0.315809	-1.932146	0.156466
Haryana	-62.351399	0.056059	0441835	—2.223603	O.847579
Himachal Pradesh	933.550781	0.054442	—32.898102	-645.814941	0.879112
Jammu and Kashmir	722.073486	—2,527779	—0.477641	169.654449	0.326087
Kerala	53.408524	0.003413	0.008952	—0.048081	0.580564
Madhya Pradesh	80.241310	—0.007504	—0.154908	-0.028199	0.004643
Maharashtra	52.878101	—0.012532	0,000542	0.068167	0.018554
Manipur	63.002823	5.719250	—48,999512	0.017124	0.606317
Mysore	31.002487	-0.024484	0.192582	0.035846	0.22400!
Orissa	146.051910	—0.002175	-0.959408	— 0.303066	0.436386
Punjab	—14.718911	0.039178	0.893493	0.158357	0.591539
Rajasthan	139.087650	—0.020589	0.875496	-19.791315	0.022742
Tamil Nadu	62,170837	0.006264	—0.181045	—0.050370	0.432434
Uttar Pradesh	127,463730	—0.025990	—0.147431	17.812622	0,035416
West Bengal	33.658851	—0.022217	0-144795	—0.177010	0.240909

TABLE 5—THE INTERACTING PATTERNS OF THE HINDUS, MUSLIMS AND CHRISTIANS IN THE DIFFERENT STATES OF INDIA

India HMX	*Andhra Pradesh* HMX	*Assam* HMX	*Bihar* HMX	*Gujarat* HMX
H - - O	H - + - H - + + H - + +			H - + -
M - - O	M - + - M - + + M - + +			M - - +
X - - O	X - + - X - + - X - + -			X - + -

Haryana HMX	*Himachat Pradesh* HMX	*Jammu & Kashmir* HMX	*Kerala* HMX	*Orissa* HMX
H - + -	H - + + H - - + H + + +			H + + +
M + - -	M + + - M + + +			M - + +
X + + -	X + - - X - - + X + + -			X - - -

Madhya Pradesh HMX	*Maharashtra* HMX	*Manipur* HMX	*Mysore* HMX	*Punjab* HMX
H - + -	H + - + H - + - H - + -			H + - -
M + + +	M + - +	M + - -	M + - +	M + + +
X - - -	X - + + X + - +			X + + +

Rajasthan HMX	*Tamil Nadu* HMX	*Uttar Pradesh* HMX	*West Bengal* HMX
H + + +	H - + -	H - - +	H - + +
M + + -	M - - -	M - - +	M + + +
X - + -	X + - -	X - - +	X - + + -

TABLE 6-STATES CLASSIFIED ACCORDING TO THE TYPE OF INTERACTION BETWEEN ANY TWO OF THE THREE RELIGIOUS GROUPS (NUMBER OF STATES IN EACH **CATEGORY IS GIVEN** IN PARANTHES1S)

Type of Interaction	*Symbolic reprt-sentation*	*Hindu-Muslim Interaction*	*Muslim-Christian Interaction*	*Hindu-Christian Interaction*
Symbiosis	— + +	Madhya Pradesh, Manipur, West-Bengal, Haryana	Assam, Bihar, Mysore, Gujarat, Kerala, Maharashtra, West Bengal	Himachal Pradesh, Kerala
Additive Symbiosis	+ + + +	Kerala, Rajasthan	Punjab	
		(6)	(8)	(2)
Single group movement				
Prey-Predator	— + — +	Andhra Pradesh, Assam, Bihar	Uttar Pradesh,	Uttar Pradesh Jammu and Kashmir
	+— + --	Mysore, Maharashtra	Andhra Pradesh, Rajasthan	
	—+ - — —	Gujarat, Orissa, Tamil Nadu	Madhya Pradesh, Orissa	Maharashtra, Rajasthan, Orissa, West Bengal, Assam, Bihar, Mysore
Other forms	— — + +	Jammu & Kashmir, Punjab	Haryana	Haryana, Punjab, Manipur, Tamil Nadu
		(10)	(6)	(13)
Two group movement				
Competition	+ — – +	Himachal Pradesh	Jammu and Kashmir, Manipur	
Other form	— — — —	Uttar Pradesh	Himachal Pradesh, Tamil Nadu	Andhra Pradesh, Gujarat, Madhya-Pradesh
		(2)	(4)	(3)