PROFESSIONAL EDUCATION AND SC/STs: A FOCUS ON SCIENCE AND TECHNOLOGY INSTITUTES

Dissertation submitted to the Jawaharlal Nehru University in partial fulfilment of the requirements for the award of the Degree of

Master of Philosophy

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Certificate

This dissertation entitled 'Professional Education and SC/STs: A Focus on Science and Technology Institutes' submitted by Pindiga Ambedkar to the Centre For the Study of Social Systems (CSSS). Jawaharlal Nehru University, in partial requirement for the award of the degree of Masters Of Philosophy (MPhil), is an original work and has not been submitted so far. in part or full, for any other degree or diploma of any university.

We recommend that the dissertation be placed before examiners for evaluation.

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Declaration

I, Pindiga Ambedkar declare that the dissertation entitled 'Professional Education and SC/STs: A Focus on Science and Technology Institutes' submitted by me in partial requirement for the award of the degree of Masters Of Philosophy (MPhil) is an original research work and has not been submitted so far, in particular or full, for any other degree or diploma of any university.

Pindiga Ambedkar

To my parents who struggled against all odds to get me educated and Gowri who taught me what love is and what it means to miss that.

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Introduction

> Education in Arts and Law cannot be of much value to the Scheduled Castes [and other marginalised sections] either to the graduates or to the people. It has not been of very high value even to the Hindus. What will help the Scheduled Castes [and other marginalised sections] is education of an advanced type in Science and Technology ... Without Government assistance, the field of Advanced Education in Science and Technology will never become open to Scheduled Castes [and other marginalised sections]. (Ambedkar, B.R, 1942-46)

Dr. B. R. Ambedkar's insightful observation about the importance of advanced education in the field of science and technology for the upliftment of people belonging to the Scheduled Castes and other marginalized sections of Indian society is the entry-point for this study. This study is an attempt to evaluate the situation of institutions of advanced learning (like IITs and IISc) in the context of SC and SC representation, both among the students and faculty members, 65 years after this observation by B.R. Ambedkar. Such an evaluation becomes more than necessary especially in the context that Reservation policies are implemented in these institutions in order to ensure the entry of marginalized sections science and technology. Professional education is crucial for the marginalised sections as it enables them to gain economic wealth that is so important for subsequent generations debut into the lucrative professional sector and MNC driven economy. By professional education we refer here to technical courses and programmes in engineering, technology, management, architecture, town planning, pharmacy and applied arts & crafts, hotel management and catering technology. Professional education in science and technology institutes is the focus of this study. While it is true that through reservations the marginalised sections gain entry into the elite S&T institutions. But the question is how far the political economy of coaching classes and the atmosphere in elite S&T institutions are conducive to the students from marginalised sections.

Studies (Desai and Kulkarni 2008) point out that the educational gap for SC/STs at college level is not only high but has not shown any improvement in the past few years. Affirmative Action seems to have helped decrease inequality at the primary level permitting entry into low-skill jobs. A large section of SC&STs in Public sector are found in Group C, consisting of jobs such as driver, technical, typist and the like, requiring education up to the class 8 or found in Group D. Group D consists of jobs like peon and watch man and the like, that require basic literacy. Even in this sector of low skill jobs, "there are vast differences between those who have year- round job and those who are self employed or work as casual labourers." This only points out to the process by which dalits are not able to enter higher paid jobs primarily due to lack of access to professional education. Even for a handful of candidates who manage to enter premier institutes the process does not end. The ordeal socialisation into the academic culture elite institutions is great for the SC&ST students. Recent media reports about the increasing number of suicides of students belong to SC/ST communities in these premier institutes has only further amplified our interest into this issue.

In the following sections of this introduction we wish to highlight the factors that relating to education and social mobility among the SCs and STs. It then lists the objectives and research questions of this dissertation which is based on literature survey.

The Role of Education in Social Transformation

Scholars like S. Thorat have already explored the relationship between caste system and economic discrimination and deprivation. At the same time, the impact of caste system is not limited to the sphere of economics alone but has far-reaching implications in the socio-cultural sphere as well. Thorat's insightful observation about the inter-group inequality which is characteristic of Hindu society is worthwhile to mention here. He writes,

> Inter-group inequality in the economic sphere is a basic and unique characteristic
> of the Hindu Society. Wide differences continue to prevail between the castes, in
> terms of access to capital assets, employment, education, income and wealth, and
> these differences closely correspond to the scheme of economic rights as
> prescribed in the classical form of the caste system. Historically, the caste system

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forms the framework for the material life of Hindus (as much as the social, cultural and religious life). The essential features of economic organization of the caste system are the unequal and hierarchal assignments of economic rights between the castes ... Among them, the untouchables who are placed at the bottom of social and economic hierarchy of the caste system, suffered the most from lack of access to all possible sources of income. The manner in which the caste based customary rules related to right to property, occupation, employment, wage, education were devised, left no choice to the untouchables except to serve the higher castes as wage labourers. [Thorat, 2005 in Thorat, Aryama and Prashant Negi (ed.): 66-7].

Education has the power to transform both individual and the society. The individual through education develops his/her mental capabilities, enhances skills and expands ones understanding about the society. 'Education comes next only to the important necessities of life-food, clothing and shelter.'(Chalam 2008). Education is all the more important for certain communities that have been denied access to various material benefits because of their social origin, especially the Scheduled Castes/Scheduled Tribes, backward classes and women. The Scheduled Castes are the mass of people who were earlier treated as untouchables in the society. These mass of people were excluded from all spheres of social life. The 'untouchables' through ritual sanctions were debarred from owning any property, having access to education; they were not even allowed to move freely in the streets as it was believed that even their shadow polluted the others. So they were allowed to move around only during the mid-day when the sun was over head. The so-called 'untouchables' even today live on the margins of villages or in separate hamlets close to where the main village is situated. These people, along with the Scheduled Tribes or 'adivasis'(a term the community members address themselves as) happen to be one to the most impoverished sections of Indian society. The 'adivasis' are the other mass of people who are excluded from the mainstream society because of their geographical location. The 'adivasis' live in areas that are close to the forests and cut off from the so-called 'civilisation'. The 'adivasis', like the 'untouchables', have also been structurally cut-off from the development processes throughout.

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Dr. B .R. Ambedkar, the chairman of the Drafting Committee through relentless struggle in the Constituent Assembly was able to secure certain rights for marginalised sections. The Constitution of India recognises the 'ex-untouchables' as Scheduled Castes and the 'adivasis' as Scheduled Tribes. The Indian Constitution has certain safeguards to help SC and STs, enabling them to catch up with the rest of the society. There are certain provisions in the Constitution which enables the Government of India to provide certain programmes for the benefit of the Scheduled Castes. Reservations according to the proportion of the population are given in government-run educational institutes, government jobs etc. The Indian Constitution if followed in letter and spirit is a document that can help in transforming our society - which presently is highly segregated and exploitative - into a more democratic one, politically, economically and socially. Social change and transformation have historically been fundamental characteristics of any civilization. The interaction and conflict between the existing social relations and institutions provides an impetus for this change, resulting in a new form of social order. In India around the mid nineteenth century, with the interaction of the occidental and oriental cultures and with the introduction of the modern institutionalised forms of education, new channels of social change were created. According to Britto (1978) historically education has existed in some form or the other and has influenced the destiny of societies at all stages of their development. The general purpose of education in simple societies at an individual level was enhancement of various aspects of one's personality whereas at the community level it aimed at transmission of specific kinds of cultural patterns for group sovereignty. As societies become more complex in nature, education becomes institutionalised and evolves into a social institution with specific functions of its own. She defines institutionalised education as a process through which the 'individual is fortified for a role in a system that may demand either conformity so that the status quo is maintained or encourage innovation, in which case individuals have an active role to play in changing society. Similar views are expressed regarding the role and meaning of education by Halsey (1997) who defines institutionalised education as 'a planned process of cultural transmission consisting of three elements of preservation, innovation and dissemination'.

Sabyasachi Bhattacharya (2002) presents a different view of the meaning of institutionalised education with an emphasis on its ability for social and economic mobility and as a social right of every individual. He describes institutionalised education as characterised not only by the form of the setting where education is imparted but also by the fact "that it carries a social or a governmental mandate and in consequence recognition of individual's completion of designated stages of education and hence possible claim to employment or other kinds of engagement as a part of what demographers call 'the economically active population'."(p.2). Here education is also recognised as an important means of social and economic mobility or means to access resources.

Although the colonial-imperial interests were primarily the guiding principles for introducing these new institutions, they held a radical structural implication for a social order based on caste, class and gender stratifications. Access to the modern education system in itself was a process of emancipation for the marginalised groups. In the Indian context modern education system holds tremendous significance for the political empowerment of the marginalised sections of the society. It has increasingly been seen as a means of socio-economic mobility by the populace. However the nature of transformation that is aimed through education depends upon the purpose & content of the education, and access to the education system itself. Education is not a neutral enterprise but is shaped by the nature of the social order. Moreover, the character of the education system is not only determined by the existing social structure but it in turn also influences the social structures. The stratifications that prevail in society enter into the education system through different forms of exclusionary processes. They broadly get reflected in two ways. Firstly, through the limited access to education to those sections which have been historically deprived from the education system like women, SCs, STs, Backward Classes, religious minorities (Muslims in India) and especially women from the marginalised groups.(Hasan 2008), (NSSO 1999-2000) Secondly, these sections are excluded by the selective representation of the experiences of the privileged groups and a complete invisibility of the experiences and world view of the marginalized sections of the society. Thus the education system can reinforce the stratifications of the larger social structure. Education through its immense potential for social transformation is surely one of the important tools for the marginalised sections of the society to progress.

This brings us to the concept of social mobility. Social mobility in general is defined as an improvement in income, education, social standing either of individual or household. Social mobility simply means shift from one status to another status either vertical or horizontal direction. Although social mobility is examined in a given system of social status, or unit of status like occupation in western societies which are relatively open in nature and where occupation plays the most significant role in determining one's income, expenditure pattern, authority, life style, and, in a way, one's social class position. But in Indian Society it is caste or other such primordial unit that has ever enjoyed the sole primacy in determining one's social status in the system of given social stratification, and occupation and other units of status or position are only the additional inputs to it. Hence social mobility, in western sense is possible, in Indian society, only in the case of major shift of these status units or positions but such social mobility is only partial and not total..." (Nandu Ram 2008).

While horizontal or vertical movement of households or caste communities happens through state policies, social movements, political representation and power, there is no doubt that education is the most crucial factor. This has been true of all societies where marginalised groups fought for their rights. Even more important is the question what kind of education is important for the people to acquire through whose benefits one can live a decent life. While some headway has been made by SC and STs in primary education and minimally in liberal higher education, there is a huge gap in professional education especially in the S&T sector. In the present situation where the market economy plays a major role, it is necessary for people to acquire advanced level education that enables them to cope up with the new demands. With the entry of private players into the education sector, a lot of new institutes and colleges have come up. This entry of the private players in the realm of education has a variety of implications. First of all, in order to gain access to such higher educational institutes one needs both cultural capital and the power of economic capital. Further, most of these newly emerged institutions are driven by profit motives. This in a way closes the entry for the marginalised

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sections as they do not have the purchasing power[1]. This new form of exclusive mechanism still remains outside the ambit of any concrete policies which ensure social justice.

A Brief Overview of Affirmative Action in India

The 'Enlightenment' ideas of democracy, liberty, equality, fraternity etc. had raised awareness among the subjugated population about their civil and political rights all over the world. In the earlier period of absolute feudalistic values, it was the elite who had the privilege of higher education. In the context of India, from the second half of the 19th century onwards there were many initiatives to make education accessible to common people. There were also stiff resistances against these initiatives from the upper strata of society. However, the transformation of the economic order in India due to the colonial interventions (and the transformation from feudalism to capitalist mode of production) and the emergence of a new form of labour market drastically changed the traditional conception of education. In this new scenario, to meet the demand of the labour market it became imperative for the colonial administration to open the doors of education to all strata of society. The immediate beneficiaries of this transformation were the people belonging to the upper castes. Through this policy of 'sponsored mobility', the native elites were given certain concessions through reservation in higher services like Indian Civil Services. But at the same time, this radical changes in the nature of education did trickle down to the lower caste order who were otherwise denied access to any form of formal/modern education (but this was due to the spillover effect)[2]

Within a short span of time, even though small in number, the newly emerged lower caste intelligentsia started demanding access to education and representation in the administrative services for the lower castes. An outcome of these demands was reflected in the policies of princely states of Mysore and Kolhapur. The first Indian ruler to implement Reservation Policy in India was Chatrapati Sahu Maharaj of Kolhapur. On 26th July 1902 he introduced 50%

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[1] According to Education For All by Nambissan and Sedwal, in 1993-4, as many as 48.1% of Dalits in rural areas were below the official poverty line in comparison to 31.3% of others (excluding Dalits and tribal persons). In urban areas, almost 50% of Dalits were below the poverty line in the same year, also see Anand Teltumbde(2000) in 'Impact of New Economic Reforms on Dalits' in P.G. Jogdand, ed., New Economic Policy and Dalits (Jaipur: Rawal Publications, 2000)

[2] Spillover effect is an economic term which means that the intended target was a different group but as a residual effect, reaches other groups; in this instance, it indeed benefited a few members of the lower castes. This was the elite that demanded the fruits of education for their community.

Reservation in his state services. He also started special hostels for different communities so that they could have access to education without much hardship. Despite all such individual efforts and initiatives, certain sectors of society (especially untouchable and 'Shudra' communities) were left out due to structural inequalities prevalent in society. This was quite similar to the situation of Blacks in Euro-American nations. To undo such injustices, different governments across the modern world have devised certain policies to enable the socially deprived sections to access higher education. Such constitutional initiatives are broadly designated as Affirmative Action policies. One of the initial steps of these policies has been to make it mandatory that certain seats were reserved in educational institutes for the children who belonged to the underprivileged racial, ethnic, class or caste communities. But it is imperative to mention here that such kinds of policies are also a product of growing pressures from different social movements spearheaded by the intelligentsia of these communities. For instance, in the context of India, one of the early such movements was led by Jyotirao Phule who repeatedly appealed to the colonial administration to ensure the accessibility of education to the people belonging to the lower castes.[3] Another example is 'Justice Party's' demand for the education of the non-Brahmins in the Madras province.

A serious and systematised impetus for implementation of Reservation policy designed for the marginalised sections (SC/STs) of society came to be enabled through the provisions enshrined in the Constitution of independent Indian nation-state. The reservation policy in India is to have a mandatory quota set aside for the respective disadvantaged group. At present the quota for the SCs is 15 per cent and 7.5 per cent for the STs and 27 per cent for the Other Backward Classes[4]. Also there are certain schemes like scholarships, hostel etc., given to the SC/STs.[5] We can say that the Indian constitution is an antidote to the 'Manu Smriti' which codified the caste hierarchies and its relations with one another in terms of property, education, customs etc.

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[3] The memorandum submitted by Mahatma Jotirao Phule to Hunter Commission in the year 1851 is one of the earliest demands from the lower classes to have free and compulsory education.

[4] Other Backward Classes are an official category recognised by the Government of India who are socially and educationally backward.

[5] Policies of the government for the benefits of SC/STs with respect to Education:

Post-matric scholarship, reservations of 15 percent for sc and 7.5 percent for STs in government run educational institutes. Post-matric scholarship is given to all the SC/ST students whose parental annual income is less than two lakhs. Now there is also a scheme of national fellowship(RGNF) to SC/ST students (the number is restricted to 2000 for SCs and 667 for STs) who are pursuing research in different fields of study. There is a special scheme to encourage SC/ST students in professional institutes but the number of beneficiaries are only 429 because of the structural hostility of these institutions.

Constitutional Provisions to Ensure Equality among Citizens

The Constitution of India is a guiding principle for organizing the social life of Indian society. Earlier, there were certain sections of people like women and Shudras who were considered to be equal to animals. This was codified in the Manu Smriti and since it was followed for a long time, it has become commonsensical knowledge to treat women, Shudras and untouchables with contempt. It remains a common practice in most parts of the country even today. The increasing atrocities against dalits for instance are an indicator of the widespread nature of such kinds of prejudices and traditional convictions.

Constitution makers were aware of many such social inequalities present in the Indian society and hence made direct provisions to guarantee social justice in the Constitution. Some of the provisions in the Constitution that enable the government to take measures to deal with inequality, discrimination and marginalization so that equality could be brought about in the society are given below:

Article 15.

(1) The State shall not discriminate against any citizen on grounds only of religion, race, caste, sex, place of birth or any of them.

(2) No citizen shall, on grounds only of religion, race, caste, sex, place of birth or any of them, be subject to any disability, liability, restriction or condition with regard to—

(a) access to shops, public restaurants, hotels and places of public entertainment; or

(b) the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of State funds or dedicated to the use of the general public.

(3) Nothing in this article shall prevent the State from making any special provision for women and children.

1[(4) *Nothing in this article or in clause (2) of article 29 shall prevent the State from making any special provision for the advancement of any socially and*

educationally backward classes of citizens or for the Scheduled Castes and the Scheduled Tribes.]

2[(5) Nothing in this article or in sub-clause (g) of clause (1) of article 19 shall prevent the State from making any special provision, by law, for the advancement of any socially and educationally backward classes of citizens or for the Scheduled Castes or the Scheduled Tribes in so far as such special provisions relate to their admission to educational institutions including private educational institutions, whether aided or unaided by the State, other than the minority educational institutions referred to in clause (1) of article 30.]

If we look into why there are sub-clauses in Article 15, it would be clear that these sub sections are created keeping in mind the day to day realities that exist in society. In every village the SCs settlements are forced to be located outside the boundaries of the village. And they are not allowed to use the public wells and their movement to other parts of the village is restricted. Since these practices are a reality, the above provisions in the Constitution enable the government to take measures to control such practices. There are innumerable examples of these sorts. One recent instance of such kind of atrocities would be the case of a village (Uttapuram in Madurai District) in Tamil Nadu where a wall was built by the caste Hindus to prevent the Dalits (SCs) from using that particular road. Another shocking example that can be cited is the Khairlanji episode in which an entire Dalit Family was killed except the male head, who was not present at the time of the incident. The incident goes like this: Bhotmonge's are a Buddhist family who has a small plot of their own and they did not have to depend on the caste Hindus for any work. This enraged the upper castes of the village and they brutally murdered four members of the family. They in fact paraded the daughter and mother naked in the village, sexually assaulted them and then brutally murdered them.[6] These examples show the condition of the day to day life in rural India.

Article 15 clause 4 and 5 given above enable the government to make special provisions for the educational advancement of the marginalized sections.

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[6] For a detailed account of the incident go through Anand Teltumbde's *Khairlanji: A Strange and Bitter Crop.*

Art. 16. (1) There shall be equality of opportunity for all citizens in matters relating to employment or appointment to any office under the State.

(2) No citizen shall, on grounds only of religion, race, caste, sex, descent, place of birth, residence or any of them, be ineligible for, or discriminated against in respect of, any employment or office under the State.

(3) Nothing in this article shall prevent Parliament from making any law prescribing, in regard to a class or classes of employment or appointment to an office

(4) Nothing in this article or in clause (2) of article 29 shall prevent the State from making any special provision for the advancement of any socially and educationally backward classes of citizens or for the Scheduled Castes and the Scheduled Tribes.

2[(5) Nothing in this article or in sub-clause (g) of clause (1) of article 19 shall prevent the State from making any special provision, by law, for the advancement of any socially and educationally backward classes of citizens or for the Scheduled Castes or the Scheduled Tribes in so far as such special provisions relate to their admission to educational institutions including private educational institutions, whether aided or unaided by the State, other than the minority educational institutions referred to in clause (1) of article 30.]

Article 46 which is in the Directive principles of state policy is a guide for the different governments for making socially relevant policies so that the interests of the marginalized sections of the society are protected. The article given below expects the state to promote the educational and economic interests of the Scheduled Castes and Scheduled Tribes in particular.

Art.46. *The State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation.*

The articles with respect to the educational advancement of the SC/STs are highlighted in italics. But even after sixty years of the adoption of the constitution why do the SC/STs continue to be at the bottom is one of the questions this study would attempt to address. If we take any parameter of development they still continue to be at the bottom of the table. The primary answer to this question lies in the lack of political will on part of the ruling classes. It is important to register here that even today the political power of the nation-state remains in the hands of a group of elite families and communities. They hardly show any commitment to the cause of social justice except occasional promises. But the presence of larger socio-political movements of lower caste communities is the only possible guarantor of this vital cause. In fact this persistent lack of political will on part of the ruling classes to implement such policies has led many to believe that were it not for Dr. B.R. Ambedkar, the above provisions would not have become part of the Constitution. However, as the guardian of the Constitution, the nation-state has the obligation to erase this structural inequality thereby the measures like reservations are an entry point towards achieving a greater democratic polity. The other way of addressing the same question would be to abolish all the advantages a person receives through his/her economic/cultural/symbolic inheritance.

The sociological significance of the provisions in the Constitution is massive. A mass of humanity is being allowed to come out of their traditional-structural occupations and positions. But the question is whether the 'society' at large, i.e., the elites who have control of the all the institutions of power, culture, economy etc., is ready to share a social life that treats all human beings as equals. The tardy implementation of the reservation policies speaks of the attitude of the people in positions of power; be it in any field of social life.

Issues and concerns regarding Reservation Policies

Russell says "wherever unjust inequalities exist a man who profits by them tends to protect himself from a sense of guilt by theories suggesting that he is in some way better than those who

are less fortunate. These theories involve a limitation of sympathy, and opposition to justice and a tendency to defend the *status quo*. They thus make the more fortunate members of the community into opponents of all progress; fear invades their souls and they shrink timidly from all doctrines that they suspect of having a subversive tendency, and of being therefore a threat to their own comfort."(Russell 2008) From the above lines we can see that opposition to affirmative action policies stems from the worry that the 'social elites' would no longer have the privilege they had, but would have to share it with the other under-privileged. Interestingly, two notions of equality are operative in this debate. The arguments of the upper strata regarding the equal grounds for battle pitch the question of equality as a matter of individual choice. The invocation of slogans like 'every individual is equal', abstracts the concept of equality and thereby evades the question of structural inequalities which are historically concrete and tangible realities and experiences. In the context of India, these inequalities are largely structured through the hierarchical relationship among castes. The governmental policies about reserving certain percentage of seats to the people who belong to the lower caste order in terms of education as well as job opportunities is derived precisely out of the recognition of these structural inequalities which are historically constituted. Communities that have been systematically and historically denied access to material as well as cultural goods are in need of certain policies which facilitate the recovery of their self esteem and pride.

But there are certain arguments that argue affirmative action policies are not needed. A predominant reason cited to supplement this argument is that merit will be compromised in this process. The above argument could have had some justification if society was free from inequalities; especially caste inequalities. The proponents of the above arguments remain oblivious to the fact that society is highly stratified and different forms of exploitation exist. In fact, it is entirely possible that they are aware of such inequalities but are insecure that the people of the lower strata would take away their places which their ancestors have carved out for them in the form of private property, social status or on the basis of birth, power, and access to institutions.

Contrarily, a crucial argument put forth is that affirmative action policies are much needed as they reduce the structural inequalities to some extent by enabling lower classes/castes to become part of the mainstream which they were historically denied access to. Yet another argument

regarding the affirmative action is that it is a design of the ruling classes in order to continue the exploitation, but in return they give something to the marginalized in order to pacify them. Proponents of this argument believe that the fundamental exploitation is class-based and that the abolition of class-based exploitation would automatically ensure the abolition of all other forms of inequalities. This orthodox Marxist understanding about the social structure and class struggle has already proven insufficient in dealing with the peculiar socio-religious system prevalent in India which is based on what B.R. Ambedkar terms as 'graded inequality'.

Galanter (1984) argues that preferential treatment can be justified mainly on two grounds: (i) may be viewed as needed assurance of personal fairness, a guarantee against the persistence of discrimination in subtle and indirect forms ; and (ii) it is justified in terms of beneficial results that it will presumably promote : integration, use of neglected talent, more equitable distribution etc. He points out that the presence of SCs and STs in legislative bodies is mainly because of the provisions of reservations and very few candidates from the above categories can successfully contest in an open completion.

Another important argument against the implementation reservation policies is that such kinds of policies adversely affect the productivity of nation. Such kind of arguments are predicated upon the belief that the nation fail to choose the best among its citizens due to reserving opportunities on the basis of caste or other forms of identities. Many studies had already shown the fallacies of such arguments. For instance, Thorat (2005) writes,

> Relaxations in qualifications for appointment may hamper the productivity of firms by forcing them to hire incompetent workers. However, as with overall efficiency argument, there is little support for this view in economic theory and in the empirical literature on discrimination. The fallacy of the argument becomes evident when one considers the fact that recruitment under reservation in the public sector in India and elsewhere rarely involves the alteration of minimum norms of eligibility. Therefore, the question of compromising on productive efficiency does not arise. (p.809)[7]

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[7] Thorat, S (2005) "Reservation and Efficiency: Myth and Reality", Economic and Political Weekly, July 2005

The study of Weisskopf and Ashwini Deshpande (2010) has also shown that the argument of reservations affect efficiency does not stand when empirically tested. They write,

> The results that we have obtained from our analysis of productivity in the Indian Railways are consistent with the results from productivity studies in the United States, in that there is no statistically significant evidence that AA (Affirmative Action) in the labour market has an adverse effect on productivity. Our results are stronger, however, in that we do find some suggestive evidence that AA in the labour market actually has a favourable effect – in particular, that the growing proportion of SC & ST employees hired into high-level A+B category railway jobs, largely through India's reservation policies, has contributed to greater overall railway productivity. (p.15).

In the above study A+B category designates the managerial level jobs. This indicates that the presence of people belong to lower strata in the decision making level in fact improves the productivity. Such kinds of empirical findings show that most of the arguments regarding the efficiency and reservation are a by-product of certain social prejudices.

Reservations in India have some more opposition which argues that reservation divides people on the basis of caste and thereby hampers the unity of the nation. For the proponents of such an argument, caste is no more considered a matter of concern for India. According to this group, caste is a tool employed by the politicians to garner votes. Such kinds of argument can be made only if one is completely unaware of the actual condition of social life in India. If the argument is that the question of caste divides India, then we have to think of the nature of this unity.

Despite constitutional provisions and reservations, studies (Desai and Kulkarni 2008) in based on NSSO data show that the representation of SC &STs in higher and professional education as late as 1999 - 2000 is 4.83 percent only. Further field studies in schools expose the discrimination at the day to day level. At a college in the city of Aurangabad, Maharashtra 80%

of the dalit children said that they were made to sit in primary school. In another study, a dalit school teacher reported that they were asked to sit separately and their notebooks and slates were not touched by other teachers and students. Similar visits and studies in S&T educational institutions are required to find out the issues and concerns of SC&STs in science professional education.

Science and Technology Education

The most striking fact about science and technology policy in india is that it has been the prerogative of a small group of scientists and administrators within few public institutions. The absence of any involvement of academicians, civil society, and other stake holders in matters that affect the livelihood and safety of citizens in major projects has been noted time and again. (Vishwanathan 2001; Prasad 2008)

Science and Technology education on the other hand is characterised by an asymmetrical structure with few premier institutions with very little or no contact with other medium and local academic institutions with minimal amenities. A major observation of scholars in the field is the absence of communication and collaboration even among the scientists working on the same theme within the country. (Prasad 2005), something that Thakur (2004) calls the absence of 'epistemic community'.

Our point is that all this indicates the absence of democratic mechanisms in the science and technology sector which has by and large remained out of public scrutiny due to the enormous importance to S&T in ushering economic growth.

The weak situation of SC/STs in science and technology education is also part of this undemocratic functioning of the S&T sector in India. This dissertation would explore one aspect of the problem namely SC/STs in premier S&T institutes in India.

Objectives of the Present Study

- To examine the importance of education for social mobility among SC/STs.

- To look at presence of SC/STs in Science and Technology Institutes, both at student and Faculty levels.

- To look into the nature of Science and Technology education with respect to diversity, and democracy.

Methodology

The M. Phil dissertation at JNU is to be a literature review on the subject. Since there is not much work on the question of SC/STs in Science and Technology, the research uses both primary and secondary data for analysis but largely relies on secondary source material. On one hand, this study attempts to provide a critical overview of the existing set of studies regarding affirmative action policies and on the other hand tries to analyse the available statistical data in order to explore the situation of the implementation of Reservation policies in specific institutions of advanced learning like IITs and IISc. The primary data in this dissertation has been collected mainly through personal visits of the researcher to various government offices and other concerned institutions and individuals. The Ministry of Human Resources Development and the Ministry of Social Justice and Empowerment offices are some of major sources of information. Some of the data has been procured through Right to Information Act, 2005. The reports of various government-appointed committees, annual reports, census data, etc., are also used for analysis. The secondary resources mainly comprised of various studies by different scholars. As part of its analysis it has used critical insights of various scholars, especially those who have worked on the question of social equity and justice in the context of race, gender, caste, class and ethnicities. The fundamental analytical approach of this study comprises of both qualitative and quantitative methods. One of the reasons behind using both analytical methods is that the central question of this research, i.e., social inequality and marginality, has material as well as symbolic dimensions.

The material has been organised into three chapters which are as follows:

Chapter One

The first chapter, titled "Education and Scheduled Castes/Scheduled Tribes", deals with the question of the role of education in the emancipation of SC/ST communities. It traces the changing notions of education and its varying social roles historically. The chapter begins its enquiry by mapping the debates around the access to English education and its role in the creation of new Indian middle classes and the intelligentsia. It also elaborates upon how the official categories such as 'Scheduled Castes' and 'Scheduled Tribes' have originated historically. It provides a brief sketch about the Constitutional definition of these categories.

The chapter traces the socio-economic status of Scheduled Castes and Scheduled Tribes through a census analysis as well as various data about atrocities committed against lower caste population. This section also deals with various theories regarding social mobility. At the same time, the attempt of this section is not to simply track the debates around social mobility but to mark certain historical ruptures through these debates. Further, this chapter makes a comparative analysis between educational development during colonial rule and that of post-colonial rule, especially in the context of accessibility of education regarding the SC/ST population. The chapter concludes with an observation that the accessibility to science education is a necessary requirement for the improvement of material condition of the lower strata of society. Using statistical data, this chapter argues that even though SC/STs lag way behind in all disciplines, their performance and presence in the engineering and medical stream (the institutions of science and technology in general) seeks special attention.

Chapter Two

The second chapter titled, "Higher Professional Education in Science and Technology: Scheduled Castes and Scheduled Tribes", deals with certain characteristic features of science and technology education in India. It examines the issues concerning the Scheduled Castes and Scheduled Tribes in the Indian Institute of Technology and Indian Institute of Science through some case studies. First of all, it traces the history of IITs and IISc in the larger context of the history of technical education in India. This chapter provides a graphic account of the competition prevalent in these institutions in terms of admission (entrance examination, interview, etc.), as well as an atmosphere within the institutional system. After furnishing an

account of the tedious selection process, this chapter argues that in order to diversify the knowledge production, it is necessary to critically examine the normative notion of 'merit'. This chapter deals with various hurdles that the students belonging to the lower strata have to face due to the lack of both cultural and economic capital. For instance, it becomes more than mandatory to enrol in one of the training institutes in order to pass the highly competitive JEE (Joint Entrance Examination). The average cost of such kind of coaching (a minimum of 2 lakh rupees) is well beyond the reach of anyone belonging to the lower strata. Similarly, even after passing the entrance examination, most of the students belonging to the lower strata face hardships due to the lack of cultural capital. Most of these students are first-generation graduates and largely hail from rural areas. Drawing on the insights of Pierre Bourdieu's studies on education, this chapter argues that the people who speak in favour an abstract category called 'merit' fail to take into consideration the fact that the notion of individual is a byproduct of various capitals one possesses or inherits – cultural, economic, social/symbolic capital. It further argues that the elite class managed to reproduce their position in successive generations because they possess/ largely inherit the requisite socio-cultural and intellectual resources which are essential for their success in an educational system.

This chapter also traces the official entry of SC/ST students into IITs. It also engages with similar questions and data about the IISs in order to show the discriminatory character of its institutional structure. Further, this chapter deals with narrative accounts of SC/ST students from IIT-Delhi in order to exhibit the structural as well as the everyday nature of discriminatory practices prevalent in this institution. One of the other areas 1this chapter engages in its course of enquiry is the near-absent presence of SC/ST faculty members in these premier institutions. Through the analysis of various data available, this chapter establishes the negligible presence of SC/ST faculty members in higher learning even after the mandatory reservation policies.

Chapter Three

The third chapter which is entitled 'Democracy, Diversity and Science Learning', will explore the relationship between Science and Democracy. The larger Indian backdrop for this chapter is the contrasting positions taken by Jawaharlal Nehru and Babsaheb Ambedkar. While Nehru took

science as value in itself in the process of nation-building and relied on 'the rule of experts', Ambedkar placed his emphasis on access to science as a necessary input in empowering communities. The chapter argued that the success of the Nehruvian vision in the scientific establishments have led to lack of diversity both in terms of providing space for multiple knowledge forms and access to deprived communities. As a result, these institutions continue to reproduce existing knowledge rather than produce new knowledge they continue to be elite enclaves.

In a nutshell, this research is an attempt to engage with the ideological nature of scientific knowledge produced by various science institutions in India in order to expose the structural interplay between social hierarchies and scientific expertise. Broadly, this study deals with the question of education and Reservation policies in general and the nature of the implementation of Reservation policies in institutions of higher learning such as IITs and IISc in particular.

Chapter One

Education and Scheduled Castes/Scheduled Tribes

"Education, in its broadest sense, is the means of this social continuity of life."

John Dewey

Education and its social organization has been the major factor for the advancement of societies and civilizations. Education helps people to reflect on the day to day affairs that happen around them and also of the things that are affecting their human condition. Education has many functions. One of the major functions of education in a country like India is that it enables people to improve their material conditions and earn respect in their particular community. There are three divergent views of education in the present day. The first considers that the sole 'purpose of education is to provide opportunities of economic growth and to remove hampering influences. The second holds that the purpose of education is to give culture to the individual and to develop his/her capacities to the utmost. The third holds that education is to be considered rather in relation to the community rather than in relation to the individual, and that its business is to train useful citizens' (Russell, p.15). Modern education is also viewed as an investment. Halsey et al. state, 'No sophisticated theory of education and the economy can ignore its contribution to economic development. Indeed, throughout the twentieth century the relationship between education and the economy has constantly assumed ever greater significance.'(1997:156)

Like every other society, in India too education was controlled by religious institutions. Education became a social/secular institution as the society progressed into the so called modern age (in the context of Europe the post-Enlightenment era). Collective and mass production increased the demand for skilled labour and the society had no choice but to expand the scope of education. In India also there was a demand for such education. Lord Macaulay the British administrator wrote in 1835 the famous Minute in which he advocated for English as the medium of instruction and the spread of Western Education. Though it was designed for effective

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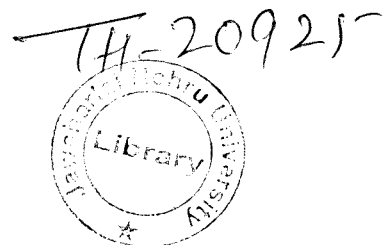
governance, it did introduce the Indians to a new world of opportunities and material benefits. According to P.N. Pandey; "though he [Macaulay] did not create the will for English education rather the desire had already its origin in the material advantages which were inseparably connected with the knowledge of English."(Pandey, 1988)[1]

Similarly, Prakash Karat argues that the English educated elites of the society were mainly the upper castes and their demand in the beginning was limited to better administrative positions in the British institutions. He observes that:

"English as a linguistic medium in education was instrumental in the creation of the new Indian middle classes and the intelligentsia. Colonial-ism through English, created a supply of clerks and persons for intellectual functions. But English as a colonial language was mainly confined to administration and an educational set-up suitable for providing administrative personnel. It did not become the natural means of communication between the urban centres and the vast rural hinterland. English was, therefore, confined mostly to urban groups who were trained to undertake subordinate administration and allied tasks...The rapid acceptance of English among the proto-middle class arose from two motive forces. There were, on the one hand, traditional upper caste groups like the Bengali Kayasthas, the Tamil Brahmins and the Marathi Chitpavans who changed their old literate occupations and began mastering English to serve their new masters. These elements outnumbered the sections of the middle class which could be classified as elements of the commercial and business groups. New forms of commerce, administration and legal institutions-all dictated the necessity of a westernised native class. This was provided for mainly by pre-existing social groups who made the necessary adjustments in their scholarly pursuits. Sanskrit and Persian, themselves languages divorced from the people, gave way to English." (1972: 26)

One can see from the above description that education was used as tool to get greater material benefits. This description also reveals that unlike the usual narratives where they appear

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[1] For a brief history of education in India, see Prem Narain Pandey, *Education and Social Mobility*, 1988

as emancipators of the downtrodden; the upper caste intelligentsia had no concerns for the toiling masses of the country. Prior to the introduction of western education, the learning was limited on to the dwija castes. Even among them women were forbidden from being educated. Due to religious sanctions the shudras, ati-shudras, women were equal to animals hence education was denied to them. The examples are numerous but the epic tale of Ekalavya epitomise the extent of this denial of knowledge. The epic narration goes like this: when he [Ekalavya] had approached Dronacharya to take him as a disciple, the guru refuses his request by saying that he is not eligible as the shastras forbidden the lower castes' access to formal knowledge. The idea here is to indicate the lack of material conditions available to the lower castes before the interventions of colonial rule. It is however imperative to mention here that my attempt is not to validate all the aspects of colonial rule but to highlight the fact that unlike the grand narratives of nationalism the experiential realities of colonial rule had multiple dynamics especially if we take into account the subjective location of the lower caste population in India.

If we take into consideration this historical matrix then we can even argue that the British interventions in the realm of formal education had benefited the lower caste communities in a substantial manner. Because of their post-Enlightenment historical location, the Britishers took serious note of discriminatory practices on the basis of caste hierarchy and opened the doors of education to all irrespective of one's caste belongingness. But there were innumerable accounts of the opposition from the Brahmins and other upper castes. But the newly emerged lower caste intelligentsia (even though they were less in number) and their consistent and committed efforts had sabotaged many of these upper caste efforts. To counter the Brahmin led upper caste moves against the lower castes' access to education; many of the Lower caste intelligentsia had worked hand in hand with the colonial administrators. One of the most revealing and foremost effort of lower caste intelligentsia had been exemplified by Jyotirao Phule and his establishment of the educational institutions as well the founding of Satyashodak Samaj. In the second half of 19th century Mahatma Jyotirao Phule started schools for girls and also for children belonging to Mahar and Mangs community. These are two numerically large untouchable castes in Maharashtra. Phule writes to the Hunter Commission in 1851 requesting the government with

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various proposals to show that the lower classes (during the British rule the lower castes were called so) could get access to education.

> "The Mahars, Mangs, and other lower classes are practically excluded from all schools owing to caste prejudices, as they are not allowed to sit by the children of higher castes. Consequently special schools for these have been opened by Government. But these exist only in large town. In the whole of Poona and for a population exceeding over 5,000 people, there is only one school, and in which the attendance is under 30 boys. This state of matters is not at all creditable to the educational authorities. Under the promise of the Queen's Proclamation I beg to urge that Mahars, Mangs, and other lower classes, where their number is large enough, should have separate schools or them, as they are not allowed to attend the other schools owing to caste prejudices."(Phule, 1882)2

Even after the efforts of visionaries like Phule the plight of the untouchables has not changed completely. The caste prejudices continue and when and where the untouchables started to assert their rights they are inflicted with severe atrocities by the dominant caste members in the villages. An example worth mentioning apart from those of the champion of the untouchables, Dr. B.R. Ambedkar, are the personal memoirs written by many untouchables who have documented the personal hardships and difficult circumstances imposed upon them because of the religious/societal sanctions on their mobility. Dr. Nigamde, one of India's top agricultural scientists had to face severe discrimination while he was attending a school that was in an adjacent village. He describes these experiences in his autobiography *In the Tiger's Shadow*[3]. His accounts about the experiences in the school clearly reveal the nature of caste oppression during the 1930's and 40's in Maharastra. There are numerous such examples and the best documentation available is contained in the number of autobiographies which narrate the humiliation and the discrimination they faced while attempting to get educated. This was the case for all the untouchables who wanted to avail of education. Surprisingly, even today this kind

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[2]Phule, 1881, *A memorial addressed to the Hunter Commission.* This is a very useful document to understand the plight of the socially backwards' struggle to get education

of discrimination exists and caste prejudices in different walk of lives are too rampant. Ironically even sixty years after gaining independence; in schools where mid-day meals are served, the children of the upper castes refuse to eat along with the students belonging to the untouchable castes. It was well reported that the students from the untouchable castes were asked by their teachers to clean the toilets daily before attending classes. In this prejudiced caste-ridden society it would require great courage and self determination to strive for a better life. At this moment, this is what the untouchables have at their disposal to move towards better living conditions.

Due to various historical experiences as well as the efforts of various socio-political movements, the untouchables have realised that their progress and ability to break free from caste oppression lies in achieving the benefits of education. The untouchables have started to avail whatever educational opportunities they come across. Though 'others' perceive them as inferior human beings, they have to ignore those caste slurs and continue to reap the advantages of education.

The untouchables have taken to education in a big way since the opportunities were available to them but the definitive break came through the success of B.R. Ambedkar, who against all odds and prejudices wrote the first and foremost successful history of a highly educated Indian from an untouchable community.. He was one of the first untouchables to graduate and go to USA and Great Britain to complete his Masters and Ph.D. He had returned to India to serve his community who were being treated worse than animals.[4] An achievement of this stature has encouraged millions of untouchables to deal with the question of education and the role of education in the upliftment of their own communities more seriously. The contributions of Ambedkar and the Indian Constitution drafted by him for the upliftment of the marginalised sections of the society would be discussed in detail in the next chapter.

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[4]For a detailed account of the sufferings of the untouchables during the early 20th century see the untouchables and how they have come to be by B.R.Ambedkar.

Social mobility and social change are concepts that need to be reviewed in order to arrive at their importance for a country like India. Indian society is highly stratified both 'vertically' and 'horizontally'. This 'vertical' and 'horizontal' stratification is due to the division of society into different castes and religious groups (caste division among different religious groups also exists). "The caste is held together by ties kinship, by a cycle of group observances, by bonds of mutual assistance and support, and finally by the power of the group to exact obedience to its rules."(Galanter, p.8-17) Mobility among different social groups was made possible, especially for the lower castes, after India adopted a democratic form of government to govern itself. For almost all Scheduled Castes the mobility is possible because they avail certain schemes of the government.

The Constitutional Denomination of Scheduled Castes and Scheduled Tribes

The untouchables are a mass of people who are about 162 million (2001 census) belonging to different castes and are the bottom of the Hindu social order (caste order). They are both among the 'bottom in the India society of both status and economic terms.'(Mendelsohn, et al, : 1).

The Scheduled Castes is the official term under which certain castes are classified. The scheduled castes are also known by terms 'Untouchables,' 'melchas,' 'Harijans,' 'Outcastes' 'Broken people,' 'Depressed Classes,' 'Exterior Castes' and 'Dalits'. The above terms are not in order except the 'Untouchables' and 'Dalits'. 'Untouchables' is a term still in use and to be precise they are still looked upon as untouchables by others while the term Dalit is preferred by the 'Untouchables' themselves. The word Dalit, was first used in Marathi language, in Sanskrit means 'broken' or 'ground or reduced to pieces generally' (Molesworth's Marathi-English Dictionary 1831) (cited in ibid. p.4)

The category Scheduled Caste (SC) is the official identification for different castes spread across the length and breadth of India. The criterion for a caste to be recognised as Scheduled

Caste was that the caste should be an untouchable caste separate from the four varnas (Brahmins, Khsatriyas, Vaishyas, Shudras). For the ritualistic purposes they should be considered polluted. The President of India, on request from the governor can include or delete a particular caste from the list of Scheduled Castes. This helps the people under this category to be eligible for certain benefits given by the Indian State. The Schedule was originally initiated by the British Government in the 1936, but the term Scheduled Castes only came to be used more often after independence due to the Constitutional safeguards for the marginalised sections of the society.

In the article 341 of the Indian Constitution "341. (1) The President may with respect to any State or Union territory, and where it is a State, after consultation with the Governor thereof, by public notification, specify the castes, races or tribes or parts of or groups within castes, races or tribes which shall for the purposes of this Constitution be deemed to be Scheduled Castes in relation to that State or Union territory, as the case may be. (2) Parliament may by law include in or exclude from the list of Scheduled Castes specified in a notification issued under clause (1) any caste, race or tribe or part of or group within any caste, race or tribe, but save as aforesaid a notification issued under the said clause shall not be varied by any subsequent notification". Even in the case of the Scheduled Tribes Art. 342 give the above provisions.

Scheduled Tribes is a category of people whose population is about 8 crores. The Scheduled Tribes unlike the Scheduled Castes are distinct from the mainstream Hindu society; they have their own culture, lifestyle, religious practices and have their own languages. They are predominantly separated from the mainland because of their geographical location. The tribals were isolated from the rest of India till the British rule. The colonial rulers with an eye on the natural resources sought to control these communities and bring them to mainstream. Even now, the areas dominated by the tribals are home to vast amounts of natural resources. The tribals have started to adopt the name 'Adivasis' (which means original dwellers) to reclaim their status which at present is degraded. Now there is another term 'indigenous people' which is gaining popularity. Xaxa argues that "The adivasi consciousness and the articulation of indigenous people status is not so much about whether they are the original inhabitants of India as about the

fact that they have no power whatsoever over anything (land, forest, river, resources) that lies in the territory they inhabit. This is despite being the original inhabitants of India in relation to the others. The consciousness and the articulation are basically an expression of the yearning to have or to establish a special relation with the territory in which they live. It is the same kind of yearning that the various dominant communities of India articulated in the period before independence or after independence."(Xaxa,1999)

Socio-economic Status of SC/STs

According to the 2001 Census, The population of Scheduled Castes is 16.2 crores and Scheduled Tribes 8 crores. Together they are about 25 percent of the Indian population. The economic status of the SC is similar to their social status; they are at the bottom of every economic indicator. In 2001 Census, 75% of the SCs were landless or near landless (owning less than one acre); of the working population in 49.06% of SCs were agricultural labourers, while STs were 32.69% while others was only 19.66% and more than 60 million child labour are in this country and about 40% of them come from SC communities.

Atrocities, Untouchability And Discrimination: During 16 years between 1981 to 2000 for which records are available, a total of 3,57,945 cases of crime and atrocities (these are the numbers of registered police cases) were committed against the SCs. This comes to an annual average of about 22,371 crimes and atrocities per year. The break-up of the atrocities and violence for the year 2000 is as follows: 486 cases of murder, 3298 grievous hurt, 260 of arson, 1034 cases of rape and 18,664 cases of other offences. The practice of untouchability and social discrimination in the matter of the use of public water bodies, water taps, temples, tea stalls, restaurants, community bath, roads and other social services continues to be of high magnitude.[5] The most obvious reasons for the above conditions of the Scheduled Castes can be ascribed to the centuries old discrimination against them and the growing exploitations of their human resources. Ritually they were not allowed to own property until recently.

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[5] In a booklet released at the convention on the Problems of Dalits in India.

Shah, Ganshyam et al (2006) have shown that the condition of the Scheduled Castes continue to be worse while compared with the rest of the population in terms of access to resources.

The specificity of the Dalits as a severely disadvantaged social group can be illustrated from yet another angle, that of household occupation. After all, it is not because of some inherent in Dalits that they are worse off. This is the state of affairs is the result of systematically distorted and unequal relations among social groups that work through 'normal' institutional mechanisms such as the market to perpetuate poverty. Thus, Dalits are poor because they lack the resources to accumulate wealth and because they tend to be concentrated in low-wage, low-mobility occupations that perpetuate their status.(p.44)[6]

For a position in the society (status and acceptance) the SC/STs need to move to better occupations and that is possible only through good education. That good education is professional education where the employability is higher and also the remuneration is higher and better as compared to conventional degrees. The acceptance of them as equals is important for the marginalised people, as they are viewed in the society as unclean and the caste prejudices still exist. Dr Ambedkar had also stressed on this point .

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[6] Shah, Ghanshyam, Harsh Mander, Sukhadeo Thorat, Satish Deshpande and Amita Baviskar(2006) Untouchability in Rural India, Sage Publications Pvt. Ltd 216 pages. To see the extent of untouchability prevalent in India it is important to explore this book.

Table 1.1 Population Profile of SC/ST communities in India

S. No.	States / Union Territories	Scheduled Caste(SC)	% SC population to total population	Scheduled Tribe(ST)	% ST population to total population
1	2	3	4	5	6
	INDIA(*)	1665.76	16.20	835.80	8.10
States:					
1	Andhra Pradesh	123.39	16.20	50.24	6.60
2	Arunachal Pradesh	0.06	0.60	7.05	64.20
3	Assam	18.25	6.90	33.08	12.40
4	Bihar	130.48	15.70	7.58	0.90
5	Goa	0.23	1.80	0.01	0.00
6	Gujarat	35.93	7.10	74.81	14.80
7	Haryana	40.91	19.30		0.00
8	Himachal Pradesh	15.02	24.70	2.44	4.00
9	Karnataka	85.63	16.20	34.63	6.60
10	Kerala	31.23	9.80	3.64	1.10
11	Madhya Pradesh	91.55	15.20	122.33	20.30
12	Maharashtra	98.82	10.20	85.77	8.90
13	Manipur	0.37	2.02	6.32	34.41
14	Meghalaya	0.11	0.50	19.92	85.90
15	Mizoram	0.00	0.00	83.90	94.50
16	Nagaland			17.69	88.90
17	Orissa	60.82	16.50	84.45	22.10
18	Punjab	70.28	28.90		0.00
19	Rajasthan	96.94	17.20	70.97	12.60
20	Sikkim	0.27	5.00	1.11	20.60
21	Tamil Nadu	118.57	19.00	6.51	1.00
22	Tripura	5.55	17.40	9.93	31.10
23	Uttar Pradesh	351.48	21.10	1.07	0.10
24	West Bengal	184.52	23.00	44.06	5.50
25	Jammu & Kashmir	7.70	7.60	11.05	10.90
26	Uttaranchal	15.17	17.90	2.56	3.00
27	Jharkhand	31.89	11.80	70.87	26.30
28	Chattisgarh	24.18	11.60	66.16	31.80
Union Territories:					
1	A & N Islands		0.00	0.29	8.30
2	Chandhigarh	1.57	17.50		
3	D & N Haveli	0.04	1.90	1.37	62.20
4	Daman and Diu	0.05	3.10	0.13	8.80
5	Delhi	23.43	16.90		
6	Lakshadweep			0.57	94.50
7	Pondicherry	1.57	16.20		

Source: Population Profiles, Census of India 2001, RGI

Social mobility usually refers to the shift in one's status either vertically or horizontally. Ram (2008) says "social mobility is examined in a given system of social statuses, which in themselves are fluid in nature, it has also been analysed extensively along a single status, or unit

of status, like occupation, in the western societies, which are relatively open in nature and where occupation plays the most significant role in determining one's income, expenditure pattern, authority, lifestyle, and, in a way one's social class position."(p.72)

The mobility of a social group has been studied through multiple approaches. Some of the approaches are Reference Group Theory of Merton and the other being the single approach which argues that occupation is the sole criterion for determining one's social status. Social mobility can help us trace the patterns in which a particular group has moved in a given social system. The objective of Reference Group Theory is to systematise the 'determinant and consequences of those processes of evolution and self approval in which the individual takes the values and standards of the other individuals and groups a comparative frame of reference.

M.N Srinivas[1] differs slightly. He says that the lower castes or classes, with a slight improvement in their economic condition, try to imitate the upper castes life style. This process he termed as Sanskritsation. The upper castes adopting the British ruler classes' habits and tastes were classified by him as westernisation. But such simplistic yet not innocent categories are based on a typical teleological model. MSS Pandian's critique on M.N. Srinivas ideas on Sanskritisation well illustrates the pitfalls of such teleological model and the casteist underpinning of such models. Pandian has observed that:

> Taking a cue from Johannes Fabian's argument about how the West constructs its Other by 'the denial of coevalness', we can immediately locate a teleological scheme within Srinivas's comparative analysis. The teleology moves from lower caste practices to sanskritisation to westernization. This very teleology sets caste as the Other of the modern...[7]

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[7]Pandian Continues "But we need to remember here that what looks here like the unmarked modern is stealthily upper caste in its orientation. What M N Srinivas offers us as the history of westernization in India is eminently instructive here. He writes,

> Only a tiny fraction of the Indian population came into direct, fact-to-face contact with the British or other Europeans, and those who came into such contact did not always become a force for change. Indian servants of the British, for instance, probably wielded some influence among their kin groups and local caste groups but not among others. They generally came from the low castes, their Westernization was of a superficial kind, and the upper castes made fun of their Pidgin English, their absurd admiration for their employers, and

After a close analysis of some of M N. Srinivas's basic arguments and narrative strategies Pandian further observes that:

> Let me stay with this theme a bit more. M N Srinivas, in the course of his book, gives us a list of 'Westernised intelligentsia' who were, in his words, 'the torchbearers of a new and modern India. The list runs as follows: Tagore, Vivekananda, Ranade, Gokale, Tilak, Gandhi, Jawaharlal Nehru and Radhakrishnan. Let us for the moment not get caught in the question how complex figures like Gandhi find a place in this list of Westernised intelligentsia. What is of interest here is the glaring absence of the names of those who courted the modern for the mobilization of lower caste. Babasaheb Ambedkar and Periyar E V Ramasamy are obvious instances here. It is evident that Indian modern, despite its claim to be universal — and of course, because of it — not only constitutes lower caste as its Other, but also inscribes itself silently as upper caste. Thus, caste, as the Other of the modern, always belongs to the lower castes.

To think that something is inherently lower to certain communities and constructing certain communities as the other of modern and thereby attributing caste to the lower caste is a mechanism which contributes significantly to the debates around merit and efficiency (the buzzword of upper caste politics). The upward mobility of lower castes is repeatedly and systemically obstructed by the 'graded inequality' of the Hindu caste structure.

Social Mobility among and across the Scheduled Caste communities and individuals was studied greatly by leading sociologists during 1960s. Damle, Y.B, McKim Marriott, Bernard Barber (1968) have studied the caste system and social mobility and have come the conclusion

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the airs they gave themselves. Similarly, converts to Christianity from Hinduism did not exercise much influence as a whole because first, these also came from the low castes, and second, the act of conversion often only changed the faith but not the customs, the general culture, or the standing of the converts in society.

Very clearly, for M N Srinivas, the source of the Indian modern cannot be the lower castes. Their attempts could only remain superficial trapped in pidgin English and absurd admiration for their employers. Interestingly, this is one of those several paragraphs in Srinivas's book, which refuses the distinction between his own view and that of others whom he is talking about. MSS Pandian, 'One Step Outside Modernity', EPW, 37 (18), 4 May.

that there can be mobility in ones caste but not in the caste hierarchy[2]. Over a period of time certain castes that have benefitted economically started to claim a higher status in the castes hierarchy but the fact remains that in the eyes of the social elites they continue to be Shudras or lower castes.

Social change is a long-term process and some castes gather upward mobility in the social hierarchy because of their economic clout and access to political power. T.K. Oommen says that, for an 'effective planning of social change, it is important to begin from the area that is likely receptive to change.'(1968, p.933) He charts out some key points for change: location of the area prone to change; to understand the characteristics of the group that accepts or resists most of the changes to be introduced. And, lastly to identify the change-resisting group and locate it, as change is possible only through overcoming this group.

From the above study Oommen's major conclusions are that: (1) the educated are the most change-prone category in rural India; (2) the illiterate offer the greatest resistance to change; and, (3) the literate maintain a middle position. He further states that with "admission of lower castes to educational institutions is the most change-prone of the activities listed. In a strategy of social change through democratic methods this, therefore, seems the most suitable area to start with. Once the lower castes become educated they will grow to realise their importance in society and will successfully compete with the clean castes in achieving status in the secular context. Not-withstanding the latent impact of special developmental measures and political re-presentation offered to the lower castes, the upper castes accept these more than they do ritually polluting behaviour. Once the lower castes achieve economic and political status, their emancipation from ritual degradation will come about with relative ease and speed." (ibid, p.936) The argument that a change of heart is necessary on part of the so-called social elites to accept the lower castes as equal human beings does not hold much substance, as it is amount of education along with material gains that affect the change in attitude of the social elites in the long run. Because of prejudices, the first generation lower castes who have secured better employment due to their access to education are not accepted but gradually the second generation who no longer fit into the lower caste stereotypes, their visibility with caste markers reduces.

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The scope of the present study is not to track social mobility but to enquire or acknowledge the fact that the 'untouchables' are shunning their hereditary(caste based) occupations and taking up other works that are not assigned to any specific caste. There is significant awareness among the untouchables about the importance of education, but not about quality education in specific. The volume of the number of SC/ST students enrolling for the Engineering and Medical stream is an indicator of the way in which the importance the untouchables are giving to professional education (statistically, the number of SC/ST students enrolling for professional courses is increasing year by year.)

As the economy of the country shifted from primary to tertiary sector for which the advanced sections of the society were fully equipped to reap benefits. The untouchables and the other marginalised sections of the society also began to acquire education that fits in knowledge economy. This is a difficult transition for the marginalised sections because majority of them are first generation learners. But the determination to acquire knowledge that helps to improve their material condition is noteworthy.

In India the mobility of social groups is quite skewed as the policy of the government is aimed to cater to the dominant social groups whose transition is a 'natural phenomenon' but the 'others' are forced to fit into such a scheme. In the process the latter's mobility is limited to the individuals who are motivated and make conscious efforts to fit into the dominant system.

Educational Development of the SC/STs during the Colonial Rule

Education for the untouchables was barred because of ritual sanctions. But because of the missionaries and the colonial rulers, education was made accessible theoretically to all social groups but in reality the disadvantaged were still barred from availing education. For example no schools were opened to the Untouchable castes before 1855 in Bombay Presidency, Nacharaiah says "because the deliberate policy of the British was to restrict the benefits of higher education chiefly to the Brahmins and other upper classes. The Depressed Classes were not allowed by the government to have a share in education."[3] (Govt. Of Maharashtra, 1993, pp.95-96) cited in Dalit education and Economic Inequality

Table 1.2: Primary Education in Bombay Presidency, 1881-82 65

Category	No. of scholars at school	% of total
Christians	1,521	0.49
Brahmins	63,071	20.17
Other Hindus	202,345	64.69
Mohammedans	39,231	12.54
Parsis	3,517	1.12
Aboriginal and Hill Tribes	2,713	0.87
Low-caste Hindus	2,862	0.87
Jews and others	373	0.12

Source: Govt. of Maharashtra, Dr. Babasaheb Ambedkar, Writings and Speeches, Vol.12, 1993, pp.102-103 Cited in G.Nancharaiah(2002) 'Dalit Education and Economic Inequality', in Bhattacharya S, *Education and the Dispriviledged: Nineteenth and Twentieth Century India*, Orient Longman, Hyderabad, 2002,

Table 1.3:

Secondary education in Bombay Presidency, 1881-82

	Middle schools		High Schools	
	No. of scholars at school	% of total	No. of Scholars at school	% of total
Christians	1,429	12.06	111	2.26
Brahmins	3,639	30.70	1,978	40.29
Other Hindus				
Cultivators	624	5.26	140	2.85
Low Castes	17	0.14	-	-
Other Castes	3,823	32.25	1,573	32.04
Mohammedans	687	5.80	100	2.04
Parsis	1,526	12.87	965	19.66
Aboriginal and Hill Tribes	6	0.05	-	-
Others(including Jews)	103	0.87	92	0.86

Source: Govt. of Maharashtra, Dr. Babasaheb Ambedkar, Writings and Speeches, Vol.12, 1993, pp.102-103 cited in G.Nancharaiah(2002) 'Dalit Education and Economic Inequality', in Bhattacharya S, *Education and the Dispriviledged: Nineteenth and Twentieth Century India*, Orient Longman, Hyderabad, 2002.

The government's antipathy towards the Untouchable classes was corrected by the secretary of India in1859. He reiterated the responsibility of government for mass education, and schools were opened for the Depressed classes. But the question of securing the admission of the Depressed Classes to these schools was yet to be solved. In 1856, for example, when a Mahar boy was denied admission to the Dharwar Government School, the decision of the government was not favourable to the Depressed Classes. This was pointed out by Mahatma Jyotirao Phule.

The general benefits of the education introduced by colonial rulers can be seen that in the fact that it had raised the consciousness of the Indians against the ill effects of the colonial rule in India. "In the context of education the model of political development highlights the importance of the growth or dissemination of education under colonial rule, and suggests that the political awakening of the lower strata was the outcome of the growth of education. We find that historical accounts of the political awakening among the lower castes in western and southern India discuss the egalitarian struggles of these regions within the context of the growth of the colonial education system. As education gradually filtered down to the lower castes in these parts, it is argued, it inspired them to fight for rational causes such as the right to equality.[8]

But from table we can see that the enrolment ratio of the lower castes was very low. There is no denying in fact that education in colonial India did create a very miniscule number of educated members from the lower castes. This paved way for the lower castes to join or initiate egalitarian struggles.

> The only way we can reconcile the measly spread of education in colonial India with the claim that education inspired the lower castes to rise is by accepting that it contributed to egalitarian struggles by nurturing an elite among the lower castes. That would be a more modest assessment of the role of education. To make it more accurate, we need to ask

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[8] See the works of Krishna Kumar for further interpretation on the role of education in colonial India

why the non-Brahmin elite, unlike the older elite consisting of Brahmins and other upper castes, developed a dualistic attitude towards British Rule when both kinds of elites had been socialised by the same system of education. The explanation is that the lower-caste elite found in the British presence an audience and an agency for fighting against Brahman domination. (Kumar, 2005)

The managers of education were of the opinion that if the elites of the society were provided with education there would be downward filtration. The top down approach was adopted, where the benefits of education would trickle down to the bottom of the society. The idea behind the colonial 'educational discourse was the role of the state as the protector of propertied interests. As an agency of state, education had a dual role to perform. It was supposed to equip the masses with morality, thus assisting in the state's peace keeping function. And it was supposed to equip the upper classes with skills and knowledge necessary for the intellectual and aesthetic enjoyment. In the context of the colonial state's economy, the first aim was scuttled on financial grounds, and the second got tempered by the first."(ibid, p.99)

Table 1.4 Collegiate education in Bombay Presidency 1881

	No scholars	*% of total*
Christians	14	3
Brahmins	241	50
Other Hindus		
Cultivators	5	1
Low Castes	0	0
Other Castes	103	21.3
Mohammedans	7	1.5
Parsis	108	21.5
Aboriginal and Hill Tribes	0	0
Others(including Jews)	2	0.4

Education of the SC/STs in the Post Independence Period

Literacy in India is the mere measure of the people above the age of 7 who can read and write. It is generally considered as an indicator of the awareness of an individual about the society, people etc. It can be said that literacy is the first step towards education. Merely having high levels of literacy is not sufficient for the development of the society. It is only with proper education that people make sense of their existence as well as equip themselves with necessary skills for employment and sustenance. It should be noted that mere literacy does not talk about the educational development of the people. Nandu Ram points out that "there seems to exist a symmetrical relationship between socio-economic standing of the people and their literacy level as is evident from the fact that the SC and ST population have remained traditionally at the bottom of the social hierarchy. So much so, their literacy rates also have been lowest in the country."(Ram, p.103)[4]

It should be noted that post independence the government was more interested in the promotion of Higher Education. In a way primary and secondary education was neglected. Because of such a policy, the set of people who had a prior access to education and were in urban centres benefitted maximum. All the centres of higher education were located in the main cities like Delhi, Mumbai, Chennai, and Calcutta these were also the administrative centers of the British Empire prior to the independence. As the demand for quality higher education increased, higher educational institutes were established in other urban centres as well.

If we look at the literacy rates of the country from the table - we can observe that the literacy rates of the population have been gradually increasing. But in the first three decades after independence, half of the population of India were illiterates. In 1961 the literacy rate of India was only 23. 93, in 1971 the literacy rate was 29.45, in the year 1981 the literacy rate was 43.67. Now if we look at the columns of SC/ST population the situation is even worse, and for the SC/ST females the literacy rates was in single digits till 1981.

Table 1.5 Literacy rates of SC/ST with the rest of the population 1961-2001

Year	Total Population			Scheduled Castes			Scheduled Tribes		
	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female
1961	23.93	34.44	12.95	10.27	16.96	3.29	8.53	13.83	3.16
1971	29.45	39.45	18.72	14.67	22.36	6.44	11.3	17.63	4.85
1981	43.67	56.5	29.85	25.83	37.67	13	16.35	24.52	8.04
1991	52.19	64.2	39.29	37.41	49.94	23.76	29.91	40.65	18.19
2001*	64.84	75.26	53.67	54.69	66.64	41.90	47.10	59.17	34.76

Source:

*Primary Census Abstract : Census of India 2001

Table1.6 Percentage growth literacy among the total population and the SC/STs, 1961-2001

Decade	Total Population			Scheduled Castes			Scheduled Tribes		
	Persons	Male	Female	Persons	Male	Female	Persons	Male	Female
1961-71	23.06	14.54	44.55	42.84	31.83	95.74	32.47	27.47	53.48
1971-81	48.28	43.21	59.45	76.07	68.47	101.86	44.69	39.08	65.77
1981-91	19.5	13.62	31.62	44.83	32.57	82.76	78.04	65.78	126.24
91-2001	24.23	17.23	36.6	46.19	33.44	76.35	57.47	45.56	91.09

Source:

*Primary Census Abstract : Census of India 2001

From the above table_ one can observe that growth rate of literacy of SC/STs is higher than the general population, such difference is stark in the growth rate of literacy among the SC/ST females. As discusses earlier mere literacy does not give a picture about the educational levels attained by the concerned population, what would be helpful is to study the enrolment of students in different fields.

The Education system in India is broadly comprises of the following: Primary education and the middle school level, Secondary and Higher Secondary that comprises of the Matriculation and the Intermediate level; and Higher Education which includes education that is imparted in universities, autonomous colleges and institutions. This includes technical and professional education as well.

For the advancement of any society the overall population has to be reasonably educated to a certain level. And the people should have the liberty to chose and have access to education and profession without any constrains. Even though every society around the world is highly stratified, there is a peculiar sociological condition still prevails in India due to the "graded inequality" perpetuated by the caste system. In the western world due to capitalistic development they were able to overcome some of the feudal characteristics Such kind of mobilisations was possible in the case of the West because the socio- economic relations were largely determined by class relations (though there is difference of opinion in the cases of gender, race and immigrant rights). For example, in pre-industrial societies it would have been difficult for a serf to become one of the ruling class members; one had to be born into a family that was destined to be the governing class. But now theoretically at least any individual has the freedom to choose whatever profession or occupation he or she likes. In the West also access to resources is not that easy but what matters is ones economic status than the social or symbolic capital based on clannish or casteist origin. The social status or the symbolic value one possesses in a society/ community is largely based on either by a) the quantum of material wealth one possesses b) the stature one gains through his/her professional life. The mobility is possible for people because education especially the school education is distributed evenly across and among class lines. . But in a country like India where there is no uniform educational system and where educational system is highly stratified, the end result would be that it mirrors the society in all it discriminatory aspects. It is one of the reasons why there has been no major social endosmosis

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that has taken place in India. No matter what kind of modern occupation one chooses the social origin of the individual is what determines his/her symbolic value in the social structure. . Many studies have pointed out the prejudices and discrimination haunts the individual belonging to lower caste even after he /she achieves the highest academic/ professional achievements.

Education has the ability to get rid of social evils but In India it is extremely difficult to break the traditional social structure because the education system is organised in such a manner that the existing social structures are not disturbed and on the contrary which in fact help their sustenance. As pointed out by Chalam[5], there are three kinds of educational systems that run parallel to one another. The elite private schools, the central schools like Kendriya Vidyalayas, Navodayas etc., and finally, the set of schools run by the state governments and municipal or local bodies. This is the process of creating resources for the already existing societal structure. The elite institutions happen to take in students who have acquired the cultural capital that is required in such institutions. The social structure is tuned in such a way that these elite institutions eventually have a higher enrolment of students from elite schools, despite the former's declaration that they are open to all.

Table 1.7 Dropout rates for SCs, STs and All categories of students, 2007-08								
Class	I-V			I-X			I-XII		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
SCs	34.37	24.52	30.09	53.56	51.12	52.47	68.05	68.9	68.42
STs	31.04	31.68	31.34	62.62	62.31	62.48	76.02	77.97	76.85
All Categories	25.7	24.41	25.09	43.72	41.34	42.68	56.55	57.33	56.71

Source: Education Tables, MHRD,2009

If we look at the table 1.7 for the dropout rates of the students across all classes of study it is observed that the dropout rate is about 56.71 per cent of the students enrolled. This shows a very sad picture of the education scenario in India. For the SC/STs it is even worse, of the hundred students who are enrolled 68.42 dropout of school in the case of the SCs and 76.85 students drop out of the school in the case of the STs. There could be numerous reasons for the students to drop out from school. Various studies have shown that students drop out of schools because of the economic pressures, lack of proper schools in rural areas and the schools are located very far from the place where the student lives. Students have to travel to a different

village altogether to attend school. In the case of SCs students, they face discrimination and are humiliated because of their social origin.

Table 1.8 Results of HR [higher]/SR [senior] secondary examinations for SCs, STs and All Categories, 2008									
	Appeared			Passed			Percentage		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
SCs	786547	530473	1317020	483663	374298	857961	61.49	70.56	65.14
STs	302987	188735	491722	187949	126251	314200	62.03	66.89	63.9
All Categories	5426506	4004625	9431131	3783500	3229812	7013312	69.72	80.65	74.36

source: Education tables,MHRD,2009

From the table1.8 we can see that the results of the students who have appeared for the senior secondary examination; there is not much of a difference between categories. It indicates that given the opportunity, those SC/ST students who have had the economic and social ability to get into CBSC and ICSC school done equally done in the examinations. What is interesting is that in all the three categories girls have performed better than boys. The data was not available for the breakup of the streams like sciences, commerce, humanities etc., otherwise it would have been interesting to see what streams the students opt for.

It is important for us to take a look at the enrolment and the performance of the students in the school boards that are under the Union Government. The quality of education is very good in these boards and also the performance of the students is very high. From the table 1.8 given below we can see that the number of students who appeared in the Central Board of Secondary Education (CBSE) is nearly 4.5 lakhs, the pass percentage is 82.9. In the case of Indian Certificate of Secondary Education there are only 43,753 students who are enrolled (appeared) for the Board exam. The pass percentage is nearly 97.95

Table1.9   Results of High School and Higher Secondary Examinations for 2007 in ICSE/CBSE

Name of the Board	Number of Students						Pass Percentage		
	Appeared			Pass					
Annual Examinations- Regular Students	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
All Categories									
CBSE*	261580	196806	458386	208408	171597	380005	79.67	87.19	82.9
ICSE**	24236	19517	43753	23564	19292	42856	97.23	98.85	97.95
SCs									
CBSE	12854	9215	22069	10180	7840	18020	79.2	85.08	81.65
ICSE	415	284	699	398	281	679	95.9	98.94	97.14
STs									
CBSE	7276	5468	12744	4494	3470	7964	61.74	63.46	62.49
ICSE	518	486	1004	490	478	968	94.59	98.35	96.41

Source: Results of High School and Higher Secondary Examinations year for 2007, GoI Ministry of HRD, New Delhi,2009
*Central Board of Secondary Education, New Delhi, **Indian Certificate for Secondary Education, New Delhi

If we look at the data pertaining to SC/STs, it is quite revealing that there is hardly any representation of them in the CBSE or ICSE Boards in comparison with the total percentage the questions that need to be answered why are there very less number of SC/ST students studying in schools affiliated with these boards. The possible and easy answer to this pertinent and complex question may be that most of these are managed by private institutions and located in urban areas. Further it may be argued that the fee structure of most of these instituition is beyond the reach of most of the lower caste communities.

However, after the path breaking works of thinkers like Pierre Bourdieu it would be more than suicidal to attribute everything to mere matter of economic accessibility alone. Bourdieu had observed that

... indeed, among all the solutions put forward throughout history to the problem of the transmission of power and privileges, there surely does not exist one that is better adapted to societies which tends to refuse the most patent forms of the hereditary transmission of power and privileges, than that solution which the educational system provides by contributing to the reproduction of the structures of class relations and by concealing, by an apparently neutral attitude, the fact that it fills its function.

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From tables 1.10 and 1.11 given below it is quite clear that the number of SC/ST students in schools that impart CBSE and ICSE is just 4.81 percent in case SCs and 2.78% in case of STs. Further study is needed to explore the nature of the schools that impart education affiliated to CBSE and ICSE.

Table 1.10 Percentage wise of SC/ST students in CBSE 2007

	All	SC	%	ST	%
Boys	261580	12854	4.91	7276	2.78
Girls	196806	9215	4.68	5468	2.77
Total	458386	22069	4.81	12744	2.78

Source: computed from the table 1.8

Table 1.11 Percentage wise of SC/ST students in ICSE 2007

	All	SC	%	ST	%
Boys	24236	415	1.71	518	2.13
Girls	19517	284	1.45	486	2.49
Total	43753	699	1.59	1004	2.29

Source: computed from the table 1.8

The enrolment indicator of the SC/ST students clearly reveals an almost absent presence of them in these institutions. But this indicator in ironical manner raises the question of merit and competency in higher education. If the enrolment of SC/STs is very low in schools where the quality of education is very high then expecting the SC/STs to compete on par with the students who pass out from these schools in entrance examinations is unfair. This is what Lyotard calls the differend, as he explains, a differend is the effect produced by a disjunction between two incommensurable discourses. He writes, for example, "Society, as one says, is inhabited by differends. I would say that there is a differend between two parties when the 'settlement' of the conflict that opposes them appears in the idiom of one of them, while the tort from which the other suffers cannot signify itself in this idiom" [6]

The strategic concealment of the unequal power relationship between two parties in dispute is the mode and modalities through which the upper castes argument regarding the merit and efficiency acquires their basic logical validation. This validation is in fact reminds one of Michael Foucault's path breaking theorisations of the relationship between power and

knowledge. This relationship between knowledge and power is evident in Nandu Ram's observation about the participation/accessibility of quality education for SC/ST students (especially those who hail from rural areas). He states SC/ST aspirants mostly hail from rural areas, "are socially handicapped as they do not have a tradition of education rather of higher education in their family or in distant relations. As a result, they lack proper guidance, encouragement, inspiration, etc. from that end and are left to cope up independently with the vast arena of educational pursuit. This is also supported by the fact that in realisation of importance of providing them education rather better education."(Ram, 1995, p.113)

Now that we have come to a point of what kind of education is going to benefit the SC/ST communities if they have to come out of the vicious circle of social degradation coupled by poverty. It is a vicious circle because within the existing socio- economic symbolic structures the lower castes cannot escape from the norms of the prevailing caste system; they are very much dependent on the upper castes for work in agricultural lands, petty jobs in cities etc. Further economically the SC/STs have being tied to the feudal remnants of caste relations. Higher Education is their only hope to come out of social inequality and discrimination practiced both subtlety and overtly. Not any higher education but professional education that gives them monetary benefits, which Dr B.R. Ambedkar way back in 1940s demanded from the British, while he was the member of the Executive of the Governor General's Council. He lamented on the condition of the Scheduled Castes especially their education. He states that 'the welfare of Scheduled Castes depends on the sympathetic public service and that public service if it is to be sympathetic must be representative of different elements in the national of the country, and particularly of the Scheduled Castes.' He further goes on to say that requirement of the SCs to improve their condition is not sufficient if there are few ministers from among the SCs. There is need to have SCs occupying Executive Posts. This alone can improve the conditions of the Scheduled Castes. "Executive Posts are strategic posts, posts from which a new direction can be given to the affairs of state. The attainment of the executive post, it is obvious requires a high degree of education. Such posts will be open except to those who have acquired advanced education."[9]

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[9]Ambedkar, B.R. *Grievances of the Scheduled Castes* submitted to the Governor General

In order to improve the economic conditions of the Scheduled Castes, Ambedkar recognises the importance of technical education than literary education. "Education in Arts and Law cannot be of much value to the Scheduled Castes either to the graduates themselves or to the people. It has not been of very high value even to Hindus. What will help the Scheduled Castes is education of an advanced type in Science and Technology. But it is obvious that education in Science and Technology is beyond the means of the Scheduled Castes and this is why so many of them send their children to take up courses in Arts and Law. Without Government assistance, the field of Advanced Education in Science and Technology will never become open to the Scheduled Castes, and it is only just and proper that the Central Government should come forward to aid them in this connection."(ibid)

It is a well known fact that all over the world engineers and medical professionals are bestowed with high prestige and status, and, in countries like India, these professionals have the status of demi-gods. In the southern states of India, students who do not opt for or pursue either Engineering or Medicine after class XII are looked down upon. The courses not only bring prestige and fame in society but also give access to a lot of economic benefits.

Table 1.12 Enrolment of SC/ST students in higher education

Subject	Total		SCs		STs	
	1978-79	1988-89	1978-79	1988-89	1978-79	1988-89
Arts	1073032	1653652	105518	163212	25650	46117
Science	483359	739752	20711	42215	8921	6616
Commerce	48591	1035650	23074	47150	6094	10193
Education	67799	91017	3918	6979	816	1914
Medicine	105594	142125	7553	7170	1363	2101
Engg./Arch.	104720	205282	5538	12080	1068	2711
Agriculture/Vet.Sci.	39711	NA	2379	NA	243	NA
Law	168402	NA	10570	NA	1865	NA
Others	14911	NA	797	NA	68	NA
Research (All Subjects)	NA	31386	NA	914	NA	187
Total	2,558,360	3,836,976	180058	279720	41081	69169

Sources: 1. *Twenty-eighth Report of the commissioner for the Scheduled Castes and Scheduled Tribes,* 1986-87, Government of India, New Delhi.
2 Selected Educational Statistics: 1988-89, *Studies in Educational Statistics,* No.1 1990, Ministry of Human Resource Development, Department of Education, Planning and Monitoring Statistics Division, Government of India, New Delhi, 1990. Table VIII, pp.36-45.
Cited in G. Nanchariah (2002) 'Dalit Education and Economic Inequality', in Bhattacharya S. *Education and the Dispriviledged: Nineteenth and Twentieth Century India,* Orient Longman, Hyderabad, 2002, p.171.

From the above table it is quite clear that the SC/STs lag way behind in all different disciplines. But the engineering and medical streams are very important for the present study. In the year 1988-89, there are about 142,125 students enrolled for Medical stream out of which there are only 7170 SC and 2101 ST students. Percentage wise, the SC students comprise of 5.04%while the ST students comprise of 1.47%. This was during the time when the professional educational institutions were run mostly by the Government or government aided institutions. Since the study is focusing on the science and technology educational, we can see how far the SC/STs are lagging behind when compared to the rest of the population. Going into the figures in science the out of the total enrolment in science for the year 1978-79 it was 4,83,359 for all while the SCs it was 20,711 and for STs it was 8921. If we calculate the per cent it's a meagre 4.28 for the SCs and STs is 1.84; after a decade, the rise in absolute numbers is not so encouraging either. For SCs the percentage has increased to 5.7 and for STs, it is 0.89. The SC/ST population which is nearly 23 per cent of the total population their representation is a bare minimum in the field of Science and Technology courses.

In this context it would be important to look at the SC/STs in Higher Educational Institutes that impart Science and Technology. Above all, these figures indicate that the fundamental notion regarding science and education of science needs critical evaluation. It would be productive to revisit the debates around science and progress in the context of the nation-state in order to think further about the relationship between science and democracy. In short, these discussions lead us to the question of a complex relationship between democracy, science and the need for the diversification of knowledge.

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Chapter Two

Higher Professional Education in Science and Technology Institutes: Scheduled Castes/Scheduled Tribes

This chapter deals with certain characteristic features of science and technology educational scenario in the country. In later part of the chapter the issues of SC/STs and women researchers in elite[1] institutions of the country is discussed in general. Then the issues concerning SC/STs in Indian Institutes of Technology and Indian Institute of Science, like discrimination, are examined through some of the case studies.

Science education has always been given priority across the world. A country with a strong hold in research and development in science and technology eventually has a major say in the world affairs. In India as well research in science and technology has been given priority. In India the British established different scientific and technological institutes. But the major thrust to science and technological research was given after independence. Creation of premier institutes like Indian Institutes of Technology, India Institute of Science, Council for Scientific and Industrial Research (CSIR) etc., were part of nation-states attempt to accelerate the pace of scientific and industrial growth through advance research and training. With India gaining independence and the process of nation building started, higher education was given necessary impetus. In this chapter the profile of the two premier institutes of the country, namely the India Institute of Technology and Indian Institute of Science would critically analysed. This chapter also engage with the participation/adjustment of the SC/ST students in these institutes and the representation of the SC/ST faculty in higher educational institutes (if any).

Technical education plays a vital role in human resource development of the country by creating skilled manpower, enhancing industrial productivity and improving the quality of life. Technical education covers courses and programmes in engineering, technology, management, architecture, town planning, pharmacy and applied arts & crafts, hotel management and catering technology. There is a demand for professional courses in India as

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[1]   Elite, according to the Oxford Dictionary of Sociology, refers to any superior or privileged group, but it more properly refers to groups defined by their superior power. In this chapter the word elite is used to denote the position of IITs, IISC and AIIMS have in comparison to other such institutions in their respective fields.

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the employment opportunities of such courses are very high. These courses were largely concentrated on the training of applied science professionals than fundamental scientific research. Or in other words, these courses were aimed at creating science/technical professionals according to the market/industrial demands. With a major availability of technical professionals like engineers, scientists and other professionals, the needs of the country are also met and can also cater to other countries. (Annual Report 2009-10, MHRD).

In a 'free' market economy there are no restrictions (in an ideal situation) on flow goods and services. 'Business' is always in search of markets where they can get their requirements at cheap rates. India being an economically poor country but rich in resources, especially skilled work force, is a big supplier of cheap services to the developed countries where the cost of productions is high and a similar service would be ten or more times higher. One can see the establishment of many multi-national companies (MNCs) in India since 1991. India has a very good base in providing Information Technology (IT) related services. The demand for such work is still increasing and that's when we can see that many engineering colleges, pharmaceutical colleges, etc were opened in big way in the country. According to the Annual Report 2009-10 of the Ministry of Human Resources Development there are 2872 colleges for engineering and technology, 1080 pharmacy colleges. For details of other courses see Table 3.1. The technical education system in the country can be broadly classified into three categories: Central Government funded institutions, State Government/State-funded institutions & Self-financed institutions. In the year 2009-10 there were 65 institutions funded by Government of India (GoI).

Table 2.1: Total number of Professional Institutions and student Intake

S.No.	Programme	Degree		Diploma	
		NOI	Intake	NOI	Intake
1	Engineering & Technology	2872	1071896	1659	471006
2	Architecture	106	4133	nil	nil
3	Master of Computer Applications	1169	78293	nil	nil
4	Pharmacy	1080	68537	575	32181
5	Applied Art & Craft	12	935	4	480
6	MBA	1565	135893	nil	nil
7	PGDM	375	43668	nil	nil
8	Hotel Management	93	6387	86	4490
	Total	7272	1409742	2324	508157
	Grand Total	Institutions			9596
		Intake			1917899

Note: NOI stands for number of institutions
Source: Annual Report 2009-10; MHRD

From above table, we can see that the demand for Engineering stream is very high, 10,71,896 students are enrolled in graduation or Post-graduation. Every year nearly one million engineering graduates are being churned out from various colleges across India.

Table 2.2: Institutes of National Importance

Centrally Funded Institutes	Number of Institutions
Indian Institute of Technology(IITs)	15
Indian Institute of Management(IIMs)	7
Indian Institute of Science (IISc)	1
Indian institute of science Education & Research(IISERs)	5
National Institute of Technology (NITs)	20
Indian Institutes of Information Technology(IIITs)	4
National Institutes of Technical Teachers Training & Research(NITTTRs)	4
Others	9
Total	65

Source: Annual Report 2009-10; MHRD

To oversee the technical education, a regulatory body was set up called All India Council for Technical Education (AICTE). It was formed in the year 1945. Only in the year 1985 AICTE was given a statutory status through an Act of Parliament. The function of AICTE is to approve new courses, grant permission to start new institutions and also to

regulate them. It also has different functions like approving increase in the intake of students in institutions, fee structure, promoting technical education among women and weaker sections. All the things related to technical education comes under the purview of AICTE.

Indian Institutes of Technology: A Historical Account

The need to set up any institution has to be supported with reason and purpose. The same can be said of the IITs. As the world was in turmoil in the 1940s due to World War II, there was huge reconstruction process happening all over once the war ended. The need also was felt in Asia and other colonised countries. In India too post-war reconstruction was the top priority. During that period the Sarkar Committee was set up in 1946. The committee felt that the then existing infrastructure or facilities for the higher technical education was not sufficient. So it recommended setting up four institutes in four corners of the country. The Sarkar committee selected Massachusetts Institute of Technology (MIT) as the model for the institutes to be set up in India. The committee also gave different suggestions on the number of students; faculty, courses and content etc. (Rao, 1997: pp.75-6)

The Indian Institutes of Technology are administered centrally by the IIT Council, an apex body established by the Government of India to co-ordinate activities of these Institutes. The Minister for Human Resource Development of the Government of India is the Chairman of the Council. Each Institute of Technology has a Board of Governors responsible for its overall administration and control. They are fully funded by the Government of India. The IITs also receive funding from various government departments like ISRO, DRDO. Apart from these IITs have tie-ups with private firms to do consultancy work and carry out joint research. Funding is not a problem for the IITs unlike other state and central universities which have received major budget cuts.

The first IIT was founded in the year 1951 in Kharagpur, West Bengal. The second IIT was set up in 1958 in Bombay. The third and the fourth were established in Madras and Kanpur in 1959 and 1960 respectively. The College of Engineering and Technology New Delhi was converted into the fifth IIT in 1961. Later, ten more IITs were setup, IIT, Guwahati was established in 1994, under the Institutes of Technology (Amendment) Act,

1994. University of Roorkee was converted into IIT, Roorkee, 2001. The government of India, in order to further quality technical education and to increase the access to more students, set up eight new IITs at Hyderabad (Andhra Pradesh), Patna (Bihar), Jodhpur (Rajasthan), Mandi (Himachal Pradesh), Bhubaneshwar (Orissa), Ropar (Punjab), Gandhinagar (Gujarat) and Indore (Madhya Pradesh). (Annual report, 2009-10)

Table 2.3: Strength of the UG and PG students in IITs

Indian Institute of Technology(IITs)	Total Strength of Student in 2009-10*	Student intake in UG in year 2009-10	Student intake in PG in year 2009-10
IIT, Kharagpur	7542	1187	1164
IIT, Bombay	6366	746	1038
IIT, Madras	5641	684	971
IIT, Kanpur	3965	664	598
IIT, Delhi	5921	701	1217
IIT, Guwahati	3006	469	525
IIT, Roorke	5433	1013	970
IIT, Gandhinagar	119	90	Nil
IIT, Bhubaneshwar	226	109	Nil
IIT, Patna	223	109	22
IIT, Hyderabad	274	112	43
IIT, Jodhpur	215	107	Nil
IIT, Ropar	209	104	Nil
IIT, Mandi	99	99	Nil
IIT, Indore	107	107	Nil
Total	39346	6301	6548

Note: *Includes the total number of student in their academic pursuits – 1st to fourth year in terms of UG, two years of PG
Source: Annual Report 2009-10; MHRD

Table2.4: Total number of seats through JEE for 2011

Category	GE	OBC	SC	ST	Total
Seats	4848	2599	1441	730	9618
PD*Seats	144	74	47	28	293

Source: Counselling Brochure JEE 2011; *PD indicates reservation for physically disabled –of 3% across all categories is mandatory.

The IITs are among the top technical institutes in the world at the graduation level but when it comes to the stage of fundamental scientific research they lag behind the Euro-American institutions. A large number of IIT students join the these foreign institutes for higher studies and research. There is a history of the students going abroad for masters and research. The brain drain phenomenon is too high in the elite Institutions like IITs. [Krishna, V V and Binod Khadria, 1997; Sukhatme, S P and I Mahadevan 1998]

Year after year there is an ever increasing demand for engineering and medical courses. In the knowledge economy; there are ample opportunities as the world economy is closely knit and it is easier for the developed countries to get cheap skilled labour. The students who pass out from these premier institutes are mostly recruited into multi-national companies. The pay in these firms is very high compared to what the people in government sector get in the same rank. The students who graduate from these Institutes are best equipped and can compete with the best of the world. The students have access to latest technologies and developments in scientific world. The competition to gain admission to the IITs is too high. In year 2010 about 455,571 candidates applied out which only 13,104 (only 3%) qualified for the 9509 seats.

Student has to have completed 10+2 or equivalent examination for basic eligibility. The candidates should have secured 60% in the qualifying examination in case of General/OBC category students. In the case of SC/ST/PD candidates it is 55%. The candidate is allowed to appear only twice (once in the year of passing the qualifying examination and the following year). There is cap on the age of eligibility as well.

After meeting the above criterion the students have to clear the entrance examination called the Joint Entrance Examination (JEE). Entry into the elite institutions is highly selective process and the very nature of this process is exclusive. In order to get admission the requirement is one must obtain a minimum of 60% in the qualifying examination and then secure a rank within the number of seats available.

The argument to support such a selection process cited is merit. But if we closely observe the students requirements to clear the entrance, 'merit' appears as the product of a host of socio-cultural factors. . First and foremost requirement is the access to quality

schools. And that access comes with a fee that is too high; apart from that there is a need to enrol in a coaching centre. If one were to look into the economic costs involved for such training, it would be a minimum of two lakh rupees. It is well known that the good coaching centres and colleges are available only in urban areas. For students from rural areas and poor socio-economic backgrounds it is a huge task. Bright students who with some coaching inputs would clear the entrance but lack enough resources, do not even think of appearing because of the hardships one has to encounter. With so much of difficulties one would face inorder to prepare for JEE a large majority of the students are structurally restricted from even attempting for it. In this context the concept of merit becomes a highly problematic criterion.

Merit in India is understood only in terms of one clearing the entrance test. The necessary requirements (cultural, economic and social capital) are not taken into account. The other concerning factor is that in the institutions of higher education the medium of instruction is English, a language alien to majority of students in this country. Thus bearing these various factors it become highly difficult to adjust to such an environment and it takes a long time. Meanwhile the students who have the necessary capital are at home and do well in their respective courses. In other words, cultural inheritance is the primary criterion for the admission as well as the survival within these institutions. Even at the school levels, as Pierre Bourdieu's studies show; such cultural inheritance plays a definitive role. According to Bourdieu (1986 and 1971) the bourgeois class are capable of reproduce their position in successive generation. Such kind of reproduction is possible because they possess (largely inherit) the requisite socio-cultural and intellectual resources/capital which is essential for the success in an educational system. Further, these educational systems themselves are controlled by the same bourgeois class. Moreover, the entire structure of these institutions, their architectural settings to curriculum, is not only designed by the same class to protect their class interests but also to reproduce their class interest and values as the normative value. Or in other words, these institutional spaces thrive on logic of exclusion which identify and mark the 'inferior' class with regard to those of the culturally dominated classes. Such an understanding indicates that there is a requirement to study the concept of merit in much broader terms than what is thought out to be at present.

It is interesting to look into the performance of the students at the entrance test (JEE) conducted by the IITs. If we carefully observe the tables Minimum Qualifying Marks (MQMR) and cut-off marks in the year 2011, 2010, 2009, we can notice that the cut-off marks for each subject are increasing every year. In the year 2009 the cut-off marks for chemistry was 11 for General Category, 10 for OBC (Other Backward Classes) and 6 for SC/ST and PD (Physically Disabled) candidates. In the year 2010 it increased to 19, 18, and 10 respectively. And for the year 2011 it is 20, 18 and 10. The merit cut-off marks for the three consequent years also has increased gradually. But what is important for us to note is the subject wise cut-off marks, the sum of the three subjects for the general category is 30 in the year 2009; 57 in the year 2010; 74 in the year 2011.

If we take a look at marks obtained by the last candidate admitted from the SC or ST category, it is way above the general category minimum cut-off marks. The minimum cut off marks are marks required by a candidate to qualify the entrance examination (here JEE). For instance in the year 2011 the minimum cut-off marks of general category candidates is 74 and the marks secured by the last eligible SC candidate to be given admission into the IITs is 114, which is way above the general category cut-off marks.

Now the argument made by some who are against Reservations and who argue that the SC/ST students lack in merit and quality does not hold grounds even in their own narrow logic of merit. The students who are competent enough according to the IIT standards for general candidates only get admitted in even from the SC/ST quota. When one analyses the data cited by Kripal (1999) and Rao (1997) about the dropout rates form the SC/STs it is found to be alarmingly high. Now if these students from the SC/ST background are not performing well it means that there is some problem with the institutional set up of the IITs as they had come in with standards which are way above than the one set by IIT. Further enquiry into the data on the number of the SC/ST faculty in IITs was not available for the complete IITs. However in one article titled 'Dalits at the Indian Institute of Technology'[2] it was pointed out that only 2 members belonged to the SC category were in faculty positions out of 427. (This figure indicates only the situation in IIT, Chennai.)

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[2]   A report, Dalits at the Indian Institutes of Technology by Dalit Media Network, Chennai from http://www.pucl.org/reports/National/2001/dalits.htm accessed on 10th, June, 2011

Table2.5: MQMR and Cut-off marks in 2011

Category	Subject wise cut-off			Merit list cut-off marks	Extended Merit list cut-off marks
	Chemistry	Physics	Mathematics		
GE	20	20	34	229	203
OBC	18	18	31	207	183
SC	10	10	17	119	114
ST	10	10	17	115	102
PD	10	10	17	115	102

Note: MQMR stands for minimum qualifying marks
Source: http://jee.iitd.ac.in/mqmr.php, accessed on 8th July, 2011

Table 2.6: MQMR and Cut-off marks in 2010

Category	Subject wise cut-off			Merit list cut-off marks
	Chemistry	Physics	Mathematics	
GE	19	17	19	190
OBC	18	16	18	171
SC	10	9	10	95
ST	10	9	10	95
PD	10	9	10	95

Note: MQMR stands for minimum qualifying marks
Source: http://jee.iitd.ac.in/mqmr.php, accessed on 8th July, 2011

Table 2.7 : MQMR and Cut-off marks in 2009

Category	Subject wise cut-off			Merit list cut-off marks
	Chemistry	Physics	Mathematics	
CML	11	11	8	178
OBC	10	10	8	161
SC	6	6	4	89
ST	6	6	4	89
PD	6	6	4	89

Note: MQMR stands for minimum qualifying marks
Source: http://jee.iitd.ac.in/mqmr.php, accessed on 8th July, 2011

Socio-economic back ground of the students who procure admission in the elite institutions

It is well established that the science and technical subjects which are part of a professional course are highly in demand. The demand for such courses would be from the classes that are aware of such courses and those from such institutes which train to aspire for such education. The parents in order to secure admissions for their children in such institutes prepare them for the entrance along with regular schooling. Of course this is possible for families that have economic resources to support the endeavour. Lucas (2001) introduced the term Effectively Maintained Inequality (EMI) which explains such choices made by parents and their children. According to this theory (EMI), "First, the middle-class parents actively maintain the tracking system and secure the best places for their offspring. Parents are in this way actively involved in the institutionalization of tracking (Lucas, 1999). Second, social background affects individual track placements of children through various resources that children may benefit from, and also because middle-class parents know, through personal experience, how important it is for their children to be enrolled in a particular programme in order to improve further chances in life." (Van de Werfhorst and Luijkx, 2010: p.696) This theory can explain why there is a rush to enrol in courses that help in achieving better paying jobs.

In a study conducted by King(1970) he has shown that mostly students from economically well off families are present in the IITs and in the choice of courses King has found that the " streaming of students into various engineering disciplines, ostensibly according to intellectual attainment as measured in JEE, but effectively, also according to educational and social class origin would seem to have very adverse effects, reinforcing both the deprivations of the economically less privileged; as well as the advantages of the more privileged." [p.1467]

Rajagopalan and Jaspal Singh(1968) in their study, *The Indian Institute of Technology Do They Contribute to Social Mobility?*, have looked into the social background of the students in one of the IITs. Here they defined social background which includes "factors such as religion, caste, family, the rural or urban character of the native place of the

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students, the income. education and occupation of their parents, and the students' school background i.e, the type of school attended, its medium of instruction and the final qualification examination passed before being admitted to the IIT." This is the only study the researcher has come across that looked into complete caste profile of the students taking admission into IITs. Of the 237 students they have interviewed nearly 93.3 per cent of the students hailed from urban areas and only 2.6 per cent students were from the rural areas, 4.1 per cent of the students did not respond. It is very clear that more than 90 per cent of the students hail from the urban areas which have provided access to quality educational facilities.

Table 2.8: Students Classified by Religion and Caste

Caste	Religion			Total
	Hindu	Sikh	Muslim	
Brahmin	52	-	-	52(21.9)
Trading Castes	142	6	2	150(63.3)
Agricultural Castes	2	6	-	8(3.4)
Artisan Castes	-	6	-	6(2.5)
Miscellaneous	12	-	-	12(5.0)
No response	6	2	1*	9(3.9)
Total	214	20	3	237(100)

*Foreigner, Note: Figures in the parentheses indicates the percentage.
Source: Rajagopalan and Jaspal Singh(1968), *The Indian Institute of Technology Do They Contribute to Social Mobility?*, EPW, Vol.3,No. 14 (Apr.6, 1968) pp.565-570

The table show the figures of the social composition of the students in one of the IITs. India being a country, divided into numerous castes and religions, we can see that proportional representation of such social groups is not found in the IITs when the study was conducted from the above table. Students classified by religion and caste shows that the social elites (Brahmins, Vishyas and Khshatriyas)[3] are more than 88.6 per cent who have taken admission in that year. Also it was pointed out in the study that there was no woman candidate and also there was no Christian candidate. The type of schooling and medium of instruction the students had prior to joining IIT it was found that more than 213(89.87) students had schooling in English medium at high school level, 16(6.75) has schooling in

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[3]   The Social elites, in the India context, comprise of the Brahmins, Kshatriyas and Vaishyas. They have a monopoly over the means of production (Social, economic and cultural) in India.

vernacular medium and 8(3.38) had both in English and Vernacular medium. The authors point that "by and large, a homogeneous group insofar as their general social background is concerned. More specifically, in terms of cultural factors like religion and caste, there is a preponderance of the Hindus belonging to the Brahman and the trading castes. As regards the social class background, they represent predominantly upper and middle class."

The study concludes saying that "even though no student intentionally precluded from securing admission there are certain disabling and debilitating factors inherent in the structure of the society which prevent certain sections from taking advantages of the new educational opportunities... the IITs are engaged in producing what may be termed a class of potential elite, is itself being recruited from the higher strata of society almost to the neglect of the lower strata." The article has shown that in actuality the IITs were envisaged to cater to the elite so that once they graduate they could establish the required technical firms the country needed that time and initially the IITs had nothing to contribute to social mobility.

A Brief Note on the Competitive Atmosphere of IITs

Academic requirements in IITs are very demanding. The students are expected to be ready for the gruelling sessions. King(1970) raised the certain questions in the questionnaire provided to students like "why I decided to join the IIT" though the author felt the data obtained was not sufficient to reliable quantification the content analysis suggested the reasons they took up engineering. Some of the reasons the students cited are given below: For the job opportunities it offered. Because of the status enjoyed by the engineering profession, "I wanted to acquire some high status in the society so the only way to achieve this was to join an engineering career." The most common reason that many students take up engineering was because of the 'herd instinct' and 'fashion' and also the pressure exerted by the parents to take up science after class ten.

In an article by Kanta Murali published in Frontline Magazine gives an example of a coaching centre in Hyderabad wherein students are enrolled into a coaching centre from class nine onwards. And from class eleven and twelve they are grilled more. In one coaching centre that the students goes, he/she has to start at four in the morning, do the coaching for IIT till eight a.m. and then go to for their regular classes till four in the evening. Once the

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students return home they are engrossed in completing the work given at the coaching centre and the college. The students undergo this routine for nearly four years before they crack the IIT JEE.

Now the question of who can afford such facilities of a coaching centre and college fee? The poor cannot think of such an education. But what is important is does the coaching centre raise the creative thinking in the students which is important for research. In the CABE[4](2009) report one ex. Directors of IIT make an observation, "Earlier many of the students coming to IITs were from common schools they had a variety of talents in IIT, but now the talent coming to IIT had dropped. They are all from upper classes go to private English Medium Schools and they know how to pass these exams because they are trained to pass these exams by private home tuitions from class I. [These] students come to the IIT and he said the IIT quality has suffered because they were not drawing from the whole mass of people ... Now you have a testing so inbuilt with the kind of input from private education that only those who attend such schools can tackle those question."(p.166). This proves the class/caste composition of the IITs which is due to the high competition and lack of intensity of the such elite students towards the social composition of the country.

Women candidates in the Science and Technology Institutes

Women candidates are not found in proportion to their population in higher education especially in science institutes, they are discriminated right from choosing the science stream. The presence of women in science in India is majorly influenced by the socio-cultural norms. This reflects even in premier science institutes. Also the male child is given preference to pursue the technical stream. The reasons being right from high school the student has to be enrolled in a coaching centre which is expensive. Everyone is aware of the fact that professional education mainly science and engineering streams are largely a bastion of male students because due to their cultural upbringing, most of the parents in India have a bias towards the male child hoping that he would take care of them in old age, and thus invest in his education. Since the female child would anyway go to live with the in-

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[4]   CABE stands for Central Advisory Board of Education is the highest body in the country look into the issues of education.

laws so there is no need to get her a professional education. This attitude of the parents has led to the decrease in the number of female students in science institutes.

Gupta (2007) studied the women research scholars in IIT and has found out that women research scholars belong to a better socio-economic background than men. Also her study revealed that girls who take up doctoral programme in science have received encouragement from the family members, but 'not without contradictions that reflect gender role-expectations in society.' The women research scholars are at a disadvantage because of lack of informal interaction with the advisor and other faculty members and had to work more than their male counter parts to prove themselves in the field of science.

All the IITs are fully residential institutions. And if one looks at the number of hostels for the boys and girls one can anticipate the skewed ratio between men and women students. For example IIT Kharagpur the first such institute has 19 hostels in total, 15 for men and only 4 for girls. In an atmosphere where one set of students are in a minority would have a negative impact on their development and would affect their progress.

It is important to look into the stereotypes that exist in the campuses in relation to various marginalised groups like women, minorities, SC/STs though present study focuses on the SC/STs.

SC/ST students at IITs

The official entry of the SC/ST students into IITs happened from the year 1973 when the IITs started to implement the Reservation Policy. It means that the entry of SC/ST students had started only after two decades of the inception of IITs. Had the entry of the SC/ST students into these premier institutes begun from their inception it would have created awareness among the people of these sections about the needs to get into these institutions? But at the same time the task is not at all easy, because the basic infrastructure of education is insufficient to support the aspirations of the SC/ST students. Bourdieu's theorization about the cultural inheritance and collapse of interest of the players and the field illustrates the structural impossibility, which is constructed and maintained by the ruling class (elites) to prevent/resist the entry of their structural 'Other'. Or in other words, the cultural/symbolic

capital is not an easily accessible 'asset' because the inheritance plays a crucial role in its operation. Acquiring economic capital is not necessarily a guarantee for elevating one's ability to access the cultural or symbolic capital. Such kind of insights, provided by Bourdieu, is very useful in understanding the subjective difficulties faced by the SC/ST students in India's premier institutes. Most of the students belonging to SC/ST communities have no or hardly any inheritance in terms of the history of education in a generational matrix. Within the parameters of elite institutions' definition of merit and efficiency, these students appear as less competent because what these institutions count as knowledge is primarily derived from the dominant form of cultural and social capital, which is subservient to hegemonic values.

D. Parthasarathy, in an article, argues that IITs are a clear case for the 'institutional habitus' where the IITs are "dominated by certain castes in educational institutional such as the Indian Institutes of Technology (IITs) may lead to certain forms of institutional isomorphism, where pedagogy, assessment and evaluation methods, and formal, semi-formal and informal institutions evolve in ways that uphold biases, discriminatory practices, or may perpetuate educational practices which are insensitive to the lower strata of society.

Further, Viduthalai Rajendran (2000) points out that,

> The way dalit students are treated at IIT, Chennai, will give the lie to the implicit assumption of Deshpande's note that what happens in IIT-type institutions is casteless pursuit of efficiency. The dalit students are given separate roll numbers. This makes the identification of the dalit students by the upper caste faculty easy and facilitates their harassment and penalisation. In fact one of the dalit students, so penalised, has moved the Chennai High Court seeking justice.

The IITs are presently undergoing a major structural change. The Kakodkar committe has recommended that the government reduce the funding to the IITs so that the institutes managements have greater financial autonomy. It has recommended to increase the fees incurred from the students by fourfold and to give certain fellowships to the students in the form of subsidy. The committee has also recommended allowing foreign nationals to be allowed to take up permanent teaching assignment at IITs. Such kind of a 'reform' definitely

brings more hardship to the students belong to SC/ST communities. The atmosphere of these institutions further deteriorates due to the excessive control of the private players/money power over these institutions. Further, these proposed changes alter the fundamental motto of these institutions and make them more elitist and exclusive than now.

Indian Institute of Science

India Institute of Science (IISc) was established formally in the year 1909. The idea of the institute was the brain child of Sir Jamsetji Tata who wanted to have in an institute that conducted scientific research and development at advanced level. This was necessary at that time because the independence struggle was gaining momentum and the country needed to have self reliance in science and technology field. The Institute was established in Bangalore because of the generous land grand and monetary resources provided by the maharajah of Mysore. The institute began functioning with two departments: General and applied Chemistry and Electro Technology. Biochemistry and Organic Chemistry Departments along with the library were also the first ones to be added to the institute.

Presently IISc has about six departments Biological Sciences, Chemical Sciences, Earth and Environmental Sciences; Electrical Sciences; Physical and Mathematical Sciences and Mechanical Sciences. Under each department there are different centres specialising their particular field.

The IISc has produced top class scientists and some of the alumni are the ones who headed various IITs when they were first established.

Table 2.9: Number of students of roll at IISC

Particulars	2007-08	2008-09	2009-10
PhD	1186	1367	1533
M.Sc(Engg)	343	241	265
Int. PhD	253	227	228
ME	371	427	
M.Tech	89	93	612
M.Des	28	30	49
MBA	37	25	8
Total	**2307**	**2410**	**2695**

Source: Data provided by IISC,

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Table 2.10: Summary of total candidates joined

Particulars	GN	SC	ST	Total	Men	Women
PhD- Science Faculty	112(106)	10(13)	3(-)	125(119)	87(70)	38(49)
Ph D-Engineering	56(45)	5(4)	1(-)	62(49)	42(42)	20(7)
M.Sc(Engg)	68(58)	1(5)	0(-)	69(63)	60(53)	9(10)
Int. Ph.D	33(41)	6(2)	0(2)	39(45)	25(33)	14(12)
Q.I.P	8(8)	0(-)	0(-)	8(8)	8(7)	0(1)
E.R.P	29(22)	0(-)	0(-)	29(22)	27(17)	2(5)
Total	306(291)	22(24)	4(2)	332(317)	249(232)	83(85)

Note: Numbers in brackets indicate figures in 2007
Source: Data Provided by IISC

Govind (2005) has studied the IISc's scientists, their social-background, their views on religion, work, research etc. This study is important in many counts, which brings forth the social profile of scientists. But what is lacking in this study (and which is very important a factor in the context of Indian) is the caste profile of the Scientists. Not because one is interested in the caste of the scientists or their religion but to understand an organisation and to see if there is any diversity in the institution or it is the preserve of a particular caste or community. He failed to look into this angle. Had there been an attempt we could have had better understanding about the institution.

Faculty and the Research

Table 2.11: Designation Wise On roll Strength At The Institute As On 18-05-2011

Designation	On roll	SC	ST	OBC	GN	Male	Female
Academic Staff							
Professor	193	3	0	2	188	179	14
Associate Professor	93	1	1	1	90	83	10
Assistant Professor	87	0	1	0	85	80	7
Lecturer	4	4	0	0	0	4	0
Scientific Staff							
Principal Research Scientists	55	3	0	6	46	50	5
Scientific Officer Grade I	8	1	0	0	7	7	1
Scientific Officer Grade II	9	5	3	0	1	7	2
Senior Scientific Officer	27	8	5	0	14	24	3
Technical Staff							
Techinal Officer Grade I	5	1	2	0	2	4	1
Techinal Officer Grade II	11	1	0	1	9	9	2
Techinal Officer Grade III	11	0	0	1	10	8	3

Source: Data provided by IISc

Atmosphere in the institutes of Higher learning

The atmosphere that exists in the institution is of paramount importance for the pupils to adjust and to achieve their potential. Not many studies have been conducted on the culture prevalent in the institutes of higher learning in India. Though some of the studies did look into the problems faced by the SC/ST students Viney Kripal and Meenakshi Gupta (1999), Srinivas Rao (1997) Roli Varma and Deepak Kapur (2009) have brought out the different aspects of the problems. Rao's (1997) study on IIT Chennai has shown that the discrimination by non-scheduled students against the SC/ST students is often because of the 'preferential treatment' these students are given in admissions.

Also the institutional setup is such that the SC/ST students are discriminated. In the year the 2000 there were two kinds of forms for JEE available one for the general category students and the other for SC/STs. The application forms for the general category students were in white colour and for the SC/STs were in pink colour. Even the answer sheets for the mains examination followed the same pattern. Rajendran(2000) has also pointed out that the roll numbers given to SC/ST students are different and easily gives away the identity of the SC/ST students. Also the admission criteria followed by the IITs towards the SC/ST students is discriminatory. In order to secure an admission a SC/ST student has to get a minimum two-thirds marks of the last general category student. For those who have not been able to secure the above marks are given one year preparatory course and the following year they are admitted into courses under the quota that were unfulfilled. Both Rao(1997) and Kripal and Gupta(1999) have stressed on the fact that the students who are undergoing such a training are under a lot of distress and their motivational levels are low because they are feel inferior to the rest of the students as they have to complete the course in five years.

All the above studies were silent on the teachers' views on the reservation policy and in particular about the reservations in IITs. In Rao's(1997) work, it was pointed out in the few personal experiences of students he interviewed; two of the students observations are cited below:

The teacher knows how to take revenge against the Scheduled Caste and Scheduled Tribe students particularly, in awarding marks. Once I was affected by this and then onwards, I lost interest in studies. This happened in the fourth semester.In the, department, about 60-70 percent teachers show this kind of discrimination. Even if one works hard, this happens. This happens only with the reserved category students (Rao 1997).

Another student in the IIT Chennai, narrates his experience:

I met a professor to tell my problem that I am unable to understand what he is teaching in the class. The first question he asked me was, "Are you a reserved category student?" Will he say the same thing if a general category student goes to him with a doubt (ibid)

The above two examples gives only a one-sided view, as the teachers' views have not been studied. But from various examples that have come out in media reports and personal accounts of students before it is observed that there is general stereotype among faculty that the students who come through reservations are not competent enough, but the reason why they do not match up to the teachers expectations are never looked into.

In one of the study to look into the discrimination of SC/ST students in IIT Delhi conducted by a Delhi based organisation Insight Foundation, the narratives of the students were quite startling. Given below are some of the case studies from that study.

Student 1

A final year B. Tech student, says that the teachers at the institute are among the best in the country, he feels that some of the teachers need to realise the harm they cause to the students morale. He says, "In my first semester, the Physics professor was taking my viva and I was not able to answer, on which she became very annoyed and asked me, if I was from quota[5]. I said, "No." Then she explained, "Quota means SC/ST." I again answered, no. She was asking the same question to the general category students, if they were not able to answer in the viva.

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[5] Quota is referred to students who have obtained admission through Reservation Policy. It is used in a derogatory form to insult the students indirectly. The underlining meaning of the term is to denote that one lacks merit and are not worth being in the institute.

Throughout her classes, I had the fear that she would do something wrong in my grading. So, I was quite nervous and never went to her for any help or to clarify my doubts."

Student No. 2

He is a B.Tech II year student when the interview was conducted. He narrates his experience for being assertive and for which he suffered. He says, "One of my professors told me, SC/ST students are very poor. And said if she asked me some question, I would not be able to answer that. When I protested on her statement, she said, "Oh! So you want to fight with me!" After that she became very hostile to me. Whenever I went for some clarification, she used to get angry and rebuke me for not being able to understand 'simple' English and always made very discouraging comments like, "Are you always sleeping in the class? Why did you join IIT if you don't know English?" However, unlike other students, I persisted in meeting her, as I needed continued support. One day, she got very angry and told me, "I think you are mad. You should get medical check-up." "Then I realized that it was getting tough to cope up with her. I called my father and then both of us went and met the professor. She was very rude to both of us and told my father that there was something wrong with me and I must consult a doctor. My father tried to talk to her but in vain. The professor did not budge from her point that I am mad. At the end, I failed in the subject. I paid the price of asserting myself and asking guidance from the professor."

Student 3

He was a B.Tech III year student. He narrates an incident that very important for the Dalits of this country. To celebrate the Birth Anniversary of Dr. B.R. Ambedkar the SC/ST students approached the administration for permission which was denied. He says, "Here in IIT, we cannot form any group. One of my Dalit seniors tried to contact IIT administration to organize an orientation programme for SC/ST freshers. Immediately, a letter was sent to his parents stating that, "your son is involved in politics". Pravin Togadia and Ashok Singhal can come and speak in the IIT hostel (they came in the tenure of the previous IIT Director) but the students cannot organize Dr. Ambedkar Jayanti in the campus. Since the last few years, the SC/ST Employees Association is organizing Dr. B.R Ambedkar Jayanti, but when Dalit students tried to organize, they faced stiff resistance from the IIT administration and were categorically asked the rationale for celebrating Dr. Ambedkar's birthday in IIT campus! One funny incident that reflects the prejudices and ignorance of IIT faculties

happened few years back. On Dr. Ambedkar Jayanti, the SC/ST Employees Association invited IIT Director as the chief guest. When asked to speak, he just said one sentence, 'In IIT, there is no caste discrimination' and went back to his seat!"

Student 4

Following are the narration of a student who had done his B.Tech from IIT Delhi, and M.Phil from Jawaharlal Nehru University and he narrates his experiences during his student life in IIT Delhi;

> During my first year, I was attending one Chemistry class in which some students tried to bunk through the back door. However, one of them (with surname Srivastava) got caught. The professor got very angry and started scolding him and asked the names of other students who had run away. There were 5-6 students. One of them had surname 'Meena', which is a Tribal surname. As soon as the professor heard his name, he became angry all the more and started making comments like, 'I know how they come here', 'these SC/ST students don't deserve to come to IIT' and 'they are ruining the IIT atmosphere'. He spoke for more than 15 minutes giving a discourse on 'how un-educate able SC/ST students were'.I was sitting in the class listening to him. Now when I look back and reflect about my four years of stay in IIT, I can understand how that one particular incident had marked my student life there. How could I trust the IIT professors when they had already passed the judgment on me? I could never draw courage to reveal my caste identity to my friends in IIT. I knew I was stigmatized. Since I knew English, I tried to pass off as non-Dalit. But that was not a happy solution. I had to hear many derogatory remarks about Dr. Ambedkar, Mayawati and about other Dalit students within my friends circle but I could never reply. After graduating from IIT in 2003, I worked for six months and then joined Jawaharlal Nehru University for my post-graduation. Here, things were far better. I came in touch with the Dalit students' group working there and slowly became assertive about my identity. I started appreciating my background. I belong to *'khatik'* caste. My forefathers used to take out the skin of dead animals. My family had migrated to Delhi long back and both my parents have raised me by working in tanneries, skinning dead animals. Why should I be ashamed of my parents, my identity? Now, I am very much comfortable about my identity and in fact feel proud about my parents.(ibid)

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Table 2.12 SC/ST students committed suicide in various higher educational institutions

Sr. No	Name	Education(pursuing)	Institute	Place	Date of Committing Suicide
1	M. Shrikant	Final year, B.Tech,	IIT Bombay	Mumbai	1st January 2007
2	Ajay S. Chandra,	Integrated PhD,	Indian Institute of Science, Bangalore	Bangalore	26th August, 2007
3	Jaspreet Singh.	Final Year MBBS	Government Medical College, Chandigarh	Chandigarh	27th January, 2008
4	Senthil Kumar	PhD	School of Physics, University of Hyderaband	Hyderabad	23rd February, 2008
5	Prashant Kureel	First Year B.Tech	IIT Kanpur	Kanpur	19th April, 2008
6	G. Suman	Final Year M.Tech	IIT Kanpur	Kanpur	2nd January, 2009
7	Ankita Veghda	First Year B.Sc Nursing	Singhi Institute of Nursing, Ahmedabad	Ahmedabad	20th April, 2009
8	D. Syam Kumar	First Year B Tech	Sarojini Institute of Engineering and Technology, Vijaywada	Andhra Pradesh	13th August, 2009
9	Bandi Anusha	B. Com	Final Year, Villa-Mary College, Hyderabad	Andhra Pradesh	5th November,2009
10	Pushpanjali Poorty	First Year MBA	Visvesvariah Technological University, Bangalore	Bangalore, Karnataka	30th January, 2010
11	Sushil Kumar Chaudhary	Final Year MBBS	Chattrapati Shahuji Maharaj UniversityLucknow	Lucknow,UP	31st January,2010
12	Balmukund Bharti	Final Year MBBS	AIIMS, New Delhi	New Delhi	3rd March, 2010
13	J. K Ramesh	Second Year,BSc	University of Agricultural Sciences, Bangalore	Bangalore	1st July 2010
14	Madhuri Sale	Final year, B.Tech.	IIT Kanpur,	Kanpur	17th November,2010
15	G. Varalakshmi	B. Tech First Year	Vigyan Engieering College,Hyderabad	Hyderabad	30th January,2011
16	Manish Kumar	3rd Year B.Tech	IIT Roorkee	Roorkee	13th February, 2011
17	Linesh Mohan Gawle	PhD	National Institute Immunology	New Delhi	16th April, 2011.

Source: Data taken from Insight Foundation and tabulated

The above table is an indicator of the hostile atmosphere prevalent in these institutes towards the students belongs to SC/ST communities. The elite institutes have not been able to cater to the special needs of the students who have come from marginalised backgrounds that have not prepared them for the "high culture" that Bourdieu (1973) talks about. He goes

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on to say that "the educational system provides by contributing to the reproduction of the structure of class relations and by concealing, by an apparently neutral attitude, the fact that it fills this function."

Different studies on the IITs have shown that the SC/ST students face a lot of hardships in adjusting to environment which is quite alien to the culture the students from these communities have been brought up in. Pinto (2002) points out that the culture that is prevalent in the premier institutes is that of the elites and the Dalits are alien to that culture; who otherwise come from a communitarian society. He further says individual competition and necessary skills are not available with the Dalit students.

Is this 'symbolic violence' confined to only the science institutes or is it the same in other universities as well. For this the study conducted by Nandu Ram looking into the issues of the SC/STs in Jawaharlal Nehru Universtiy and Virginius Xaxa studied the Delhi University.

Ram (1995) has found that the representation of the SC/ST students is less than the stipulated 22.5 per cent. He says that since the academic session of 1983-84 there was a change in the admission policy which deviated from their earlier principles "Consequently, number of the SC/ST students admitted for different programmes of studies since 1983-84 has gone considerably down and in the academic session of 1989-90 it was hardly 8 per cent which was much below the prescribed percentage quota." He says that the university is better compared to the rest of the universities in the country. He has recognised the difficulty for the SC/ST students to adjust in the university apart from their socio-structural difficulties is the medium of instruction which is English. He says that the students take a semester or two to adjust to the new language.

> The higher education is not uniform with regard to the contents, syllabi, medium of instruction, and in a word, the standard of administration of knowledge and its evaluation all over the country. This is more distinctly visible in the form of medium of instruction opted by students before they join JNU. Less than one-third SC/ST students (the number of ST students was more) had adopted English and rest had either Hindi or a regional language ... Since the university has adopted English as medium of instruction majority of the SC/ST students like many students from other

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castes and communities face difficulty, in understanding and grasping the lessons and in writing their tests and assignments, till certain period of time. (p.140)

What is to be noted from the above study is that because of the structural disadvantages the members of SC/ST communities already face, it becomes a double burden for the students from these communities to excel in their academics. But what is positive about universities is that there is a vibrant students' movement so the issues of alienation and isolation found in engineering and technical institutes is arrested. Also there are no proper 'bridge courses 'to improve the standards of the students who lacked the necessary capital required in higher educational institutes.

Xaxa (2002) has looked into the 'three principal social segments in institutions of higher learning: students, non-teaching staff and teaching staff.' The issue of reservation for the SC/ST is concerned with the above three social segments. He looked into the response of the Delhi University (DU) to the issues of the SC/STs. First he looked into the admissions of the SC/ST students. His first comment is that though in principle the DU has accepted reservation as a policy, but does not show the will to implement the full quota. He points out that the reservation in M. Phil was only implemented from the year 2002-2003

Table2.13.- SC/ST Enrolment in Delhi University

Year	Undergraduate			Postgraduate		
	Total	SC	ST	Total	SC	ST
1995-96	41170	4150(10.0)	785(1.9)	10463	649(6.2)	213(2.0)
1996-97	41921	4221(10.0)	697(1.6)	10320	649(6.3)	251(2.4)
1997-98	41523	3789(8.8)	843(2.0)	10567	660(6.2)	228(2.2)
1998-99	42873	3789(8.8)	869(2.0)	11412	718(6.2)	206(1.8)
1999-2000	46302	4000(8.6)	836(1.8)	11893	655(5.5)	246(2.0)

Note: Figures in parentheses indicate percentages
Source: Report of the Parliamentary Committee on the welfare of SC/STs, 2001-2002, in regard to reservation in services. Cited in Xaxa (2002) Ethnography of Reservation in Delhi University, EPW, Vol 37. No 28. July13-19

If we look at the percentage of students belonging to the SC/ST both at Undergraduate and Postgraduate level from table— one can notice that at the graduate level the percentage of the SC students has never reached more than 10 per cent of the total number of students and the ST students is even worse which has not been more than 2 per

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cent from the year 1995-96 to 1999-2000. At the postgraduate level it is even more strikingly low for both SC/ST students; Far from the stipulated quota 15/7.5 percentage for the SC/STs respectively.

Xaxa further says that on the one hand there is no serious effort made to take care of the academic needs of the SC/ST students but on the other hand students from these categories are subjected to discrimination and maltreatment by the faculty, the administrative staff and even the fellow students. Though this cannot be generalised for the whole faculty or administrative staff or the fellow students but if one were to listen the accounts of the students and their experiences one would come to know of the innumerable incidents of discrimination and humiliation'.

The Representation of SC/ST Faculty Members in the Higher Educational Institutes

In this context it would be productive to recollect the studies of Jyotirao Phule. He states,

> The teachers now employed in the primary schools are almost all Brahmins; a few of them are from the normal training college, the rest being all untrained men... But as a rule they are all unpractical men, and the boys who learn under them generally imbibe inactive habits and try to obtain service, to the avoidance of their hereditary or other hardy or independent professions. I think teachers for primary schools should be trained, as far as possible, out of the cultivating classes, who will be able to mix freely with them and understand their wants and wishes much better than a Brahmin teacher, who generally holds himself aloof under religious prejudices. These would, moreover, exercise a more beneficial influence over the masses than teachers of other classes ... who will be able to mix themselves readily with the lower orders of society.

The above document was submitted to the British government to look into the difficulties of the lower castes accessing education in the 1880s. Various studies have shown that much has not improved either in primary education or in higher education till date. Since this chapter focuses on the higher education we'll look into the higher educational scenario.

It is important to look into the representation of the teachers from the SC/ST communities in institutes of higher education to understand if the country was able to create enough man power from the above communities who can reach teaching posts. The data shows a very bleak picture.

In an article by Santhosh.S and Joshil K Abraham (2010) have pointed out that in Jawaharlal Nehru University which has about 486 faculty members there are only 23 who got appointments through SC/ST quota. If the constitutional guarantee of 15 % for SCs and 7.5 % for STs was followed; there should have been 73 members from the SCs and 36 members from the STs at the faculty level. But in the above article it was stated that there were only 3.29% from the SCs and 1.44% from the STs.

In Delhi University as cited in Xaxa (2002) has shown that the gross under representation of the SC/STs at faculty level.

Table 2.14: Position of SC/STs in Teaching Posts in University Department and Colleges as in 1995

Position	Total no. of Teachers		No. SCs		No. of STs	
	Dept.	College	Dept.	College	Dept.	College
Professor	311	4*	2	0	0	0
Readers	247	2545	1	3	1	0
Lecturers	142	1963	4	8	1	0
Total	700	4512	7	11	2	0
Grand Total	5212		18		2	

Note: Xaxa (2002) mentions that posts of professor in colleges was introduced very recently but the above table shows 4 professors which should not be the case.
Source: Statistics in Respect to Scheduled Castes and Scheduled Tribes in Teaching Posts in University Departments and Colleges as in 1995. Cited in Xaxa (2002)

From the Table 2.14, we can observe that the number of faculty at the Delhi University is 5212, but the number of faculty from SC/ST community is only 20(18 SC, 2 ST), the percentage wise SC and ST faculty are 0.34 and 0.04 per cent respectively. The percentage of SC/ST faculty members being less than 0.5 percent in Delhi University can no way be justified after the prevalence of a reservation policy which guarantees 22.5 percent reservation for the SC/ST communities. This was the case even when the UGC was from time to reminding the DU to follow the reservations at teaching level till late 1990s. In the same article Xaxa (2002) points out that the data in the year 2001 was mildly better at the

university level; there were three professors (SC 2; ST 1 out of 295), three readers (SC 2; ST 1 out of 191) and 13 lecturers (SC 11; ST 2 out of 130).

In the premier science institute of the country, IISc, which is also the oldest, is no different in comparison to the other higher educational institutes when it comes to representation of SC/ST at the faculty level. From the Table 3, we can see that at the professor level there are 3 SC, 0 ST and 2 OBC and the rest 188 belong are general category. In the percentage wise the SCs are only 1.6 % of all the professors at IISc. At the level of Associate Professor there is 1 SC, 1 ST and 1 OBC candidate each and the rest are General Category.

Table 2.15: Faculty at IISc as on 9th June 2011

Designation	On roll	SC	ST	OBC	GN	Male	Female
Professor	193	3(1.6)	0	2(1.03)	188(97.37)	179	14
Associate Professor	93	1(1.07)	1(1.07)	1(1.07)	90(96.79)	83	10
Assistant Professor	87	0	1(1.14)	0	85(..)	80	7
Lecturer	4	4(100)	0	0	0	4	0

Note: Figures in parentheses indicate the percentage
Source: data provided by IISc

At the level of the Assistant Professor there are 0 SC, 1 ST and 0 OBC and 8- from the general category. At lecturer level there are only 4 members (all SC).

Now the scenario has changed to a certain extent. But the idea of the location of the untouchables in society is still engrained in the minds of most people. Bourdieu's concept of Habitus was studied by many but the work of Oliver and O'Reilly (2010) can be adapted to understand the above phenomenon. "Habitus describes those internalized structures, dispositions, tendencies, habits, ways of acting, that are both individualistic and yet typical of one's social groups, communities, family, and historical position" (Oliver and O'Reilly, 2010:56). Oliver and Reilly have studied the migrants from England to Spain and found empirically that even though the migrants were from the same class, the people hesitated to interact freely with one another because of the prejudices attached to how someone spoke or dressed and were able to identify their social origin. Habitus reinscribes position and informs the denigration and positioning of others, while ongoing struggles for power and authority in the new field redraw the 'common mass' (Reay, 2004, cited in Oliver and O'Reilly, 2010:

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62) and this insecurity of the social elites because of the SC/STs joining them and asking for a share in educational field (teaching) makes them resist any policies of Social Justice.

It is a general misperception that the students from the 'lower' strata are not able to cope up with studies because they are inherently/intellectually poor and end up taking their lives. This is a preconceived notion especially with the case of the SC/ST students because the understanding is that the students who lack competence are given admission because of the Reservation Policy. Such kind of a stereotypical perception needs to be critically interrogated. In fact, a proper official mechanism, which monitors the well-being of the students hail from lower strata of society would enable them to cope up with the highly competitive atmosphere and structure of these institutions. Further, we need a mechanism to spread awareness among all students and staff members about the necessity of affirmative action in order to create a democratic and equitable society. Such kind of awareness would produce more conducive and productive atmosphere within the system. Creation of such mechanisms need a more nuanced understanding about the structures of caste based society. But many/most of the Faculty members and students are insensitive to the plight of the SC/ST students because of their urban upper middle class upbringing. This upbringing along with certain caste prejudice and bias create an insular outlook among them. The highly individual-centric attitude of most of the Faculties and students of these institutions is a by-product of this insular outlook. This insular outlook is evident not only in their insensitivity to the weaker section of society but also through their lack of commitment to society in general. Most of the students from these institutions opt for lucrative jobs in multi-national IT industries or migrate to foreign nations. Or in other words, their contribution to the welfare of the nation is very negligible even though the prime motto of these institutions is to contribute immensely to the growth of the nation. Instances like technologically brilliant minds are opting for management jobs are indicative of this narrow outlook to success. Such attitudes are fundamentally undemocratic and exclusive in character and one cannot expect any social response to the issue of hierarchy from these quarters. Such attitudes are sedimented into the structures of these institutions and they reproduce these attitudes as natural attitudes.

This individual-centric approach tries to naturalize the cultural capital and cultural inheritance and thereby actively partake in a symbolic violence. This reminds us of Bourdieu's remark on the nature of knowledge produced by educational institutions and the larger structural dynamics of it. Bourdieu states: "By traditionally defining the educational system as the group of institutional or routine mechanism by means of which is operated what Durkheim calls 'the conservation of a culture inherited from the past,' i.e. the transmission from generation to generation of accumulated information, classical theories tend to dissociate the function of cultural reproduction proper to all educational system from their function of social reproduction." (258-59) From the above argument we can say that even the idea that someone is an untouchable or inferior because they are born into a caste, clan, race or family is through the transmission of such ideas from one generation to another. However, human habitus like any other discourses are historically conditioned and subject to change. But this change is not a product of changes in individual attitude or consciousness alone but it necessitates a structural rearrangement and reconfiguration of the relationship between power and knowledge.

Chapter 3

Democracy, Diversity and Science Education

Science and Democracy are considered to be complimentary categories. Science with its putative rational and objective foundation is supposed to strengthen democratic values in various spheres. However, such claims are questioned by various quarters in recent times.

Every aspect of the complex set of enterprises that we call science and its multiple manifestations, are shaped by and can be understood only in its local historical and cultural context. Further, the normative truth claims of the scientific enterprise are in fact a product of the consensus of experts. Or in other words, the best way to assess scientific claims is through a process of political evaluation. Since the "evidence" for a scientific claim is never conclusive and is always open to negotiation, the best way to evaluate scientific results is to ask who stands to benefit if the claim is taken to be true. According to the philosopher of science Bruno Latour, "Science ... is politics by other means"[1] (Latour, 1988:229). Thus, the results of scientific inquiry are profoundly and importantly shaped by the ideological agendas of elites. Given the impossibility of scientific objectivity, it is futile to exhort scientists and policymakers to try harder to remove ideological bias from the practice of science. Instead, what we need to do is deliberately introduce 'corrective biases' and 'progressive political values' into science.[2]

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[1] *The Pasteurization of France* (Trans. Alan Sheridan and John Law). Cambridge, MA: Harvard University Press, 1988.

[2] See Noretta Koertge, 'Scrutinizing Science Studies', in A *House Built on Sand: Exposing Postmodernist Myths About Science* Koertge, Noretta (Ed.), Oxford University Press, USA, 2000 (edition). Noretta Koertge charts out various critiques about universal claims of modern science in the introduction; but hardly shares most of them. In fact the author criticizes the relativist notions and pleads for certain universal validation, because of that I am avoiding direct citation, which may misrepresent the position of the author as well the book.

Scientific Enterprise in Post-Colonial India

From the inception of the independent Indian state in 1947, the ruling elite of the nation claimed that progress in science and technology would bring the country to progress; and scientific temperament would strengthen the democratic character of the Indian State and society. The Nehruvian vision for India was underwritten by a faith that science and technology, planning, and heavy industries would ultimately lead to national progress. After all, Nehru characterised dams and heavy industries as 'temples of modern India'. He also believed that democratic socialism or socialist liberalism in the country could lead to some kind of equality among its citizens only if it was based on scientific thought. Such beliefs of him paved the way for the establishment of institutions of advance learning in the field of science and technology. In his review of *The Essential Writings of Jawaharlal Nehru*, Vivek Bhandari observes,

> He [Nehru] strongly advocated the development of science and technology, which he believed would propel India into the age of modernity. He also envisioned India's active role in international affairs. One of the most fascinating sections deals with Nehru's views on the place of science and technology in the development state. His advocacy of nuclear technology played a critical part in shaping India's nuclear program (a member of which is the President of India today), although it is clear from his speech "Pernicious Influence of Technology" that he was aware of the dangers of valorising science and technology. Nehru's desire to promote the role of technology led to the foundation of many engineering and medical colleges, at the pinnacle of which are the Indian Institutes of Technology, many graduates of which are members of India's transnational intelligentsia preoccupied with the expansion of information technology.[3]

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[3] Gopal, ed., Uma Iyengar. *The Essential Writings of Jawaharlal Nehru*. New Delhi: Oxford University Press, 2003. 741 pp. Reviewed by Vivek Bhandari (School of Social Science, Hampshire College) Published on H-Asia (July, 2006).

The first four IITs in India were, for example, set up during Nehru's tenure as the Prime Minister of India.

Even though Nehru always believed or claimed himself to be a follower of Gandhi, his differences with Gandhi regarding science and technology indicates his strong belief in scientific progress. He notes,

> It [Gandhi's] may not be a correct attitude; its logic may be faulty..... Even this attitude is not necessarily accepted by the political associates and followers of Gandhi. Personally, I do not agree with it and I should make it clear that the Indian Congress and the national movement have not adopted it ... I have mentioned these considerations to you not to defend the spinning wheel but so that you may realise that Indian nationalism is not opposed to big scale machinery and much less to science. I have no doubt that when it is in a position to do so, it will industrialize the country as rapidly as possible. Meanwhile, helpless as we are, we have to carry out such makeshifts as possible..... My whole outlook on life and its problems is a scientific one and I have never felt attracted towards religion and its methods.[4] [Singh 1988: 15-18].

In this context, we need to make a distinction between the position on science taken by Nehru and Babsaheb Ambedkar.

First of all, while Nehru was concerned about the role of science in nation-building Ambedkar' emphasis was on sciences role in shaping communities. Given this difference, Nehru relied on the process of planning, while Ambedkar sought a bigger role for pedagogy.

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[4] Singh, Ramjee, Gandhi and the Modern World, Classical Pub. Co. (New Delhi), *1988*.

For instance, Ambedkar wrote, "What will help the Scheduled Castes [and other marginalised sections] is education of an advanced type in Science and Technology." (Ambedkar, B.R. 1942-46). He further noted, "But it is obvious that education in science and technology is beyond the means of the scheduled castes and this is why so many of them send their children to take up courses in arts and law. Without Government assistance, the field of Advanced Education in Science and Technology will never become open to Scheduled Castes [and other marginalised sections]." In certain ways, contrary to Nehru, Ambedkar moves away from treating science as a democratic value by itself, and argues that what would in fact democratise the society is access to science by all.

Science Institutions and Democracy

Against the backdrop of the contrary positions taken by Nehru and Ambedkar, let us turn to the relationship between science institutions and democracy. Here, we need to examine access to these institutions – a theme central to Ambedkar's disposition towards.

Writing about the Nehruvian vision and the consequent planning process in the post-independence India, Partha Chatterjee notes that the planning process was based on the 'rule of experts' and thus, was kept away from the realm of the popular politics and democratic decision-making. As he puts it,

> ...the very institution of a process of planning became a means for the determination of priorities on behalf of the "nation." The debate on the need for industrialisation, it might be said, was politically resolved by successfully constituting planning as a domain outside "the squabbles and conflicts of politics." As early as the 1940s, planning had emerged as a crucial institutional modality by which the state would determine the material allocation of

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productive resources within the nation: a modality of political power constituted outside the immediate political process itself.[5]

In other words, the planning process did not take the people into confidence and it remained as an elite enclave. Institutions imparting scientific education which were also, as we have already seen, an outcome of the Nehruvian vision, share a close kinship with this structure of imagination. For instance, the recent decision by the Ministry of Human Resource Development to keep the expenditure on teaching and research by the so-called Innovation Universities which are proposed to be set up during Eleventh Plan period, out of the scrutiny of Comptroller and Auditor General (CAG), tells us that the Indian state wants to keep these institutions unaccountable to Indian people. Till now a few elite institutes like Bhaba Atomic Research Centre, Atomic Energy Commission, and Indian Space Research Organisations are exempted from CAG's scrutiny.[6] It is well known that Science and Technology institutions in India have exempted themselves from any kind of public accountability and democratic participation. This is so even in areas like agriculture and textiles where policy decisions have a huge impact on land, water and other resources. In short Science and Technology had for long remained a prerogative of an insular, exclusivist, elite group of 'experts', almost all of them hail from 'upper' caste group. Such exclusion in Science and Technology institutions in a democracy does have a bearing on the access to Science and Technology by SC/STs and other marginalised groups. It is important here to take note of the demands by the lower caste groups as early as 1920s, regarding access and importance of technical education. Sujatha says,

> The Justicites could not succeed [in] introducing all the reforms on education
> but by 1923 secured an enlargement of the Madras University Senate that
> included a representation of various communities. Talks of reservation of seats
> in government institutions that began in the late 19th century materialised by
> 1921 ... Geetha and Rajadurai(1998: 135) point out how the educational model

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[5]Chaterjee, Partha (1993) The Nation and Its Fragments: Colonial and Postcolonial Histories OUP New Delhi p.202

[6] 14 Innovation Universities to be at par with ISRO, BARC, AEC in Deccan Herald, 2 February 2011.

put forth by the Justicites was not "merely a means to gain access to the precincts of the government. Rather, it envisaged learning as a continual process integrally linked to work and labour." They cite the testimony presented by the Secretary of the Vishwakarma Mahajana Conference in 1916 which outlined the difficulties of students of industrial and artisanal classes to pursue technical education in the foreign countries even when they had the skills because they lacked formal literacy. (Sujatha 2008: 45)

The above lines show us that access to science and technology had been viewed by of the low caste groups as a source of empowerment. In fact, Many studies have shown that because of reservations introduced decades back, Tamil Nadu has ensured a caste diversity in technical and science education. Such diversity, by distributing competencies across different castes, opens up the space for addressing issues which affect different social groups.

It is important to recall here that access, as I have shown in the previous chapter, to these institutions is nearly impossible for the SC/STs and other marginalised groups. For example, an editorial published in the *Economic and Political Weekly* in April 2000, notes, 'The 41-year old institute, which receives a large annual grant of Rs 40 crore from the ministry of human resource development, has only two SCs on its faculty of 420. The situation of the OBCs is better, but only marginally. There are no more than 25 OBCs on the institute's faculty. The institute does not have a single Muslim faculty member. Ironically, the IIT, Chennai, owes its existence to the efforts of the late K Kamaraj...'[7] Ironically, Kamaraj was an OBC.

The story of exclusion in these institutions needs to be understood qualitatively as well. The experience of humiliation and its everyday manifestation in these institutions needs to be

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[7]Pandian, M.S.S (2000) 'Myth of Creamy Layer', Economic and Political Weekly, 22April 2000, p. 1417.

taken into account to have a holistic understanding this exclusion.[8] Life of Namdeo Nimgade is a case in point.

Nimgade completed his Ph. D in soil science from the University of Wisconsin in 1962; and was perhaps the first Dalit, after Ambedkar, to earn a doctorate in an American university. In the course of narrating his experiences in the Indian Agriculture Research Institute, Delhi, in his autobiography, he notes, "In 1968, I was invited to present a paper based on my research at the International Science Congress in Adelaide, Australia. Caste politics and bureaucracy continued to dog me as my boss wanted to go to Australia."[9] Finally, Nimgade managed to go to Australia because of the intervention of the Institute's director. In Australia, his research paper was adjudged as one of the six best conference papers. Yet, it did not help him much in the Indian Agriculture Research Institute: "Back in India, because of the jealousy of my boss my project funds were allowed to expire... I was not given the permanent status as a senior Class I officer due to the bias of my boss... I was promoted as a senior Class I officer in another speciality."[10]

The humiliation of students in institutions of higher education is equally important to understand. Here, I will give a case not from a science institute but from a central university. However, it is a case from a science department. Senthil Kumar was a first generation learner from a poor Dalit family belonging to the pig rearing community of Tamil Nadu. He had finished his M. Phil from the Pondicherry Central University before joining the Department of Physics at the University of Hyderabad. His family being too poor to support him, his plans for a Ph. D would not have materialised had it not been for the new fellowships

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[8] For a theoretical and detailed understanding of caste 'humiliation' and its everyday manifestation, see Gopal Guru's (ed.) Humiliation - Claims and Context.

[9] Nimgade, Namdeo (2010) In The Tiger's Shadow: The Autobiography of an Ambedkarite Navyana Publishers New Delhi p.264

[10] Ibid., p. 267

announced by the University Grants Commission (UGC). Interestingly, almost as if to counter the enabling effect of the fellowships, the English and Physics departments introduced course work for the Ph. D. in the same year. Though he had successfully passed an entrance examination as well as an interview to earn admission into the Physics doctoral programme, Senthil was unable to clear the new hurdle of course work, and his fellowship was stopped. Having failed twice, Senthil Kumar killed himself on 24 February 2008.[11]

Reflecting on Senthil Kumar's suicide, N. Sukumar poignantly writes:

> I have lived for seven eventful years in the same university and the same hostel where Senthil Kumar lived. I know that though Senthil chose to end his life on 24 February, his death began much earlier, on the day he set foot in the university. Every dalit or reserved category student in a "meritorious" higher educational institution dies a little every day. Although other students from poor or rural families also face problems, the daily experience of social exclusion adds a huge and uniquely negative dimension to the lives of "quota students". Dalit students feel intimidated by the myriad activities of campus life that are structured in ways that make them feel like "inferior outsiders". It is the accumulated weight of small, everyday practices of shaming and distancing that finally produces a big, extraordinary event like suicide. We cannot understand such shocking acts without understanding routine acts of exclusion.[12]

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[11] Caste, Higher Education and Senthil's 'Suicide' by Senthilkumar Solidarity Committee (a group of intellectuals and activists based in Hyderabad) *2008 Economic and Political Weekly, Vol 43 No. 33, pp 10-12* cited in Sukumar, N (2008) Living a Concept: Semiotics of Everyday Exclusion *Economic and Political Weekly* Nov 15

[12] Ibid., p. 14

Senthil Kumar unfortunately succumbed;   Namdeo Nimgade survived. Then suicide as a larger response to humiliation has a presence in Nimgade's life too. At the cost of brevity, let me quote him:

> In the early 1970s, the Ford foundation set up the Water Technology Center at IARI, and I was posted there.
>
> Dr. Vinod Shah was an agricultural scientist from a higher caste. He came from a rich family and he had been promoted above me. But he was a victim of politics and bureaucracy, and he committed suicide because of blocked promotions. This led to a big outcry and the establishment of a commission of inquiry headed by the retired Chief Justice of India. In the course of reviewing the materials and interviewing various scientists, he also interviewed me. Justice Gajendragadkar said, 'Dr Nimgade, I see that several times your juniors were given promotions, while your claims were neglected. You had every reason to commit suicide, but I find that you are quite calm and composed. How can that be?'
>
> I replied, 'I feel that life is a gift from our parents. It should not be destroyed. I was born in a poor untouchable family in a remote village. I cannot afford the luxury of committing suicide. I must face the world, struggle hard, and educate my children better than myself. I was inspired by Dr. Babasaheb Ambedkar.'[13]

As I have mentioned in the previous chapter, there were at least seventeen cases of scheduled caste/scheduled tribe students committing suicide in institutions of higher learning between 2007 and 2011.

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[13] (Nimgade 2010, p.267)

Let me end this section with 2011 and the IITs. The 'Self-enrichment programme' introduced by the Indian Institute of Technology-Delhi this year, is claimed 'to boost the confidence of students who come from a different background.' For the IIT, Delhi, different background meant Scheduled caste and Scheduled Tribe students. The note send to the SC/ST students by the IIT claims that the course will enable them to develop social skills, orientation and have the ability to adapt to the environment at IIT Delhi. In other words, these students have to shed their socio-cultural specificities to be part of the IIT and 'the environment at IIT Delhi' will not change. What is being sought here is a certain kind of homogeneity in the place of enabling diversity.

Diversity, Knowledge, and Democracy

In the context of Indian science institutions' desire for homogeneity, let me quote Nehru. He noted, "It is the scientific approach, the adventures and yet critical temper of science, the search for truth and new knowledge, the refusal to accept anything without testing and trial, the capacity to change previous conclusions in the face of new evidence, the reliance on observed facts and not on pre-conceived theory, the discipline of the mind, all that is necessary not merely for the application of science but for life itself and the solution of its many problems."[14] This is indeed a plea for diverse sources of knowledge and continual change of knowledge. In other words, there is a need for diverse groups to engage with science and technology and find solution to the problems 'civilisation' throws up.

Democracy is expected to provide space for, and listen to various and divergent voices. In other words, sameness or homogeneity is opposed to the very idea of democracy. This means, democratic pedagogy needs to accommodate diverse forms of knowledge which, in dialogue, would lead to new forms of knowledge. Without such a dialogue, Nehru's idea of changing 'previous conclusions in the face of new evidence' would be not possible. In a manner of

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[14] Vivek Bhandari, The Essential Writings of Jawaharlal Nehru,

speaking, homogeneity reproduces knowledge and diversity produces knowledge. While reproduction of knowledge, by endorsing the *status quo*, affirms extant forms of power, production of new knowledge challenges the same.

Indian elites' opposition to diversity is well illustrated in Pratap Bhanu Mehta's letter of resignation from the National Knowledge Commission in 2006. In his letter he notes,

> ...the government's recent decision (announced by Honorable Minister of Human Resource Development on the floor of Parliament) to extend quotas for OBC's in Central institutions, the palliative measures the government is contemplating to defuse the resulting agitation, and the process employed to arrive at these measures are steps in the wrong direction. They violate four cardinal principles that institutions in a knowledge based society will have to follow: they are not based on assessment of effectiveness, they are incompatible with the freedom and diversity of institutions, they more thoroughly politicize the education process, and they inject an insidious poison that will harm the nation's long term interest.[15]

It is imperative to mention here that my attempt is not to conflate the issues of the SC/STs with other marginalised groups but the principle of reservations is a mechanism to enable social groups to enter 'public sphere' which has been structurally denied to them. Reservations only enable different social groups to enter an institution but the problems they encounter and what measures can be taken to resolve are discussed in the conclusion part. Let us analyse the implications of the above quote. While one can draw many conclusions from the above quote, what is of interest for us is his dismay with politics. He does not want education to be politicized and, for him, politicization means lower castes entering central institutions. He does not see politicization in democracy as a possible assertion of diversity.

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[15] Pratap Bhanu Mehta's resignation letter from Knowledge commission sent to the Prime Minister. http://www.outlookindia.com/article.aspx?231331 accessed on 9th June, 2011

In order to keep education de-politicized, Mehta is willing to suspend democracy itself. He writes,

> As an academic I find it to be an appalling spectacle when a group of Ministers is empowered to come up with admissions policies, seat formulas for institutions across the country. While institutions have responsibilities and are accountable to society, how will they ever achieve excellence and autonomy if basic decisions like who should they teach, what should they teach, how much should they charge, are uniformly mandated by government diktat? As you know, more than anyone else, the bane of our education institutions is that politicians feel free to hoist any purpose they wish upon them: their favourite ideology, their preferred conception of social justice, their idea of representativeness, or their own men and women. Everything else germane to a healthy academic life and effective pedagogy becomes subordinate to these purposes.[16]

The simple message here is, keep the democratically elected representatives out. What they enact is, for Mehta, nothing more than 'an appalling spectacle'. He, 'as an academic,' wants to decide, among other things, whom to teach. The institutions of higher learning, as the data provided in the previous chapter, decide in favour of the privileged when they have the power to decide whom to teach.

Pratap Mehta also, in his letter, offers us a notion of diversity as well:

> ..., the measures your government is contemplating violate the diversity principle. Why should all institutions in a country the size of India adopt the

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[16] Ibid

same admissions quotas? Is there no room at all for different institutions experimenting with different kinds of affirmative action policies that are most appropriate for their pedagogical mission? How will institutions feel empowered? How will creativity in social justice programs be fostered, if we continue with a 'one size fits all' approach? Could it not be that some state institutions follow numerically mandated quotas, while others are left free to devise their own programs? The government's announcement is deeply disappointing because it reinforces the cardinal weakness of the Indian system: all institutions have to be reduced to the same level.[17]

Some, like Babasaheb Ambedkar, Periyar E.V. Ramasamy and Ram Manohar Lohia, may argue that since 'one size does not fit all', it is necessary to have affirmative action. For Mehta, since 'one size does not fit all', one should let go affirmative action. His notion of diversity is, all institutions should not be reduced to the same level, and i.e. some should be exclusionary.

Andre Beteille who too reigned from the National Knowledge Commission, had similar reasons to offer. In his resignation letter, he noted,

I had hoped that I could contribute something to the design of new centres of science and scholarship that would enable us to maintain and advance our competitive advantage in the sphere of knowledge, but the government's decision to proceed with the expansion of caste quotas makes that objective appear unrealistic. We can either move forward and create centres' of academic excellence or go along with the demands of identity politics based on caste and community, but we cannot do both.[18]

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[17] Ibid.

[18] Full text of Andre Beteille's letter of resignation to the prime minister
http://www.outlookindia.com/article.aspx?231332 accessed on 23rd July, 2011

Of course, one can do both – that was the argument central to the judgment of the US Supreme court, delivered three years before the resignations of Mehta and Beteille, on the Michigan university's admission policy.

The judgment took seriously citizenship as an idea: 'We have repeatedly acknowledged the overriding importance of preparing students for work and citizenship, describing education as pivotal to 'sustaining our political and cultural heritage' with a fundamental role in maintaining the fabric of society.' Given its concern for maintaining 'the fabric of society', it argued that class room discussions would be 'livelier, more spirited, and simply more enlightening and interesting when students have the greatest possible variety of backgrounds.'[19] Indian elite are yet to be adequately concerned about the fabric of their society and treat diversity of knowledge as the source of democracy. Such diversity, by bringing into play different forms of knowledge and concerns, would usher in new production of knowledge in the place of mere reproduction of knowledge. Production of new knowledge is a definite source of efficiency in any society.

We have discussed the importance of diversity and democracy in the science institutions, the need for diversity through various government policies and the need to include civil society in policy formulation and democratise the asymmetrical idea of science institutions. Next we move to the end of conclusion part which gives the limitations of the study and certain measures that could be taken to improve the atmosphere in the Science and Technology Institutions.

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[19] Grutter v. Bollinger's deposition in the Supreme Court of United States of America cited in Martha Nussbaum (2008) Affirmative Action and the Goals of Education in the Conference on Affirmative Action in Higher Education in India, the United States and South Africa New Delhi, March 19-21, 2008 Organised by Programme for the Study of Discrimination and Exclusion, School of Social Sciences, Jawaharlal Nehru University and Centre for Comparative Constitutionalism, University of Chicago

Conclusion

The status and condition of the Scheduled Castes will be improved only when the representatives of the Scheduled Castes come to occupy executive posts as distinguished from ministerial posts. Executive posts are strategic post, posts from which a new direction can be given to the affairs of the state....

Dr. B.R. Ambedkar[1]

It is an obvious fact that various forms of oppression on the basis of caste are prevalent in our society. We have already discussed about various measures that are included in the Constitution to prevent such forms of oppression and discrimination. But as this study shows, caste oppression and discrimination are not only rampant in our villages but all-pervasive; in this case, in institutions of higher learning. These institutions are designed for the advancement of scientific and technological knowledge and one expects a modern, democratic and conducive atmosphere in their functioning. But ironically these institutions still remain elite enclaves and the prevailing value systems of them are contoured through the caste economy of 'merit'.

One of the facts this study has attempted to establish is that the accessibility to professional science education is a necessary requirement for the improvement of material conditions of the lower strata of society. But the presence of students and faculty members belonging to SC/ST communities in the engineering and medical stream (the institutions of science and technology in general) is very negligible. This study attributes the hostile atmosphere in the institutions of higher learning as one of the primary reasons for such a dismal condition. Senthil Kumar's tragic plight and suicide is one of the startling exemplifiers of this hostile atmosphere. Senthil, a first generation learner from a pig-rearing community had to sacrifice his life to redeem the basic human dignity and rights in an institution of higher learning. This research also shows that Senthil Kumar's

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[1] Chalam(2008; 180)

death is not an isolated case and the rate of students succumbing to pressure and humiliation is in fact alarming. Such tragic deaths of young talents remind us of the necessity and urgency to consolidate efforts to challenge the anti-democratic character of these 'elite enclaves'.

One of the fundamental arguments we have been trying to establish through this study is that only by deconstructing the commonsensical understanding of the world can one think of an effective politics. Many scholars have already shown that there is nothing common in the 'commonsense', and in fact what is disseminated as 'commonsense' is the value of hegemonic classes. The stereotypical representation of people belonging to lower strata of the caste hierarchy is in fact the product of such commonsensical/hegemonic values. How these values can be deconstructed is the question that arises. In the context of the discriminations that exist within the institutions of higher learning, my proposition echoes Ambedkar's observations. Following Ambedkar, one can argue that the status of the Scheduled Castes/Scheduled Tribes in Higher Educational institutions can be improved only if they acquire executive posts inside the institutions. This study shows the importance of acquiring decision-making powers as this would help in changing the knowledge delivery system, the curriculum and also the administrative regulations which would ensure the entry as well as persistence of the Scheduled Castes and Scheduled Tribes students in such institutions. The presence of members of the lower castes in the decision-making bodies and their contribution to the improvement of the system in the long run would break existing stereotypes and thereby bring a more equitable atmosphere. This would also help ensure that stories like that of Senthil Kumar, mentioned above, do not repeat.

The chapters have discussed how these elite science institutions have maintained the singular language of merit which is the language of the anti-democratic anti-Reservation lobby (though they subscribe to the reservations prescribed in Manu Smriti) in the country. This study shows that the arguments such as the 'suffering of merit' and 'loss of productivity' are not based on any factual evidence. On the contrary, such

arguments are byproducts of caste-ridden prejudices prevalent in the society. Such kinds of stereotypical impressions and prejudices are structurally reproduced through systematic maintenance of exclusive measures. Even after the implementation of reservation policies, the dismal presence of faculty members belonging to the lower castes in these institutes are a result of these exclusionary mechanisms. By retaining nearly absolute control over decision-making bodies, the upper strata have ensured the prevention of the entry of the 'others'. This has led to the lack of diversity in the institutions and eventual deprivation of the quality of researches undertaken by them. This argument has been supported by one of the best scientists the country has produced; C.N.R.Rao says "India has more brilliant people than any other country. Sixty per cent of India's population is from villages. It is these villages that have the best of brains. This is where our hope is. Those from big cities like Bangalore are more interested in money and they will not make much contribution to the future of the country's research."[2] The argument I propose is that, any kind of high quality research can only take place when there is scope for diverse ideas to meet and interact. For this to happen there must be a change in the character of the institutions. So one can infer from the arguments in the chapters that this diversified language and knowledge is possible only through the inclusion of all sections of society.

One of the other propositions of this study is that diversity is essential for the democratization of knowledge. In this context, the relationship between democracy and Science education was studied and it has been found that the two categories are not in congruity due to the exclusion of the lower strata in educational processes. One has to look into the possibilities of policy level reforms to ensure the diversity and quality of knowledge produced by these institutions. One example that can be cited is the 'Super 30 Ramanujam School of Mathematics'[3] which has shown that the lower strata of the society

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[2] C.N.R.Rao spoke the above lines in the inaugural address of seminar 'Frontiers of nanotechnology' organised by the Karnataka State Higher Education Council as reported in The Hindu; 1 June, 2011

[3] "Super 30 is a highly ambitious and innovative educational program running under the banner of Ramanujan School of Mathematics". It hunts for 30 meritorious talents from among the economically backward sections of the society and shapes them for India's most prestigious institution – the Indian Institute of Technology (IIT). In the last seven years, it has produced hundreds IITians from extremely poor background. During this program students are provided absolutely free coaching, lodging and food. Super 30 targets students from extremely poor families. They have all seen the change with sheer disbelief in their

students, when given opportunity, can excel in whatever fields they choose. However, in this context, I would like to provide a brief summary of the findings and propositions of each chapter.

In the first chapter we have concentrated mainly on the question of the role of education in the emancipation of SC/ST communities. It has attempted to trace the changing notions of education and its varying social roles. This chapter has argued that unlike the grand narratives of nationalism, the experiential realities of colonial rule had multiple dynamics especially if we take into account the subjective location of lower caste population in India. This chapter also attempted to traces the efforts by the lower caste intelligentsia like Mahatma Jotirao Phule and Dr. B.R. Ambedkar. Further, it has engaged with various theories regarding social mobility. Through a detailed statistical analysis historically tracked the dropout and enrolment rate of SC/ST students across the nation. It had attempted to establish the fact that access to quality education in the primary and secondary educational levels is central not only to increase the number of students from the marginalized sections in the institutes of advanced learning, but also to improve the quality of higher education in general. The chapter has further proposed that the accessibility to science education is a necessary requirement for the improvement of material condition of the lower strata of society.

The second chapter we have dealt with certain characteristic features of science and technology education in India. It has examined the issues concerning the Scheduled Castes and Scheduled Tribes in the Indian Institute of Technology and Indian Institute of Science through some case studies. After furnishing an account of the tedious selection process, this chapter argued that in order to diversify the knowledge production, it is necessary to critically examine the normative notion of 'merit'. This chapter also dealt with various hurdles that the students belonging to the lower strata have to face due to the lack of both cultural and economic capital. Drawing on the insights of Pierre Bourdieu, this chapter has argued that the people who speak in favour an abstract category called

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eyes that their children are now going to be top technocrats." From the website of the Super 30, http://www.super30.org/

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'merit' fail to take into consideration the fact that the notion of individual is a byproduct of various capitals one possesses or inherits. This chapter also looked into the caste profile of the students taking admission into IITs. It also engaged with similar questions and data about the IISs in order to show the discriminatory character of its institutional structure. One of the other areas this chapter has attempted to engage in its course of enquiry is the near-absent presence of SC/ST faculty members in these premier institutions. Through the analysis of various data available, this chapter has attempted to establish the negligible presence of SC/ST faculty members in higher learning even after the mandatory reservation policies.

The third chapter which is entitled 'Democracy, Diversity and Science Learning', will explore the relationship between Science and Democracy. Drawing its insights from the critique of the universality of science made by the constructivist school, this chapter attempts to understand ideological structures of the scientific establishment (such as centres of higher learning like IITs and IISc in the Indian context). The larger Indian backdrop for this chapter is the contrasting positions taken by Jawaharlal Nehru and Babsaheb Ambedkar. While Nehru took science as value in itself in the process of nation-building and relied on 'the rule of experts', Ambedkar placed his emphasis on access to science as a necessary input in empowering communities. The chapter argued that the success of the Nehruvian vision in the scientific establishments have led to lack of diversity both in terms of providing space for multiple knowledge forms and access to deprived communities. As a result, these institutions continue to reproduce existing knowledge rather than produce new knowledge they continue to be elite enclaves.

As a postscript to this study it would be productive to make certain propositions regarding the structural change of the system. For ensuring the inclusion of SC/STs, there have been various attempts for remedial classes, especially for developing skills in English language. But the mere acquisition of language skill alone cannot make an improvement in status of SC/STs; there must be a structural change in the character of the institutions. The improvement of language skill can only be a small part of this structural

process. Language is a problem for many students from the rural background, which include both lower caste as well as the upper caste students. Thus there must be remedial programmes for those who lack certain language skills. The general improvement of the SC/STs cannot be achieved through 'caste-marked' remedial measures. Also, there are first-generation learners who lack the social and cultural capital for which certain measures have to be taken, so that these students reach to their potential without the handicap of such capital. TISS director S Parasuraman's remark about the news reports that IIT Delhi is introducing etiquette lessons for SC/ST students shows the complexity of the situation and the necessity to take long term structural measures. He states, "it is not useful to segregate students at all. Every student who joins IIT knows his/her maths but may not be able to write good English. All students from rural and underprivileged backgrounds need adjustment but putting them through a training programme is not the answer. IIT-Delhi needs to have a long-term support system in place and hire better counsellors for every student, not just SC/STs or OBCs." This observation also echoes some of the findings of this research.

Since this study was based mostly on secondary sources, there is a requirement to look into the issue of caste in science institutions through an ethnographic study which would enable us to actually give a clear picture of the various social processes prevalent in these elite institutions. Various issues that can be looked into are the presence of other marginalised groups, namely women, religious minorities, and the new entrants through reservations - the other backward classes.

In the end, I hope that the findings of this research would be useful for the general struggle for equality. And this study reiterates that any effective engagement with the question of 'quality' cannot overlook the question of 'equality', because quality is a byproduct of equality.

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