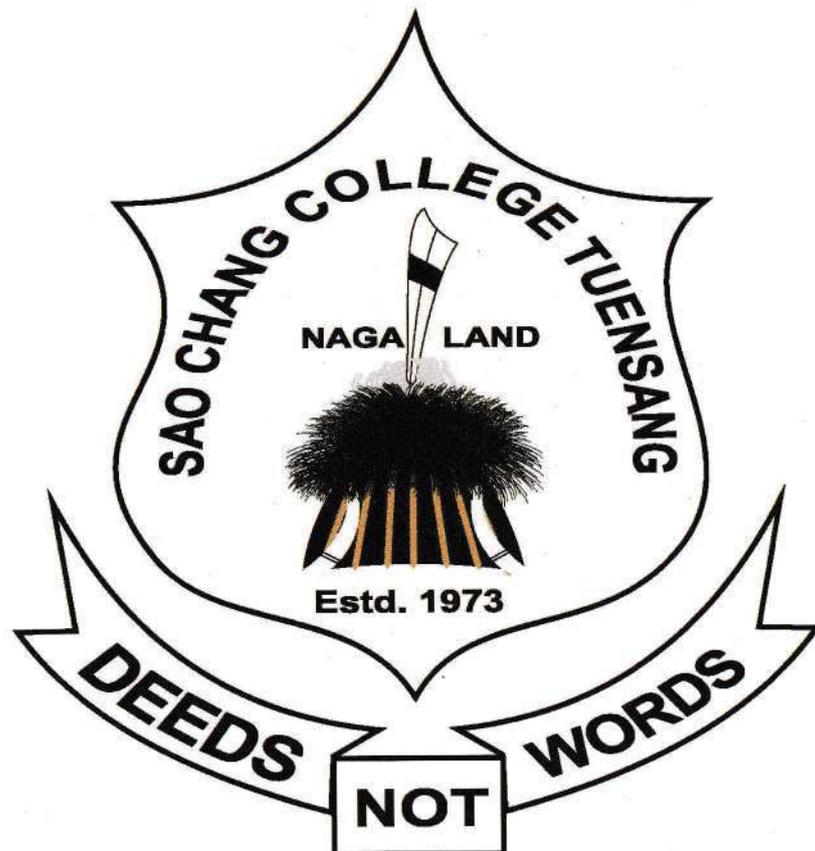


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## EDITORIAL

The articles in this volume have their origins in the monthly inter-departmental seminars and lectures organized by the Educational Research, Innovation and Consultancy Cell, held at Sao Chang College since 2011. The present volume contains papers presented during 2013 - 2014 seminar. We have been encouraged at various times since then by the intellectual stimulation and generous support of friends and colleagues. It would be not be possible to mention them each one by name. We are indebted to our Principal, S. Chubasangla, for practical assistance and for her unflagging personal support. We should also like to thank our fellow contributors, without their collaboration this journal could never have been realized.

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# **A STUDY OF THE PROBLEMS OF GOVERNMENT AND PRIVATE COLLEGES IN TUENSANG DISTRICT**

**Mudang Khamniungan**  
**Assistant Professor**  
**Research Scholar, Nagaland University.**

**Abstract:** Higher Education occupies an important place in the field of education all over the world contributing immensely for the progress and prosperity of human society. Keeping in view the importance of higher education in the society, this paper tries to identify and present the various problems hampering the development and progress of higher education in Tuensang district thereby suggesting remedial measures to the problems.

**Keywords:** Infra-structure, performance, transport, funding, transparency

**The Profile of Tuensang District** Tuensang District is one of the biggest districts of the state. It is situated in the eastern part of Nagaland bordering with Myanmar (Burma) in the East, Phek district in the South and Mokokchung and Zunheboto districts in the West.

Tuensang district has a geographical area of 4,228 sq.km. and it is inhabited by the tribes of Chang, Khamniungan, Sangtam and Yimchunger. Each tribe has their own language and some have got some variations and therefore one tribe may speak more than one dialect. They also had their own beliefs and practices but they are however now replaced by Christianity.

## **The Educational Scenario of Tuensang District**

Prior to the coming of modern civilization, the people of the district were leading a primitive life. There was practically not an iota of literacy or education in the ordinary sense of the term. Education was first introduced in the district in 1948 with the establishment of the Government Primary School Station-I at Tuensang Town with enrolment of 15 students. Mr. Gohain was appointed as the first Head of the institute with other two teachers. The district is hilly and the villages are sparsely situated and therefore one Primary School cannot serve several villages because it is difficult for the young children to go to a distant school. Due to this situation and greater demand for education it was felt necessary to have one Primary School in each village. Following this need, after the formation of 'Naga Hills Tuensang Area' (NHTA) which came into being from 1st December 1957, more schools were opened in the district. Presently, there are 39 high schools in the district out of which 22 are Government and 17 private, out of 91 middle elementary schools 55 are Govt. and 36 are private middle elementary schools. There are 304 primary schools out of which 268 are government and 36 are private primary schools in the district. There are two secondary schools in the district of which both are Government Schools. So also there are two colleges in the district one Government and the other one is a private institute.

The demand for higher education in Tuensang district, as in most other districts of Nagaland and India, has continuously been increasing after Independence, but for the people of the district, college education is limited to only two colleges at present, Sao Chang Government College and Loyem Memorial College.

The demand for more facilities for higher education was heard from all sides- from the student community, social workers, parents and even the political leaders, but the two mentioned colleges are still lagging far behind as compared to other colleges in the state.

In short, as a result of all these interconnected and interacting changes taking place in society, college education is passing through a critical period. The establishment of more arts, science and commerce colleges is an urgent need in the district of Tuensang, as the number of students seeking college education has increased steadily over the years. Infact, for many years there has been much talk about the restructuring of the educational set up but little attempt has been done to put all that in action. Further, in view of the problems of finance being crucial to the existence of a system itself, a special reference to the problems of facilities, infrastructures and financing of the college education in Tuensang district stands justified.

The seminar paper is limited to the existing colleges- both government and private colleges in Tuensang district and their problems. The problems have been studied by taking the population sample of the principals, all the lecturers and 10% of the students. Administrators and principals and 5 people each of the community leaders and student leaders were also interviewed.

#### Establishment of college education in Tuensang district

Sao Chang College was established in 1973 and after a gap of 20 years Loyem Memorial College was established in 1993. Till date 1852 students has graduated from Sao Chang College and 350 students has graduated from Loyem Memorial College.

With regard to the number of students' enrolment it was found that students' enrolment in Sao Chang Government College keep increasing year after year, whereas students' enrolment in Loyem Memorial College is decreasing year by year which may be due to lack of proper facilities for the students and also financial problem of the students to pay their tuition fees because it is a private college.

**Table.1. Opinion regarding government's concern for college education in Tuensang district**

	College	Area	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College N=20	Government has less concern for the improvement of college development and education	0	20	100%	0%
2	Loyem Memorial College N=10	Government has less concern for the improvement of college development and education	9	1	90%	10%

Source: Data from fieldwork 2011

100% of the government college faculty said that the government is concerned for bringing improvement of college education in the district. Whereas, 90% of the private college faculty responded that government have less concern for the improvement of college education in the district, and 10% said that sometimes government gives grant-in-aid for the college.

College		Areas	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College N=20 (including principal)	Pucca building	20	0	100%	0%
		No play ground within the campus.	20	0	100%	0%
2	Loyem Memorial College N=10 (including principal)	Pucca building	20	0	100%	0%
		No play ground within the campus.	20	0	100%	0%

Source: Data from fieldwork 2011

100% each of the respondents from both Sao Chang College and Loyem Memorial College have responded that they have pucca building but there is no play ground in both the colleges.

**Table.3. Availability of primary amenities in the college**

College		Area	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College N=20	Availability of basic facilities	19	1	95%	5%
		Not fully satisfactory	20	0	100%	0%
2	Loyem Memorial College, N=10	Availability of basic facilities	2	8	20%	80%
		Not enough basic facilities	10	0	100%	0%

Source: Data from fieldwork 2011

95% of the faculty from Sao Chang Government College has responded of having all the necessary basic amenities and 5% has expressed not fully satisfactory. Whereas, 20% from Loyem Memorial College responded that they have basic facilities in their college and 80% responded that they do not have basic facilities and 100% responded that they do not have enough primary amenities in their college.

**Table.4. Satisfaction with the infrastructural facilities available in college**

College		Infrastructural facilities	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College, N=20	Satisfactory facilities	19	1	95%	5%
2	Loyem Memorial College, N=10	Satisfactory facilities	6	4	60%	40%

Source: Data from fieldwork 2011

95% of the lecturers from Sao Chang College expressed satisfaction over the infrastructural facilities available in their college, and 5% expressed dissatisfaction. And 60% of the lecturers from Loyem Memorial College expressed their satisfaction with the infrastructural facilities available in their college, while 40% of the lecturers expressed dissatisfaction with the presently available infrastructural facilities in their college.

**Table.5. Miscellaneous problems in the college, problems encountered by the principals and lecturers.**

College		Areas	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College N=20	Any miscellaneous problems	1	19	5%	95%
		Problems faced by colleges in Tuensang district (in various areas)	20	0	100%	0%
		Major problems encountered (students insincerity in their studies)	20	0	100%	0%
2	Loyem Memorial College N=10	Any miscellaneous problems	1	9	10%	90%
		Problems faced by colleges in Tuensang district (in various areas)	10	0	100%	0%
		Major problems encountered (lecturers tendering resignation letter giving very short period of time)	10	0	100%	0%

Source: Data from fieldwork 2011

95% each of lecturers from both the colleges responded that there is no such problem as of now. Whereas, 5% each of lecturers from both the colleges expressed that they faced many such problems, like no first aid health care facilities in the college, no adequate Bus services, non-enhancement of salary in the case of private and so on.

And 100% of the faculty from both the colleges responded that there is a financial constraints, 100% said that there is inadequate infrastructure, and another 100% responded that there is a negative attitudes towards college education from the public, and another 100% responded that students are not sincere in their academic careers, and the response of the government is very slow in case sought for any assistance.

Principal from the Loyem Memorial College expressed that sometimes lecturers used to give them very short duration of their resignation from the lectureship which causes problem to bring another new qualified lecturers in the college. And all the lecturers from Loyem Memorial College expressed their dissatisfaction with the pay packages and also not giving their salary on time to them, otherwise there is no other problem.

**Table.6. Expectations from the government and other agencies for the improvement of colleges in Tuensang district**

	College	Areas	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College N=20	More funds should be given	16	4	80%	20%
		Other educational agencies should also pay a visit to the colleges in the district and suggest remedial measures to the problem.	4	16	20%	80%
2	Loyem Memorial College N=10	More funds should be given	10	0	100%	0%
		Other educational agencies should also pay a visit to the colleges in the district and suggest remedial measures to the problem.	10	0	100%	0%

Source: Data from fieldwork 2011

80% of the lecturers from Sao Chang College expressed that government should sanction more funds for the colleges in the district while 20% responded that not need to make an excuse for the fund constraint but people should be willing to work hard. 20% said that other agencies should also pay a visit to the colleges in Tuensang district and suggest some of the remedial measures in the areas where they any improvement areas and 80% responded that only visiting will not help the college. Whereas, 100% of the lecturers from Loyem Memorial College expressed that government should extent some grant-in-aid to the private college and other agencies should also suggest some way out for the improvement of the college education in the district.

#### **Suggestions from the faculty for the improvement of college education in Tuensang district**

More support from the public is needed to address various problems; more financial assistance from the government and other agencies should come in, more experienced and qualified lecturers should be appointed in the insufficient departments, transparency should be maintained in the management and administration of the college, regular assessment of the students performances should be made, teaching faculty should be sincere and regular in their profession and co-operation of people from all walks of life will definitely help the colleges in the district to improve and move forward to a higher place.

**Table.7. Satisfied with the infrastructural facilities available in the college**

			Ye s	No	To some extent	Yes	No	To some extent
1	Sao Chang College N=60	Classroom	47	12	1	78.33%	20%	1.67%
		Conference hall	46	5	9	76.67%	8.33%	15%
		Toilets	44	14	2	73.33%	23.33%	3.33%
		Games facilities	35	13	12	58.33%	21.67%	20%
		Desks & benches	35	14	11	58.33%	23.33%	18.33%
		Library	24	25	11	40%	41.67%	18.33%
2	Loyem Memorial College N=10	Classroom	6	3	1	60%	30%	10%
		Conference hall	5	4	1	50%	40%	10%
		Toilets	3	5	2	30%	50%	20%
		Games facilities	7	2	1	70%	20%	10%
		Desks & benches	7	1	2	70%	10%	20%
		Library	4	3	3	40%	30%	30%

78.33% of the students from Sao Chang College responded that they are satisfied with the classroom facilities and 20% responded that they are not satisfied and 1.67% responded that they are satisfied to some extent.

With regard to the conference hall facilities 76.67% of the students from Sao Chang College responded that they are satisfied and 8.33% responded that they are not satisfied and another 15% responded that they are satisfied to some extent.

73.33% of the students from Sao Chang College responded that they are satisfied with the toilet facilities and 23.33% responded that they are not satisfied and 3.33% responded that they are satisfied to some extent.

Regarding the games and sports facilities, 58.33% of the students from Sao Chang College responded that they are satisfied and 21.67% responded that they are not satisfied and 20% responded that they are satisfied to some extent.

With regard to the desks and benches, 58.3% of the students from Sao Chang College responded that they are satisfied and 23.3% has responded that they are not satisfied and remaining 18.33% responded that they are satisfied to some extent.

And 40% of the students from Sao Chang College responded that they are satisfied with the library facilities and 41.67% responded that they are not satisfied and remaining 18.33% responded to the questionnaire that they are satisfied to some extent.

60% of the students from Loyem Memorial College responded that they are satisfied with the classroom facilities and 30% responded that they are not satisfied and 10% responded that they are satisfied to some extent.

With regard to the conference hall facilities 50% of the students from Loyem Memorial College responded that they are satisfied and 40% responded that they are not satisfied and another 10% responded that they are satisfied to some extent.

30% has responded that they are satisfied with the toilet facilities and 50% responded that they are not satisfied and 20% responded that they are satisfied to some extent.

Regarding the games and sports facilities, 70% of the students from Loyem Memorial College responded that they are satisfied and 20% responded that they are not satisfied and 10% responded that they are satisfied to some extent.

With regard to the desks and benches, 70% of the students from Loyem Memorial College responded that they are satisfied and 10% has responded that they are not satisfied and remaining 20% responded that they are satisfied to some extent.

And 40% of the students from Loyem Memorial College responded that they are satisfied with the library facilities and 30% responded that they are not satisfied and remaining 30% responded to the questionnaire that they are satisfied to some extent.

**Table.8. Satisfied with the library book facilities**

College	Facilities	No of Respondents			%		
		Yes	No	Somewhat	Yes	No	Somewhat
1 Sao Chang College N=60	Quality of books.	37	21	2	61.67%	35%	3.33%
	Quantity of books	36	23	1	60%	38.33%	1.67%
2 Loyem Memorial College N=10	Quality of books	5	3	2	50%	30%	20%
	Quantity of books	5	3	2	50%	30%	20%

Source: Data from fieldwork 2011

With regard to the quality of books available in the library, 61.67% of the students from Sao Chang College have responded that they are satisfied and while 35% expressed dissatisfaction and 3.33% responded that they are somewhat satisfied. Whereas, 50% of the students from Loyem Memorial College have expressed of their satisfaction, while 30% responded that they are not satisfied and 20% have expressed that they are somewhat satisfied.

On the quantity (volume) of books available in the college, 60% of the students from Sao Chang College responded that they are satisfied, while 38.33% have expressed dissatisfaction and 1.67% expressed somewhat satisfied. Whereas, 50% of the students from Loyem Memorial College have responded to the questionnaire that they are satisfied with the quantity (volume) of books available in their college, while 30% expressed dissatisfaction and 20% responded somewhat satisfied.

**Table.9. Availability of hostel facilities and transportations**

College		Areas	No of Respondents		%	
			Yes	No	Yes	No
1	Sao Chang College N=60	Availability of hostel facilities	0	60	0%	100%
		Transportation problems	44	16	73.33%	26.67%
2	Loyem Memorial College N=10	Availability of hostel facilities	0	10	0%	100%
		Transportation problems	0	10	0%	100%

Source: Data from fieldwork 2011

100% students each from both the colleges responded to the questionnaire that their college do not have any hostel facilities in the college for the students.

While, 73.33% responded that they are facing difficulties in transportation, because the 5 college Buses available presently could not accommodate all the students and the faculty to go to the college. 26.67% of the students from Sao Chang College responded that they do not face any transportation problem to go to the College. Whereas, 100% of the students from Loyem Memorial College responded that they do not have any transportation problem.

## DISCUSSION OF THE FINDINGS

As per the findings of the research, there are only two colleges which cannot accommodate all the students from the district. Therefore they are compelled to seek education outside the district and many willing students are forced to drop out as their parents cannot afford to send them outside. Tuensang district is the biggest district in the State with a population of 1, 96,801 according to 2011 Census, therefore there is an urgent need to establish at least two more colleges in the district for imparting higher education to the students of the district.

It is also found that in both the colleges, the infrastructure facilities are not satisfactory. The library facilities including reading rooms, volume and quality of books are also not up to the mark. Most of the time newsletters and magazines are not available in the library for the teaching faculty as well as for the students for updating latest information and events that are taking place around the world. The student enrolment is also not satisfactory in the private college and is decreasing year after year due to various reasons like absence of Honours paper, lack of facilities and also due to inability to pay the college fees etc. on the other hand due to decreasing student enrolment it is not possible to enhance the salary of teachers which stands in the way of attracting good faculty for the college.

The study found that Sao Chang College is offering honours papers only in three subjects (English, Political Science and History) in the arts stream and there is no honours paper in the science stream. There is no honours course in Loyem Memorial College till date depriving many students from offering major subjects which are very important for their future higher studies. Therefore, more honours papers including science subjects should be introduced in the Government College and Loyem Memorial College should also introduce honours course at the earliest.

The two existing colleges in Tuensang district are facing numerous problems in all the areas which need urgent attention of the college administrators to minimize various problems. The study found that there are no proper library facilities in both the colleges for the students and also for the lecturers. The quality of books, volume of books and even the reference books are not satisfactory and latest educational magazines and newsletters are not made available in the college. Therefore library facilities need to be improved keeping in mind the pivotal role of the library in the field of higher education. Internet facilities should also be installed in the library for the students and lecturers to help them access to the various study materials which are not readily available in the college. Through this research, it is also found that there are no hostel facilities for the students and no staff quarters for the faculty available in the college.

Moreover, there is a transportation problem in Sao Chang College for getting to the college since the college is located about 7.5 kilometres away from the main town area. Therefore, more college Buses should be procured by the concerned authority to minimize the transportation problems of the students. It is also found that students especially from the private college are facing financial problems in paying their college fees and to purchase various basic needs which is a similar finding of a study conducted by Solanki.S., 1976 who found out that the students had problems in paying the first term fees and that tribal students faced difficulties in going for higher education due to financial constraints.

Enough staff quarters should be constructed in both the government and private colleges and also salary should be given on time in the private college in order to give teachers a sense of job satisfaction. Various facilities including incentives for children education should also be provided so that they will have job satisfaction and develop positive attitude towards their profession and work more sincerely.

All the respondents suggested that for the development and progress of college education in Tuensang district in the first place infrastructural facilities should be improved and staff quarters and hostels for the students should be constructed at the earliest possible, and for this more financial grant-in-aid should be given by the government to both government and private colleges. Along with this all the teaching faculty should be very sincere in performing their duties and students should also need to be serious in their studies so that college education in the district will automatically improve and it will also help in the social and economic development in the district.

### **SUGGESTIONS FOR IMPROVEMENT**

On the basis of the findings, some suggestions for improvement are hereby put forward:

- 1.** The people in general should come forward to help the college administrators, faculties and also encourage students to pursue higher education. The people should be made aware of the importance of college and higher education for development of the district
- 2.** Adequate infrastructural facilities should be properly developed in the college in all areas. Enough staff quarters and hostel facilities for the students should be made available. Necessary teaching aids and technological devices should be made available to create interest in the lecturers and students for effective learning. Sufficient college Buses should be provided for the faculty and the students to minimize their transportation problems. Enough classrooms should be constructed to accommodate more students. Regular power supply should be ensured for the smooth and timely office transactions in the colleges. The basic infrastructural facilities like classroom, conference hall, toilet, indoor games and desks and benches need to be improved. Adequate laboratory facilities should be provided for the science students for their practical experience. News papers and journals should be made available in the college for both the lecturers and the students which will help them to be informative in every area.
- 3.** More financial grants - in aid should be extended by the government for the development of college education. Grants to private college/s should also be considered by the government.
- 4.** Teaching faculty should work with full dedication in their profession and not just for earning money. Teaching faculty should be sincere in taking their classes regularly and on time. In any case the lecturers should complete the course of the studies before hand and avoid last hour rush to complete the syllabus. Lecturers should be given promotion on seniority basis and also giving their salary on time to encourage them to work with sincerity. Facilities for children's education should also be given to the faculty. Reasonably good amount of salary should be given to the lecturers to create in them a sense of job satisfaction. Moreover, private college need to increase the present pay packages of the teaching faculty.

5. Comprehensive assessment on the performances of students needs to be well developed.

To help the students to develop the habit of regular study, class tests should be conducted at the maximum possible and not occasionally. The courses of the study should be reviewed and necessary innovations should be made keeping in view the present relevancy of the syllabus to help students in getting practically useful education. More honours subjects should be introduced in the government college and also private colleges should introduce honours papers in the earliest possible.

6. Adequate games and sports facilities should be provided to encourage the students to participate in the co-curricular activities.

7. The college location should be little far from the main town area free from any kind of noise pollutions. Over crowded of students in a class should be avoided by splitting the students into different class sections for effective monitoring of the class, and also to help the students pay attention during the class hour.

8. The relationship between the lecturers and the students should not be limited to the classroom situation only but even outside the four walls of the classroom.

9. Officials from concerned higher authority should pay regular visits every year to the colleges to assess the conditions of college education, identifying the problems and redressing of the same for the improvement of college education.

## **CONCLUSION**

College education occupies an important place in the field of education all over the world contributing immensely for the progress and prosperity of human society. Keeping in view the importance of higher education in the society, the present research study was conducted to identify the problems hampering the development and progress of college education in Tuensang district thereby suggesting remedial measures to the problems.

In this present study, questionnaire and interview schedule has been used in collecting the data from the college principals, lecturers, students, community leaders and student leaders. Apart from this, information from the government documents, various organisations documents, journals, etc. were collected and used for finding out the various problems which the colleges in Tuensang district are facing at the present time.

Findings from the data are calculated into percentages according to the responses given by the respondents. Every means have been tried to find out the numerous problems of college education in Tuensang district and also giving suggestions for solution to the problem with an aim to rescue college education in the district from further deterioration.

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## WOMEN EMPOWERMENT AND SEAT RESERVATION WITH REFERENCE TO NAGALAND

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**Abstract:** The paper seeks to inform about the rationale of women empowerment through seats reservation at the political decision making level in the light of which a critical analysis on the objection to women seats legislation in Nagaland is undertaken highlighting the factors of political vested interest and Art 371 (A). An attempt is made to explore the probabilities of acceptable solution to the problems of difficulty in implementation of the legislation relevant matters of concern are also brought to light.

**Keywords:** empowerment, customary law, male domination, non implementation

### Introduction

Women Empowerment and Seats reservation are terminologies of contemporary politics concerned with promoting gender equality in politics. Women empowerment refers to enabling women acquire decision-making power through legal measures. The impetus for women empowerment have come from the low presence or even absence of women in decision-making offices which have culminated in overarching influence of male perspectives and interests in policy-making, while overlooking particular needs and problems of women and how policy impact women differently. Increased participation of women in decision-making is to incorporate the perspectives and values of women representing half of the humanity in policies that affect their lives and for supplementing policy shaped by males.

The low presence of women in decision-making offices is perceived to be caused not by natural/biological factors but man-made socially constructed barriers set up by discriminatory laws, gender biased cultural patterns, ideas, patriarchal social setting which is difficult to be abolished. Such barriers are perceived to prevent women from utilizing political right of participating in governance equal with men in spite of equal provision by law. On this account, seats reservation has been introduced to ensure women participation in decision-making. Seats reservation involves the institutional mechanism of allocating a fixed number of seats also known as women quota. The size of the quota is sufficiently large to provide women the strength to exert influence in decision-making. The need for women seats reservation is also on the basis that few women elected without this means cannot exert influence upon decision making due to the inability to overcome the male majority dominance. As such, the rationale behind seats reservation is to compensate for the barriers beset and encourage women to take interest. Seats reservation is generally meant to be a temporary measure until the barriers for women's entry is removed.

Thus, women empowerment through seats reservation is concerned with promoting gender equality in political arena, recognize women as equal citizens with contribution to make in public life, making democratic right of participating in governance for women reality with the view that it would culminate in better life for both and women and accelerate progress of humanity.

### **Analysis of the issue:**

This assertive move of the women reflects the feeling of denial of right they deserve for participating in governance and the confidence in their capability in sharing public responsibility. The pursuit of women seats must be upon their awareness of male dominance in political sphere in which women candidates are under-valued, women's voice not heard in party activities and public affairs etc. From the women rights point of view, disapproving women seats for protecting customary law that does not recognize rights equal with men and which has been shaped and interpreted by males exclusively is not plausible. Moreover, customary laws can be subjected to change to meet the needs brought by changing times on the basis that existing conditions and needs of the period influence in shaping it. The disapproval of women seats is a reflection of desire of men to maintain the dominance in the political sphere. The factors behind male dominance can be traced to the influence of gender biased customary law, patriarchal values, gender-based ideas. Further analysis of the decision taken by State government not to introduce women seats, provides the insight that the core factor is the interest of the political class to avoid facing the adverse impact on their political positions by the requirement to vacate their present seats for women and the involved disruptions in their political career. In this regard, a solution can be modification of the present reservation pattern into a different pattern such as double-member based reservation or any other better one that can be found, without the feature that requires vacating seats by sitting members. This suggestion put forward is upon the expectation that the political class would be receptive to it, upon the reason that adverse impact upon them is eliminated. This can be another pathway in view of the odds existing against the success of the ongoing legal fight undertaken by JAWRC. Towards this end, a thorough discourse has to begin involving women organizations, tribal bodies, village council members, political parties through the initiative of the State government.

From women rights point of view, disapproving women seats for protecting customary law is not plausible. Such a stance denies women their due rights. Moreover, on the basis that existing conditions of the period influence in shaping it, customary laws can be subjected to change to meet the needs brought by changing times.

### **Conclusion**

The analysis brings forth some concerns that need examining. Firstly, the problem of incompatibility between values of customary law and values of constitutional law, an outcome of the interface of traditional governing system and modern governing system founded on modern values instituted by Art.371 (A)(Melville, 2004). Secondly, the concern on whether those who will utilize women seats ultimately, will be guided by the same understanding upon which the women leaders are leading the movement and whether women's presence in governance will be merely symbolic. This matter points to the need of women organizations to focus in the area of sensitizing women in the right direction simultaneously.

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## **MGNREGA: ISSUES AND CHALLENGES IN NAGALAND**

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**Abstract:** India as a nation is facing massive unemployment and under employment problem in rural areas. To control unemployment and poverty in rural India, the more effective programme formulated by the Central Government was The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in 2005. The aim of the Act was to provide 100 days of guaranteed wage employment to every rural household who volunteered to do unskilled manual work. The Scheme marked a paradigm shift from the precedent wage employment programmes. The study was intended to highlight the important features of the Act in general and few specific issues and challenges faced by Nagaland on the implementation and execution side of the Scheme in particular

### **INTRODUCTION**

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) popularly known as NREGA was formulated by Central Government in 2005 in order to evolve the design of wage employment programmes more effectively to fight poverty in rural areas. With its legal framework and rights-based approach, MGNREGA provides employment to those who demand it and is a paradigm shift from earlier programmes. Notified on September 7, 2005, MGNREGA aims at enhancing livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteered to do unskilled manual work. The Act covered 200 districts in its first phase, implemented on February 2, 2006 and was extended to 130 additional districts in the financial year 2007-08. All the remaining districts have been notified with effect from April 1, 2008. MGNREGA covered the entire country with the exception of districts that have a hundred percent urban population. Thus, MGNREGA fosters conditions for inclusive growth ranging from basic wage security and recharging rural economy to a transformative empowerment process of democracy.

### **NREGA GOAL**

- a). Strong social safety net for the vulnerable groups by providing a fall-back employment source, when other employment alternatives are scarce or inadequate.
- b). Growth engine for sustainable development of an agricultural economy. Through the process of providing employment on works that address causes of chronic poverty such as drought, deforestation and soil erosion, the Act seeks to strengthen the natural resource base of rural livelihood and create durable assets in rural areas. Effectively implemented, NREGA has the potential to transform the geography of poverty.
- c). Empowerment of rural poor through the processes of a rights-based Law.
- d). New ways of doing business, as a model of governance reform anchored on the principles of transparency and grass root democracy.

### **PARADIGM SHIFT FROM WAGE EMPLOYMENT PROGRAMMES**

NREGA marks a paradigm shift from all precedent wage employment programmes. The significant aspects of this paradigm shift are captured below:

- i) NREGA provides a statutory guarantee of wage employment.
- ii) It provides a rights-based framework for wage employment. Employment is dependent upon the worker

SN	Name of the state	Minimum Wages		
		2005-2006	2011	2012
1	Assam	62	130	136
2	Andra Pradesh	80	121	137
3	Arunachal Pradesh	57	118	124
4	Bihar	68	120	
5	Gujarat	50	124	134
6	Haryana	95	179	191
7	J&K	45	121	131
8	Karnataka	63	125	155
9	Kerala	125	150	164
10	Manipur	66	126	144
11	Meghalaya	70	117	128
12	Mizoram	91	129	136
13	Nagaland			124
14	Punjab	101	153	166
15	Rajasthan	73	119	133
16	Sikkim	85	118	124
17	Tripura	60	118	124
18	West Bengal	67	130	136
19	Jharkhand	76	120	

Source: GOI Department of Rural Development

exercising the choice to apply for registration, obtain a Job Card, and seek employment for the time and duration that the worker wants.

iii) There is a 15 day time limit for fulfilling the legal guarantee of providing employment.

iv) The legal mandate of providing employment in a time bound manner is underpinned by the provision of Unemployment Allowance.

It is clear from table 3 that different minimum wage rates were notified for all the states under MGNREGA. The wage was highest in Haryana with Rs.191 and lowest in Bihar and Jharkhand with Rs. 122 with effect from April 1, 2012. In Nagaland the notified wage was Rs.124 which was just above the wage rate of Bihar and much below the wage rates of neighbouring states like Manipur and Assam with Rs. 144 and Rs.136 respectively. Wage is one of the important indicators which determines the standard of living of the people.

### CHALLENGES IN NAGALAND

The study has planned to highlight important challenges faced by MGNREGA in Nagaland under three heads namely social audit, vigilance cell and quality management of works.

#### SOCIAL AUDIT

An innovative feature of MGNREGA is that social audit as a means of continuous public vigilance. Social audit ensures transparency, accountability, consultation and people participation.

The social audit process is not a fault finding, but a fact finding process. The Social Audit Unit may be either a Society or a Directorate, independent of the implementing departments or agencies. The Director/chief executive officer of the society/directorate shall be a person who has worked in the social sector for the rights of the people for at least 15 years. The work may also be outsourced to an outside agency preferably an NGO which is not involved in the planning and implementation of the Scheme but possesses adequate experience of having worked in rights and entitlement based programmes. Social Audit Unit shall identify appropriate number of State Resource Persons (SRP), District Resource Persons (DRP), Block Resource Persons (BRP) and Village Resource Persons (VRP), to facilitate the Gram Sabha in conducting social audit. The Social Audit Unit shall have Quality Monitors to facilitate evaluation of asset quality during the social audit. This will ensure durability of assets and their intended usefulness.

V) The Act is designed to offer an incentive structure to the States for providing employment as ninety percent of the cost for employment provided is borne by the Centre. There is a concomitant disincentive for not providing employment as the States then bear the double indemnity of unemployment and the cost of unemployment allowance.

vi) Unlike the earlier wage employment programmes that were allocation based. NREGA is demand driven. Resource transfer under NREGA is based on the demand for employment and this provides another critical incentive to States to leverage the Act to meet the employment needs of the poor.

vii) NREGA has extensive inbuilt transparency safeguards.

**a. Documents:** Job Cards recording entitlements (in the custody of workers) written application for employment, Muster Rolls, Measurement Books and Asset Registers

**b. Processes:** Acceptance of employment application, issue of dated receipts, time bound work allocation and wage payment, Citizen Information Boards at work sites, Vigilance Monitoring Committees, regular block, district and state level inspections and social audits

viii) The public delivery system has been made accountable, as it envisages an Annual Report on the outcomes of NREGA to be presented by the Central Government to the Parliament and to the Legislature by the State Government. Specifically personnel responsible for implementing the Act have been made legally responsible for delivering the guarantee under the Act.

## **MGNREGA IN NAGALAND**

The Government of India has selected only one district from Nagaland for the implementation of NREGA during the first phase. Accordingly, Mon district with its backward status was selected the first MGNREGA district in Nagaland in 2005. But the actual implementation started during the period 2006-07 only. In the second phase (2007-2008), 4 more districts viz. Kohima, Mokokchung, Wokha and Tuensang were brought under the Act. Thus, a total of 5 districts were under MGNREGA, including Mon (Phase-I), in the year 2007-08. Finally the Government of India notified and declared all the remaining rural districts in the Country under MGNREGA with effect from April 1, 2008. Accordingly, the Act was implemented in the remaining 6 districts viz. Dimapur, Phek, Zunheboto, Longleng, Kiphire and Peren during the third phase. Thus, all the districts in the State were covered under the National Rural Employment Guarantee Act from the financial year 2008-09.

## **ISSUES IN NAGALAND**

This study was intended to highlight few issues related to MGNREGA in Nagaland under three heads namely work completion rate (implementation), funds availability (finance) and minimum wages (wage rate).

## WORK COMPLETION RATE

The completion of work under NREG Schemes in Nagaland is at a very slow pace. Work completion rate had been very poor in Nagaland as a whole till 2012-13 which is shown in Table 1.

S No.	District	Financial Year			Financial Year			Financial Year		
		2009-2010 and Earlier			2010-2011			2012-2013		
		No. of Works started	No. of Work Completed	Work Completion Rate	No. of Works started	No. of Work Completed	Work Completion Rate	No. of Works started	No. of Work Completed	Work Completion Rate
1	<u>DIMAPUR</u>	417	1	0.24	1708	4	0.234	1715	398	23.207
2	<u>KIPHIRE</u>	197	0		334	0		215	0	
3	<u>KOHIMA</u>	1725	251	14.551	1227	4	0.326	879	867	98.533
4	<u>LONGLEG</u>	188	0		313	0		204	66	32.353
5	<u>MOKOKCHUNG</u>	823	490	59.538	676	5	0.74	518	252	48.649
6	<u>MON</u>	474	1	0.211	748	1	0.134	718	64	8.914
7	<u>PEREN</u>	351	1	0.285	272	54	19.853	186	0	
8	<u>PHEK</u>	977	18	1.842	1231	546	44.354	729	294	40.329
9	<u>TUENSANG</u>	1448	426	29.42	2266	2	0.088	379	0	
10	<u>WOKHA</u>	1177	139	11.81	940	0		815	772	94.724
11	<u>ZUNHEBOTO</u>	1174	0		561	0		542	417	76.937
	<b>Total</b>	<b>8951</b>	<b>1327</b>	<b>14.825</b>	<b>10276</b>	<b>616</b>	<b>5.995</b>	<b>6900</b>	<b>3130</b>	<b>45.362</b>

Source: GOI Department of Rural Development

A comparative study between districts has revealed that the work completion rate was highest in Mokokchung (59.5%) followed by Tuensang (29.4%) till 2010. During the same period not even a single work was completed in districts like Kiphire, Longleng and Zunheboto. During the financial year 2010-11 work completion was highest in Phek with 44.4% followed by Peren with 19.9%. No work was completed in Kiphire, Longleng, Wokha and Zunheboto. In 2011-12, the rate was highest in Kohima with 99.8% closely followed by Peren with 98%. Again in Wokha no single work was completed and in Longleng out of 299 works only 2 works (0.6%) were completed. Again during the financial year 2012-13 Kohima stood first with the completion rate of 98.6% followed by Wokha with 94.7% and Zunheboto with 76.9%.

## FUNDS AVAILABILITY

The Central Government provides funds for the implementation of the programmes under NREGA on the basis of hundred percent wage cost of unskilled manual labour and seventy five percent of material cost. A 60:40 wage material ratio should be maintained. Table 2 indicates the funds available for the financial year 2012-13.

Financial Year 2012-13 (Rs. in lakhs)

District Name	District Level	Block Level
	Fund Transfer	Fund Transfer
<u>DIMAPUR</u>	10404.9	10263.2
<u>KIPHIRE</u>	1503.39	1447.68
<u>KOHIMA</u>	5922.16	5355.56
<u>LONGLENG</u>	1981.21	1956.82
<u>MOKOKCHUNG</u>	4939.56	4945.15
<u>MON</u>	3595.14	2655.07
<u>PEREN</u>	3976.4	2838.62
<u>PHEK</u>	3507.08	2289.33
<u>TUENSANG</u>	2725.78	1899.46
<u>WOKHA</u>	3558.52	3285.84
<u>ZUNHEBOTO</u>	2630.76	2469.46
Total	44744.9	39406.2

Source: GOI Department of Rural Development

There is a direct relation between funds availability and work completion in any programme. Table 2 highlighted that the funds were available to all districts at all levels. But compared to the funds availability with work completion rate, the rate was low and even zero in few districts. There were reports which revealed that there was a short fall of state share for 2010-11 and 2011-12 for all districts.

### MINIMUM WAGES

The MGNREGA enacted minimum wages to be paid for unskilled manual labour in all the states in the country. The wage rates were periodically revised by the Centre. In some states where the wages under NREGA were lower than state level minimum wages. But in Nagaland NREGA wage had been higher than state level minimum wages. Table 3 highlights the state wise notified wages under MGNREGA.

The Social Audit Unit shall be responsible for building capacities of Gram Sabha for conducting social audit by identifying, training and deploying suitable resource persons at village, block, district and State level drawing from primary stakeholders and other civil society organisations having knowledge and experience of working for the rights of the people. The Social Audit Unit will create awareness amongst the labourers about their rights and entitlements under the Act, and facilitate verification of records with primary stakeholders and work sites. Trained resource persons should be identified to facilitate the process of Social Audit. These trained resource persons in turn train the village community in carrying out the verification process. The resource persons can be drawn from primary stakeholders, civil society organizations, Bharat Nirman Volunteers (BNV), who have knowledge and experience of working for the rights of the people. The Social Audit Unit shall be responsible to host the social audit reports including action taken reports in the public domain. The Social Audit Unit shall facilitate smooth conduct of social audit by Gram Sabha for reading out and finalising decisions after due discussions. The implementing agency shall at no time interfere with the conduct of social audit. The State Government shall be responsible to take follow up action on the findings of the social audit.

In Nagaland it is a great challenge to follow all the rules and procedures because it requires public awareness and active participation.

### **VIGILANCE CELL**

Three-tier vigilance mechanism to proactively detect irregularities in the implementation of the Act and to follow up detected irregularities and malfeasances, including those identified during social audit and ensure that the guilty are punished and recoveries of misspent funds duly made. At the state, state level vigilance cell, at the district, district level vigilance cell and at the local level, vigilance and monitoring committee are there to look after irregularities.

### **State Level Vigilance Cell**

At the State level, a Vigilance Cell consisting of a Chief Vigilance Officer (CVO) will be set up. The CVO may be a senior government officer or a retired officer supported by at least two senior officials (serving or retired), one Civil Engineer and an Auditor.

### **Functions of Vigilance Cell**

- a. Receive complaints about the implementation of MGNREGS in writing or orally or through mobile, telephone or the internet and get it verified either directly or through the District level Vigilance Cell depending on the seriousness of the complaint.
  - b. Conduct regular field visits to detect irregularities.
  - c. Take *suo-moto* action on reports appearing in the media.
  - d. Review the inspection system, transparency arrangements and functioning of the field and district level vigilance system.
  - e. Initiate recoveries of amounts through the Public Accountants Act in the case of officials and Revenue Recovery Act in the case of others.
  - f. Recommend initiation of disciplinary action against the officials found guilty and frame charges if the reply to the initial memo is unsatisfactory.
  - g. Recommend to the District Vigilance Cell to file an FIR before the police in cases where criminal action needs to be initiated.
- In Nagaland following all guidelines and principles in framing the vigilance cell and execute them at village level more effectively is a challenging task.

## **QUALITY MANAGEMENT OF WORKS**

An important objective of the MGNREGA is creation of durable assets and strengthening the livelihood resource base of the rural poor. Around Rs 40,000 crores are being spent every year through MGNREGA. If implemented effectively, the programme has the potential to transform rural areas by creating durable assets that would not only enhance the livelihood security of rural poor but also result in substantial infrastructural development in rural areas. It is therefore, of utmost importance to ensure good quality and durability of assets being created under MGNREGA. An effective Quality Management mechanism can help achieve this objective.

### **The Objectives of Quality Management is two folds:**

- i) to ensure that the created assets achieve the objectives. This implies that the functionality of the asset in terms of location, design, operational management and maintenance is adequate; and
- ii) to ensure that the asset is durable, that it is constructed conforming to sound engineering standards in terms of design, materials and workmanship.

In Nagaland reports revealed that creation of durable assets and quality works is a great challenge.

## **CONCLUDING REMARKS**

In India MGNREGA provides an income supplement to poor households through 100 days of guaranteed work, especially during the slack agriculture season when demand for labour in agriculture is low. In Nagaland, the Programme has the potential to enhance the standard of living of the rural poor. The study has highlighted some issues and challenges faced by MGNREGA in Nagaland. In order to overcome the issues and challenges highlighted, the Programme requires sincere, efficient and effective government-people participation. The success of any programme in rural areas is partly in the hands of people and partly in the hands of government and MGNREGA is also no exception.

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## TRAUMA OF INSURGENCY IN DR. TEMSULA AO'S THESE HILLS CALLED HOME

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**Abstract:** *These Hills Called Home* is a collection of ten short stories. The background of the stories is the turbulent time in Naga history when insurgency was at its height. The traumatic events are truly weaved into the stories. The author is strongly of the view that such conflicts do not result in any winner but only victims and the trauma that the victims underwent is beyond physical it leaves a deep scar in mind and soul. It is thus found that the trauma caused by insurgency is a major theme.

**Keywords:** Padmashree, guerrilla, underground, gaonburas, informer

### **Temsula Ao**

Temsula Ao is one of the first voices from Nagaland in the English literary world. She has contributed a number of articles on oral traditions, folk songs and cultural traditions of the Ao Nagas, linguistic diversity of the Naga tribes on national journals. To her credit are five collections of poetry, an ethnographic work titled *Ao- Naga Oral Tradition* (2000) and two acclaimed collections of short stories *These Hills Called Home* (2006) and *Lamburnum for my Head* (2009). She is a former Dean of School of Humanities and Education and Professor of Department of English, NEHU, Shillong. She is the first Naga woman to have done Ph.d and a recipient of *Padmashree* for Literature and Education 2007 and Governor's Gold Medal 2009 from the Government of Meghalaya. She is currently the Secretary, Nagaland State Women Commission.

### **Birth of insurgency**

The Naga territory was inhabited by various Naga tribes and they lived independent of each other. The British occupied the Naga territory around 1870-1880 and established an administrative headquarter in Kohima and they held the various Naga tribes together. Though occupied, the Britishers did not interfere and left the Nagas independent. Therefore, Nagas believe that they have been never a part of India.

In the 1920's when the Britishers were talking of leaving India, the Nagas also began to think that they would rather be by themselves than be part of India and thus emerged The Naga National Council (NNC) in 1945. This became an umbrella organisation of the fight for Naga independence. In 1946, Jawaharlal Nehru issued a statement that the Naga territory must form a part of India. This intensified the Naga fight for an independent land. Though NNC never approved of violence, the extremists went to the extent of resorting to arms. They infiltrated into villages and mobilised the peaceful tribesmen. The 1950's and 1960's were the most troubled times in the land. In 1956, the insurgents founded the Naga Federal Government.

The rebels met the troops with violent opposition; they attacked outpost, ambushed convoys on the ... They terrorised the Nagas who refused to help them. The army ...burnt down many villages with granaries and the civilian inhabitants were rendered homeless. The undeclared war went on

between the Army and Naga rebels unabated, and the innocent and simple villagers were made the victims of the war.

(ABHAON 183)

It is this undeclared war and atrocities meted out to the innocent villagers by the rebels and the Army that provide the background for the stories in *These Hills Called Home*. The memories of such ghastly reality is imprinted in the generation of the Naga people who lived in the troubled times of 1950's and 60's. The author herself is a product of that generation and though, not all of them had first hand experience of the atrocities, they were traumatised by the events in the land. The author says that, in the book, she attempted to "re-visit the live of those people whose pain has so far gone unmentioned and unacknowledged". She further adds:

what the stories are trying to say is that in such conflicts, there are no winners, only victims and the results can be measured only in human terms. For the victims the trauma goes beyond the realm of just the physical maiming and loss of life- their very humanity is assaulted and violated, and the onslaught leaves the survivors scarred both in mind and soul (THCH: Preface xi).

Thus trauma caused by the insurgency is found to be the main theme in *These Hills Called Home*.

### **What is trauma?**

In *Oxford Advanced Learner's Dictionary* 'trauma' is defined as a deeply distressing experience or emotional shock following a stressful event or physical injury "or a mental condition caused by severe shock". But in the earlier edition it was defined as physical injury only. It was in the latter half of the nineteenth century that the meaning got transferred from the physical wound to psychical wound with the coining of terms like 'traumatic neurosis' and 'nervous shock'. In the 1890's psychologists Sigmund Freud and Joseph Breuer wrote that the cause of illness in 'traumatic neurosis' is not the physical injury but the effect of fright- the psychical trauma. Therefore any distressing experience such as fright, anxiety, shame or physical pain are a part of psychical trauma.

Cathy Caruth in *Unclaimed Experience* says that traumatic experience cannot be represented. It is due to the inability of the brain to properly encode and process the event yet the event is ever-present and intrusive. The mind presents the trauma only through repetitive flashbacks that literally re-enact the event. Thus traumatic experience is understood as a fixed and timeless photographic negative stored in a certain place of the brain, but it maintains the ability to interrupt consciousness.

### **Trauma of insurgency**

Temsula Ao in the preface of the book says "memory is a tricky thing: it picks and chooses what to discard. Sometimes it is trivial that triggers the process of remembering" (THCH: Preface ix); she goes on to say that in the stories, she tried to "re-visit the live of those people whose pain has so far unmentioned and unacknowledged" (ibidem) but etched in their memories. She maintains that she is neither supporting nor relaying history but to convey how the land and the people went through a terrible time to highlight the fact that "in such conflicts, there are no winners only victims" (ibidem) and that the trauma underwent by the victims is beyond physical injury- they are "scarred both in mind and soul" (ibidem).

The trauma in *These Hills Called Home* is caused by insurgency. The motive of these revolutionaries was independence from the Indian State. What followed were decades of strife, guerilla warfare, plundering and killing. This resulted in traumatising the innocent people especially the villagers.

In "An old Man Remembers", old man Sashi remains reticent all his life about his days in the jungle when he fought against the Indian army "as though that phase has been consigned to a dark place in his heart" (THCH

92) yet the traumatic experience is still in his mind like an intruder or a ghost. His grandson's prodding trigger the many painful memories and in "repetitive flashbacks" Sashi remembers his past traumatic experience. On the last day of the school before Christmas, as the last school bell was rung, sounds of gun fire were heard. All the school children rushed out of the classrooms and saw the most horrifying sight that changed the lives of Sashi and his friend Imli. That day gun-toting soldiers had come to village and picking out and shooting the Villagers like animals. The village sentry shouted to the school children to run to the jungle for safety and as they ran, the last sight they saw of the sentry was his battered body on the ground. In the forest they encountered the rebels/undergrounds. They took sashi and Imli to their camp where they were told that they had been recruited into the Naga Army. A year after, they found an opportunity to run away and marching for three days in the jungle reached their village only to find the whole village in ashes. They traced their family members who had relocated in a nearby jungle. This incident snatched their youth away all of a sudden. Later they were recaptured by the underground and from then on life in the jungle was a long suffering experience. He recounts that for a whole generation like him, The prime of their youth was a seemingly endless cycles of beatings, rapes, burning of villages and granaries...and running from hideout to another deep jungles to escape the pursuing soldiers, turned young boys into men...becoming ruthless killers(ibidem 93)

Such traumatic experience disrupts the connection between 'self' and the 'other' as Sashi says many found difficulty in leading normal lives in the society because of the trauma suffered during their careers as freedom fighters. Sashi too suffers from 'traumatic neurosis'- he groans and moans and even shrieks in his sleep and would wake up crying and screaming seeing bad dreams.

The innocent people always lived in the grip of fear. They were traumatised by both the underground(rebels) and overground(Indian army) forces. Sashi explains that since living in the forest, the rebels were always short of food and basic necessities. Therefore they would go to villages and demand the needed supplies. If they do not comply, they intimidate and in-still fear into the hearts of the villagers by firing in the air. That was how they obtained sacks of rice, livestock etc for the group in the forest. Generally the young boys were the primary target of the underground. Many were forced to join the underground thus disrupting their normal life at an early age. Yearly taxes from every household was imposed in all the villages which angered the Indian forces. 'The Last Song' is a heart wrenching story that exposes the price a village had to pay for paying such taxes. One day, as a new church dedication was held in a village, the army raided the church to arrest all the leaders of the village. The reason was to show to the entire Naga people the consequences of betraying 'your own government' and supporting the rebel cause by paying taxes. As the pastor led the congregation, the soldiers approached the church with gunfire. The crowd overcome with fear and anger ran everywhere.

there were chaos everywhere. Villagers trying to flee the scene were either shot at or kicked and clubbed by soldiers... the pastor and the Gaonburas were tied up securely for transportation to army Headquarters...(ibidem 28)

All this while Apenyo, the singing girl of the village stood on her ground and sang on. This infuriated the Captain of the army and before her mother Libeni could pull her to run away, the army dragged Apenyo by the hair towards the old church building and raped and killed her. After frantically looking for Apenyo, what she saw was ghastly. She too met the same fate. When this chaos was over and thinking that the army had left, some villagers were about to carry the bodies back but the captain happened to see them. He ordered his soldiers to fire on them as they were witnesses to the despicable act. The villagers again tried to take shelter in the church but 'even the house of God could not provide them security and save them from the bullets of the crazed soldiers'(ibidem 29). The bodies of the two women were dumped on the porch and the church was set on fire so that all the witnesses would be killed. The new church too and the granaries and houses caught the fire carried by wind and burnt to the ground. The army and other security forces are shown for

what appear to the people- raping, pillaging, destroying and humiliating the people, their culture and traditions through mass punishments. This story is narrated by an old woman of the village. Though this is not her story, from the narrative one understands her trauma of living in such a time. This story conveys profound loss and intense fear.

In 'The Curfew Man', Satemba, is an informer. He was traumatised by a particular incident in which, acting on a tip-off, the army raided a house where underground agents managed to escape but the owner of the house was brutally beaten up and later died. For many nights after this incident, he neglected his work and stayed at home with intense fear, shame and anxiety. At the same time he was warned by the underground. The trauma creates a speechless fright in Satemba.

The Home Guards was created by the government for the locals to be their 'extra arms' and their 'guide'. These people became dreaded figures among the civilians as they were arrogant because of the power that they were given. Imlichuba in 'Soaba' is a leader of such a group in Mokokchung town. His fortune changed drastically once he attached himself with the government and he enjoyed unquestioned authority in the town. Many innocent people on ground of suspicion were arrested and were brought to his house for 'proper interrogation'.

No one knew what eventually happened to these people; if some survived the tortures, they would either surface in the civil hospital or the local jail. Quite a few were never seen again (ibidem 13)

Though the tortures were common knowledge, people never talked lest they would be caught for saying something they should not have. The narrator in 'Soaba' says that, as a result of the conflict between the two forces, new vocabulary began to creep into the everyday language of the people. The words which are very simple in English like 'convoy', 'situation', 'grouping', 'camp', 'curfew' and the like acquired frightening dimensions. 'Convoy' simply mean massive deployment of arm personnel to various strategic areas but to the Nagas the word create fear as they relate it with the olive uniformed merciless men. 'Situation' is an 'innocent word' but acquired a singular meaning- "it referred to the fall-out of the struggle between the two opposing forces". 'Camp' meant only the underground camps in the forests. He further says that the word 'grouping' had a more sinister implication. In 'grouping', the whole village would be forcibly located to a new one by the army. Thus two three villages were herded together in one village. This was done to make it convenient for the army to guard them day and night. During such migrations, they underwent intense physical and mental tortures:

It was the most humiliating insult that was inflicted on the Naga psyche by forcibly uprooting them... confining them in an alien environment, denying them access to their fields, restricting from their routine activities... demonstrating to them that the 'freedom' they enjoyed could be so easily robbed at gunpoint (ibidem 11)

'Curfew' became a dreaded word especially in towns. In 'The Curfew Man', it is said that, of all the restrictions imposed on the civilians, the night curfew was the worst as all normal activities come to a stop soon after dark. There are stories of civilians being shot dead by the patrol parties and reported their deaths as undergrounds killed in 'encounters'. Sick people taking to the hospital were stopped for humiliating searches and often send back with abuses and threats.

These kinds of traumatic experiences are clearly imprinted in the memory of the people and they create a speechless fright in them. Such conflicts effects everyone involved. Sashi says his friend Toshi drifted away

to live in the fringes of the society unable to lead a normal life; after several years, the captain in 'The last song' was traced to a military hospital where he was kept in an insane asylum with maximum security; Hoito, the commander in 'The Shadows' murdered his comrade Imli and deserted the underground. He is subsequently found roaming in the forest as a mad man. Truly, there are no winners, only victims. The traumatic experience often seeps into the psyche of the victim so overwhelmingly.

### **Conclusion**

This anthology "from a war zone" is powerful proof that the violent phase in Naga life remained etched in their memory. Temsula Ao herself lived in Nagaland during the turbulent times when the Naga insurgency was at its height. Like a mirror of the society, the stories truly reflect the society of the time and in doing so, she reveals how, for the victims the traumatic events effects beyond "physical maiming and loss of life- their very humanity is assaulted and violated...and leaves the survivors scarred both in mind and soul"(Preface X).

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## THE VARIOUS ASPECTS OF NAGA ART

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**ABSTRACT:** The research study is an attempt to analyze the various aspects of Naga art. Why and how such practices like the feasts of merit and headhunting exist and visual forms such as the colorful textiles, woodcarving, body tattooing, weapons and ornaments produced. Among the Nagas, art and rituals are interdependent; none of them complete without the other. Everyday activities like work in the fields, hunting, fishing, birth and dead, followed minute taboos and observances. Among the Nagas adherence to the prescribed rituals and taboos was strictly observed in their art, any deviations from the technical tradition were believed to bring ill fortune such as death, famine, sickness or defeat in war. With very limited tools at their disposal, the Naga artisan skillfully reproduced traditional styles by simply visualizing the forms and lines mentally.

**Keywords** feasts of merit, headhunting, *morung* (men's ceremonial house), rituals, taboos

### Introduction

Nagas are an indigenous people, with their homeland stretching along the north eastern states of Indian States of Nagaland, Assam, Manipur, Arunachal Pradesh and north western Myanmar (Burma). The Nagas on the Myanmar side lies within the Sagaing state. The state of Nagaland was created out of the Naga Hill areas of Assam and North Eastern Frontier Agency (NEFA) in 1963 becoming the 16<sup>th</sup> state of the Indian Union. Spread over an area of 16,579 square kilometers, the population of the Nagas in India is about four million, out of which 71.03 per cent of the population resides in rural areas and 28.97 per cent in urban areas as per 2011 census.

The Nagas belong to multi-ethnic groups and subgroups, though they have no common language, they have similar cultures and traditions. The 16 major tribes such as the Angami, Ao, Sema, Lotha, Rengma, Chakhesang, Khiamniungan, Chang, Konyak, Phom, Sangtam, Liangmei, Yimchungrü, Pochury, Rongmei and Zeme and numerous sub-tribes each with its own distinct languages, custom and dress inhabit the 11 districts of Kohima, Dimapur, Mokokchung, Wokha, Zunheboto, Longleng, Kiphiri, Tuensang, Mon, Peren and Phek with Kohima as its capital. Tribes such as the Khiamniungan, Konyak, Yimchungrü, Tikhir, Makuri and Tangkhul have villages on either side of the international border.

One of the important aspects of Naga art is how rituals for various occasions are closely connected to different forms of art. Art and ritual beliefs among the Nagas are interdependent, none of them complete without the other. Everyday activities like work in the fields, hunting, fishing, birth and dead, followed minute taboos and observances. Among the Nagas adherence to the prescribed rituals and taboos was strictly observed in their art, any deviations from the technical tradition were believed to bring ill fortune such as death, famine, sickness or defeat in war. With very limited tools at their disposal, the Naga woodcarver skillfully reproduced traditional styles by simply visualizing the forms and lines mentally.

Traditional Naga religion recognizes a supreme God or Creator and lesser gods such as the spirits of the rivers, forest, mountains, caves and stones. Nagas believed that proper sacrifices and appeasement must be made to them for their blessings for good crops, protection from natural disaster and unforeseen calamities. For example, accidental deaths were attributed by the Nagas as having incurred the disfavor of their gods.

But when proper sacrifices are made and rituals observed, a man is blessed with healthy children, success in war, bountiful harvest and increase in livestock which enables him to perform the feasts of merit and thereby gains the right to wear the much coveted warrior and feasts giver's cloths, ornaments and house decorations, status and recognition for himself and blessings for the whole village.

### **Brief Literature Review**

Until the advent of the British in the 1830s, the Nagas had little contact with the outside world apart from cultural contact with the Ahoms, who ruled Assam from the 13th to early 19th century. Lotha (2007) writes that Naga Anthropology developed parallel to the growth of the British Empire in the Naga Hills. Beginning from the mid 1830s various articles in the form of military and survey reports and classical monographs were written on the Naga tribes such as the Angami, Sema, Lotha, Ao, Konyak and Rengma Nagas by Anthropologist, British administrators, Surveyors and Christian missionaries, but writings about Naga art are meager. Frances Jenkin's reports published in Pemberton's Report on the Eastern Frontier on British India (1835), and Moffat Mills's Report on the Province of Assam (1854), and John Butler's Travels and Adventures (1855), E.T. Dalton's Descriptive Ethnology of Bengal (1872), had brief descriptions about the habitat, phisic, headhunting, agriculture, implements, dress, warfare, crime and punishment, marriage, weapons and so on. Lotha (2007) writes, in 1901 the Government of India took up the suggestion of the British Association for Advancement of Science and funded the ethnographic Survey of India to be carried out all over India in connection with the census operations. The outcome of the ethnographic survey was the publication of various monographs- T. C. Hodson, Naga Tribes of Manipur (1911), J.P. Hutton, Angami Nagas (1921), Sema Nagas (1921) J.P. Mills, The Lotha Nagas (1922), The Ao Nagas (1926), and The Rengma Nagas in 1937. Henry Balfour also wrote articles on different topics about the Nagas (1914, 1917, 1923, 1926) and Christopher von Fürer-Haimendorf wrote Naked Nagas (1939), and many articles on the Konyak Nagas (1938a, 1938b, 1939, 1943). On the subject of Naga art such as woodcarvings, basketry, textiles, pottery and metalworks these monographs describes the techniques and modes of production but fail to give importance to the artists or artisans who made such arts possible. Robert Gosset Woodthorpe's The Lushai Expedition (1873), and the descriptions of land surveys, research and observations in the Naga hills collected in the Narrative Reports (1876-1878) and the Notes on the Wild Tribes Inhabiting the So-Called Naga Hills (1882) has illustrations of Naga village scene, burial ground, woodcarvings, ornaments, body tattoo, weapons, clothing and tools. These visual representation is a "testament to long-forgotten local cultures and will endure as early examples of the visual ethnography of that region" (Michael Oppitz 2008:33). The photographs taken by Christoph von Fürer-Haimendorf in the Naga Hills in 1935 and 1937 constitutes one of the finest photographs on the Nagas regarding their agriculture, ritual and art and used extensively by Julian Jacobs in his book The Nagas: Hill Peoples of North East India (1990). Anthropological museum collections in Europe of artifacts such as ornaments, head-dresses, weapons, hunting equipments, baskets, musical instruments, textiles, looms, spinning equipment, as well as pipes and toys collected by Adolf Bastian (1878-79), Lucian Scherman (1910-11), Hans-Eberhard Kauffmann (1936-37), Paul Wirz (1938) and Milada Ganguli (1963- 92), Henry Balfour (1922-23), John Butler (1869-75), Ursula Graham Bower (1937-46), James Henry Hutton (1909-35) and James Philip Mills (1916-38), Charles Pawsey (1920-48), R.G. Woodthrope (1875-76), Christoph von Fürer-Haimendorf (1936-37) among others, give us great insight into the minds of the creative Naga artisans. Verrier Elwin's The Art of the North East Frontier of India (1959) and MiladaGanguly's Naga Art (1993) describe Naga art in general.

Among Naga scholars M. Alemchiba Ao's *Arts and Crafts of Nagaland* (1968) was the first to comment at length on the artistic activities of the Nagas. The monograph describes the technical processes involved in the working of the Naga crafts such as spinning and weaving textiles, pottery, woodcarving, basketry and metal works. Ao, admits being a Naga himself, he had certain initial advantages in the field investigation and in the processes of analyzing the data. But at the same time, he states: "it was not easy to carry on such an investigation in a land where the people suffered from the effects of hostility continuously for a decade. Added to this was the divergence of Naga traditions" (1968: ix). Panger Imchen in his book *Ancient Ao Naga Religion and Culture: A Foundation towards Christianity* (1993) he has used the sociological and anthropological methods and interpretations about the ancient Ao Naga religion, cultural practices and beliefs in the context of Christianity and change. Kajen Mongro's *Naga Cultural Attires and Musical Instruments* (1999) gives detailed description and the various names, meanings, utility and social functions of Naga ornaments, textile and musical instruments. N. Venuh's *Naga Society: Continuity and Change* (2004) explores the various aspects of Naga culture, customs, traditions and social changes that are taking place in the Naga society today with special reference to change and continuity in Naga customary law, festivals, dress, the *morung* system, beliefs and practices, political institutions, Naga worldview and transformations. Abraham Lotha's *History of Naga Anthropology 1832-1947* (2007) examines the relationship between anthropology and colonial administration in the development of Naga anthropology. Some of his important writings on Naga art include *Understanding Naga Woodcarving* (1998), and *Naga Woodcarving Heritage: Carving the Present and the Future* (2007) here he critically analyze non-utilitarian woodcarvings in the traditional Naga society. He writes that ethnic arts can be appreciated better when one understands the cultural context of the art. Description of the socio-cultural settings that inspired the non utilitarian woodcarvings, the meanings and significance on non utilitarian woodcarving in the Naga society are dealt with in this paper, while *Naga Warfare* (1998) discusses the causes for warfare in the Naga society and how headhunting came to be institutionalized.

### **Methodology**

The research methodology for the study is mostly drawn from participant observation, formal and informal interviews, recording life histories of individual artisans and narrative or reflexive method and photography. Data collected through fieldwork illustrate the daily life of the Naga artisans and the stories surrounding their arts. To supplement the information collected through these means, the materials the researcher consulted include archival resources from libraries, unpublished articles and seminar research papers and published chapters, essay and reviews in journals and newspapers on ethnic art.

### **Agriculture**

Every aspect of Naga life is interconnected with agriculture and its rituals, ceremonies and festivals. Nagas perform a series of agricultural ceremonies to appease the spirits of the forest, rivers, rocks and the fields to protect the crops and to increase agricultural yield. Specific rituals was observed for each agricultural activity such as the selection of sites for cultivation, clearing of the land of trees and undergrowth, the burning of the felled trees and bushes, the first sowing of seeds and the first harvesting of crops. Agriculture is supplemented by craft making especially in sowing and harvesting seasons. The relationship between agriculture and craft production is inseparable.

In order to perform the various agricultural rituals and ceremonies, specific baskets are needed. For example, a ceremonial basket which the Khamniungan Naga called *mao* was also used to forecast the first rice seeds. Before rice was transplanted, the Chang Nagas invited elder clan members to pray for a good harvest and they were served food in a ceremonial rice plate referred to as *lahphaou*. Another important basket used by Khamniungan Nagas, is the rice beer cup hanger or *ting pa chang*, a conical basket cover which looks like a lamp shade made of thin slices of the inner part of a bamboo stitched together with cane thread. It is hung on the beam called *ling le shio* (seed decorated place) near the hearth. Hooks made from the stump of side branches of a tree is suspended inside the *ting pa chang*. On the hooks are hang the *amlakto* (gourd beaker) which contains a pinch of salt, a river fish, and a small token of millet biscuit called *lakpou* which is replaced on every important agricultural festivals, new house construction or repair and feast giving ceremonies. It is never thrown, as it is believed to contain the blessings of the household. On the hooks are also hung the house owner's rice beer cups and baskets containing seeds for the next sowing and animal heads killed for the ritual ceremonies.



Fig.1 Rice beer hanger called *ting pa chang* by Khamniungan Nagas is a conical basket cover made of thin slices of the inner part of a bamboo stitched together with cane thread. It is hung on a beam near the hearth, Lengnyu village, 2010

### Feasts of merit

Another aspect of Naga art is the feasts of merit. The social status of the Nagas depends largely on the ability of an individual to provide feasts. The performance of these series of feasts was optional but the continual quest for prestige in the Naga society encouraged and at the same time provided every married man, an equal opportunity to compete for status through the feasts of merit. The prestige of an individual was closely bound up with expenditure and public display of wealth. The number of feasts varied from tribe to tribe and hosting of this kind of communal feasts was always an expensive affair, necessitating lavish supply of cattle and rice beer, and each series in the feasts of merit becoming more elaborate and costly than the last one performed. Every Naga hoped to perform the whole series in the feasts of merit and gain honor both in life and after death. At the same time, these ritual feasts of merit demanded not only the intensification of economic production such as rice and grains, breeding of pigs, *mithun* and fowls but ceremonies also ensure that the wealthy individual shares and redistributes his accumulated wealth with his fellow villagers who are less fortunate thereby creating a balance in the society.

## Headhunting

Another important aspect of Naga art is headhunting. Headhunting was once an institutionalized cultural practice among all the Naga tribes, which has social and religious sanction. A Naga method of fighting and headhunting was a combination of individual enterprise and teamwork. Individual bravery was greatly admired and each warrior sought to distinguish himself by taking as many heads as possible. Every Naga aspired to take an enemy's head and flaunt his bravery for it not only brought him prestige, honor and entitlement to wear the much coveted warrior's paraphernalia but in killing an enemy he was doing good for the village, in fact for the survival of the village.



Fig.2 Hip basket called *dangsa* richly decorated with carved wooden human head, monkey skulls, boars' tusks and cane balls to indicate the warrior status.

## The *Morung*

The first step towards building of a new village was to select the central location to construct the *morung* (Men's ceremonial house) Naga villages are divided into *khels* (wards) and each *khel* has a *morung*. The *morung* was the most important social, political and religious component of the village. The numbers and size of *morung* in a village depend on its population and the vitality of the clan member who construct it. The *morung* was the centre of social and cultural life of the Nagas and had no individual existence apart from the community. It functioned as the guard-house and armory, recreation club, center of education, art and discipline. It was here where debates and discussions concerning the interests of the clan and village and economic and political rituals were held and the art of warfare, and skills such as woodcarving, basketmaking, songs, dances and folklore of the tribe was communicated orally from generation to generation. The *morung* often housed the log-drum considered as sacred by the men for it was not only used as a signaling instrument but the heads of enemies were kept or hung displaying the men's dominance in warfare - strictly a male prerogatives.

Among the Nagas, woodcarving communicated the value systems example, of the tribes. The carvings of human figures and animals represent their characters and not their magical or spiritual powers. For instance, the carvings of animals such as the tiger, *mithun* (*Bosfrontalis*) hornbill, python and elephants in the *morung*, are believed to make the *morung* members brave and wealthy and at the same time, create terror and panic among the enemies. The tree from which the main post, the side-beams, the ridge-pole of the *morung* and the log-drum was felled had to be strong, straight and tall without any blemish; so too the men of the village had to be just and honorable. The main *morung* post communicated the value of honorableness; carvings of tiger, elephant and human heads communicated men's strength and aggressiveness in warfare; while that of the *mithun* and python wealth and the hornbill beauty.

Using simple tools and materials that reflected their environment wood, bamboo, stones, clay, iron, bones, tusk, cotton, nettle and bark fibers, natural dyes and even feathers into their art, the practice of headhunting and feasts of merit and the *morung* system stimulated many artistic productions such as colorful textiles, woodcarvings, ornaments, weapons, body tattoos, songs and dances.

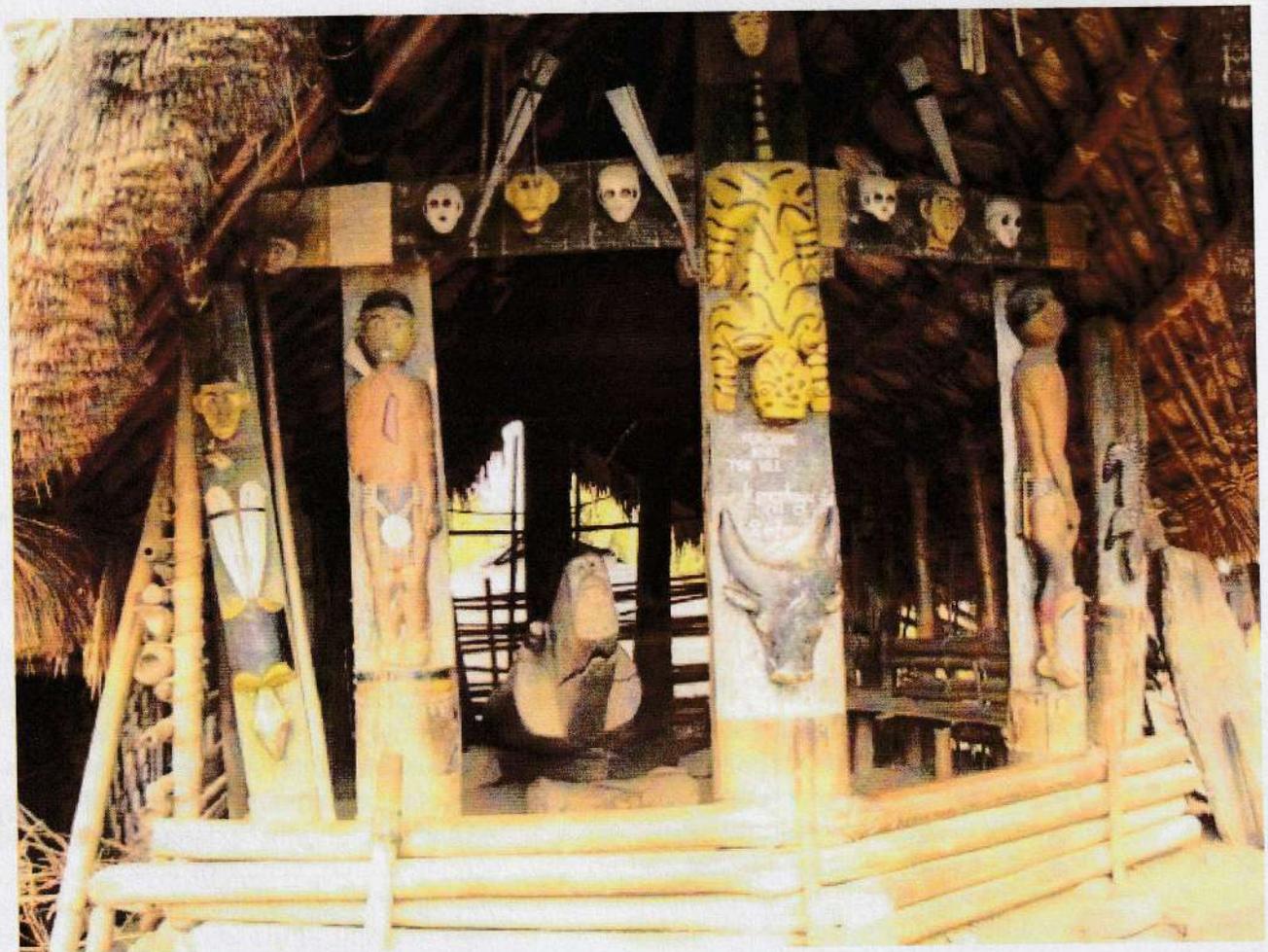


Fig.3 Carvings of human figures, *mithun* head, hornbill and tiger in front of the Lomou *morung* at Tuensang village, 2011

## Textiles

Among the Nagas it was not only the social identity of the weaver which added values and meaning in the cloth but the rareness of the materials, the amount of labour invested in their production and the symbolic meanings of the design motifs. The most prominent colour for warrior's cloth is red. Red signifies enemies' blood and therefore bravery. Another prominent colour frequently used is black as a background or in combination with other colours such as green, orange, yellow and blue. Many of the skills needed for collecting and extracting natural dyes such as dark blue colour from indigo, red from a tree which the Chang Naga called *lungpai*, the bark of which is crushed with the twigs of a wild creeper called *wailou* and weaving the various intricate designs required time and patience and a nice coordination of hand and eye. Goat's and dog's hair dyed red and black, beetle wings, bird feathers, yellow orchid stem, cowrie shells and glass beads were rare and precious. And it was stitched on or woven into the cloth worn by warriors and wealthy individuals.

The most crucial role for textiles for the Nagas was in identifying the gender, social status and specific regional locations of the wearer. For example, among the Lotha Nagas ordinary man at Yikhim, Changsü and Riphyin villages wore a plain white cotton cloth called *Sünli*. (Renchen Women Welfare Society 2010). The



Fig.4 Circles of cowry shells sewn to the surface of a black shawl and outline of human figure indicating the martial achievements of the wearer.

yarn used for these plain weave cloths were cotton, nettle fibre and wild jute which was sometimes dyed dark blue with indigo. Circles of cowrie shells sewn to the surface of a basic black shawl are common to the central and eastern Naga tribes such as the Ao, Chang, Khamniungan Sangtam, Sema, Phom and Yimchungrü. This shawl is six foot long by four foot wide and has 53 rectangular red designs, each measuring about four centimeters long by three and half centimeters

wide on a black background; circles of cowrie shells are stitched on to the shawl. Sometimes outline of the human figure and the V-shaped chest tattoo are added indicating the martial achievements of the wearer. In addition to cowrie shells, tassels on shawls with red or black dyed dog's or goat's hair, yellow orchid stem and beetle wings, announced the wealth of the wearer.

Feasting the village cannot take place without the cooperation and contribution of the wife who not only did the bulk of agricultural work but she also has to pound the rice and brew the beer for the feast and weave the ceremonial shawl. For her contribution she acquires the right to share in the high status gained by her husband. Wives and daughters of Sangtam Naga can wear a shawl with diamond shaped patterns symbolizing the grains of rice used in feasting the villagers and also the X-shaped pattern symbolizing the pounding mortar and pestle for the rice pounded to make rice beer.

## Ornaments



Nagas are closely related to their environment and natural materials like bamboo, cane, orchid stems, stone, glass, red dyed goat's hair, claws, bones, teeth, horns, sea-shell beads, white Job's tears, natural dyes, feathers and even beetle wings found their way into their ornaments. Some ornaments can be worn by anyone, but most ornaments have particular meaning and they are therefore 'powerful' (Jacobs 1990:103), and the right to wear them is strictly controlled. The tiger's tooth, claws and the boar's tusk are considered to be of high value and the owner of it is formidable, respected and feared. Apart from the husband, the wife also gains the right to wear certain ornaments. Hornbill feathers are also worn by wives and daughters of men who had done the *mithun* sacrifice and among the Konyak the daughter of a warrior chief can wear the feather on her headdress.

Fig.5 A conical ceremonial headgear made of bichromatic weave done in red dyed cane with yellow orchid stem and red dyed goat's hair, Tuensang, 2007



Fig.6 Khamniungan warrior of note wears a spike brass armband called *khiaptso*.

## Weapons

In a war within *khels* the Khamniungans like the Tangkhuls and the Lothas were restricted from using actual *daos* and spears. They were allowed to use wooden sword or club for hand to hand combat, a sturdy cane helmet with the inside cushioned with nettle fiber cloth to protect the head, a bamboo shield, arm-guard and leg-guard to fend off blows to the body. Successful warriors could decorate their *dao* (a kind of long knife) handle and *dao* holder, and the spear with red dyed cane and goat's hair and yellow orchid stem. The shields used in war were usually made of buffalo, rhinoceros or elephant hide. Angami warriors' shields of cane matting are decorated with red dyed goat's hair and vertical line of human heads made of bearskin. Sometimes the shields were covered with leopard, bear and tiger skin. Even drinking cups, smoking pipes, *panji* (bamboo splint) basket of warriors were elaborately decorated. The Konyak in addition to incised and carved wooden and bone hairpins, brass and wooden representations of human heads worn as chest ornaments, carries a hip basket known as (*dangsa*), richly decorated with carved wooden human head, monkey skulls, boars' tusks and cane balls to indicate the warrior status.



Fig.7 Warrior's shield made of buffalo; rhinoceros or elephant hide and decorated with grass tassels and red dyed goat's hair.

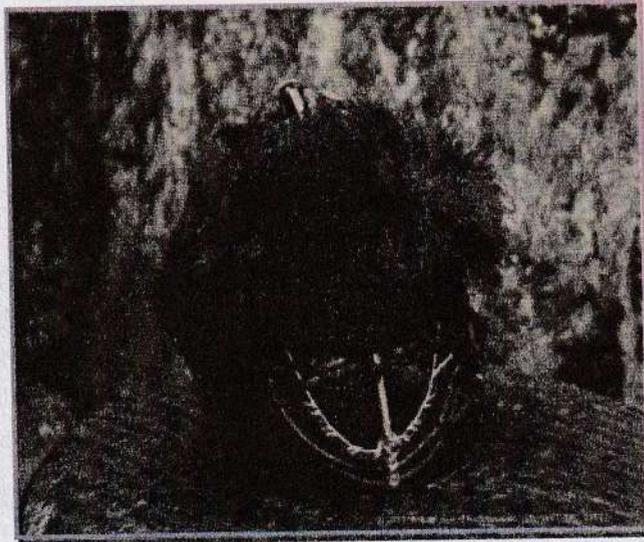


Fig.8 a sturdy war helmet made of seasoned cane, strengthened by an addition of nettle fiber twisted into a stout cord and wound in a continuous spiral around the hat for extra protection. On the inside strips of nettle fiber cloth are sewn on to the frame acting as a cushion to the head and decorated with pig's bristles and bear's fur, Tuensang, 2007

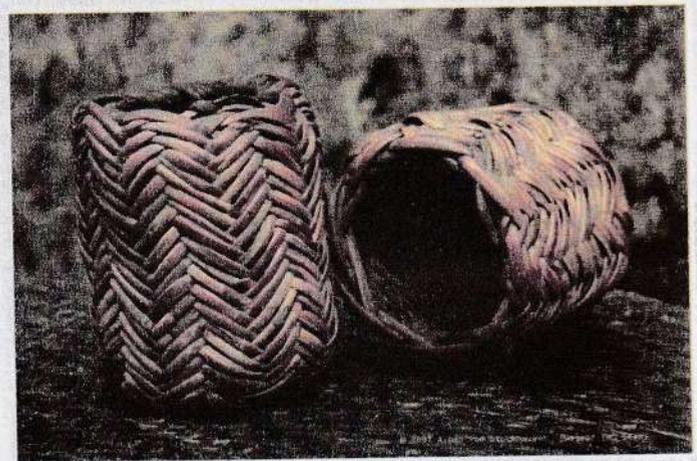


Fig.9 an armguard made of seasoned cane, Tuensang 2007

## Tattooing

Tattooing was confined to the northern and central Nagas such as the Chang, Sangtam, Ao, Phom, Yimchungrü, Khiamniungan and the Konyak. As with any other ornaments tattooing serves to make statements about membership of groups and status within groups (Jacobs 1990:112). Tattoos on arms and chest with human figures and various zigzag patterns are associated not only with headhunting but it also enabled a man to tell a friend from a foe, particularly when a number of villages had combined to attack another village.

The V-shaped tattoo with slight variations on the chest of Chang, Khiamniungan, Phom and Yimchungrü men are commonly known as a 'tiger chest' indicating that the wearer could "act like a tiger and kill his enemies" (Saul 2005:36). Both men and women tattoo among the Khiamniungan, Yimchungrü, Phom and the Chang but the Ao, Sangtam and some Tangkhul Nagas only tattoo their women.

Among the Chang Nagas, woman's facial tattoos represent her clan. For instance, The Ongh, Lomou, Honghang and Khangshou clan have identical forehead tattoo known as *khüngbub* which consist of a lozenge shape that had its sides extended at the top and bottom. The tattoo on the chin known as *kaobiüb* differs from clan to clan. Ongh woman has three wavy horizontal lines on her chin whereas the Lomou has an X-shaped tattoo between two simple vertical lines. But both has the same chevron shape > to the corner of their mouth. Honghang woman chin tattoo is identical to the Lomou and Khangshou chin tattoo but the Khangshou chin tattoo is enclosed within a chevron > shape (Interview with Bümütyano, Tuensang village, 2010).

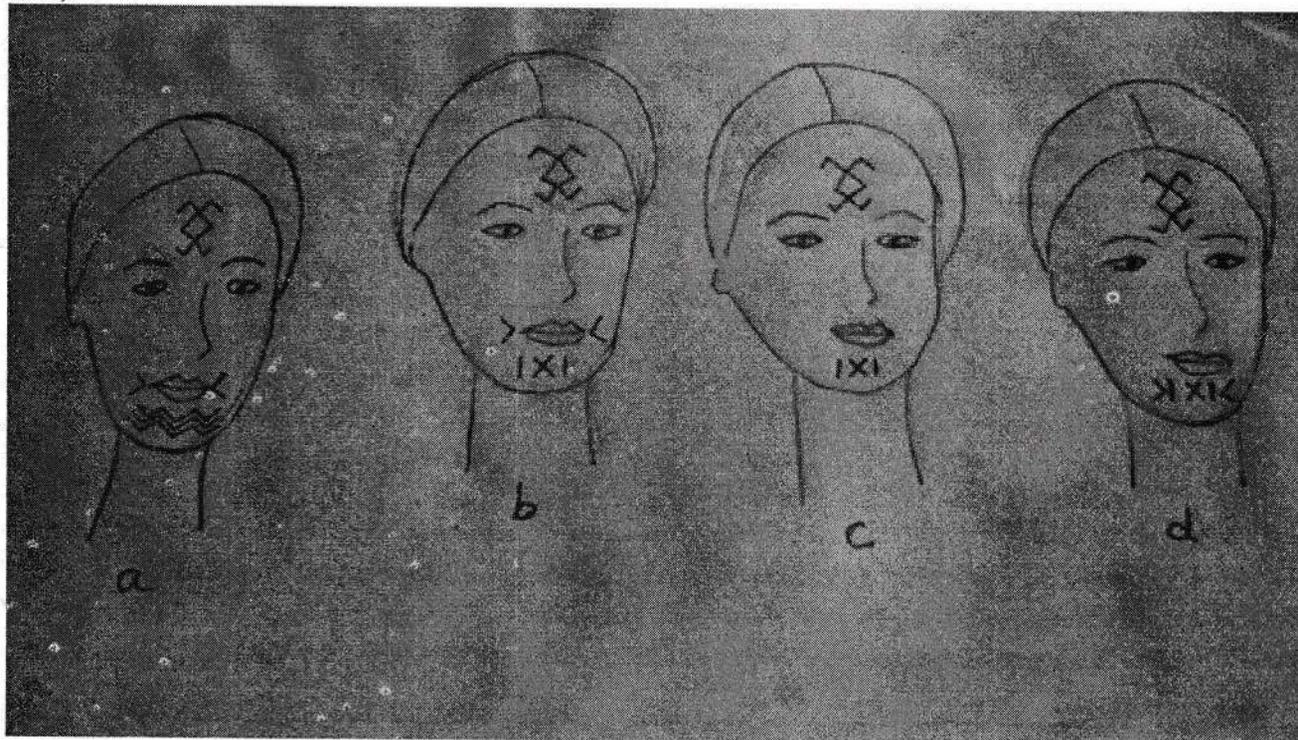


Fig.10 The four different facial tattoo of Chang woman (1) Ongh, (2) Lomou (3) Hongang (4) Khangshou, Tuensang, 2011

### House decorations

Certain decorations and additions to Naga houses advertise the wealth of the owner. One of these decorations among northern and central region is the actual buffalo and *mithun* skulls adorning the front porch of the house and the vertical tassels of thatching grass hanging down at the front gable and bamboo pole projecting from the roof with tassels. Among the Phom Nagas, the man who has performed the fourth series in the feasts of merit can put up an X-shaped projection of split bamboo along the ridge of his house roof and with the performance of the last feast known a *hamniman* he can decorate his field house with woodcarvings.

In some Khamniungan villages such as Pathso, Noklak, Pusho and Wei and in Yimchungrü villages such as Mimi in Longpfuri area, feasts givers roofed their houses with slates. The Lothas and the Rengmas also erect stone monoliths to commemorate the giving of feasts. The Tangkhul Naga donor of feasts presents the best example of decorated individual house. The door and the walls of the house are elaborately carved in low relief of conventionalized *mithun* heads and life size human figures and rows of human heads in high relief.

At times circles alternating with what looks like an enemy's teeth stand between the stylized *mithun* heads on the panel of the house. Similarly the Angami feasts giver decorate the front of his house with painted or carved representations of man and woman, *mithuns*, human heads, hornbill features, spears, *daos*, shield and concentric circles.

The decorations and woodcarvings in private houses were "a symbol of prestige, honour and influence. By conferring high social status on such men the society was providing incentives and motivations to the others to become powerful and wealthy, Such motivations and recognition was essential for the existence of the tribes" (Lotha 1998:21). Decorations on the *morung* also reflected the fearlessness, bravery and wealth of the men in the village. For example, in Tuensang village, the cane and bamboo basket balls hanging from the eaves of the *morung* symbolized enemies' heads, while the V- shaped projections of bamboo splints along the ridges of the *morung* roofs and the three wooden imitations of hornbill feathers in front of the *morung* symbolizes the wealth of the *morung* members, and the grass fringes referred to as *morung* necklace and a grass tassel called *morung* bell suspended on cane ropes hanging from the middle of the gable signifies the youthfulness, beauty and virility of the *morung* members.

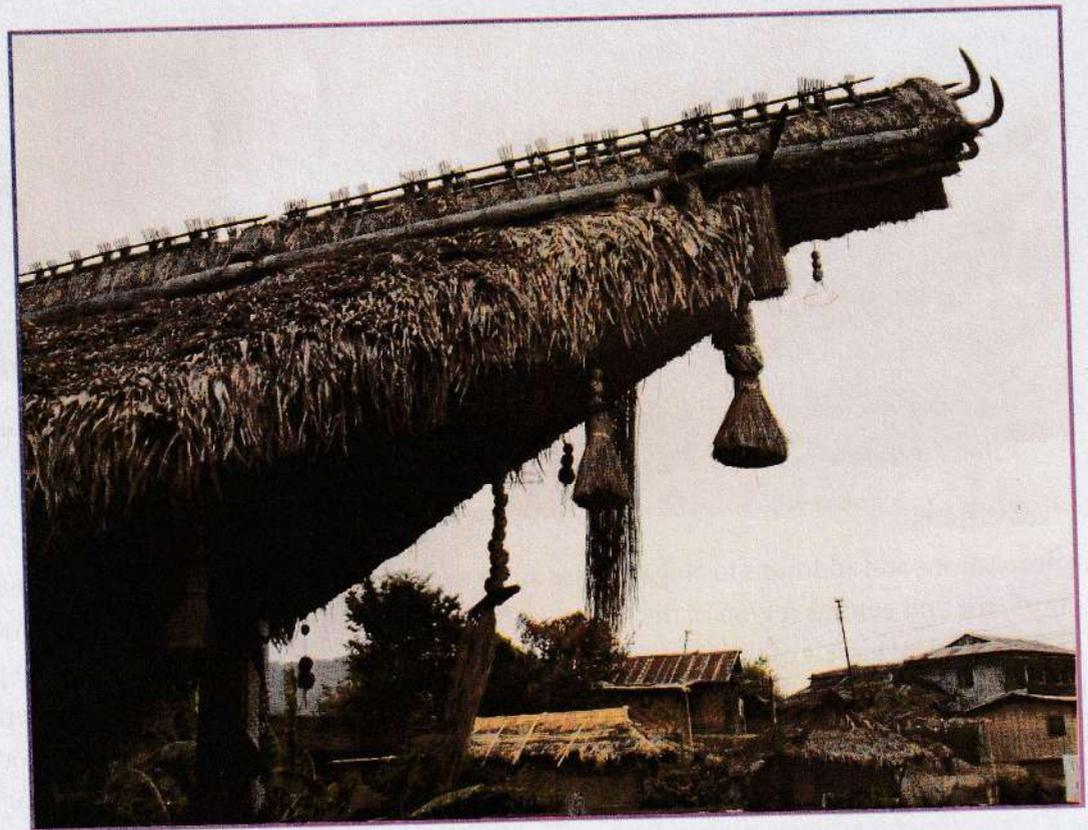


Fig.11 Decorations on the *morung* reflects the fearlessness, bravery and wealth of the men in the village, Tuensang village, 2007

## Conclusion

Much of Naga art consist of perishable material and in the past, one of the main concerns for every Naga village was the protection against frequent enemy attacks and the spread of disastrous fires and the rigid observations of the rituals and taboos surrounding certain arts, which discouraged the artists from devoting much of their time to produce lasting art forms. In spite of the difficulties and insecurities of life, Nagas' Contemporary life styles have brought changes to all Naga villages. Some Naga artisans has taken up jobs working as carpenters, schoolteachers, entrepreneurs, manual laborers such as mechanics and construction workers. Naga artisans have adopted to meet the demands of modern life and continue to be tough and flexible holding the fabric of Naga culture. Providing not only technical and financial assistance but also teaching them the awareness and appreciation of the uniqueness of their art, will build up their self-esteem, and also improve their quality of life and generate self employment and independence. In order for Naga art to persist, a mere nostalgic renewal of traditional skills and knowledge of the arts will not ensure a vibrant future. Introduction of traditional skills and knowledge such as woodcarving, textile and basket weaving, metalwork, pottery along with other cultural expressions through fusion music, theater, drama, literature, paintings, dances, film making to future generations such as schools and colleges will generate interest in students who are inclined towards the art.

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# ABNORMALITIES IN THE SEX CHROMOSOMES OF MAN

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**Abstract:** Sex chromosome abnormalities are gender specific. Normal males inherit an X and a Y chromosome while females have two Xs. A single Y chromosome is sufficient to produce maleness while its absence is necessary for femaleness. Female abnormalities are due to variations in the number of X chromosomes. Male abnormalities are the result of irregular numbers of either the X or the Y chromosome or both.

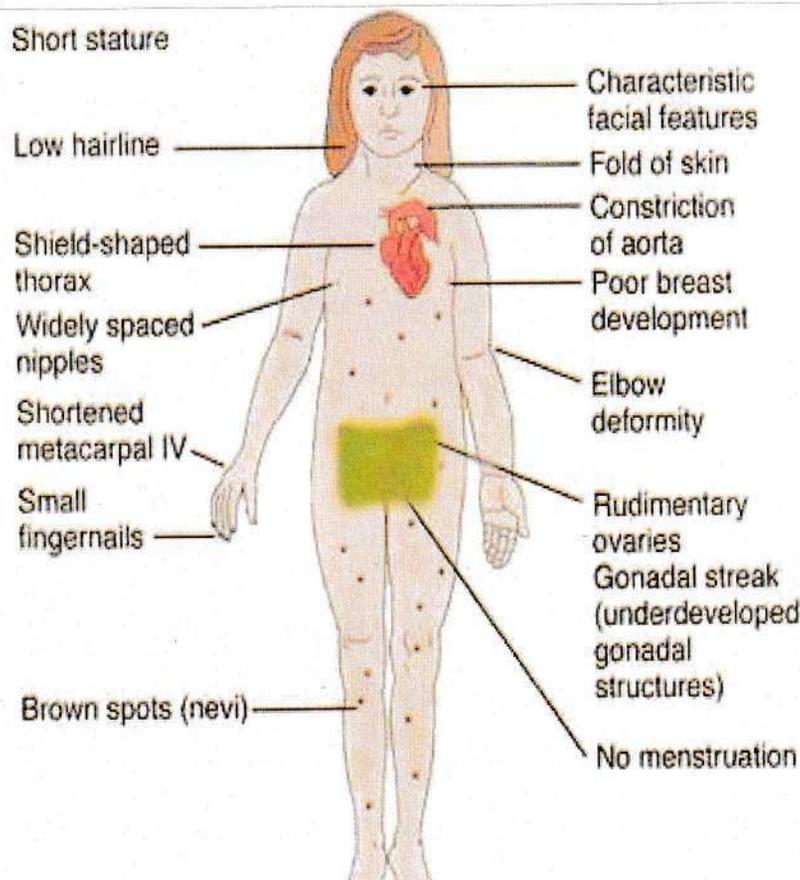
**Keywords:** Turner syndrome, triple X syndrome, klinefelter syndrome, XYY syndrome

## Introduction:

Two cytologist, J.H. Tjio and Levan (1956) of Sweden showed that the normal number of chromosomes of man is 46. Later several investigators recorded that, some individuals with chromosomes below or above 46 show physical, mental and reproductive abnormalities.

An increase or reduction of sex chromosomes in the normal complement of female (XX) and male (XY) results into a chromosomes abnormality in man and this condition is called the syndrome.

Some of the abnormalities commonly observed in the human population are discussed below:



## Female Sex Chromosome Abnormalities:

### 1. Turner syndrome

**Turner** H.H, in 1938 first described this individual phenotypically females with 45(44+XO) somatic numbers or chromosomes. This monosomic condition is due to missing of "Y"-chromosomes; i.e. when females inherit only one X chromosome their genotype is XO (i.e., monosomy X). If they survive to birth, these girls have abnormal growth patterns.

### **The symptoms of Turner syndrome vary depending on the age of the girl or woman affected.**

Babies born with Turner syndrome often have swollen hands and feet, which is caused by an accumulation of excess fluid in the surrounding tissues. This is known as lymphoedema, and it usually clears up soon after birth.

Other symptoms that may develop before birth include:

- thick neck tissue
- swelling of the neck (cystic hygroma)
- being a small baby

### **Common characteristics of Turner syndrome**

The two most common characteristics of Turner syndrome are:

#### **(a). Short height**

Babies with Turner syndrome usually grow at a normal rate until three years of age. After this age, they will have a lower-than-average growth rate.

At puberty, a girl with Turner syndrome will not have the normal growth spurt. Girls usually begin puberty between 8-14 years of age. Without treatment, a girl with Turner syndrome will grow to around 136-147cm (4ft 6in to 4ft 10in) tall. On average, adult women with untreated Turner syndrome are 20cm (8in) shorter than adult women without the syndrome. However treatment with growth hormones can reduce this difference.

#### **(b). Non-functioning ovaries**

Ovaries are the pair of reproductive organs in females that produce eggs and sex hormones. During puberty, a girl's ovaries usually begin to produce the sex hormones estrogen and progesterone.

However, most girls with Turner syndrome will not produce these sex hormones which means that:

- unlike other girls, they may not start their monthly periods naturally
- they may not fully develop breasts
- they may be infertile (unable to have a baby)

Even though many women with Turner syndrome have undeveloped ovaries and are infertile, with hormone replacement therapy (HRT) their vagina and womb may develop normally. This will mean they are able to have a normal sex life. Girls with Turner syndrome also usually have normal pubic hair growth.

About three out of every 10 girls with Turner syndrome experience some physical changes during puberty, and a very small number may be able to become pregnant naturally.

### **(c). Other symptoms**

As well as short height and non-functioning ovaries, there are many other symptoms or characteristics that can affect girls and women with Turner syndrome. Some of these are listed below.

#### **(i). Changes in appearance**

particularly short, wide neck (webbed neck)

- broad chest and widely spaced nipples
- arms that turn out slightly at the elbows
- low hairline
- mouth abnormalities, which can cause problems with the teeth
- large number of moles
- small, spoon-shaped nails
- a short fourth finger or toe

#### **(ii). Eye symptoms**

- eyes that slant downwards
- droopy eyelids (ptosis)
- a squint (strabismus)
- lazy eye (amblyopia)
- cataracts cloudy patches in the lens (the transparent structure at the front of the eye)
- short-sightedness (myopia)

#### **(iii). Ear symptoms**

- low-set ears
- reoccurring middle ear infections (otitis media) and glue ear during early childhood
- hearing loss which can occur in later life, is often more severe and develops earlier than the normal age-related decline in hearing

#### **(iv). Learning difficulties**

Most girls with Turner syndrome have good language and reading skills. However, some have behavioral, social and specific learning difficulties that are often overlooked by doctors, and can cause the parents great anxiety. They include:

##### **(a). Social intelligence**

About a third of girls with Turner syndrome have problems understanding social relationships due to the way their brain develops. Affected girls may find it difficult to sustain friendships, and in later life they may experience relationship problems both at home and at work.

Girls and women with Turner syndrome tend to be anxious and eager to please, which can make them vulnerable because they may be naive or lack experience in dealing with particular situations. As adults, many women with Turner syndrome prefer to work with children.

### **(b). Spatial awareness and numeracy**

Spatial awareness is the ability to understand where you are in relation to objects or other people. More than 8 out of 10 females with Turner syndrome have difficulty understanding spatial relationships. This may cause problems when learning to drive or when following directions on a map.

A similar number have some degree of difficulty learning or understanding math's. This is known as dyscalculia. Girls may find difficult to understand simple mathematical rules, and their concept of numbers may not be well developed. School teachers may not fully appreciate the problem, which can cause considerable stress.

### **(c). Attention and hyperactivity problems**

Typically, girls with Turner syndrome will go through a phase in childhood that involves:

- physical over activity, such as constant fidgeting and restlessness impulsive acts, such as breaking rules or having no sense of danger
- having a short attention span and being easily distracted

Attention and hyperactivity problems usually begin when the girl is a toddler. However, they may not be a serious problem until the girl starts school at four or five years of age and they may have difficulty settling in class.

These may be symptoms of attention deficit hyperactivity disorder (ADHD), but medical (stimulant) treatment for the condition may not be as effective or may not work in cases of Turner syndrome.

The physical hyperactivity usually reduces around the time the girl starts secondary school at 11 years of age. However, problems with inattention can sometimes last longer, until the girl is a teenager.

## **2. Triple-X syndrome.**

**The** irregular combination of X chromosomes has been recognized among females with X chromosomes aberration. In women who inherit three X chromosomes--their genotype is XXX or more rarely XXXX or XXXXX. As adults, these "super-females" or "metafemales", as they are sometimes known, generally are an inch or so taller than average with unusually long legs and slender torsos but otherwise appear normal. They usually have normal development of sexual characteristics and are fertile but tend to have some ovary abnormalities that can lead to premature ovarian failure.

They may have slight learning difficulties, especially in speech and language skills, and are usually in the low range of normal intelligence (especially the XXXX and XXXXX individuals). They frequently are very tall in childhood and tend to be emotionally immature for their size. This sometimes results in teachers and other adults labeling them as troublemakers because they expect more maturity from bigger girls. However, they are usually as emotionally mature as other girls of their age. None of these traits prevent them from being socially accepted as ordinary adult women. Individuals who are genetic mosaics (XX/XXX) have less noticeable symptoms. Triple-X syndrome is less rare than Turner syndrome, and so little is known about it. The frequency is approximately 1 in 1,000 female infants and it occurs more commonly when the mother is older.

### Symptoms and Signs

Female person, who have been diagnosed with triple x syndrome, manifest the following signs and signs and symptoms:

- Tall stature
- Epicanthal fold or to vertical skin folds that may cover the eyes' inner corners
- Weak muscle tone
- Delayed development of motor skills such as language and speech
- Learning difficulties like dyslexia
- Proportionately smaller head size or microcephaly
- Introvert
- Enamel Hypoplasia
- Kyphosis
- Small mandible
- Low weight in comparison with their height
- Lordosis
- Mental retardation
- Ovarian failure
- Posteriorly rotated ears
- Weak muscle tone
- Menstrual irregularities
- Having difficulty with interpersonal relationships
- Infertility
- Increased width between the persons eyes

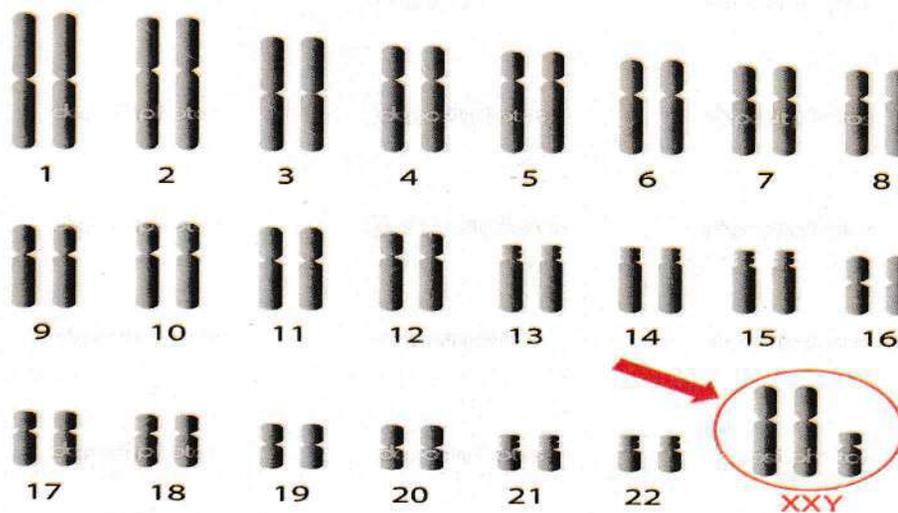
The signs and symptoms mentioned above, varies from one person to another.

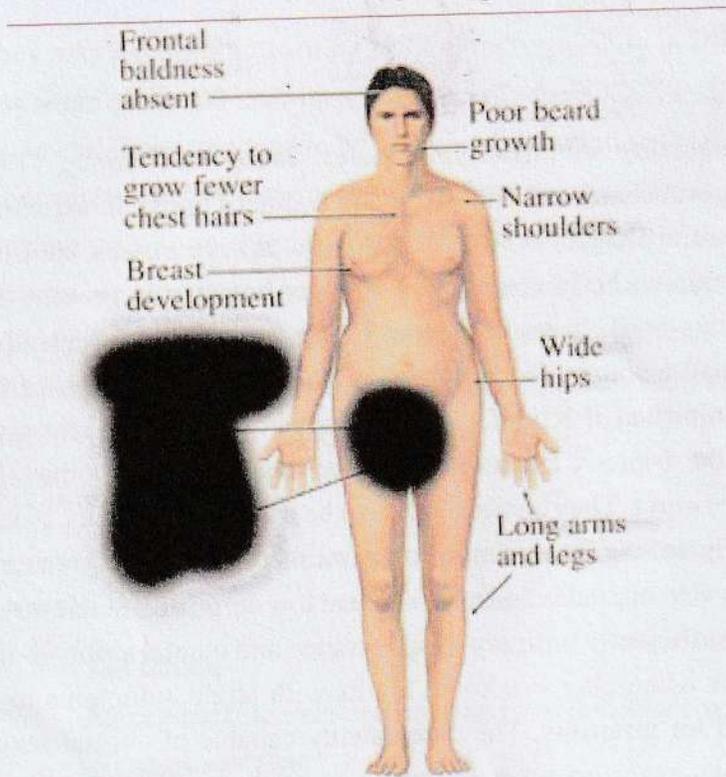
## Male Sex Chromosome Abnormalities.

### 1. Klinefelter syndrome.

In 1952 H.F Klinefelter, reported this abnormality in phynotypic males. Jacop and Strong (1959) demonstrated that these individual have 47 chromosomes i.e. Trisomy (XXY). Inherit one or more extra X chromosomes--their genotype is XXY or more rarely XXXY or XY/XXY mosaic. In severe cases, they have relatively high-pitched voices, asexual to feminine body contours as well as breast enlargement, and comparatively little facial and body hair. They are sterile or nearly so, and their testes and prostate gland are small. As a result, they produce relatively small amounts of testosterone. The feminizing effects of this hormonal imbalance can be significantly diminished if Klinefelter syndrome boys are regularly given testosterone from the age of puberty on. Like triple-X females (described above), many Klinefelter syndrome men are an inch or so above average height. They also are likely to be overweight. They usually have learning difficulties as children, especially with language and short-term memory. If not given extra help in early childhood, this often leads to poor school grades and a subsequent low self-esteem. However, most men who have Klinefelter syndrome are sufficiently ordinary in appearance and mental ability to live in society without notice. It is not unusual for Klinefelter syndrome adults with slight symptoms to be unaware that they have it until they are tested for infertility. They are usually capable of normal sexual function, including erection and ejaculation, but many, if not most, are unable to produce sufficient amounts of sperm for conception. Klinefelter syndrome males with more than two X chromosomes usually have extreme symptoms and are often slightly retarded mentally. Men who are mosaic (XY/XXY) generally have the least problems. There is no evidence that Klinefelter syndrome boys and men are more inclined to be homosexual, but they are more likely to be less interested in sex. They have a higher than average risk of developing osteoporosis, diabetes, and other autoimmune disorders that are more common in women. This may be connected to low testosterone production. Subsequently, regular testosterone therapy is often prescribed. The frequency of Klinefelter syndrome has been reported to be between 1 in 500 and 1 in 1000 male births. This makes it one of the most common chromosomal abnormalities. Males with Down syndrome sometimes also have Klinefelter syndrome. Both syndromes are more likely to occur in babies of older mothers.

### Klinefelter Syndrome





Klinefelter syndrome is a disorder that affects only males. Males normally have an X chromosome and a Y chromosome (XY). But males who have Klinefelter syndrome have an extra X chromosome (XXY), giving them a total of 47 instead of the normal 46 chromosomes. The syndrome can affect different stages of physical, language and social development.

Not all males with the condition have the same symptoms or to the same degree. Symptoms depend on how many XXY cells a man has, how much testosterone is in his body, and his age when the condition is diagnosed.

As babies, many XXY males have weak muscles and reduced strength. They may sit up, crawl, and walk later than other infants. After

about age four, XXY males tend to be taller and may have less muscle control and coordination than other boys their age. As XXY males enter puberty, Klinefelter syndrome patients are often tall and usually don't develop secondary sex characteristics, such as facial hair or underarm and pubic hair. Due to extra X chromosomes, it adversely affects testicular growth, and this can result in smaller than normal testicles. This leads to lower production of the sex hormone testosterone. Klinefelter syndrome also cause reduced muscle mass, reduced body hair, and enlarged breast tissue.

Some affected individuals also have genital differences including undescended testes (cryptorchidism), the opening of the urethra on the underside of the penis (hypospadias), or an unusually small penis (micropenis).

By adulthood, XXY males look similar to males without the condition, although they are often taller. They are also more likely than other men to have certain health problems, such as autoimmune disorders, breast cancer, vein diseases, osteoporosis, and tooth decay.

XXY males can have normal sex lives, but they usually make little or no sperm. Between 95 percent and 99 percent of XXY males are infertile because their bodies don't make a lot of sperm. Many people with this disorder have no idea they have it until they hit puberty or try to have children. When men with Klinefelter syndrome try to have children, most discover that they are sterile because they cannot produce sperm. Learning disabilities (not categorized as mental retardation) are also a common problem for them. Patients may have trouble using language to express themselves. They tend to be quiet, sensitive, unassertive and have trouble fitting in, but personality characteristics vary among affected individuals.

Some people with features of Klinefelter syndrome have more than one extra sex chromosome in each cell (for example, 48,XXX $\text{Y}$  or 49,XXXX $\text{Y}$ ). These conditions, which are often called variants of Klinefelter syndrome, tend to cause more severe signs and symptoms than classic Klinefelter syndrome. In addition to affecting male sexual development, variants of Klinefelter syndrome are associated with intellectual disability, distinctive facial features, skeletal abnormalities, poor coordination, and severe problems with speech. As the number of extra sex chromosomes increases, so does the risk of these health problems.

Some people with features of Klinefelter syndrome have the extra X chromosome in only some of their cells; in these individuals, the condition is described as mosaic Klinefelter syndrome (46,XY/47,XX $\text{Y}$ ). Individuals with mosaic Klinefelter syndrome may have milder signs and symptoms, depending on how many cells have an additional X chromosome.

Klinefelter syndrome affects 1 in 500 to 1,000 newborn males. Most variants of Klinefelter syndrome are much rarer, occurring in 1 in 50,000 or fewer newborns.

### **Diagnosis**

The only way to confirm the presence of an extra chromosome is by a karyotype test. A health care provider will take a small blood or skin sample and send it to a laboratory, where a technician inspects the cells under a microscope to find the extra chromosome. A karyotype test shows the same results at any time in a person's life.

A pregnant woman may also undergo chorionic villus sampling or amniocentesis. These types of prenatal testing carry a small risk for miscarriage and are not routinely conducted unless the woman has a family history of chromosomal disorders, has other medical problems, or is above 35 years of age.

### **Treatments**

It is important to start treatment as early as possible. With treatment, most boys grow up to have normal sex lives, successful careers and normal social relationships. Treatments include: Educational services, Physical, speech and occupational therapy, Medical treatments including testosterone replacement therapy which is the best way to treat this disorder. Teenagers are typically given testosterone injections to replace the hormone that would normally be produced by the testes. Synthetic testosterone works like natural testosterone - it builds muscle and increases hair growth.

#### **(2). XYY syndrome.**

Males inherit an extra Y chromosome--their genotype is XYY. As adults, these "super-males" are usually tall (above 6 feet) and generally appear and act normal. However, they produce high levels of testosterone. During adolescence, they often are slender, have severe facial acne, and are poorly coordinated. They are usually fertile and lead ordinary lives as adults.

Many, if not most, are unaware that they have a chromosomal abnormality. The frequency of XYY syndrome is not certain due to statistical differences between different studies. It may be as common as 1 in 900 male births to as rare as 1 in 1500 or even 1 in 2,000. XYY syndrome is also referred to as Jacobs syndrome. XYY individuals are tall, sub-normal in intelligence (with IQs ranging from 80-95) and anti social.

Early studies of XYY syndrome done in European prisons initially led to the erroneous conclusion that these men were genetically predisposed to antisocial, aggressive behavior, below average intelligence, and homosexuality. Contributing to the early view that XYY syndrome men have serious personality disorders was the case of Richard Speck. In 1966, he coldly murdered 8 nurses in a Chicago dormitory. At his trial, his lawyer claimed that he was innocent due to uncontrollable urges caused by his XYY genotype. This novel appeal was akin to claiming insanity or severely diminished mental competence. The jury was not convinced and found him guilty of murder. He was sentenced to life in prison where he eventually died. In fact, Richard Speck did not have an XYY genotype. However, some researchers suggest that the high testosterone levels of XYY men can make them somewhat more prone to violence and that this may cause higher rates of wife beating.

### **Symptoms**

The list of signs and symptoms of 47 XYY syndromes includes the 14 symptoms listed below:

- Tall stature
- Learning disability
- Delayed speech
- Delayed language skills
- Developmental delays
- Behavioral problems
- Large teeth
- Weakness
- Poor fine motor coordination
- Prominent glabella
- Asymmetrical face
- Long ears
- Sunken chest
- Severe adolescent nodulocystic acne

**Conclusion:**

<b>Sex Chromosome Abnormalities</b>			
<b>Female Genotype</b>	<b>Syndrome</b>	<b>Male Genotype</b>	<b>Syndrome</b>
XX	normal	XY	Normal
XO	Turner	XXY	Klinefelter
XXX	Triple-X (super female)	XYY	XYY (super male)

The chromosomal abnormalities do not transmit the extra chromosomes to their sons or daughter because the extra chromosomes are being mostly eliminated during gametogenesis. When the pregnant women is known to have chance of bearing a child with a genetic defect, it may be desirable to diagnose the condition in the fetus. This can be done by taking some cells from the fetus by drawing a few milliliters of amniotic fluid with the help of a hypodermic needle. This technique is called amniocentesis and is usually performed at 15<sup>th</sup> week of pregnancy to allow enough time for safe abortion if recommended. Antenatal diagnosis, gene therapy, patient therapy is also other means of remedy. All this therapy are to minimize the effect of the genetic defect because it irreversible.

The persons who have genetic defect should not be discriminated by the society but treat them equally in all aspects. If you're a parent, let your baby undergo diagnostic test to know if he has chromosomal abnormalities or none, if he is positive, the best that you can do is to support and give all the attention and care that the child needs.

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# NANOTECHNOLOGY A SCIENTOONIC REPRESENTATION

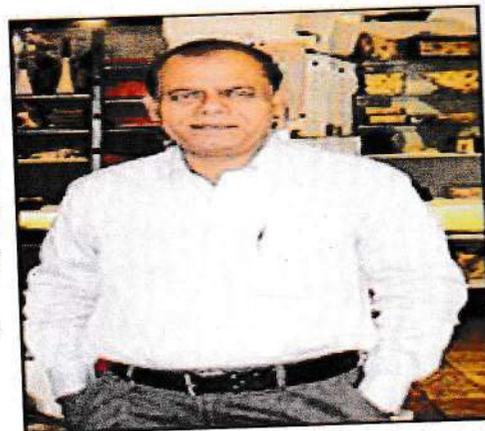
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Department of Physics

**Abstract:** Nanotechnology is a multidisciplinary field which covers a vast and diverse array of devices derived from engineering, biology, physics and chemistry. These devices include nanovectors for the targeted delivery of anticancer drugs and imaging contrast agents. Nanowires, nanorobot, nanoeggs and nanocantilever arrays are among the leading approaches under development for the early detection of precancerous and malignant lesions from biological fluids. These and other nanodevices can provide essential breakthroughs in the fight against cancer. This paper mainly contains Nanotechnology and its 'various' applications with the help of scientoons. And this tells about the history of Nanotechnology and its necessity.

**Keywords:** nanovectors, nanowires, nanoeggs, nanocantilever, nanodevices, scientoons



## ORIGIN OF SCIENTOONS:

In 1988 while delivering a lecture entitled "Development of Drugs & Pharmaceutical Industry in Developing Countries" in an Asian conference held at National University of Singapore, Singapore, **Pradeep K. Srivastava** used few science cartoons in order to make his lecture more informative, interesting and impactful. He coined a new name for such cartoons - SCIENTOONS. The lecture was well received and enabled him win a SILVER MEDAL for the best lecture.

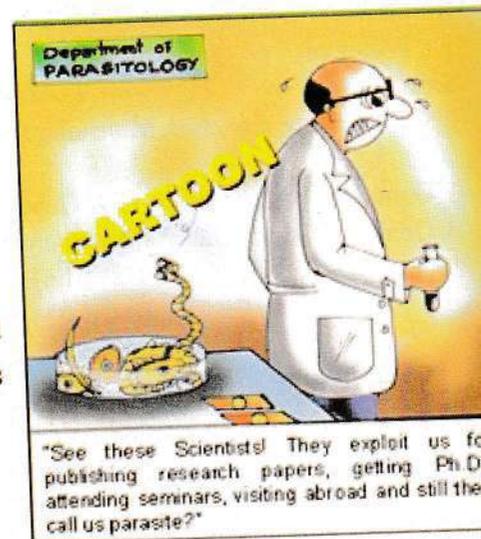
Pradeep K. Srivastava. The Scientoonman

Scientoons are the cartoons, based on science. They not only make you smile and laugh but also provide information about new researches, subjects, data and concepts in a simple understandable and interesting thought provoking way.

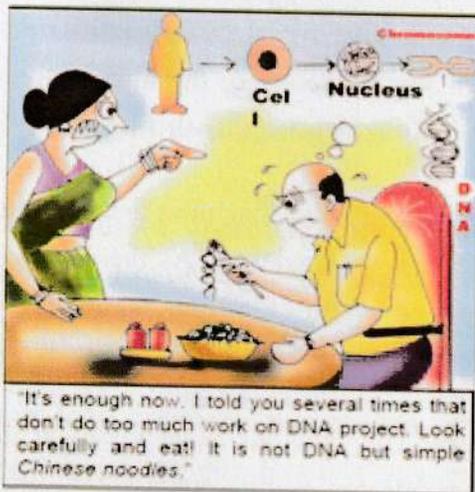
Scientoonics is a new branch of science that deals with effective science communication by using a novel class of science cartoons called scientoons.

## EXPLANATION OF PARASITES USING SCIENTOON

Plants or animals, which live in or on others and draw nutrients from them for their survival, are called Parasites and study of parasites is known as Parasitology.



## EXPLANATION OF DNA USING SCIENTOON

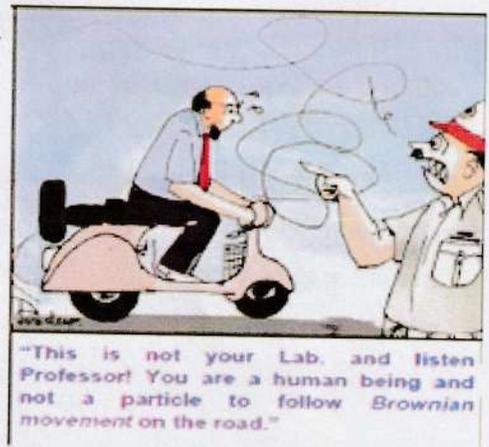


On April 2, 1953, American Biologist James D. Watson and French Physicist Francis H. Crick proposed a double helical structure of DNA (DeoxyRibo Nucleic Acid), which is tightly tightlypacked in the 46 chromosomes in each of the 100 trillion cells of cells of human body. DNA is a hereditary material through which traits are transferred from one generation to another.

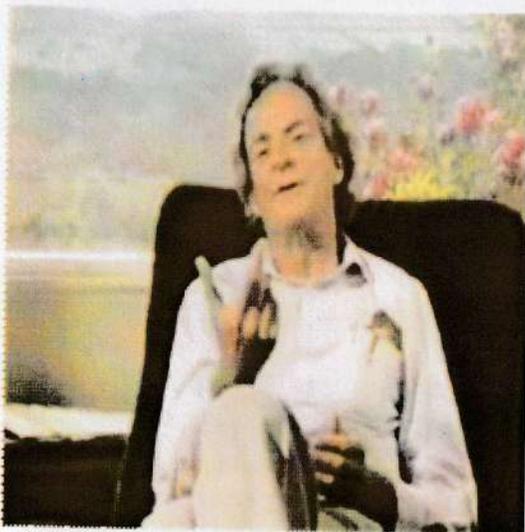
A part of DNA doing specific job in the body is called a gene.

## EXPLANATION OF BROWNIAN MOTION USING SCIENTOON

The ZigZag movement of the suspended particles in a fluid medium is called Brownian Movement.



## There's Plenty of Room at the Bottom



### Richard Feynman

It is a lecture given by physicist Richard Feynman at an American Physical Society meeting at Caltech on December 29, 1959. Feynman considered the possibility of direct manipulation of individual atoms as a more powerful form of synthetic chemistry than those used at the time. The talk is considered to be a seminal event in the history of nanotechnology, as it inspired the conceptual beginnings of the field decades later.

Feynman considered a number of interesting ramifications of a general ability to manipulate matter on an atomic scale. He was particularly interested in the possibilities of denser computer circuitry, and microscopes which could see things much smaller than is possible with scanning electron microscopes. These ideas were later realized by the use of the scanning tunneling microscope, the atomic force microscope and other examples of scanning probe microscopy and storage systems such as Millipede, created by researchers at IBM.

Feynman also suggested that it should be possible, in principle, to make nanoscale machines that "arrange the atoms the way we want", and do chemical synthesis by mechanical manipulation. As the sizes got smaller, one would have to redesign some tools, because the relative strength of various forces would change. Although gravity would become unimportant, surface tension would become more important, Van der Waals attraction would become important, etc.

At the meeting, Feynman concluded his talk with two challenges. The first challenge involved the construction of a tiny motor, the second challenge involved the possibility of scaling down letters small enough so as to be able to fit the entire Encyclopædia Britannica on the head of a pin.

### ORIGIN OF NANOTECHNOLOGY

K. Eric Drexler author of the book *Engines of Creation* (1985) which has advocated nanotechnology as a solution to a vast range of problems of mankind, popularized the word 'NANOTECHNOLOGY' in the 1980's, he was talking about building machines on the scale of molecules, a few nanometers wide motors, robot arms, and even whole computers, far smaller than a cell. Drexler spent the next ten years describing and analyzing these incredible devices, and responding to accusations of science fiction



### DEFINITION OF NANOTECHNOLOGY

Nanotechnology is the design, characterization, production, and application of structures, devices and systems by controlling shape and size at nanometer scale. Nano in Greek means "dwarf". A nanometer is one-billionth of a meter ( $10^{-9}$  m): ten times the diameter of hydrogen atom. The diameter of human hair is, on an average 80,000 nanometer.



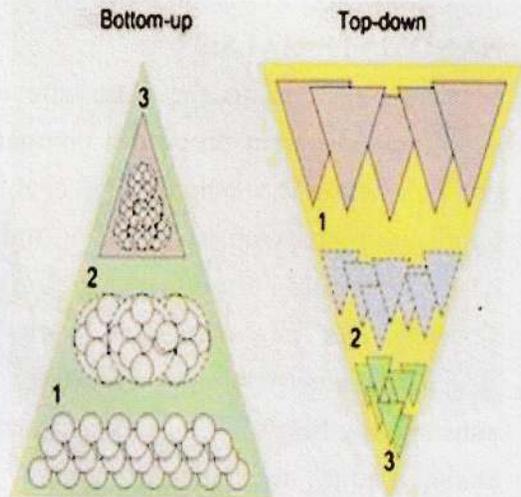
Prof. Imoto is the renowned nanotechnologist. As you are seeing him, he is a totally devoted, dedicated & committed scientist in this area

## BASIC STRATEGIES OF NANOTECHNOLOGY

1. Top-Down Approach
2. Bottom-Up Approach

### 1. Top-Down Approach

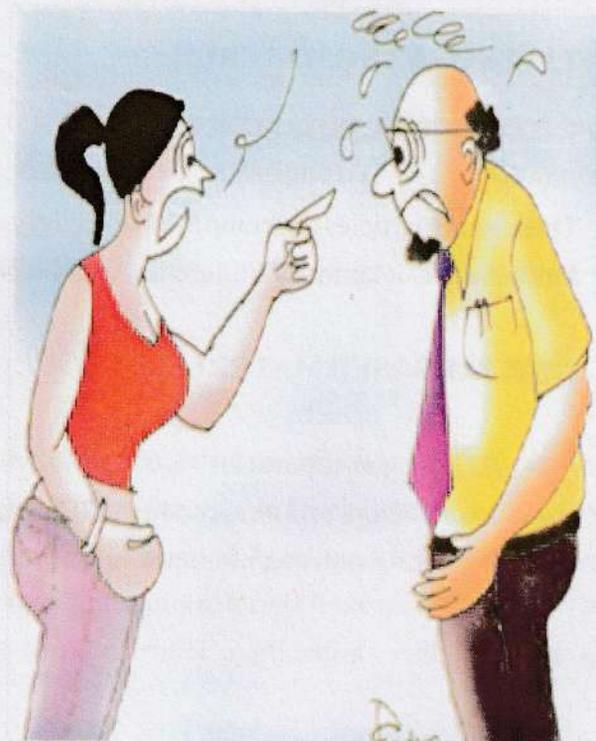
A **top-down** approach (also known as stepwise design or deductive reasoning, and in many cases used as a synonym of *analysis* or *decomposition*) is essentially the breaking down of a system to gain insight into its compositional sub-systems. In a top-down approach an overview of the system is formulated, specifying but not detailing any first-level subsystems. Each subsystem is then refined in yet greater detail, sometimes in many additional subsystem levels, until the entire specification is reduced to base elements. A top-down model is often specified with the assistance of "black boxes", these make it easier to manipulate. However, black boxes may fail to elucidate elementary mechanisms or be detailed enough to realistically validate the model. Top down approach starts with the big picture. It breaks down from there into smaller segments.



### Bottom-Up Approach

A bottom-up approach (also known as inductive reasoning, and in many cases used as a synonym of *synthesis*) is the piecing together of systems to give rise to grander systems, thus making the original systems sub-systems of the emergent system. Bottom-up processing is a type of information processing based on incoming data from the environment to form a perception. Information enters the eyes in one direction (input), and is then turned into an image by the brain that can be interpreted and recognized as a perception (output). In a bottom-up approach the individual base elements of the system are first specified in great detail.

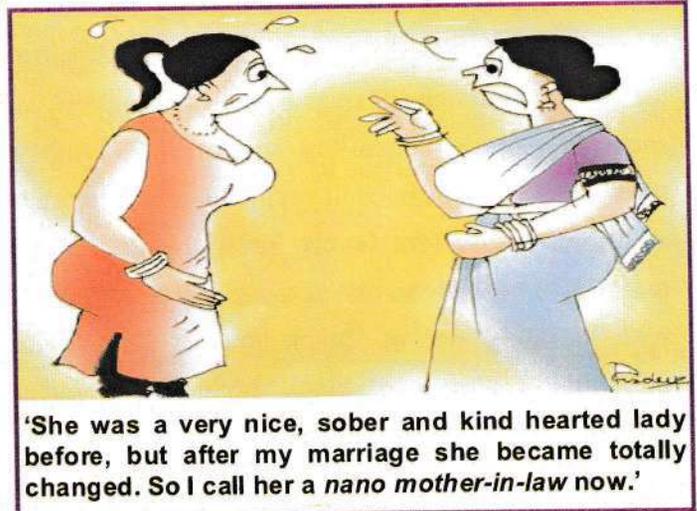
**Bottom-up” and “top -down”? You are such a senior professor, just like my father! It doesn't look nice when you ask me to do it.**



These elements are then linked together to form larger subsystems, which then in turn are linked, sometimes in many levels, until a complete top-level system is formed. This strategy often resembles a "seed" model, whereby the beginnings are small but eventually grow in complexity and completeness. However, "organic strategies" may result in a tangle of elements and subsystems, developed in isolation and subject to local optimization as opposed to meeting a global purpose.

## NANOMATERIALS:

Materials reduced to the nanoscale can suddenly show very different properties compared to what they exhibit on a macroscale, enabling unique applications. At such scales, the ordinary rules of physics and chemistry no longer apply. The materials characteristics such as colour, strength, conductivity and reactivity can differ substantially between the nano-scale and the macro scale. Opaque substances become transparent (copper). Insulators become conductors (silicon). Gold is chemically inert at normal scales, can serve as a potent chemical catalyst at nanoscales. Opaque substances become transparent (copper) Insulators become conductors (silicon). Gold is chemically inert at normal scales, can serve as a potent chemical catalyst at nanoscales.



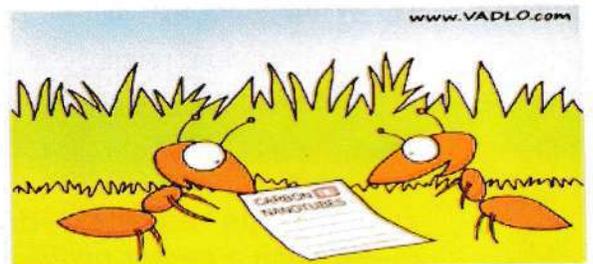
## TYPES OF NANOMATERIALS

### 1. CARBON BASED MATERIALS

These nano particles are composed of entirely carbon taking the form of hollow sphere, ellipsoid, or tube. Ex Fullerenes, Buckminster Fullerenes, Carbon Nano Tubes, etc

### 2. METAL BASED MATERIALS

These nano particles' are generally composed of conductors and semiconductors. Ex Quantum dots, Gold, silver, iron, platinum and titanium nano particles



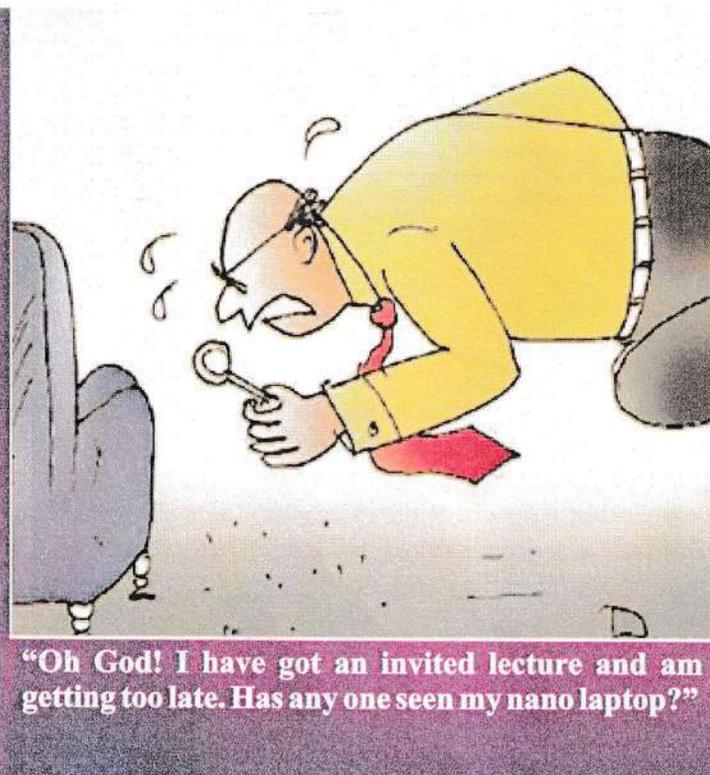
"Finally, we can drink Coke with a straw."

## CARBON NANOTUBES

A tube with nano scale dimensions, which are sheets of graphite rolled up to make a tube. The dimensions are variable. With remarkable tensile strength, carbon nano tubes exhibit varying electrical properties. These can be insulating, semiconducting or conducting.

The properties of carbon nanotubes have caused the researchers and companies to consider using them in several fields

1. Researchers at NASA are combining carbon nano tubes with other materials into composite that can be used to build light weight space craft as carbon nanotubes have the highest strength to weight ratio of known materials.
2. Another property of nanotube is that they can easily penetrate membranes such as cell walls. Nanotubes can function like needle at the cellular level. Medical researchers are using this property by attaching molecules that are attracted to cancer cells to nanotubes to deliver drugs directly to diseased cells.
3. Another interesting property of carbon nanotubes is that their electrical resistance changes significantly when other molecules attach themselves to the carbon atoms. Companies are using this property to develop sensors that can detect chemical vapours such as carbon monoxide or biological molecules. In expensive nanotubes based sensors detect bacteria in drinking water.
4. Nanotubes pacemakers placed in the heart blood vessels could generate electricity for heart function

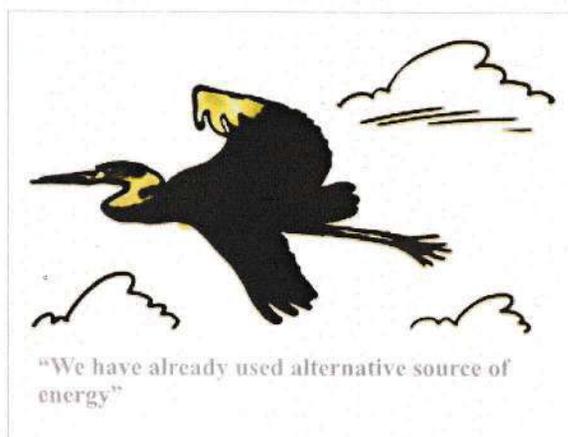


### Application of nanotechnology

Ability of materials to dramatically change their properties at nanoscale has opened up the possibility of making new devices, instruments, consumer goods etc to function in much better way than was possible earlier. Rapid progress in synthesis and understanding of nanomaterials in just a few years has led them to enter the world market in a big way. Various fields in which nanomaterials have already entered or about to enter can be overviewed. Here we shall discuss some of these applications with the help of scientoons.

## 1. HYDROGEN STORAGE

Over the past few decades, the fields of science and engineering have been seeking to develop new and improved types of energy technologies that have the capability of improving life all over the world. In order to make the next leap forward from the current generation of technology, scientists and engineers have been developing **energy applications of nanotechnology**.



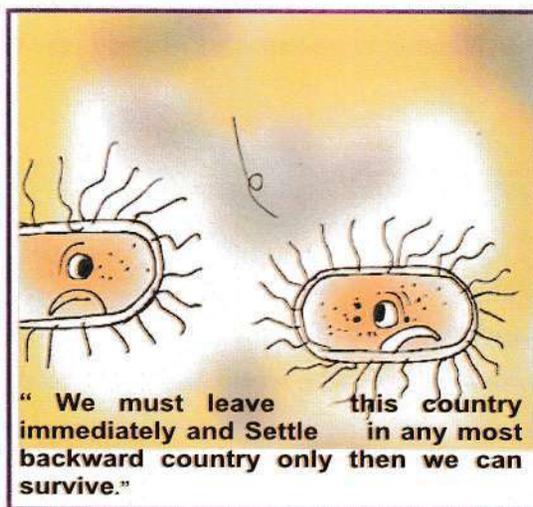
Nanotechnology will play an important role in the field of "Energy". Natural resources like oil, coal, natural gas etc required for all transportation, communication, agriculture, industry, houses and many other human activities are limited and depleting very fast. The future generation will have to look for alternative energy sources. Hydrogen has great potential as an alternative source. Unlike petroleum it can be easily generated from renewable energy sources. It is non-polluting.

Hydrogen as a part of water molecule is abundant on earth. Dissociation of water into hydrogen and oxygen is not a difficult process. Therefore abundant hydrogen fuel can be made available. When hydrogen fuel is burnt, it can only produce harmless water vapour. However main problem of using hydrogen fuel is its storage. Hydrogen gas is normally stored in a metal cylinder under high pressure. Carrying metal cylinders under high pressure not only can add to the weight of the vehicle but it dangerous also. Hydrogen in contact with air can catch fire. So the only solution is to store it in "Nanocylinder" of carbon nanotube. This could be a potent source of aero space engines and other industrial processes.

## 2. NANOBREEZE

To purify the indoor environment, the NanoBreeze Room Air Purifier uses patented photo catalytic nanotechnology to clean and purify indoor air.

Technology consists Titanium dioxide ( $TiO_2$ ) crystals, only 40nanometers in size, form a molecular machine powered bylight.  $TiO_2$  is a semi conductor charged by ultraviolet photons. When these nanoparticles are charged, powerful oxidizing agents called hydroxyl radicals are produced. These free radicals destroy airborne germs and pollutants that circulate over the surface of the patented light tube inside the NanoBreeze Air Purifiers.



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"What my wife is calling and angry that I am not responding? Tell her that I am using the battery of my mobile for driving the car."

## 1. NANOBATTERIES

Numerous gadgets like laptops, cellular phones, cordless phones, portables radios, calculators etc need rechargeable lightweight batteries or cells. Presently, the batteries for such gadgets need to be either replaced with new ones recharged quite frequently due to their low energy density or storage capacity. Attempts are being made to increase their energy density using metal hydride nanoparticles (Nickel hydride, aerogel etc )

Nano structured materials offer a tremendous potential for developing high power density Lithium ion batteries with high rate capabilities.

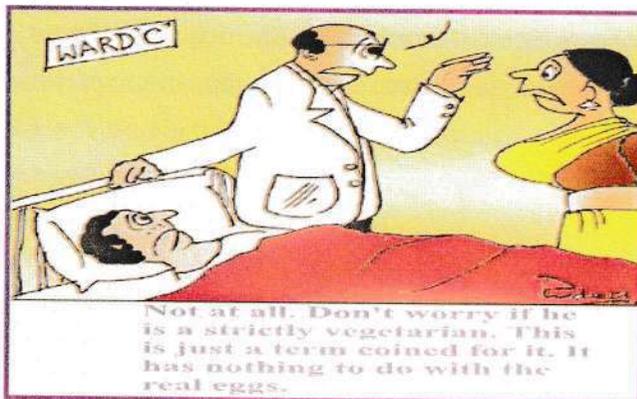
Trapped lithium in carbon nanostructures could help to make rechargeable nano battery for next generation communication and remote sensing devices.

Now day's cars are spray painted with nano particles. Nano particles paints provide smooth, thin attractive coating. Some research is going on to explore the possibility of applying a small voltage to change the colour of the car as desired.

One can use "self cleaning" glass so that it is not necessary to wash the windows with water. Self cleaning glass can be made by dissolving small amount of titania nanoparticles in it while manufacturing it by melting together its other ingredients. Titania is also able to dissociate organic dust in presence of U.V light available in the sunlight. Once dissociated it may fall down or simply evaporate. Even drops of water on glass give hazy look.

## 2. NANO EGGS

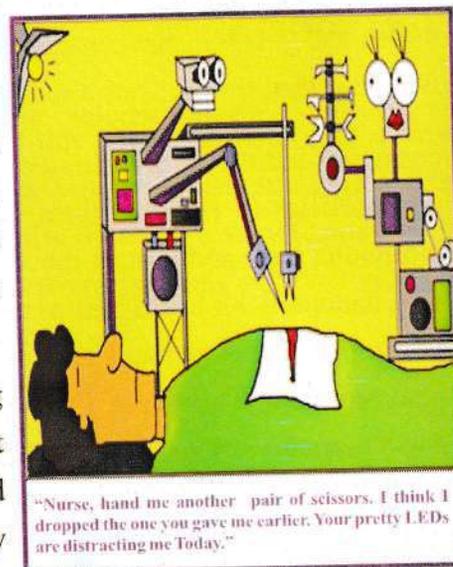
The core shell nano structure could be considered as nanoeggs. HongkongUniversity of science and technology has developed a nanoscale egg that could safely deliver platinum a known anticancer agent to tumor cell. The nanoscale egg having the hard cobalt shell surrounding a yolk of platinum and iron, show that it is seven more toxic than the anticancer agent Cisplatin to cancer cell architecture than cooking.



## 8. NANOBRAIN

A nano brain is a conceptual device that executes massively parallel/ simultaneous computing following the information processing principles of human brain. This machine assembly would serve as an intelligent decision making unit for the nano-robots, and could be programmed to execute particular operation for which it is designed.

This machine assembly would serve as an intelligent decision making unit for nanorobots. One essential feature of a nano brain is that it would acquire all sensory inputs from the external environment, and in processing that information, generate distinct instructions for every single execution unit connected to the nano brain simultaneously. Thus, the computing machine will communicate with the external world in a similar fashion to our central nervous system.



## 9. QUANTUM DOTS

Another minuscule molecule that will be used to detect cancer is a quantum dot. Quantum dots are tiny crystals that glow when they are stimulated by ultraviolet light. The wavelength, or color, of the light depends on the size of the crystal. Latex beads filled with these crystals can be designed to bind to specific DNA sequences. By combining different sized quantum dots within a single bead, scientists can create probes that release distinct colors and intensities of light. When the crystals are stimulated by UV light, each bead emits light that serves as a sort of spectral bar code, identifying a particular region of DNA. To detect cancer, scientists can design quantum dots that bind to sequences of DNA that are associated with the disease. When the quantum dots are stimulated with light, they emit their unique bar codes, or labels, making the critical, cancer-associated DNA sequences visible. The diversity of quantum dots will allow scientists to create many unique labels, which can identify numerous regions of DNA simultaneously. This will be important in the detection of cancer, which results from the accumulation of many different changes within a cell. Another advantage of quantum dots is that they can be used in the body, eliminating the need for biopsy.

## 10. AEROGELS

Space and defence scientists also are trying to adopt nanomaterials as alternative materials and replace the conventional materials. Very low density materials known as aerogels are nano porous materials. Aerogels can be of various materials. Their density is typically 0.01 to 0.8 gm/cc. So one can get an idea of how light aerogels are. Naturally it is very good to use for various applications in spacecrafts and defense to reduce the weight. Even some special lightweight suits, jackets etc can be made using aerogels as they can be made such that they are poor conductors of heat. Even some special high temperature materials which are otherwise difficult to make can be made at lower temperature as nanomaterials.

## 11. NANOSHELLS

Nanoshells are miniscule beads coated with gold. By manipulating the thickness of the layer making up the nanoshells, scientists can design these beads to absorb specific wavelengths of light. The most useful nanoshells are those that absorb near-infrared light, which can easily penetrate several centimeters of human tissue. The absorption of light by the nanoshells creates an intense heat that is lethal to cells. Researchers can already link nanoshells to antibodies that recognize cancer cells. Scientists envision letting these nanoshells seek out their cancerous targets, then applying near-infrared light. In laboratory cultures, the heat generated by the light-absorbing nanoshells has successfully killed tumor cells while leaving neighboring cells intact.

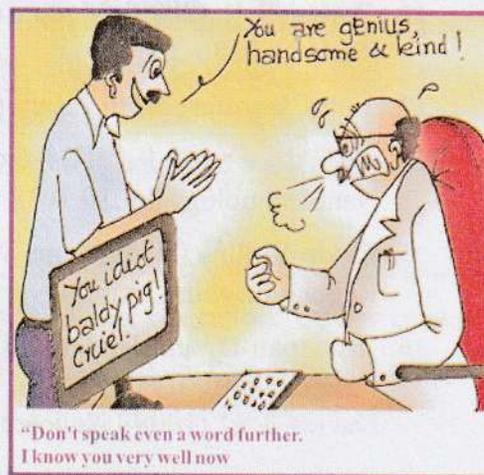
## 12. NANOROBOT

Nanotechnology is also being used to develop robots of nanosize called Nanorobots. They are of special interest to researcher in the medical industry. This has given rise to the field of nanomedicine. It has been suggested that a fleet of nanorobots might serve as antibodies or antiviral agents in patients with compromised immune system, or in diseases that do not respond to more conventional measures. These nanorobots can interact with tissues in a human body and deliver drugs and diagnose the precise nature of injury. They can also repair an organ without any surgical intervention. In theory they can remain operational for years, decade or centuries. One more feather on the cap of nanotechnology is curing cancer with the help of a new method Trojan Horse Therapy. This therapy has the potential to directly target cancer cells with chemotherapy, rather than the current treatment that chemotherapy drugs injected into a cancer patient and attacking both cancer and healthy cells.

## 13. INTELLIGENT NANOMATERIALS

'Intelligent' Nanomaterials which Have Sensing Properties. These could have intrinsic sensing properties, programmable optical, thermal and mechanical characteristics and self-healing properties.

Nanocomposites, consisting of conjugated polymers in a nanostructured silicate matrix, which changes the colour with respect to mechanical, chemical or thermal stress.



## Conclusion

Since Nanotechnology is at the verge creating a significant change in our lives in near future, so it is utmost essential to popularise it among the young learners. In many parts of the world, science is being taught in such a way that most of the times students get a horrifying image of science. Sciencetonic presentation would be of great help to make students believe that science is not only interesting but fun as well.

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## **PERSPECTIVES : SOCIO-CULTURAL AND POLITICAL ECONOMY, PERSPECTIVE OF ISSUES AND PROBLEMS OF INDIAN SOCIETY**

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Department of Sociology

**Abstract:** Each society had developed some values which had kept its social, cultural, economic and political life intact. These values aim at controlling social problem while making social life more rewarding and systematic despite various changes. In present day world humanity has achieved great success in science and technology, but without mental peace because challenge faced by the individual and social institution such as family, community establishment and hence we feel compelled to feel that our materialistic achievements might lead to total disintegration of our social and personal life, therefore there is a practical necessity to identify social issues and problems.

**Keywords:** Fatalism, particularism, patriarchal system, rural and urban disorganization.

### **Concept of Social Problems**

Neither society nor social problems are static. Social problems are closely linked with social structure, ideologies, values, attitude and interest of society. The process of social transformation brings about changes in these different aspects of social life and side by side generates new social problems.

Social problems are considered as conditions which are widespread and harmful consequences for the society. However, it is not quite as simple. What may have been considered as not harmful at one times may be considered harmful at other times. Smoking was not considered serious social problems for over a long time. In contemporary times become social problems but when an effort is made to deal with them the complexities of the social problems become evident.

What might be considered social problems in one society may not be considered as such in another society. The perception is dependent on the norms and values in a society. In some societies divorce would be considered as a social problem. In others it may not be considered so also with taking alcoholic drinks. Even within a society there might be differences of opinion when it is large and heterogeneous. There are certain behaviors which are considered as deviant and harmful in all societies for example murder, rape, etc.

### **Characteristics of Social Problems**

**(a). Social problems is caused by many problems:-** There is a cause-effect relation with regard to social problem. This does not however mean that a social problem can be explained or understood by one cause only. Illiteracy is caused by many factors, such as attitude of people to education, lack of school in many areas, status of girl child, malnutrition and poverty to name a few. To solve the problem of Illiteracy, all these problems have to be taken into consideration.

**(b). Social problems are interrelated:-** Often there is a relation between various social problems. Ill health is related to poverty, lack of education, attitude of sickness, un-employment, non-availability of medical care etc. It is not very difficult to see relation between all these causes and the effects.

**(c). Social problems affect individuals differently:-** If there is inflation some people are affected by it more than others. People who are poor or who have got fixed incomes will feel the problem more than those that

are well-off and who have ways and means of increasing their income. Dowry is more a problem for the poor than for the rich. The families with a large numbers of daughters have a bigger problem in dowry than a family which has only sons.

**(D). Social problems affect all people:-** The people in a society are independent. What affects one group will also affect most members of the society over time. Few persons are able to protect themselves fully against many of the social problems-Violence, un-employment, inflation, corruption etc.

### **Cultural elements**

There are certain cultural elements that have had their own contribution to the persistence of certain social problems in India. The following cultural traits can be particularly identified in this context.

**(a). Fatalism-** A cultural elements that has been relevant to social problems in India is Fatalism. The Hindu doctrines of Karma and Rebirth contain strong elements of fatalistic attitude of life. The welfare and developmental programmes themselves get a setback on account of the apathy and indifference of the masses that are under the spell of religiosity fatalism.

**(b). Particularism-** Another cultural traits widespread in Indian society id particularism as against universalism. This is reflected in the excessive consideration for one's own people. Kinship, caste or religion often universalistic standards are set aside in one's decision and actions. Corruption, involving favoritism or discrimination that is prevalent in our society is the result of such disregard for the norm of universalism. Some of the inter group conflict on the basis of caste, tribe, religion, language or region can also be attributed to the mobilization based on sectional identities and particularism.

**(c). Attitude to public property-** Another trait of the Indian society that has implication for corruption is the disregard for public property. This lack of disregard for public property is one of the root cause of corruption, misappropriation of public goods and use of sub-standart materials in public construction.

**(D). Patriarchal system-** As elsewhere in the world, cases of many societies in Indian societies by and large has been patriarchal where women is subjected to man. The role of woman in the Indian society has been conceived as that of wife and mother. The woman in India possesses an inferior social status to that of man. This has led to the subjugation of women and discrimination against them in various spheres of social life. The problems such as dowry, ill-treatment of daughter, wife beating, illiteracy, and occupational discrimination etc faced by women have roots in this cultural preference for the male.

### **Socio-Cultural Perspective of Issues and Problems**

Each society has its unique culture and social norms but people for their own case behave otherwise. This creates various types of socio-cultural issues and problems.

1. Deviant behaviour.
2. Problems related to marriage and family.
3. Social disorganisation.
  - (a). Rural disorganisation
  - (b). Urban disorganisation.

**1. Deviant behaviour:** Deviant behaviour is a permanent characteristic in human society. It is opposed to conformity.

Deviant behaviour is the opposite of conformity. In the words of Albert K. Cohen, "we define deviant behaviour as behaviour which violates institutionalised expectations-that is, expectations which are shared and recognised as legitimate within a social system".

Thus deviance is deviation from accepted patterns, ideals and norms of a society. Therefore deviance is abnormal. In addition to it, it's against the social norms and condemned by the society. This social non-conformity and social condemnation is the crux of social deviance.

#### **Characteristics of deviant behavior:-**

**(a). Deviance from social norms:-** Individuals do not strictly conform to the ideals and norms, imposed by their culture. As a general rule cultural and social norms are fairly dynamic and flexible. The members of society modify them here and there according to their convenience. However, when this deviance becomes marked and socially condemned it is called deviant behavior.

**(b). Personal as well as social:-** The deviant behavior may be found on both the personal as well as social.

**(c). Culturally conditioned:-** The studies by social anthropologists concerning cultures of different primitive groups show that deviant has been defined differently in different societies. Deviant behavior is culturally conditioned. It is deviant only in the context of a particular culture.

**(D). Evil social consequences:-** An important characteristic of deviant behavior is the apposition by society, which consider it as causing evil consequences.

#### **Causes of deviant behavior:-**

The following are the general causes of deviant behavior:-

**(a). Family socialization:-** Most of the sociologists admit that deviant behavior is the result of faulty socialization. In the absence of socialization the individual does not know the social norms, the ideals and the conformity behavior. This may be seen in broken and immoral families presenting wrong examples before the children. In fact, socialization is always then, it may be proper or improper. Thus deviant behavior is caused by faulty socialization rather than absolute absence of it.

**(b). Ease of rationalization:-** One finds varieties in social phenomena and circumstances in modern societies. Therefore it is found that everyone gets justification for his right or wrong behavior. At least the argument from the defense of ego is a ready justification. In such situation it has become easy for an individual to rationalize deviant behavior.

**(c). Poor enforcement of social laws:-** The presence of social laws is one thing and their enforcement is another. Often we believe that all are equal before the law but in practice this is not found. It is seen that due to economic and political power the white collar criminals remain outside the reach of law.

**(d). Lack of effectiveness in social control:-** Social control is the instrument through which the society keeps the behavior of the individual within the prescribed limit. When the social control become loose or ineffective deviant behavior increases.

**2. Problem related to marriage and family:-** Family is the primary institution of the society and marriage is the most vital aspect of this institution. Marriage and family had gone through change recently and their present nature too faces vital issues and problems.

**The changing pattern of marriage in our society:-** Marriage is the basis of culture and stability of the family, but in the last fifty years the pattern of marriage has changed and thus new pattern of family in place of joint family has come up but this pattern too faces many problems.

**(a). Marriage is not held as compulsory:-** Formerly marriage was considered to be absolute compulsory for both male and female. But in our modern society, many males and females do not consider marriage to be necessary these days. Many girls, especially those who are educated and in jobs do not marry unless they get a suitable match and if such match is not available they do not marry at all. The educated men and women do not believe in the age old values and do not consider marriage to be absolute necessary.

**(b). Opposition of Child Marriage:-** In India, the custom of child marriage was very much in vogue but after the passing of **Sharda Act**, child marriage have become illegal. Another factor leading to the restriction of child marriage in the society is the tremendous increase in women's education. The boys also do not marry early because of late settlement in career. **The Hindu Marriage Act of 1955**, specifies the marriageable age for a girl as 18 years and 21 years for a boy.

**(c). Permission of Inter-Tribal/Inter-caste marriage:-** Formerly inter-tribal/inter-caste was considered to be wrong. It has now been legally permitted with the increase of co-education, women education and the democratic ideal of equality and liberty, inter-tribal/inter-caste are now considered to be a sign of forwardness. The bonds of endogamy and the number of inter-tribal/inter-caste marriage are increasing.

**(d). Prohibition of Polygamy:-** Formerly, a man was allowed to marry several women in order to get a son. With the increase of women's education, women are demanding equal rights in marriage. The Hindu Marriage Act of 1955 has declared Polygamy to be illegal, no one can marry a second time while the former spouse is alive.

**(e). Permission of Widow Marriage:-** Due to untiring efforts of social reformer and educated persons for widow remarriage, it is no more considered to be wrong. Consequently the incidence of widow remarriage is now on the rise.

**(f). Provision for Divorce:-** The Hindu Marriage Act of 1955 introduced a significant change in the institution of marriage by permitting divorce under certain specific circumstances.

**Disorganisation of Marriage:** The above changes in marriage are indicative of the progress on one hand and disorganisation on the other. It cannot be said that the changes in marriage in recent times have led to its degeneration. The sanctity of marital bond has however diminished. It is no more unbreakable. It can be broken if there is no love and harmony between wife and husband. Infact the marriage system is passing through a transitional stage.

**Family disorganization:-** The modern family is gradually becoming increasingly disorganised. Some signs of this phenomenon can be seen in the following changes within the family like, Lack of family unity, decrease in Family control, Strife, Laxity in marital bond, conflict between parents and children, lack of protection, etc. It is obvious from the above mentioned causes that the family is rapidly disorganised in this modern society. The families are becoming smaller, the number of divorce is increasing, mutual intimacy and beliefs are being reduced and their place has been replaced by selfishness.

**Change in Modern Family:-** in the modern period the institution of family is undergoing rapid change and modification. The main changes in these connections are as follows- Reduction in economic functions of life, reduction in other activities of family, increase in family recreation, laxity in marital and sex relationship, changes in relationships of men and women, increase in importance of children, disorganisation of joint family, smaller family, and family disorganisation.

**New problems affecting the family:-** Some of the problems affecting the family are, problems of adjustment of the husband and wife relationship, problems of sexual adjustment, marriage based on romantic love, problems of broken marriage, family conflict and strife, problems of working women etc.

### **3. Social disorganisation:-**

**(A). Rural disorganisation:-** India is a country of Villages. Nearly  $\frac{3}{4}$ th of the population live in rural areas. Accordingly disorganisation in rural areas implies disorganisation of entire Indian society. In the Indian Villages of today, there is complete absence of ties and unifying bonds have dissolved and rural society is ridden through by casteism/tribalism and self seeking groups. The incidents of crimes like murder, rape, dacoit and adultery are on the rise. The community consciousness and fellowship has been replaced by selfishness, materialism and dishonesty. As a consequence of the exodus of rural population to urban areas and industrial areas, disorganisation in the rural society has become rampant. The ideology of individualism and materialism has overtaken the villagers and this has led to total breakdown of community feeling. Thus, to conclude, rural Indian society is fast disintegrating.

**(B). Urban disorganisation:-** If the rural society in India is disorganised the urban society is still more so. If the community feeling is on decline in the rural India it is totally absent in urban life. There is scarcely any trace in community life and feeling of fellowship in cities. It is too much to expect any kind of co-operation and mutual aid among town people. Every sphere is filled with corruption, mutual antagonism, hatred etc. The moral norm have undergone complete change, slums are on increase and the life in slums is most unhygienic and replete with moral corruption. Thus the urban society in India is facing widespread corruption.

### **Political Economy Perspective of Issues and Problems of Indian Society**

Economic conditions play a vital role in human, social and national life therefore, economic development leads to social change. Hence, for the study and solutions of social issues and problems of Indian society, we need to understand the political, economy perspective of the social issues and problems.

**The concepts of social and economic development:-** The concepts of social and economic development are deeply interlinked with each other.

**The concept of social development-** Social development is the process of planned institutional change to bring about better development between human needs and aspirations on one hand and social policies and programmes on the other. It is translating economic progress into better living conditions for people in the society. It is declaring war on Poverty, Illiteracy, Ignorance, Inequality, Irrational and oppression prevalent in the society. It aims not merely at the uplift of the weak, the under-privileged and the disadvantage people but at improving the quality life of all the citizens.

The important indicators of social development are;

(i) Change in levels of living. (ii) Elimination of Poverty. (iii) Expansion in Education. (iv) Increase in level of unemployment. (v) Social justice. (vi) Uplift of weaker groups. (vii) Reducing disparities. (viii). Production and improvement in health.

**Model of development adopted in India:-** Indian model of social development is based on Socialist ideology and is called "**Democratic collectivism**". It is not based on conflict but on consensus. It is democratization through adjustment. It aims at creating a socialist pattern of society. It protects the interest of both individual and the state. It aims at distributive justice, popular participation and social integration.

**The concept of Economic development:-** Bach has described economic development as, "**growth in the total output of goods and services in the economy**". David Novak has referred to a very old definition of economic growth according to which it is, "**continuous, substantial increase in per capita consumption of goods and services**". The substantial consumption of economic goods is possible only when there is substantial production of economic goods and substantial production these days depend upon more use of technologies. In a narrower sense therefore, it may be said that economic development refers to, "the extensive application of inanimate power and other technologies of the production and distribution of economic goods."

In terms of per capita income, the United States, Canada, Australia, and Western Europe (Italy, France, Germany and England) are considered to be the developed countries. On the other hand, South Africa, Mexico and most of Southern and Eastern European countries are the developing countries. India in terms of its per capita income is still an underdeveloped country.

#### **Social goals in Independent India:-**

At the time of Political Independence of the country, many intellectuals felt that India had failed to modernize because it had been the victim of capitalist imperialism.

The collective goal we had planned to achieve in the very first decade of the Republic was Social, Economic, Political and Cultural. The Social goals were; Equality, Justice, Freedom, Rationality and Individualism. The Economic goals include; distributive Justice and Economic rationalism in place of Economic theology. The political goals were establishing a Political system where the ruler is accountable to the ruled, decentralization of Political power and associating more and more people with the decision making processes. Our Cultural goal was a change from the sacred to the Secular Ideology.

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# MUSHROOM: GENERAL PRESPECTIVE AND CULTIVATION OF OYSTER MUSHROOM

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**Abstract:** Mushroom has been attracting attention of mankind since ancient times and use of mushroom, as food is as old as human civilization. Unfortunately, it is realized that mushroom did not receive universal acceptance over the years since a number of naturally growing mushroom are poisonous. The need of the hour is to identify, cultivate and popularize food, which can not only augment the food deficits but also provide nutritional security. Mushroom cultivation is the most efficient and economically viable biotechnology process for the conversion of lignocelluloses waste materials into high quality protein food.

**Keywords:** Structure, life cycles, identification, nutritive values, cultivation, oyster mushrooms.

## INTRODUCTION

Microbial biomass has been used for human consumption since time immemorial either directly or indirectly as human food like mushroom. Although, mushroom has been considered as a delicious and choice able food item among the indigenous communities, its commercial cultivation has not been popularized. In nature a number of species of mushroom are found mainly during the rainy season, when soil is moist, on almost types of soils, on decaying organic matter, wooden stumps etc. *Mushrooms are the most visible members of the economically and ecologically (decomposers) important Kingdom Fungi. Some are prized edibles; others may have medicinal properties.* Certain fungi produce mushrooms. Some people love them (mycophiles); other folks are afraid of them (mycophobes). Either way, most people would agree that mushrooms are some of nature's most unusual and interesting life forms.

## WHAT ARE MUSHROOM

The Term 'Mushroom' is derived from many language- i) Latin 'fungo' means to flourish i,e growing out from the ground or from trees. ii) Greek 'sphonggos' means 'sponge' i,e species having sponge like structure etc

Mushroom is the primitive organism known as fungi (macro fungi). They are the fruiting bodies/reproductive structure produce by members of higher fungi-Ascomycetes and Basidiomycetes. The fungi are eukayotic, spore bearing, achlorophylous and heterotrophic (saprophytic and parasitic)thallophytes. Their plant body is made up of filamentous, thread like structure known as hyphae, which form a net like structure or cottony mass known as mycelium.

Mushroom are saprophytic fungi that grow on dead decomposed matter. They derive their nutrition with the

- One other technique used to distinguish is to put a silver coin while cooking mushrooms. If the colour of the coin changes to black most probably it will be a poisonous one.

#### Important points: -

- Wild mushroom should not be consumed without proper identification.
- Liquor should be avoided along with the mushroom dish
- Pumpkin or broad bean when consumed along with mushroom can cause food poisoning.

#### NUTRITIVE VALUES

- The **protein** content of mushroom is 2.5-3% on fresh weight basis and 20-35% on dry weight basis. The mushroom protein is of good quality and its digestibility is high.
- Cereals are deficient in two essential **amino acids** viz. lysine and tryptophan. But mushroom are rich in these two amino acids apart from most of the essential amino acid viz, isoleucine, leucine, valine, threonine, tyrosine, and phenylalanine while human body cannot synthesis. However, two other amino acid viz, methionine and cysteine are less in mushroom but they are present in cereals. Therefore, mushrooms and cereal diet complements each other
- Mushrooms are rich in **vitamin B** complex and vitamin C. Vitamins are not lost during cooking. Mushroom also contains folic acid (cure anaemia) and vitamin B12, which are absent in green vegetables.
- **Minerals:** -Mushroom possesses a high amount of potassium. Besides, the ratio of potassium: sodium is very high. This is an advantage for persons having high blood pressure or heart problems. It also contain minerals like Selenium which serve as antioxidant, it also boost immunity and moreover fertility for men, Copper whose function is to increase RBC and also makes bones and nerve healthy, Beta-glucan whose main function is to give resistance to allergies and metabolism of fats and sugar.
- The total **carbohydrates** contents are 4-5%. Mushroom has very little quantity of sugar (0.5%)

#### ADVANTAGES OF HAVING MUSHROOMS

- Low in calories i.e., 32 Kcal/100g fresh mushroom and low in fat. Therefore mushroom is suitable for obese persons.
- Cholesterol is absent, but ergosterol is present which is converted into vitamin D in human body. Therefore mushrooms are good for heart disease.
- High fiber content i.e. above 1%. Therefore, it is suitable for those having constipation.
- Mushrooms are alkaline due to alkaline ash (more than 1%). Therefore, it is an advantage for those having acidity/gastritis problems and also for expected mothers.

#### CHOOSING AN OYSTER MUSHROOM, WHY?

There are many cultivated/artificially mushrooms like-Button mushroom (*Agaricus* spp), Oyster mushroom (*Pleurotus* spp), Paddy straw mushroom (*Volvariella* spp), Milky mushroom (*Calocybe indica*) Shitake, Reishi mushroom (*Ganoderma lucidum*) etc. But in my seminar I choose oyster mushroom because of the following reasons: -

- Grows on wide range on agriculture wastes.
- Its conversion rate i.e., fresh mushroom production from the dry substrate (is upto 100%)
- It is less prone to diseases and competitors' moulds.
- Faster growth rate and easy cropping
- Low cost of production and high profit and its simple cultivation technology.
- Most suitable for rural area and can generate self employment
- Easy post harvest processing particularly dehydration/sun drying.
- Grow well in temperature range of 20-32°C and 80-85% humidity—suitable for our state.
- It can be grown almost throughout the year
- Easily available of materials and equipments.

## CULTIVATION OF OYSTER (SHELL OF SEA OYSTER) MUSHROOM

### 1. Spawn production

- Spawn (seed of mushroom)-consists of mycelium of the fungus grown on suitable substrate like cereal grains. (asmycelia cannot propagate as such )
- Among wheat, maize etc grains is the best substrate for spawn production
- Quality spawn is also available round the year at Indian council of Agricultural Research Complex (ICAR), Jharnapani, NEH region, Medziphema, Nagaland
- Good quality spawn is white in colour with profuse mycelia run and without any speck or blemish.



#### Spawn production flow chart: -

The process in making spawn requires special technical skill and a laboratory for quality and economically production. A brief procedure use to be done in laboratory in making spawn is shown in flow chart diagram below.

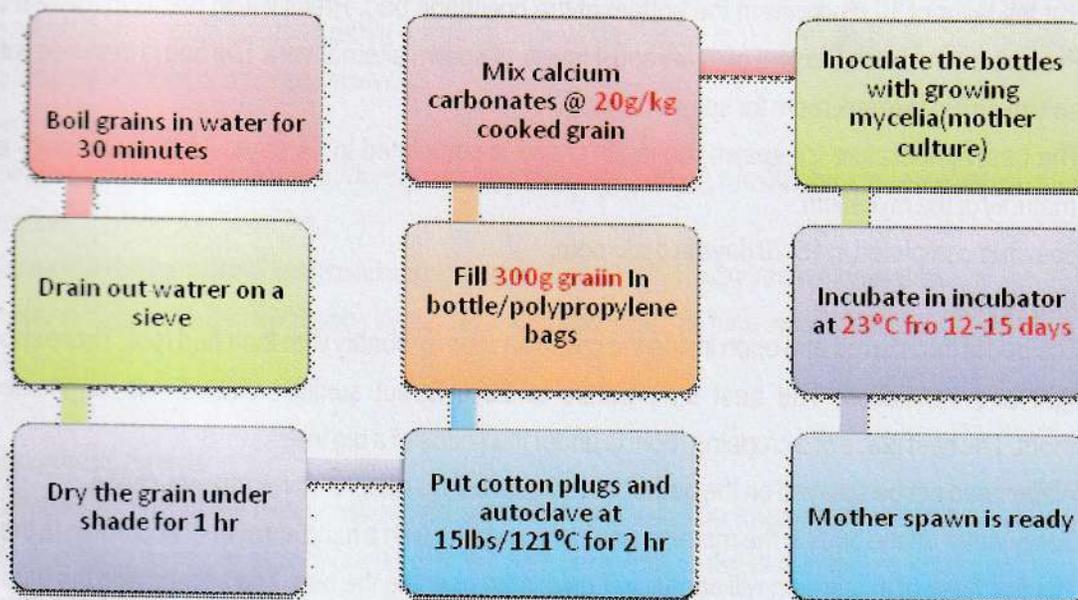


Fig: production (flow chart) of spawn in laboratory

## 2. Polythene bag method.

### a) Making the substrate ready for spawning: -

- Rice straw is the best substrate among all the cellulosic material. The straw should be good quality-golden yellow in colour.
- Cut the straw into pieces of 5 cm long. This can be done by flywheel type of chaff cutter with only one blade.
- Soak the straw for 6-8 hrs in an empty oil drum. Place a heavy weight to prevent floating of straw.
- Drain out the water.
- **Sterilization of substrate in boiling water.** Water is boiled in an aluminum saucepan or in a G.I. drum to 85°C. Keep the wet straw immersed in boiling water for 30 minutes. The lid should be closed.
- **Or sterilization of substrate with chemicals:** Add ninety litre of water in a rust proof drum of 200 litre of water capacity. Add 12 kg of straw in the water. In another bucket 7.5kg carbendazim and 125 ml of formaldehyde (37-40%) and dissolve in 10lt of water and slowly poured on the soaked straw. Straw is covered with plastic sheet. After 15-18 hrs the straw is taken out.
- Remove the straw from the boiling water. Now one kg of straw becomes three kg after soaking and boiling.
- Spread the straw on a clean floor for cooling. There should not be excess water in straw. When straw is squeezed in palm, water should not drip down.
- Spray garlic extract 0.3% (take 50g of peeled garlic cloves and make a paste. Add 50 ml of water to the paste. Squeeze it through muslin cloth to get the stock solution. Take 3 ml of stock solution and add 1 liter of water.) on the straw just prior to spawning. This is very effective against green moulds.

### b) Making the polythene ready:

- Take a polythene bag of 40 cm × 60cm size. Fold it lengthwise, 4 times. High density polythene bag are better.
- Make 20 holes with the help of single punch machine.
- Tie the bottom of the bag with a jute thread. This gives a circular bottom to the bed.

### c) Spawning:

- Put the layer of 10 cm straw in the bottom of the polythene bag. Press it with palms to make it 6 cm in height. Prepare the bed with 5 layers of straw and 4 layers of spawn alternatively. The bag is then tied with a jute thread and takes it in the dark room for spawn running.
- The best temperature for spawn run is 25°C and is completed in 14 days. Additional 4 days are needed for maturity of the mycelium.
- Spawn is completed in 15-20 days in dark room.

### d) Cropping room:

- The bed is transferred and open inside the cropping room probably with thatched roof. There should be diffused light and ventilation. The best temperature is 23°C. Direct sunlight should not fall inside the cropping room. The best place of a cropping room is under the shade of a big tree.
- Water need not be sprayed on the beds for the first two days after removing the polythene.
- Spray water on the beds in the morning and in the evening with a hand sprayer or according to the moisture.
- The first flush of mushroom will appear 6-7 days after opening the bag. The second and the third crop will come at one-week interval. The bed should be removed after one month of opening.



Fig: adding of spawn. fig: spawn and straw in layers. fig: mycelium growth in the bed. fig: oyster mushroom.

### 3. Management Of Problems.

Some of the management of mushroom problems by organism is:

- **Management of bacterial problems:** a) avoid direct watering on the mushroom. b) Do not let deposit water droplets on the mushroom. Hence slightly shake the beds after watering and c) spray bleaching @ 2g per 10 l of water twice after harvesting.
- **Management of insect problems:** a) remove all matured mushroom at the earliest. This prevents the adult from laying eggs. b) Apply bleaching powder in the mushroom house and its premises. c) spray neem based insecticides. d) Fix nylon net on the ventilation and windows of the mushroom house. e) polythene sheet is smeared with a sticky material and attached to a yellow colour bulb in the cropping room. Insects are attracted to the white light at temperature above 15°C and to yellow light at lower temperature.

### 4. Harvesting And Preserving

The right stage of harvesting is when the margin of some fruit bodies starts curling upward or downward. They should be harvested by twisting in clockwise direction and not to be plucked, otherwise the base will be left on the bed, rot later and cause spoilage of the mushroom beds. Mushroom has a very short shelf life due to its high perishable nature. Therefore mushroom should be used either freshly for consumption or to be preserved for further use. Some of the procedure for preservation of mushroom are:

#### a) Short term preservation:

- **Keeping in room temperature:** During summer days at 30-35°C, the mushroom remain fresh for 8-12 hrs only, whereas in winter for 24-36 hrs.
- **Storage in refrigerator:** Fresh mushroom can be stored for 7-15 days in a refrigerator.
- **Preservation in brine solution:** Water with common salt at high concentration (10-15%) is suitable for preservation for 6-7 days

#### b) Long term preservation:

- **Sun drying:** This is the most easiest and economic method. The mushroom are spread on a sieve and sun dried for 2-3 days, To avoid browning of the fruit body due to direct sunlight, a shade may be provided by spreading a black cloth at about 1 feet above the sieve.

## ECONOMICS OF OYSTER MUSHROOM PRODUCTION

### A. Fixed capital

1	Cropping room (capacity of 250 beds)	Rs.10000/-
2	Chaff cutter	Rs 7000/-
3.	Aluminum sauce pan for boiling of straw (120 litre)	Rs 2000/-
4.	Sprayer one	Rs 300/-
	Sub- Total	<b>Rs 19300/-</b>

### B. Working capital

1.	Paddy straw (2000kg)	Rs 6000/-
2.	Spawn 1000 packet (200gm each)	Rs 10000/-
3.	Polythene bags (10kg)	Rs 1200/-
4.	Labour, 225 man days @ 100/-	Rs 22500/-
5.	Fire wood	Rs 2000/-
6.	Miscellaneous	Rs 500/-
	Sub-total	<b>Rs 42200/-</b>

### c. Income

1.	Sales of 1200 kg mushroom @ 80/- per kg	Rs 96000/-
2.	Total cost of production	Rs 42200/-
3.	Net income out of 9 months	<b>Rs 53800/-</b>

## CONCLUSION

Mushroom cultivation offers benefits to market gardens when it is integrated into the existing production system. Small-scale mushroom production represents a specialty opportunity for farmers as without much land use also, mushroom production can play an important role in managing farm organic wastes when agricultural and food processing by-products are used as growing media for edible fungi producing nutritious food at a profit, while the spent substrate can then be composted and applied directly back to the soil. This process of combining perennials, trees, shrubs and vines to create a 'permanent agriculture' is called permaculture.

Many people are intrigued by mushrooms' nutritional and medicinal properties, in addition to their culinary appeal. As a group, mushrooms also contain many amino acids, some unsaturated fatty acids, provide several of the B vitamins, vitamin D and vitamin C, as well as the minerals potassium, phosphorus, calcium, and magnesium. For centuries, mushrooms have been appreciated as sources of pharmacologically important compounds useful in medicine. Yet not all the medicinal properties of mushrooms have been exploited. Information on the ethno medicinal uses of some

mushrooms such as *Pleurotus tuber-regium* used for headache, stomach pain fever, cold, constipation; *Lentinussquarulosus* for mumps, heart diseases; *Termitomycesmicrocarpus* for gonorrhoea; *Calvatiacyathiformis* for leucorrhoea, barrenness; *Ganoderma lucidum* for treating arthritis, neoplasia; *G. resinaceum* used for hyperglycemia, liver diseases (hepatoprotector); *G. applanatum* used as antioxidant and for diabetes had been gathered through survey.

World production of mushroom is growing and now exceeds three million tonnes worth a market value of US \$ 10 billion. Globally, mushrooms are traded mostly in processed form. However, lately fresh mushrooms are being preferred over preserved ones in EU and American countries. Major exporting countries of fresh mushrooms are Netherlands, Poland, Ireland and Belgium. China is the largest exporter of preserved mushrooms with a market share of 41.82%. Netherlands (25.11%) and Spain (7.37 %) are the other major countries. India ranks sixth with a market share of 4.44 %. The major importing countries of prepared and preserved mushrooms are Germany (17%), USA (30%) and France while of fresh mushrooms are U.K, Germany, USA and France

India is not a major producer but it does cultivate mushrooms and has a great potential as an important producer in the future. Currently India stands 54 in the world ranking of producers. The per capita consumption of mushroom in India is currently only about 25 g per year as compared to USA, which is around 3.8 kg. Currently three varieties of mushrooms are being cultivated in India. These are the white button mushrooms (*Agaricusbisporus*), the paddy straw mushroom (*Volvariellavovacea*) and the oyster mushroom (*Pleurotussajorcaju*) Of these *A.bisporus* is the most widely and economically cultivated variety throughout the world. India's present share in the world production is meager but still the potential for future growth is rated high because of the natural advantages - are the availability of cheap labor as this is a labor intensive process, presence of seasonal variations enabling us to cultivate different mushrooms under natural conditions in the form of crop rotation in different seasons and regions and lastly the abundance & availability of variety of agro wastes at low prices for mushroom cultivation. There is scope to tap the potential in and outside of our forests for providing sustained livelihood and profit to the people through systematic collection and processing of wild mushrooms, which is till today limited to the collection of morels only. The added advantage is in improvement in dietary leading to solution to malnutrition. Mushroom cultivation produces about 32 tons of dry protein per year in per acre of land while fish can produce farming only 3 quintals of proteins. Edible mushrooms can therefore be used as a weapon against starvation because of its high protein and vitamin content. And in a way contribute to food security by being easily available, affordable and usable The agriculture wastes which are burnt and cause environmental pollution, if can be used for mushroom cultivation will not only check pollution but will also play an important role in carbon sequestration and proper utilization of waste products. Mushroom cultivation also provides employment generation

In India three institutes are currently involved in Mushroom studies namely Central Food Technological Research Institute (CSIR), RRL Jammu (CSIR) and National Research Center for Mushroom (ICAR). There is a central scheme on mushroom farming by Ministry of rural development, which can be availed through CAPART, and other is through Min. of Food Processing. The main focus of this scheme to train, information dissemination, technical and financial assistance for preparation of cultures/spawn cultivation, harvesting, storage, processing, packaging, marketing linkages with farmers to employment opportunities and generating income with special emphasis on women. Other than this different types of financial assistance and soft loans are also available from National Co-operative Development Corporation

(NCDC), National Horticulture Board (N.H.B.), A.P.E.D.A., State Govt. Agencies responsible for development of Agriculture and Agro-based ventures.

The diverse challenges and constraints as growing population, increasing food, feed and fodder needs, natural resource degradation, climate change, new parasites, slow growth in farm income and new global trade regulations demand a paradigm shift in formulating and implementing the agricultural research programme. In India Vision 2030 documents highlighting the issues and strategies relevant for the next twenty years. The Vision 2030 has been prepared with the objective of promoting mushroom cultivation across the country in farming system perspective for addressing the issues like nutritional security, unemployment, environmental sustainability, recycling of agro-waste.

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# IMPORTANCE AND ROLE OF FOLKLORE FOR THE RECONSTRUCTION OF HISTORY WITH SPECIAL REFERENCE TO NAGALAND.

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**Abstract:** The article intends to highlight folklore as an important source for the writing of the past history of Nagaland, which is inhabited by different tribal groups and where there is a dearth of written documents, archaeological and other evidences to reconstruct the history of the past.

**Keywords:** Meaning of folklore, development and changes, role and significance.

## Introduction

Like in other parts of North Eastern Region India, Nagaland which is inhabited by different tribal groups, each having their own distinct rich culture and tradition and where there has been lack of written documents, archaeological and other evidences for the reconstruction of the past history, folklore serves as an important source for the writing of the past history. As an alternative source to written documents, archaeological and other evidences, folklore is significant to explain and understand societies in the context of preserving cultural diversity and protecting minority cultures especially those of indigenous people and marginalized social groups, which includes peasantry, labour, ethnic groups and women. So folklore of a group and tribe reinforces its sense of ethnic and social identity and it is a living and still developing tradition rather than just a memory of the past. Folklore also serves as an important element of the rich cultural heritage of every Naga tribe and it becomes important for the writing of history as well. It is through such an understanding that folklore is considered as an important alternative source for the reconstruction of the past history of the Nagas, particularly with the growth of ethnic crises where people often traced the roots of their respective indigenous history to folklore.

## Meaning of Folklore

In simple term folklore can be defined as the traditional art, knowledge and practice that is disseminated through oral communication and behavioral examples. Every group and tribe with a sense of its own identity shares as a central part of that identity- folk traditions which includes things people traditionally believe, do, make and say. The term folklore was coined by the british antiquarian W.J. Thoms as early as 1846 but we find that its implications changed overtime to become more comprehensive. The term folklore tends to emphasize its diverse nature consisting of, for example- traditional customs, tales, sayings, legends and art forms preserved among a people, a group and tribe. In this sense we find that folklore applies not only to words or ideas but also to physical objects and the word folklore names an enormous and deeply significant dimension of culture.

In popular usage sometimes folklore is limited to oral literature tradition, however in modern usage, folklore is an academic discipline and the subject matter of folklore comprises the sum total of traditionally derived or orally or imitatively transmitted literature and also includes material culture and customs of sub-cultures which exists within predominantly literate and technologically advanced societies. One thing we need to note here is that this new definition emerged rather than developed through the ages to include its importance as a source for the reconstruction of history and though folklore connects people to their past, it is a central part of their present life and is at the heart of all cultures including our own throughout the world.

## **Development and Changes in the Realm of Historical Thought and Writing Which Necessitated the Use of Folklore Sources for the Reconstruction of History**

From the year 1930 onward immense developments and changes were taking place both in history as well as in folklore studies. With regard to the development of folkloristic in India, a renowned folklorist from Assam, North Eastern Region, Birendra Dutta has mentioned that folklore studies in India became much more extensive with new perspectives and specialization. He has mentioned the various stages of development of modern folkloristic in India and mentions that the introduction of departments of folklore in universities is a post independence phenomenon (Dutta, 2002, pp. 18-20.) As the scholarship of folklore developed with new ideas, scope and methodologies, its importance as a source of history also grew. In the field of history too, great changes and new trends made headway after 1930. It was in the 1930's that the French historian George Lefebvre coined the term history from below, however it gained its importance and popularity only in the 1960's through the writings of British Marxist historian E.P. Thompson and others. History from below was an attempt to understand the real people and it promoted the evaluation of the lives and thoughts of premodern peasants, the development of working class and the actions and activities of women in a community wherein the historians diverted and shifted their attention from the writings of political history to the investigations and writings of new social, cultural and economic histories of the past. The emphasis of gender in history too began since the 1960's particularly with the emergence of feminist movement and thought which made an extraordinary impact in the social sciences and humanities. Most of the written documents were silent on all such new aspects and hence this shift of focus perforce has led to the necessity of using folklore sources to fill up the so called gaps or blanks of history.

## **Role and Significance of the Various Ingredients of Naga Folklore, Which Helps in the Reconstruction of Past History**

Nagaland is a multicultural state and the folklore and oral narratives of every tribal groups served as a great repository of informations with regard to the life style of the people, with regard to the geographical landmarks, with regard to the names of places, customs and beliefs of the people and also with the important past events in the past history of the Nagas. Many scholars of history, ethnoarchaeology and anthropology have drawn upon such folkloristic and oral sources for the interpretation of the cultural and historical materials. What is also of great importance is its significance to the people who owns this folk traits and stories as a cultural legacy. As a matter of fact, the various ingredients or stuffs of Naga folklore such as myths, legends, tales and various art forms are part of Naga history. It is their past, their present and also what makes up the essence of their future identity.

Folksongs, dances and music are also essential ingredients of Naga folklore and the traditional Naga culture. Every tribe have their own traditional folksongs, dances and music which apart from their entertainment value plays a vital role in rituals and festivities and served as a means of recording history by preserving informations about important past events in the history of the Nagas. For instance, Naga traditional folksongs are both romantic and historical- with songs narrating the entire stories of famous Naga warriors and ancestors and the important events of past history. In addition Naga designs on fabric and art also depicts religious, social and cultural significance and concepts of every tribal culture. We also find Naga traditional knowledge based on plant varieties and plant extracts developed by local medicine men also falls within the purview of Naga folklore to the extent that this technique embody scientific technique and handed down or passed down through generations in the community.

Nagas have no written record about their origin and the route of immigration to their current location and as elsewhere in other part of the North Eastern Region, India, the British were the pioneer who encountered the Naga people, studied about them and wrote about the people by using folklore sources such as myths, legends, folktales of different types as well as various kinds of folksongs to trace the history of the Naga people.

Thus, we find that in Nagaland as elsewhere in other parts of North Eastern Region where there is a scarcity and lack of written documents and other evidences, folklore served as an important source for the reconstruction of the past history. Folklore also plays a significant role for the preservation of the rich cultural heritage of the Nagas. The British colonization spread of Christianity and modernization has abruptly disrupted many of the rich and moral value practices of the traditional Naga culture for example, the early western missionaries opposed the use of traditional folksongs by the Naga Christians, as the songs were perceived to be associated with spirit worship, wars and immorality. As a result translated version of western hymns were introduced leading to the slow disappearance of the indigenous songs and music from the Naga hills. But today we find that there is a surge of interest and keen desire for the preservation of Naga folklore, which is encouraging an increase in the scholarly research toward the preservation of Naga folklore and the rich cultural heritage of the Nagas.

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