THE IT/SOFTWARE PROFESSION AND ITS INFLUENCE ON THE CONTEMPORARY ARRANGED MARRIAGE MARKET IN INDIA

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A THESIS SUBMITTED
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF SOCIOLOGY
NATIONAL UNIVERSITY OF SINGAPORE

Acknowledgements

I wish to thank my dissertation supervisor Dr. Jennifer Jarman for her open door policy for consultations. She has been a guru at helping with organization and giving me timely feedback especially during the race towards the end. She encouraged me to find the skills to write clearly and concisely. She also helped me to develop the material on the Indian marriage market.

I wish to thank my ex-dissertation supervisor Dr. Stephen John Appold who was a sincere mentor in the early stages of my research. He helped me to understand the vast theoretical literature on social networks and social capital.

I wish to thank Professor Peter Reeves for being the chairperson of my dissertation committee and giving me insightful comments and positive encouragement.

I wish to thank Dr. Rachel Safman for her helpful comments.

I wish to thank the Department of Sociology, FASS and National University of Singapore without whose financial support and opportunities to teach Sociology none of this would have been possible. It has and continues to be a wonderful department and university where students in the years to come will benefit from its generosity in scholarships and brilliant faculty. Furthermore, Asia Research Institute for funding part of my fieldwork in India.

I wish to thank the respondents whose identities are kept confidential upon request. I am indebted to their families, friends and firms and all the precious time and help they gave me in understanding the IT/software industry, arranged marriages and networking strategies.

My utmost gratitude goes to God in all his names and forms and for his countless blessings in making this dissertation a reality.

I shall forever be grateful for the unconditional love, positive encouragement and support from all my dearest family members whom I love very much.

My mother Vijayalakshmi, father N. S. Raghunath, brother Madhusudhan, sister-in-law Phoebe and darling nephew Krishna Nicholas who have believed in me and my positive endeavors. My little nephew kept saying "don't worry Aunty Nina you will finish your thesis."

I wish to thank my dear friends.
George and Sonia

They all bring out the best in me.

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Summary

This dissertation analyzes the effects of the symbolic capital of education and the organizational cultural capital of corporate status on social networks and status attainment of Indian software professionals. Competition and demand for an educated software workforce in India differentiates people with similar skills. This determines who gets ahead in the employment market and in the contemporary arranged marriage market. Professionals attain social capital in the Indian software labor market in the following ways: firstly, through professional credentials like engineering degrees that are in high demand; secondly, by making choices in their career paths that affect the symbolic capital of their resumes and thereby social mobility; thirdly, by using organizational cultural capital of corporate status, salaries, education and occupational status to build social capital to benefit from networking. Networks with the propensity for social capital and organizational mobility are prolific when firms have a demand for candidates with certain credentials and not when there is an excess supply of candidates. This influences an actor's ability to gain from networks with high status actors which are not based on caste or gender status. Furthermore, not all types of connections with high status actors are valuable for status attainment. High status actors fear depleting their social capital, especially if they feel that their recommendations are not likely to work. An analysis of the arranged marriage market for both male and female software professionals shows that ideas about the 'desirability of sameness' are having effects in marriage choices, leading one to consider the emergence of a new system of matching based on markers of professionally achieved status. Actors with credentials, career paths and occupational status who work in large and well recognized firms or as entrepreneurs have more bargaining power in matching themselves to persons ranked similarly or higher in the marriage market and in the process often transcend caste homogeny. Both men and women have equal bargaining power in the contemporary arranged marriage market should they possess credentials of similar value in firms for which they would like to work. This research was conducted through seventy-eight qualitative interviews, observations, document analysis and an online sample of 200 matrimonial advertisements between the years 2002-2006 based on Bangalore, India. The Indian IT/software industry has made cities like Bangalore attractive for employment and entrepreneurship and has been able to recruit from an English speaking labor force. In conclusion, it is not just what you know or who you know that matters for status attainment. The value of an actor's credentials as symbolic capital to third parties and its demand in the employment market will determine the outcome of status attainment and affects prospects in the marriage market. Professional degrees like engineering and corporate identities have become symbolic signs of achievement for Indian software professionals.

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Chapter One

This dissertation explores the software profession and its effects on the changing parameters of professional networking and contemporary arranged marriages for young Indian software professionals. I argue that both employment in software firms and contemporary arranged marriages of software professionals are influenced by signs of high status credentials and professional achievement. The marriage market for software professionals is closely linked to their professional status showing the importance of credentials such as education, size and prestige of the firms worked for and the chosen career path. Engineering degrees and jobs in reputed multinational firms have become key matching factors which link professional mobility to marriage choices.

Arranged marriages are still a widespread phenomenon in India (Mandelbaum 1970; Moore 1994; Otani 1991; Rao and Rao 1982; Reuters 2000; Uberoi 1994). Individuals with careers in well known software firms have high status both in the professional realm and in the arranged marriage market. Thus, factors employed in screening candidates for contemporary arranged marriages reinforce credential capitalism and career ambitions.

Seeking homogeny in localized caste based networks is not useful for status attainment in this sector which has been very dependent on the recognition of credentials and networks based on signs of merit. The key networking links are multicultural because of the global nature of the software industry and occur between professionals, clients, local and foreign firms, venture capital, entrepreneurs, exports and foreign direct investment. Hence, the software firm is one of the *new institutions of social arrangement in India*. This is because it defines professional reputation based on achieved status rather than ascribed status and to that extent has influenced the way those engaged in this industry in white collar jobs form and benefit from social alliances. However, stratification based on those credentials accepted by high status firms and

the resultant status attainment provides the very avenue for upward mobility and achieved status.

The effects of the burgeoning software industry on social alliances in India is important to study for several reasons: the global nature of this industry has influenced firms to adapt highly selective hiring practices to signal quality of work processes in order to compete in an international environment for clients and their outsourced projects. The global delivery model of the software industry has rendered Indian and foreign multinational firms to compete for two way work processes in India and in overseas client premises (Konana 2006). This is an industry driven by technological change and inter-firm job mobility is high (NASSCOM 2006). The industry also encourages global capital flows and thereby professional networks for entrepreneurial start-ups (see Saxenian 2000b, c, 2001). The industry facilitates competition for professionals to enter the best paying economic sector in India and to migrate overseas. Software firms (depending on their size and market status) are interested in attracting talent by paying more as there is less supply and more demand for knowledge workers (Jalote 1997). The industry enables high-end training and quality certifications for employees who gain transferable skills sets which make them hirable by reputed firms globally. All these factors have made this industry very popular and attract the best talent from India. Notably, it has influenced social alliances because of the need for its employees and entrepreneurs to remain competitive and benefit from the global outsourcing trend and the movement of firms, labor and work processes in search for cheap labor and export markets.

IT/software firms benefit from 'credential competition', a concept which is derived from credential capitalism. Credential capitalism occurs when individuals enter into intense competition with one another in an attempt to get as much education as possible in order to maximize career advancements. The IT/software industry is driven by free market enterprise

towards individual competition by doing whatever is necessary to get ahead (Collins 1979, pp. 195). Using this definition of credential capitalism, I enumerate 'credential competition' in terms of software professionals acquiring education and work experience to work in large, well recognized firms.

This is visible in the IT/software industry in India after economic liberalization in the late 1980s which increased both foreign direct investment and local entrepreneurship (Das 2000; Heeks 1996; Lateef 1997). Education policies in India concentrate on producing a minority of engineers and scientists rather than providing primary education for the illiterate masses (Ganguly 1999, pp. 2083). The educated middle class who left the country due to lack of private enterprise and opportunities for higher salaries prior to privatization and economic liberalization, can now also find jobs in the privatized IT/software industry (Heeks 1996; Khadria 1999, 2004). This has influenced and made visible modernization and mobility within this community of professionals who are a major part of India's social discourse on opportunities.

Despite India still being a less developed country, the IT/software commerce and in particular software exports are contributing to 4.1% of the Gross Domestic Product (NASSCOM 2006). This economic growth has social implications allowing upward social mobility regardless of caste or gender and is creating social stratification on the basis of credential capitalism. IT/software production in India, while still small, (less than 2% of the global IT/software market share), is earning India exports of approximately US $ 12.2 billion in 2004-2005 at a growth rate of 34% over previous years. Software firms form a pyramid structure in India, with a few large firms at the top and medium to smaller firms in the middle and at the bottom (NASSCOM 2006). Consequently, the software profession is ranked according to a social and professional hierarchy depending on the size and market prestige of firms and the filtration of

credentials by these firms. This is because Indian based firms are export and outsourcing oriented for core economy software requirements (Arora et al. 2000a; D'Costa 2002, 2003; D'Costa and Sridharan 2004) creating credential capitalism that is unparalleled.

Due to the emphasis on outsourcing to international markets, promoting the quality of service providers and professionalism have become key factors for organizational growth. Firms need to establish that their employees have professional tertiary technical qualifications for the products and services they customize and sell. There is an over-emphasis on hiring engineers who pass certain qualifying exams at the entry level. This nonetheless establishes competition based on sorting and hiring the best available candidates. There is currently an undersupply of engineers, contradictory to the fact that India has an over supply of educated labor that could be hired and trained for the IT/software industry (see Arora and Athreye 2002; Arora et al. 2000b). This generates a stratified queuing system (see Reskin 1991) where both firms and the labor market form queues based on matching jobs in the best paying firms with the best qualified professionals.

Aims and Objectives

My dissertation shows that the selection process to hire employees by reputed software firms and the competition to work in reputed software firms is changing the process of social networking and mate selection in the arranged marriage market. Software professionals benefit from signs of merit, achieved status and reputation rather than non-technical ties based on caste homogeny. Consequently, the prestige of certain credentials is affecting the negotiation processes in forming social alliances. In other words, employment in software firms indirectly affects partner selection in the arranged marriage market. In order to elaborate on how software professionals form and benefit from social alliances, the following questions and arguments will be explored in this dissertation.

Research Question and Arguments: Employment

1. What are the effects of credentials and firm status on the career choices and opportunities for software professionals?

Software professionals benefit from networking according to how they are categorized by the credentials they possess; the career choices they make; the status of the organizations where they work; and the demand for their credentials (albeit having comparable skills) in the market. Some credentials have lower prestige than others despite the actors' trainability for similar sets of skills.

Software firms are highly selective in hiring. They hire people with different types of degrees (not many have actual education in computer science) and turn them into software professionals through extensive training (Jalote 1997; NASSCOM 2006; Bangalore IT 2006; Company Websites in Appendix I). Increasing job opportunities and higher pay scales in Indian software firms (NASSCOM 2006) have forced educated middle class Indians to adopt a variety of entry strategies. These strategies include the following. Firstly, staying or returning to India to find jobs. In a study of knowledge workers, Khadria (1999, 2004) attributed the loss of educated human capital in the Indian economy to overseas migration. Saxenian (2000c, 2001) claims that educated professionals are returning to India because of increasing job opportunities and entrepreneurial opportunities in the software sector. Secondly, obtaining professional university degrees in engineering, computer science, business management and accounting to compete for jobs in software firms. Professionals with these degrees who pass the entrance standards are sought by high status software firms compared to other graduates and diploma holders sought by lower status software firms.

There is enormous competition for jobs in large and prestigious firms which have better market status, salaries and opportunities for upward mobility. Therefore, diploma holders cannot rely on influential contacts to get jobs in large and prestigious firms. This is because influential actors would not like to deplete or waste their social capital or influence by recommending those whose credentials have low prestige. Those with prestigious credentials like engineering degrees do not need influential contacts to get good jobs.

Research Question and Arguments: Arranged Marriages

2. What effects do the career paths of software professionals and their resumes have in the marriage market?

Arranged marriages are still very popular in India. However, the studies on arranged marriages in India (Mandelbaum 1970; Medora 2003; Moore 1994; Mullatti 1995; Nanda 1995; Rao and Rao 1982; Uberoi 1994) cannot explain the factors of professional attainment fostered by a new industry in the face of economic liberalization and globalization and its effects on male and female agency in mate selection.

The credential competition in the employment market influences alliances in the arranged marriage market in the following ways. Firstly, both male and female software professionals with professional degrees who are employed in high ranking firms have enormous status in the arranged marriage market. Secondly, male and female software professionals want to marry partners with credentials that are in demand by prestigious multinational firms. Thirdly, in contemporary arranged marriages, alliances based on signs of achieved status are preferred by both men and women. Fourthly, marriage partners are filtered according to several factors of professional compatibility. However, this has surprisingly not reduced the reliance on non-technical matching factors such as horoscopes. Fifthly, the reason for selecting a partner with a

similar resume extends professional networks of both partners and is seen as a sign of compatibility. These arguments are relevant and explain various types of arranged marriage networks such as caste, professional and cyber networks and the usage of several professional and non-professional factors of homogeny and matching in mate selection both for men and women.

Research Question and Arguments: Caste and Social Alliances

Does the search for homogeny in non-technical caste alliances lose some of its relevance in the software profession and in contemporary arranged marriage negotiations? The reliance on caste homogeny is reduced in the software professional networks and thereby in the arranged marriage market because of the emphasis on achieved status to enter these markets.

India has been trying to break the caste system in work practices prompted by the earlier colonial British rulers and later after independence. However, the research on influences of the caste system by Béteille, (1991, 2003); Ghurye (1961, 1969); Gould (1988) and Harriss-White (2003) shows that caste is still a feature in job opportunities and occupational status in India. My dissertation shows otherwise, through findings about software professionals and their professional networks and marriage preferences. Credential capitalism has been embraced by software firms in India who want to hire the best available labor regardless of caste or gender which induces added types of opportunities for those who possess credentials which are highly valued in the labor market and in the marriage market.

Conceptual Framework

Social network theory conceptually elaborates the importance of connections and social alliances in status attainment. Network theorists (Burt 1992, 2000, 2001, 2002; De Graaf and Flap 1988; Erickson 2001; Flap and Boxman 2001; Granovetter [1974], 1995, 1982; Kim 2001;

Lin 1982, 1990, 1999a, b; Lin et al. 1981a, b; Podolny 2001) have attempted to answer the following questions: who gets noticed and receives information and opportunities that can be realized in terms of status attainment? Why do some actors fare better in status mobility through networking than others?

Social network theory states that access to diverse networks is beneficial in getting valuable information and opportunities in an imperfect market (Burt 1992, 2001; De Graaf and Flap 1988; Erickson 2001; Flap and Boxman 2001; Granovetter [1974], 1995, 1982; Kim 2001; Lin 1982, 1990, 1999a, b; Podolny 2001). In particular, the research by Lin (1982; 1999a, b) deals with status attainment through networks by proposing two concepts namely, a) instrumental ties and b) expressive ties. In instrumental actions, actors are supposed to gain additional resources not currently possessed by them, i.e. a better job. In expressive actions, actors maintain the resources they currently possess (Lin 1982, 1999a, b). Caste ties relate to expressive actions, whereas marketing credentials for status attainment are more instrumental in nature. Social network theory emphasizes that distant and high status contacts are useful for finding jobs (Burt 1992; Granovetter [1974], 1995; Lin 1982, 1999a b). This cannot explain how people find jobs in the Indian software industry and whether this affects their chances in the marriage market. I have used the concepts of symbolic capital, organizational cultural capital and social capital to make clear the following: the importance of credentials such as engineering and professional degrees as forms of symbolic capital which can be converted into organizational cultural capital through employment in high ranking software firms. When an actor has symbolic capital in the form of credentials which are in demand by high ranking firms, then organizational cultural capital is accumulated because working for a reputed corporation is seen as a sign of competence and quality of work.

Organizational cultural capital is accrued when high status organizations recognize certain credentials as being superior over others for white collar jobs and employees who have these credentials benefit from the reputation of their high status employers. Both symbolic and organizational cultural capitals are seen as signs of achievement and can thereby be converted into social capital or social influence in social networks. Hence, social influence or social capital is accrued through the recognition of certain credentials by high status employers.

Conceptual Definitions

The concept of symbolic capital was adapted from Bourdieu's (1984, [1983], 1986) definition to mean honor and prestige. Bourdieu (1993, pp. 37) explains the notion of symbolic capital as follows.

> Being known and recognized and is more or less synonymous with: standing, good name, honour, fame, prestige and reputation.

Engineering and other professional degrees have more symbolic capital or prestige for attracting international clients and quality certifications and signify high reputation.

Cultural capital according to Bourdieu (1984, [1983], 1986) refers to several factors of cultural inheritances and socialization such as knowledge, skills and education. These are advantages which give people a higher status in society, including high expectations. Parents provide children with cultural capital by socializing them with attitudes towards learning and the necessary resources to benefit from institutions. Bourdieu (1984, [1983], 1986) defines cultural capital in three ways. These are embodied cultural capital (socialization and linked to habitus); objectified cultural capital (when one owns objects of high culture); and institutional cultural capital (recognition of education credentials which can be converted into economic capital). It is the concept of institutional cultural capital which is of significant relevance in this

dissertation and has been modified to propose the concept of organizational cultural capital. This means that organizations through their own reputation can promote the reputation of their employees.

I have used Lin's (1982, 1999a, b) definition of social capital defined as instrumental ties which means social influence or embedded resources in terms of contacts that a person has and personal resources such as education. I specifically suggest that credentials with high symbolic capital or reputation lead to high organizational cultural capital because engineering credentials are prized for employment in high ranking firms. Thus, credentials and employment in high ranking firms lead to social capital or social influence.

This thesis draws upon other concepts such as queuing which means a hierarchy of labor and credentials (Reskin 1991), filtering, which means to sort and select those with the best credentials (Arrow 1973) and signaling, which means that some credentials are signals of status (Spence 1974, 1981). These concepts were used to emphasize the process of selection in the job and arranged marriage markets.

Organization of Dissertation

This chapter introduces the significance of the Indian software industry for this dissertation alongside the conceptual focus, research questions and key arguments. In the following chapters, I attempt to provide comprehensive and detailed accounts of software professionals and argue that the assessment of credentials arbitrated by firm status affects career opportunities and thereby arranged marriage choices.

Chapter two looks at earlier research on caste, filtering, hiring, human capital, marriage, queuing, social networks, social capital and symbolic capital then discusses its relationship to

the software profession and the Indian arranged marriage market. These theories do not explain the hiring practices of Indian software firms and the labor market outcomes of educated professionals with similar skills but different credentials. The literature on the marriage market has ignored the usage of resumes and professional homogeny besides cultural similarities to sort potential candidates in contemporary Indian arranged marriages.

Chapter three provides a general overview of the development of the software industry in Bangalore, which is the field-site, with basic facts and figures. Chapter four describes the methodological issues of how the research was conducted and the key strengths and weaknesses of the sources of data.

Chapter five shows how symbolic capital is built and how that leads to organizational cultural capital through career choices in large firms or entrepreneurial ventures. Those with high symbolic capital and organizational cultural capital accrue social capital to be employed by other high ranking firms and/or form entrepreneurial ventures. Consequently, those who lack these factors experience deficiencies in their social capital and cannot get jobs in reputed firms. A typology is constructed indicating the various types of software professionals defined by their credentials and training arbitrated by software firms. Depending on their career choices and opportunities, these professionals have varied access to the labor market and social capital. This chapter deconstructs the notion of a singular definition of the software professional and shows that the types of credentials they possess translate into a diversification of their networks.

Chapter six shows how caste and gender differentiation get transformed in the credential hungry workplace, when achieved status is recognized by powerful networks. Professionals achieve mobility when organizations recognize their credential worth and employ them. This

means that professionals through their resumes and networks accentuate achieved status rather than their connections to ascribed status. Case studies, examples and statements from the respondents are used to explain that access to high status actors do not provide opportunities when the professionals' credentials are not valued in the networks and organizations that demand them.

Chapters seven and eight describe arranged marriage chances and choices amongst software professionals. The aim is to link their marriage negotiations to several matching factors. Arranged marriages provide actors with the means to choose partners that have similar career ambitions and can access similar job ladders like themselves. The signs of 'sameness' fortify measures of compatibility. Men and women use similar ranking and rating of each others' resumes and credentials when choosing partners. Chapter nine ends with the conclusions and the major findings in this dissertation with suggestions for future research.

Chapter Two

The Indian software industry has created well-paid employment opportunities for the educated middle classes in India. This has prompted social networking defined by merit in employment and contemporary arranged marriages amongst men and women. The employment market affects the contemporary arranged marriage market, because resumes are used to match potential partners. Furthermore, it is not just about what one does for a living or their occupational status, but also where one works that affects status attainment. Software firms artificially stratify the credentials of applicants with similar skills. Large (high status) software firms hire the best available candidates who pass their stringent entrance requirements, whereas the medium and small (low status) software firms hire less expensive labor. The labor is trained for similar and transferable skill sets, but their credentials affect their entry into high or low status firms. This is because Indian software firms have to prove their quality to international clients while competing for contracts.[1] The stress on training and credentials has reduced the effects of gender and caste stratification in the workplace and similarly in the marriage market.

A thorough sociological literature search showed that there was no specific theory or study which could explain the links between rankings of firms, credentials, jobs opportunities and getting partners in the marriage market. The literature on how people find job opportunities is dominated by quantitative studies by networks theorists (Burt 2001; Erickson 2001; Granovetter [1974], 1995; Lin 1999a, b) which miss out on insightful narratives about the process. Network theorists typically assert that high status and diverse contacts are beneficial for finding jobs and status attainment. This does not explain how software professionals find opportunities for jobs and

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[1] This information is from several sources (Agrawal and Thite 2003; Arora and Asundi 1999; Arora and Athreye 2002; Arora et al. 2000b).

arranged marriages. The literature on marriage by Gary Becker (1973, 1981, 1991) argues that men exchange monetary resources for things like beauty, homemaking etc in women. More recent works by Brooks (2000); Halpin and Tak (2003); Kalmijn (1993, 1994, 1998); McPherson et al. (2001); Oppenheimer (1988) and Sweeny (1997) have looked at marriage as a partnership of equal status between men and women and argue that the changes in the labor market for both men and women have altered the nature of the marriage market. However, they do not consider the adaptation of professional resumes in the selection of partners with similar credentials.

The following theoretical literature was reviewed to find the missing links: social networks, social capital human capital, marriage market, caste and occupations; filtering, signaling and queuing theories. This literature review shows that the research on the software industry in India is lacking in sociological analysis about the opportunities and strategies of software firms and professionals. Specifically, since the software industry benefits from the credentials of cheap labor, concepts such as filtering, human capital, networking, queuing, rational choice and signaling became heuristic devices and operational terms. These helped to understand the processes of status attainment.

Studies on Social Networks and Social Capital

Actors look to benefit from their existing networks of information and opportunity by leveraging their resources and influence which is termed as social capital. Social capital according to Bourdieu ([1983], 1986, pp. 249), is the reward which accrues from membership in a group and provides the basis of cohesion which makes that possible. Through social capital actors can gain access to economic resources and augment their cultural capital through networks with persons of taste or links with institutions which confer prized testimonials (Bourdieu 1979, 1980; Portes 1998).

The investments made in networking do not mean much if the persons requiring the networks do not have assets recognized by the group. Often no material exchanges may be made to gain access to strategic contacts, but the actors are accepted on the basis of their reputation. So, IT/software professionals, who have resumes which reflect degrees and jobs valued in the labor market, will gain access to similar networks in the marriage market. Leana and Van Buren III (1999, pp. 540), define social capital as associability (engaging in collective goals) and trust between employees and the organization which is an antecedent to successful collective action, that is jointly owned by both parties. The definition of social capital by Flap and Boxman (2001, pp. 161) is the outcome of the size of the network, the structure of the network, the investments in the network members and the resources of the network members (Burt 1992, 2001; Flap 1999; Flap and Boxman 2001). Social capital is built as the actor gains work experience which is recognized and valued by the market for their career moves. The arguments surrounding the concepts of social networks and social capital as indicators of status attainment are motivated by positivist traditions. These studies involve: quantitative evidence to support their claims through extensive mathematical modeling; applications of theoretical constructs to findings from select countries in Asia, Europe and North America. The literature is seriously lacking qualitative evidence from a developing country like India in relation to new industrial development such as software which has created job opportunities for some qualified professionals (NASSCOM 2006). Thus, it became crucial to design the research questions and propositions to understand whether networks and social capital work differently for different cadres of software professionals.

The status of the firm has been ignored in determining labor market stratification and its effects on other markets. The underlying assumptions by social networks theorists are as follows: those who have access to diverse networks, (Burt 1992, 2001; Granovetter ([1974], 1995, 1982) can facilitate useful information and opportunities provided they have embedded resources i.e.

network resources and ties to high status actors (Kim 2001; Lai et al. 1998; Lin, 1990, 1999a, b; Lin et al. 1981a, b; Podolny 2001). Embedded resources within networks are organized into two categories: social resources and personal resources (Lin 1999b). Social resources broadly refer to the strength of ties that actors have to other actors. The usefulness of social resources also depends on the status of the contacts that ego is connected. Personal resources refer to parental influence, education, previous work experience etc. Connections to high status contacts are supposed to generate better networking and reputation outcomes (Bian and Ang 1997; Kim 2001; Lin 1999b; Lin et al. 1981a, b; Podolny 2001).

Network theory provides interesting questions. Do all actors who have the above benefit from them? Is there any variation in status attainment? The literature does not differentiate variations in status attainment arbitrated by firm status and the demand for certain cadres of qualified labor. Despite having similar skills, and access to high status networks, some actors do better than others in finding employment and entrepreneurial opportunities.

Arguments within social network theory Burt (1992, 2001); Granovetter ([1974], 1995, 1982) and Lin (1982, 1999a, b) define networks as conduits of information and opportunity, while they say that access to resources depends on the strength of ties between members and connections facilitated across structural holes to many networks give rise to multiple sources of information and opportunities (Burt 1992, 2001). Lin (1999a) takes the social capital angle in social network theory and promotes the idea of instrumental ties (contacts that can be used to find jobs or other opportunities of resource exchange) or expressive ties (maintaining ties for emotional and social rewards).

Burt (1992, 2001) argues that an actor who has networks that are rich in information has contacts in places where such information is likely to be present and can provide a reliable flow of that information. Research on networks and social stratification draw on how networks serve as channels through which market related information travels and the ways this process lessens uncertainty (Lin 1999a). The focus has been on ties and access to labor market information and their influence on individual mobility and attainment.

These theorists have tried to answer the following question: what does it mean in terms of social networks to be better connected since good connections lead to better opportunities (Burt 2001, pp.33; Erickson 2001)? Some actors are able to leverage their social capital, networks and credentials better than others. The human capital explanation (Coleman 1988) for this inequality is that actors with better skills and education get ahead of others. However, social networks and exchange theories explain that actors who fare better in attaining their goals are connected to others who can provide them opportunities to exchange their resources (Blau and Duncan 1967; Burt 1992, 2001; Erickson; 2001; Lin 2000).

Much of the above theoretical premise is based on Granovetter's ([1974], 1995, 1982) earlier findings. He discovered that people rarely hear of jobs from their close networks but usually from distant acquaintances and attributed this to the strength of weak ties. Burt (1992, 2001) furthered this research by introducing concepts such as structural holes, bridge ties and bridge positions. He proposed that a network made up of strong ties (where every person is linked to every other person in a particular group) is redundant in terms of flows of information and influences. This is because of the lack of structural holes or spaces between disconnected networks that show up in a network diagram. Links across structural holes are considered bridge ties, and the persons who are able to link actors or groups, who do not know each other, across these are in bridge positions

of power. Hence, cosmopolitan or widely scattered networks of weak, non-redundant ties are

ideal for information and opportunities rather than local networks of close ties. These

propositions help to understand why caste based networks, which are relatively closed because of

barriers of ascribed status, are not useful for software firms and professionals. The software

industry in India needs widely scattered networks with many structural holes to find international

clients, investors and access to the labor market.

However, two questions arise from the above: who gets ahead? Actors with high levels of human

capital or actors with high levels of social capital in terms of embedded resources in networks?

Human capital is useful when recognized by firms to augment social capital to international

clients.

Lin (1999a) took on the debate of social capital and human capital theorists and argued that some

high level jobs require actors to have high levels of social capital as assets to the organizations

that hire them. A clear example of this is found in the work of Rosabeth Kanter ([1977], 2003)

who shows the value of wives' contributions to the successes of their husbands' careers which in

turn benefit corporations. This is because organizations benefit from their employees' networks.

These arguments are significant and valuable contributions which ignore two issues: a)

organizations benefit from the symbolic capital of the credentials that their employees have; b) it

is not just occupational status, but also employer status that influences which forms of human

capital are signs of quality to third parties and clients.

The problem with Lin's (1999a) argument is that he does not categorize various types of human

capital. The human capital of actors with similar skills but different credentials can be stratified

by firms. In the cases of Indian software professionals, their education and work experience is

stratified and skills are induced through training. For example, large firms hire graduates with professional degrees who pass their stringent entrance filters. Smaller firms are not as stringent about the status of applicants' credentials. They look for cheaper labor with the skills to do software work. Large firms hire professional engineers to write software code, so that they can flaunt the symbolic capital of their employees' credentials to international clients and get the required certifications. As a result, professionals who work there earn more resources from their networks, than those who do similar types of work in smaller firms.

In a study by Goldthorpe and his colleagues, (Jackson et al. 2005) the findings show that employers in Britain are less interested in education qualifications and more in the actual interpersonal skills of their employees. The argument suggests that employers are becoming less interested in education qualifications. The research challenges the impact of education on mobility and meritocracy. It ignores the impact of education in stratifying cheap labor in developing countries so that firms benefit from the symbolic capital of their credentials. Furthermore, Goldthorpe (2000) argues that social capital and parental connections are important to get jobs when actors have low levels of human capital. Devine (2004, pp. 120) proposes the use of social capital by parents to augment the human capital of their children. Her study is useful in understanding the role of educated and resourceful parents in Britain in promoting their children's life-chances through the use of high status connections. However, in India some educated parents cannot use their social influence in the following instances.

1. To have their children admitted to academic institutions which are strictly controlled by affirmative action, merit and entrance exams.

2. Use influence to help their children pass the entrance filters such as tests in some high status firms. Social influence is further rendered unnecessary, when the demand for professionally qualified labor outstrips the supply.

Some firms benefit from the credentials of their employees, because high status clients recognize this as a sign or signal of competence and quality. The following studies provided some useful insights in understanding status benefits. A relatively unexplored area has been the conferral of social status via networks with actors of higher status (Podolny 1993, 1994; Podolny et al. 1996; Podolny and Stuart 1995; Stuart 2000; Stuart et al. 1999). According to Podolny, reputation is of significant importance in markets that have high uncertainty in order to counter the ambiguity surrounding the quality of products and services. Potential customers must rely on the status of the focal actor's past or existing transactional alliances as a process of assessing the actor's ability to deliver high quality goods and services. Potential exchange partners are more likely to enter into a relationship with a high status rather than low status other, because status is a sign of quality. High status producers should have their pick of exchange partners. Hence, the prestige of one's network alliances acts as a market signal to help lessen the information asymmetry confronting prospective third parties (Podolny 1993, 2001). A further take on this argument in a study of Chicago lawyers suggests the following: actors not only benefit from having access to social resources, but also endorsement from high status network partners as the performance quality is unknown or uncertain from the buyer's point of view. The process of status transference by affiliation with prominent others increases the focal actor's reputation and in turn their earnings. This hypothesis aims to explain the benefits of status and reputation in networks in relation to transactions between businesses and clients. The effect of ties to prestigious others is not constant, but changes according to the level of uncertainty on the part of the potential clients in search of a service (Kim 2001, pp. 2-3).

These propositions are useful in understanding the effects of reputation in forming business alliances in producer-customer relationships. Firms market the credentials of their employees as evidence of their efficiency and competence to the outside world. This stress on credentials is useful when networks are built with allies who recognize achieved status rather than ascribed status.

However, the above literature (Kim 2001; Podolny 1993, 1994, 2001; Podolny et al. 1996; Podolny and Stuart 1995; Stuart 2000; Stuart et al. 1999) cannot explain reputation effects of actors with diverse and high status networks, but whose credentials and career choices lead them to lower status firms. These actors do not benefit from high status alliances in their networks. This is because high status actors can deplete their own reputation by recommending the former for jobs. Hence, not all actors who are well networked benefit from their networks. Secondly, not all who have access to high status brokers can attain mobility and status, since specific labor criterion depends on demands in the market. Furthermore, social influence as a network resource is attained when credentials enable mobility and that mobility is visible to other actors who want to form alliances with ego.

In particular, the literature by Lin et al. (1981a, b) argues the following: the socio-economic standing of the contact used by an individual is important in achieving a desired result of a job search. The job seeker's personal resources such as family background are only important initially. After the first job, education, occupational achievements and access to resourceful networks will affect an actor's ability to reach a high status contact. As work experience increases, the actor can rely more on achieved status rather than ascribed status and the strong ties between the high status contact and the firm become important. For finding a current job, the actor's occupational status in the first job rather than personal resources such as education and

family background have an effect on the strength of ties between the job seeker and the contact and the contact's status. The job seeker's educational achievement and the status of the contact have a modest effect on the ties between the contact and the firm. The contact's status and strong ties to the firm and the job seeker's education and first job status directly aid in acquiring a prestigious current job. These according to the authors, ascertain that family background gradually ceases to affect the choice of contact or the outcome of the job search, whereas increasingly work status as reflected in the first job does affect the outcome of a job search.

This research (ibid.) has been very useful in understanding why the status of the first job is important for building networks for the current job search. It also points out that achieved status becomes more important after the first job. However, the studies looked at occupational status which is nonetheless important, but ignores the effects of firm status of the first and subsequent jobs on the current job. The studies do not make any distinctions according to industry, supply and demand for skills or the symbolic capital of people with different credentials who are trained for similar skills. It does not answer the following questions: does firm status of the first or subsequent jobs (taking occupational status and education into account) affect the outcomes of networking with high status actors? In what instances do high status contacts offer information and influence leading to opportunities? How is the social capital of the high status actor affected when offering information and influence to help an actor find a job? Does the symbolic capital of an actor's resume have any effect on the outcome of networking with high status actors?

In essence the concept of social capital or social influence has become a mantra, denoting positive effects in social networks and status attainment without much attention to the role of symbolic capital or organizational cultural capital (see definitions in the conceptual framework section of chapter one). In this context, Bourdieu and Wacquant (1992); Burt (1992, 2001); Coleman

(1990); Lin (1999a, b) and Putnam (1993) look at social capital as a means to advantage. Bourdieu ([1983], 1986) does suggest that there are variations in social status affected primarily by one's reputation and access to cultural and economic resources. However, not much can be derived from Bourdieu's (1984, [1983], 1986) work on how social capital can be built as process of selection and career opportunities in a global industry affected by competition. In contrast, social capital can also be depleted if the focal actors do not have the required credentials. This has been ignored in the applications of social capital theory with regards to job searches and finding other opportunities for status attainment.

Lin (1999a) looks at social capital as investment in social relations with expected returns as a summation of all the ideas on social capital (pp. 31).[2] Social capital in relation to social networks according to Lin (1999a) is defined in terms of embedded resource such as information, influence, social credentials and reinforcement which are assets in a network.

Lin (1999a) proposes the ideas of instrumental and expressive ties. Instrumental ties lead to better information and jobs, because they carry embedded resources such as information, influence, social credentials and reinforcement. In expressive ties, members are closely networked and provide emotional, psychological and social support to each other. Instrumental ties have four resources. Firstly, the flow of information which means that certain strategic locations within a network hierarchy can provide useful and timely information about opportunities. This is supposed to reduce the transaction costs for the organization seeking the best available employees and the labor to find the best available jobs. Secondly, the use of influence or putting in a word to

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[2] Lin (1999a, pp. 31) amalgamates the definitions of social capital (Bourdieu 1980, [1983], 1986; Burt 1992, 2001; Coleman 1988, 1990; Erickson 1995, 1996; Flap 1991, 1994; Lin 1982, 1995; Portes 1998; Putnam 1995, 1993). The central premise is that individuals invest in relations and networks to produce profits.

someone at the right place and time carries weight in the decision making process. Thirdly, social ties to influential actors ratify the focal actor's social credentials which inform decision makers about the focal actors' social capital i.e. access to resources through information and networks. Fourthly, social relations enable reinforcement of identity and recognition. Being part of a group assures worthiness of the actor as being a recognized and accepted member of that group and public recognition of access to certain resources (ibid. pp. 31).

Lin (1999a, 2000) further states that social capital increases the chance of better jobs and other opportunities. This is confirmed by empirical studies that social resources positively affect outcomes when ties between individuals are diverse and weak (Burt 1992, 2001; Granovetter [1974], 1995, 1982; Lin 1982, 1990, 1999a). He further goes on to suggest inequality in social capital. This theory proposes that not all individuals or social groups uniformly acquire social capital or receive expected returns from their social capital (Portes and Landholt 1996). Inequality of social capital occurs when a certain group gathers at relatively disadvantaged socio-economic positions and the general tendency of actors to associate with those of similar socio-economic status (Lin 2000). This is very useful in understanding homophily in social networks proposed by McPherson et al. (2001). A study by Wegener (1991) on life-history data from Germany shows the multifarious nature of social networks and the interaction between social ties and status of prior jobs when predicting job mobility through ties with high status actors. He claims that individuals with high status prior jobs benefit from weak ties, whereas individuals with low status jobs do not. However, this proposition of prior job status as a variable is related to occupational status alone. The study does not take into account employer or organizational status of prior and current job to augment the social capital of ego.

These propositions of social capital and social networks do not address the following. If a person with credentials that are in demand by lower status firms leverages his or her networks to move to a higher status firm, it could result in failure. This means that if actor X has contacts in reputed firms, the leveraging of these ties are possible only if actor X's credentials are valued and demanded by those firms. Actor X and contacts may share drinks and laughter together in certain social settings. However, if Actor X wants a job and his or her credentials and work experience are not in demand or do not pose high symbolic capital, then the high status contacts are more likely to ignore this request as it could deplete their social capital. Actors increase their social capital and win networking opportunities when they show that they can find jobs on their own merit. The social capital of an actor goes up when jobs and prospects come looking for them rather than vice versa. Working for a prestigious firm augments the organizational cultural capital and thereby social capital of employees.

Actors with credentials and resumes that reflect the market demand for such by high status firms accumulate social capital and networks that are in demand by other high status firms. Those with credentials that are rated lower and work for lower status firms can leverage their networks in similarly ranked firms. This keeps the jobs and labor markets open to the people most in demand by corporations. Actors with qualifications (most valued by the high status corporations) get ahead of the labor queues (see Reskin 1991 and Reskin and Roos 1990) despite in many cases having similar skills to those with lesser or different credentials in lower status firms. These arguments become interesting and valid, because software firms in India create software professionals from various education backgrounds (NASSCOM 2006) and give them access to similar and transferable skills through training and yet stratify them according to their credentials and the corporate status of where they work. Hence, the labor queues are artificially created through a nexus between education credentials and ranking of software firms.

There are clear examples in the Indian software industry that show the depletion of social capital from contacts with high status actors. One such example given below shows the need to address the depletion of social capital. Kanwal Rekhi, a high status entrepreneur from the United States started a global networking organization for Indian software professionals called TiE (The Indus Entrepreneurs).[3] The purpose of this organization is to network software professionals to the scions in the industry for the former to advance in their careers. In these meetings, software professionals of various cadres are given chances to voice their credentials and innovations to source jobs, entrepreneurial teams, angel investing and venture capital. In many cases, software professionals do not benefit from these meetings, because their credentials and ideas are disregarded. This is because they do not meet the credential requirements to benefit from high status actors. Most are unable to pass the initial filters of these networks, despite having the skills. These networks work better for those who have already proven their worth with success stories in their careers. Contacts of these professionals fear losing social capital, if their referrals are unrewarded and unrecognized by other high status actors and institutions. This debate leads to another set of literature on the strategies and choices of software professionals.

Studies on Social Networks and Symbolic Capital

The problem with studies on network theory is the neglect of understanding the role of symbolic capital in benefiting from organizational cultural capital and creating social capital. Bourdieu's idea of symbolic capital (1998, pp. 47) is shown below.

> Any property (any form of capital whether physical, economic, cultural or social) when it is perceived by social agents endowed with categories of perception, which cause them to know it and to recognize it, to give it value.

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[3] This information was sought from Rajghatta (2001), media and five respondents.

Thus, symbolic capital has arbitrating power through the conveyance of prestige, and can consist of economic, social or cultural capital. Bourdieu states that the development of symbolic capital may be unreservedly changed from one form to another, eventually in order to gain advantages in the form of added wealth, power, allies and marriage partners (in Bird and Smith 2005, pp. 223). According to Bourdieu ([1983], 1986), forms of capital can replicate and grow or decline to a certain degree causing variations in social status.

> When one knows that symbolic capital is credit, but in the broadest sense, a kind of advantage, a credence, that only the group's belief can grant to those who give it the best symbolic and material guarantees, it can be seen that the exhibition of symbolic capital (which is always expensive in material terms) makes capital to go to capital. (Bourdieu 1993, pp. 120)

Bourdieu (1984, [1983], 1986) did propose the idea that social capital is built from other forms of capital. However, there are many propositions on the concept of social capital in relation to social networks by Burt (2001); Coleman (1988); Granovetter ([1974], 1995); Lin (1982, 1999 a, b); Portes (1998); Putnam (1995) and Woolcock (1998). The concept of social capital is used in different ways to mean norms of reciprocity, collective action, trust, cooperation, and information amongst other things. These authors conceptualize social capital as a resource that an actor starts off with because they belong to the dominant group or know people in the dominant group, have education, own objects of high culture, have parental influence etc. Human capital theorists have explored the role of credentials in white collar career tracks, but they too miss out the importance of symbolic capital. In this context, the honor and reputation of certain credentials over others is not dependent on the prestige of the education institution but rather the prestige of the employer who recognizes these credentials and in return the employee benefits from the organizational cultural capital if their employer has a high global reputation.

A study by Marsden (2001) on staffing practices by firms in the United States examines the usefulness of social capital according to employers' perspectives. He argues that network practices for recruiting and promoting employees, depends on the costs, benefits and constraints associated with its usage in various circumstances. He proposes that social capital derived from networks benefits private sector white collar managerial, service and technical positions rather than unskilled occupations (in Lin 2001, pp. viii). Marsden (2001) focuses on referrals of new recruits from employees versus external business and professional sources. He argues that the latter provide better and more credible information about candidates (pp. 119).

The contribution of this study is to point to the importance of professional and business sources to provide credible referrals for new employees. This study concentrates on the quality and the types of contacts that refer potential employees to firms rather than the qualities of the professionals that are being hired. It links credibility of information about potential candidates to business and professional organizations, because while collar professionals tend to have many connections to these institutions. The paramount concern of software firms in India is hiring labor with the best credentials at a low cost.

However, Marsden's (2001) study did not explain why certain actors' resumes are more valued by reputed employers. A study by (Upadhya 2003a, b) shows that employees of Wipro, a premium software house in India, have a high reputation. This makes it easier for them to gain funding and form teams with colleagues for new entrepreneurial ventures. Nevertheless, the study also ignored the role of the firm in stratifying the credentials of the labor pool which is trained for similar skills and the resultant effects on reputation and status attainment.

Segmented labor market theory looks at the labor market as divided into primary and secondary labor markets. Primary labor markets are supposed to offer good working conditions, whereas secondary labor markets offer poorer working conditions. This theory further specifies that women and minorities are confined to the secondary sector. This theory is useful in understanding stratification in the labor market which enables organizational control and fosters a system of credentialism and inequality in hiring (Baron 1984; Cain 1976; Carline et al. 1985; Collins 1975, 1979; Kanter [1977], 2003; Raffe 1981; Rosenbaum et al. 1990). However, it does not look at stratification of people with similar skills within the primary labor market (white collar jobs) based on the symbolic capital of their credentials and corporate status.

Erickson (2001) claims that employers define jobs in terms of human capital (education and work experience) and social capital. In this context, social capital is defined as networks rich in external contacts. She argues that the number of different kinds of people one knows is a form of social capital. Furthermore, she reiterates that since hiring is a dual process of matching employees with employers, social capital is accorded to both sides (pp. 127). Employers benefit from the social capital of their employees, because they convert employee social capital to organizational social capital. This is because the organization can mobilize employee contacts for organizational goals. Hiring occurs when employees can match these qualifications. If a job requires social capital, then candidates with these resources are better rewarded in terms of higher pay and position beyond the contribution of their human capital (Lin 2001, pp. x).

This study is useful, because it points to the fact that organizations benefit from their employees' social capital. Software firms do benefit from their employees' social capital. However, where does this social capital come from? It is more than just the contacts that the employees bring. It is also the reputation of the employees' credentials to third parties such as clients. High level

software firms hire engineers who are more expensive, when they can easily hire other graduates who are cheaper and train them for the same skills. These engineers do not have high levels of social capital at the entry level. It is the status of the organizations they work for that enables them to gain organizational cultural capital which can be converted into social capital. This is because these firms have reputations signaled by global contracts. Software firms also need to prove their quality to foreign clients by using the credentials of their employees to affirm their products and services worthiness for exports by acquiring certifications (also see Agrawal and Thite 2003; Arora and Asundi 1999; Arora and Athreye 2002; Arora et al. 2000b). Hence, organizational cultural capital affirms employee social capital as they nurture each other. Furthermore, it is difficult to contest whether symbolic capital or social capital has more value for status attainment in the labor market. In some cases, symbolic capital becomes the only form of social capital, much more than a mere network resource, because it provides the validation to enter networks with high status others. This is particularly so, when there are labor shortages created by the demand for certain types of credentials.

Software firms benefit from stratifying the credentials of their employees. However, do employees benefit from this stratification? The strategic action of an actor would be to ascertain the hiring strategies of software firms and gear their educational achievements and career choices to market demands. If they wish to enter high status firms, they need to have the credentials and work for these firms from the very beginning of their careers.

The weakness in the earlier debates on network theory is that access to high status contacts does not guarantee the outcome of networking. Neither does it guarantee one's credentials being recognized or rewarded for employment in a global industry. Here rational choice theory combined with network analysis (Hedstrom 1994) is used to explain that actors' decisions are

influenced by what others will do and what others in their immediate networks have done in the past (Hechter and Kanazawa 1997, pp. 200). This theory can explain the reason why software professionals and firms value those credentials which have high symbolic capital or reputation in the market. Coleman (1990) provides an analysis of how norms emerge amongst actors with specific interests and resources. In short, rational choice theory would explain the intended career trajectories of software professionals would determine what strategies they should employ to access such opportunities. Rational choice in this case would look at intent as a means to the outcome, if the outcome is dependent on structural constraints of the market forces. According to Hechter and Kanazawa 1997, pp. 200), the common misunderstanding of rational choice theory is that, actors choose their actions in relation to expected outcomes which is contrary to the premise that many actors act impulsively, emotionally or out of habit to preserve group cohesion and membership (see Bourdieu 1984, [1983], 1986). Hence, this makes rational choice not possible. Rational choice theory does not aim to predict what actors will do in a particular situation, but rather what actors derive and employ from values preferences and constraints faced by them (Hechter et al. 1993).

Middle class software professionals benefit from formal rationality, a concept introduced by Weber (1947, [1920], 1968) to indicate that people make rational choices to achieve their goals. These goals are defined by the existing structures of institutions which give little choice but predefine the means to achieving an end result. This dissertation supports rational choice theory, as competition to access well paying jobs make software professionals prone to choosing education and job ladders to pass the necessary requirements of working in reputed firms. While rational choice may not always guarantee the intended outcome, it helps to access the necessary labor markets, if the actor can remain competitive and does not face retrenchment or socio-economic downturns.

Research on human capital theory attributes achievements in finding jobs, opportunities and promotions to education, skills and competence. Actors who are more qualified and skilled get ahead of others. In contrast, the research on social capital and social networks shows that diverse networks lead to good jobs, as the number of different kinds of people one knows leads to good social capital (Erickson 2001). However, the human capital view along with the previous debates does not explain the following: why some actors do not get their desired opportunities despite having the credentials (human capital) and contacts (social capital and social networks)?

Proponents of human capital focus on education for status attainment but ignore how people with similar skills get stratified into different networks. There is neglect in the human capital and credential capital research on the availability of a large educated labor supply in developing countries like India and the arbitrary stratification of professionals with similar skills by software firms which creates artificial labor shortages.

There are many critiques of human capital explanations. For example, Dore (1976) and Livingstone (2003) criticize human capital theory, as they claim that the stress on credentials in knowledge economies does not lead to real knowledge, but to less skills and underemployment of the educated. According to Collins (1979), the value of credentials has gone down in American society for the following reasons: a) credentials do not guarantee real skills; b) firms have created their own specialized avenues of training and certifications for their employees; c) some groups are over educated but have low or irrelevant skills; d) some groups actively resist and wish to change the credentialing system, either because it does not lead to jobs, or they are excluded from the system. Amongst the educated middle class in India, there is intense competition for professional credentials. This is because certain credentials open doors to well paid jobs in multinational enterprises or overseas migration. Indian economists such as Khadria, (1999, 2004)

show that India is losing its well-educated human capital because of overseas migration. There is currently a shortage of engineers in India and software firms are constantly trying to address this need with government and education institutions (Arora et al. 2000b; NASSCOM 2006).

A study of the Indian software industry by Lakha (1994, pp. 394-396) shows that India has 2.5 million scientists and engineers, with 160,000 new professionals produced each year, and despite the many new computer courses introduced by the government in various institutes, labor demands are exceeding the current supply, making it arduous for firms to attain the government's software export target (pp. 394).

There are complaints amongst the software industry scions about the lack of infrastructure, research and development and relevance to industrial needs in Indian education. Nevertheless, this is often backed up with faith in the Indian education system to produce candidates for the industry who are then retrained for the needs of the firm.[4]

The findings by Ashton and Sung (1992); Becker (1993); Bills (1988, 2003); Breen et al. (1995); Gangl (2000); Hunter and Leiper (1993); Polacheck and Siebert (1993); Spence (1974, 1981) and Spilerman and Lunde (1991) show that credentials serve as filters for firms to assess skills and quality of work, as professionals at the entry level possess few networks or social capital. Education is the main resource for actors entering the labor market (Gangl 2000; Muller and Shavit 1998; Hannan 1999). However, employment history, contacts and geographical mobility also play a key role in hiring. At the entry level few professionals possess much of the above besides their education (Gangl 2000).

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[4] This information was sought from seven interviews, document analysis and NASSCOM (2006).

Human capital theory focuses on skills as the basic tools for entry in the job market. Employers' readiness to hire candidates is based on their trainability and expected training costs (Gangl 2000; Sorensen and Kalleberg 1981). They also assume that different credentials lead to different skills. This is not always the case, as software firms in India induce software skills through training professionals with different credentials to perform software work.

Despite having the ability to perform a similar range of skills, not all IT/software professionals possess similar symbolic capital which influences their career choices and networks. While some might code and maintain software services, others might be entrepreneurially inclined, while still others might be in managerial roles. However, all receive training opportunities when they first enter an organization after their education and chances to upgrade their skills later in their careers (see Agrawal and Thite 2003; Kokhova and Sukharev 2001; Raghuram 2001; Varma and Sasikumar 2004). Furthermore, the term IT/software professional is misleading as it encompasses many different cadres. The reference here is specifically about people working in the software sector as programmers or consultants working on projects. The ranking and hierarchy of the professionals vary, as some are managers and others are in entry level positions and still others are vice-presidents and chief technology officers. Another very important deviation from the current literature is to alleviate an assumption that all software contributions are from professionals with similar qualifications.

The stereotypical idealization is the Indian born middle class engineer who gets a degree in one of India's premier institutions and goes to America for higher education and work experience. The software engineer supposedly nurtures connections from various sources such as Non-Resident Indian networks, Indian networks and colleague networks (Upadhya, 2003a, b). This enables funding from angel investors and venture capitalists for startup ventures and contributes to the

brain circulation model (returning to India) as an avenue to boost the IT/software sector in India (Saxenian, 2000c, 2001). Much of this research concentrates on the effects and processes of the successful engineer/entrepreneur who is transnational. The problem lies in the suggestions that all Indian professionals have Silicon Valley links. In some cases this has been true, but it does not represent all the professionals linked to the Indian IT/software sector.

The literature suggests that successful career moves are a combination of overseas education, work experience and contacts. This needs further analysis. The various types of software professionals labeled as global Indians and software engineers are over simplified (see Biao 2002; Upadhya 2003a, b). Due to the demands of offshore and onsite software services and customization, professionals are directly or indirectly linked to transnational markets. However, data from NASSCOM (2006) shows that not all software labor is contributed by engineers, even though the term software engineer has become colloquial to mean anyone working in a software firm.

Studies on Caste

The literature on the Indian caste system has ignored the rise of the service industry in India and its implications for achieved status. Studies on the caste system with regards to occupations are few and not situated within contemporary debates about the rise of an educated middle class working in the software industry in India. Béteille, (1991, 2003); Ghurye (1961, 1969); Gould (1988) and Harriss-White (2003), argue that castes have not disappeared in defining occupational networks and status in modern India. This is true to the extent that their studies concentrate mostly on traders, manufacturers, petit bourgeoisie and the poor under class. These studies have historical accounts about the Indian caste system and its occupational structure. For example, they argue that traditional occupations and social barriers of the pre-industrial caste system in India are often reinvented in an industrialized environment.

The global nature of the software industry does not support non-technical endogamous caste alliances, because it concentrates more on achieved status and credentials of its employees to win contracts with international clients. In this sense, competition between firms to find export markets and the competition within the labor force to work for the best paying firms reduces the effects of caste networking to find jobs and entrepreneurial teams.

Studies by Upadhya (2003a) and Shrumer-Smith (2000) focus on the increasing representations of Brahmins (highest caste) in the Indian software industry. This is not backed up with any clear evidence. Large Indian software firms do not release data on the castes of their employees.

Studies on the Marriage Market

Theories on the marriage market look at exchanges of resources in marital relationships (Becker 1973, 1981, 1991; Halpin and Tak 2003; Kalmijn 1991, 1994, 1998; Kalmijn and Flap 2001; McPherson et al. 2001; Mortensen 1988; Oppenheimer 1988; Sweeny 1997). They recognize the importance of economic, occupational and cultural status in forging marriage partnerships. Their positive contribution has been to recognize the change in bargaining power of men and women due to increased participation of women in wage labor. These theories have ignored the links between the status of the firm and its indirect influence in the marriage market. Secondly, they ignore the stratification of credentials by firms and its indirect effects on the marriage market. Thirdly, they ignore the use of resumes in screening and filtering potential marriage partners. Furthermore, the underlying assumption in the literature is that marriage is based on emotive choices even though there are economic and cultural concerns in forging partnerships. While these studies are very useful in understanding the dynamics of finding marriage partners, contemporary arranged marriages require further analysis. Since the data sourced on the arranged marriage market pointed to these factors, it becomes important to review the relevant theoretical premises. The first body of literature that will be reviewed points to theoretical debates arising

from western scholars. The second body of literature will be from relevant authors who have written about Indian arranged marriages. They concentrate on dowry issues, caste and the effects of female employment on marital relations. These studies have ignored the service industry and its effects on the increased bargaining power of women in the marriage market. Furthermore, there are few contemporary sociological debates on the arranged marriage market in India compared to those from media sources and popular magazines.

Theories from western scholars on finding marriage partners focus on homophily in networks (McPherson et al. 2001) and the matching of actors with similar social status (Halpin and Tak 2003; Kalmijn 1991, 1994, 1998; McPherson et al. 2001). These ignore the effects of queuing (see Reskin 1991; Reskin and Roos 1990), filtering, signaling and idiosyncratic exchanges (see Arrow 1973; Spence, 1974, 1981; Williamson et al. 1996) between employment, firm status and marriage markets.

Kalmijn's (1994) study shows that mating for cultural similarity is more important than mating for economic similarity. He claims that economic similarity between partners is more important when people marry later in life, because occupational status works as a badge in the marriage market, because it serves as a mark of future prospects (pp. 428).

Oppenheimer's (1988)'s hypothesis emphasizes changes in the patterns of mate selection resulting from the changes in the labor market position of men and women. Women are increasingly being evaluated as potential spouses on the basis of their own achieved socio-economic status, rather than their traditional reproductive contributions, family background and physical attractiveness. Such a pattern leads to delayed marriages because of the greater difficulty in assessing long-term occupational achievements. Sweeny (1997) built on Oppenheimer's thesis

and claims that rather than making marriage undesirable, changes in the labor market prospects of men and women have changed the nature of the marital bargain. These studies very importantly show that the economic basis of marriage is shifting. They also recognize women's economic contributions in forging marriage partnerships. Both of these studies challenge earlier contributions by Becker (1973, 1991) who claims that men with excellent labor market skills are predicted to marry women with exceptional domestic skills, physical attractiveness and so on. He argues that single men and women are trading partners who choose to marry only if the perceived gains in marriage are positive for both partners. This trade between men and women is based on the sexual division of labor, where men perform productive labor and women perform reproductive labor. Hence, women's gain in employment reduces their desirability for marriage.

Becker's major contribution is to suggest the existence of a marriage market where mates are sorted according to wealth, education, status and other forms of cultural capital. All of the above studies ignore mate selection according to firm status, education and career choices of both men and women as ways of diversifying networks. Furthermore, their studies do not deal with educated actors who work for high status firms and as a consequence are in great demand in the marriage market. This does not necessarily delay the age of first marriage, if marriage is seen as a way to fortify the career networks and trajectories of both partners in similar professions.

A review about the various existing models on matching in husband-wife relationships and employer-employee relationships has been done by Mortensen (1988), who looks at various socio-economic theories which aim to predict what types of partners are likely to get together and what types of partners are likely to separate. He did not concentrate on the links between the marriage and the employment market but looked at them independently to show that relationships in both spheres are not permanent.

A study by McPherson et al. (2001) explains actors' personal networks lead them to find partners of similar socio-economic status. They define homophily as a principle which shows that ties between similar individuals occur at a higher rate than among dissimilar individuals. This limits their social worlds of potential partners, as it affects the type of information they receive; the attitudes they form and their experiences. They also suggest that ties between dissimilar individuals dissolve at a higher rate. An earlier study by Lazarfeld and Merton (1954) focuses on status homophily in which similarity is based on formal, informal and ascribed status. Status homophily includes education and occupation besides other status characteristics. However, these studies are limited to the personal networks of marriage partners and do not look at the diversification of networks through cyberspace (examples found in marriages arranged through the internet).

The study by Halpin and Tak (2003) focuses specifically on patterns of educational homogeny in Ireland and Britain. They claim that there is a strong tendency amongst actors with similar educational qualifications to marry each other. This study shows very important leads: women who are highly qualified are very desirable as marriage partners. Highly qualified men are in a better position to attract highly qualified women. While men with fewer qualifications might want to attract highly qualified women, they would have to settle for less qualified matches.

The study by Rosenfeld (2005) shows that marital partners exchange ascribed status for achieved status. Caste or ascribed characteristics do not seem to matter as much for software professionals when they are in demand in the labor and arranged marriage markets, as credentials and skills gives them access to mobility. For actors with lower achieved status, ascribed characteristics or caste does not help in status attainment. These become interesting and new factors in

understanding the process of selecting matches on the basis of homogeny which has not been considered in the earlier studies.

David Brooks (2000) did a classic study about the rise of the educated middle class in America. His study of wedding listings in *The New York Times* captures the marital patterns of the educated elite in American society. These meritocrats, as Brooks calls them, are children of professionals who are different from the old rich. They have to work hard and study hard to get ahead despite having the socio-economic resources. He refers to these couples as having awesome resumes (pp. 14). He notices that Harvard graduates marry Yale graduates or from other top ten schools. Education, career paths and parental professions are important for these people. He divides them into two categories namely, the predators and the nurturers. Predators are in aggressive professions such as sales, finance etc. Nurturers are in professions such as teaching, arts etc which have a caring element. There is a tendency for the predators to marry each other just like the nurturers to marry each other. When there is a mix, he notes that it is usually the men who are predators. The strength of this study is its recognition of the rise of the educated class and the positive implications of merit and credentials in building social capital. Brooks clearly differentiates the new educated elite from the old wealthy elite. Furthermore, the study has extensive qualitative data to analyze marriage patterns interpretively.

He shows that actors who study in elite schools tend to marry each other because of achieved status. Like the other studies, it ignores the effects of firm status. The status of the school is only important to the extent that it influences the entry into a high status firm and the career ladder of a high status occupation. For example, an IBM employee might choose to marry a Hewlett Packard employee regardless of where they went to school, as long as both have professional degrees and similar occupational status.

Indian studies on the arranged marriage market are few and far between. A study by Ramu (1989) focuses on the marital roles of single and dual earning couples. The study was undertaken in Bangalore amongst respondents working in public sector firms. It shows that the roles of women as homemakers has not depleted with their increased contributions to productive labor. This complicates husband-wife relationships, putting more pressure on women to be effective mothers, wives and income providers.

An older study by (Kapur 1970) reflects similar findings about married women. However, these studies do not discuss the process of marital selection. A more recent study by Banerjee (1999) discusses the impact of the rise in female marital age in India from thirteen years in the early 1900s to eighteen years in 1990s. This study focuses on the rise of dowry payments in Indian marriages as a recent phenomenon, whereas in the past it was a symbolic exchange of gifts. This study claims that Indian marriages have a near universal adaptation of dowry. This study does not look at the effects of professional homogeny on the exchange of dowry.

Two other studies: one by Moore (1994), a Washington Post article and the other by Uberoi (1994), a study on family and kinship in India, briefly touch on the persistence of arranged marriages in the 1990s. They look at education, profession, dowry, family influence and dating in contemporary India. There is not much detail in these studies with regards to the actual matching process and the role of men and women in selecting mates.

Medora (2003) looks at mate selection practices amongst Hindus in India and notes the importance of collectivism in Indian culture which affects arranged marriages. Arranged marriages in modern India involve collectivism (collectivist cultures assume that families take interest in the individuals' well-being and safety and in turn the individuals are expected to have

permanent loyalty to their families (pp. 211)). Arranged marriages in her view are acceptable by young Indians for two reasons: a) they do not believe in dating; b) they believe that they do not have the wisdom to choose their own partners. Since parents are responsible for raising their children, they are understood to have their children's best interest at heart. An alteration of arranged marriages amongst the urban professional class is defined as semi-arranged marriages. This is defined as marriages where there is parental intervention with room for children to develop romantic love through a brief courtship. This is different from a western concept of dating, because the family and extended family screen the potential candidates and little or no premarital sex is involved (Lessinger 2002). In this type of marriage, men and women can refuse each other after a brief courtship. This study claims that caste endogamy is still a salient feature in Hindu marriages despite modernization.

Das (1980) analyzed 1327 matrimonial advertisements to find that Indian men desired education in women and that Indian women wanted men who did well in their profession. Pal and Mathur (1989) in their study of 221 Indian men and women found that members of both genders wanted partners who belong to the same social class, but women prefer partners from richer families. Buss (1989) interviewed 247 Indians to find that women prefer men who have good financial prospects, ambition and are industrious.

The above studies do not account for the advent of the global IT/software industry after economic liberalization in the 1980s and its significant influence on both men and women wanting to work in multinationals. This has significantly affected some of the rules in arranged marriages amongst IT/software professionals who want to match their professional and educational interests in terms of how their jobs are defined and ranked by software firms. Furthermore, they do not look at the affects of class mobility and its effects on caste barriers in arranged marriages.

Studies on Filtering, Queuing and Signaling

Since searches in the marriage market involve uncertainty (Oppenheimer 1988), an earlier study of Goode (1964) talked about spouse selection as a filtering process, which helps to reduce the entire pool to a limited set of individuals. However, there has been an overall neglect in the applications of signaling and filtering theories to understand the relationships between employment and marriage markets. The following paragraphs explain the reasons why these theories have been useful in understanding the role of the firm as an indirect arbiter in the arranged marriage market. Firm status and other professional factors are used as signs and signals to filter potential candidates in the arranged marriage market. Candidates are filtered by assessing their resumes.

According to filtering theory (Arrow 1973), higher education serves as a screening device or filter based on the assumption that economic agents have imperfect information i.e. the purchaser of labor has a poor idea of the actor's productivity. There is certain differentiation of information about the worker such as education and previous experience. It is nevertheless hard to distinguish between workers who provide similar information. The employer as a rational actor can relate varying outputs to different types of workers. Education institutions act as a double filter: once in selecting entrants (through entrance criterion of tests and other eligibilities), and next in passing and failing students. This argument states that workers' competences are viewed similarly if the information about them is alike. While this type of filtering pertains to employers and educational institutions, another side needs to be considered. How can different types of software professionals be recognized by third parties and clients?

The building of signals or credentials involves many aspects such as family background, education, firm status, friends, career choices and various forms of capital accumulation.

However, the most important is how the actor transmits information of advantage and performance in terms of social and professional portfolios. Actors queue (see Reskin 1991; Reskin and Roos 1990) according to the demand for their credentials and matching takes place with firms that hire them. Hence, it is not just who one knows that transmits influence but rather what the actor's credentials are worth for the other party to form an alliance. Thus, it is important to consider the importance of resumes as portfolios of performance and signals of reputation. Professional resumes give information and helps to reduce uncertainty in the labor market exchange between employers and employees.

Resumes display information about others to the actors entering into arranged marriage relationships in an attempt to reduce uncertainty. For arranged marriages, the processes that potential partners and their families use to filter each other's credentials show some similarities with the filtering processes that firms employ. Both parties are concerned with building alliances which augment and signal their social and professional mobility. Since all the criterion or credentials cannot be matched or met, actors establish a hierarchy of needs and use a matching system as a validation process. Actors who can display their mobility strategies to the top of the social ladder are highly valued and negotiations for marriages and jobs are much easier, because they are in demand. They may receive favors, because there is a gain in filtering and recognizing their credentials. Conversely, people with credentials that are less in demand by the market forces cannot effectively use their influence for mobility to jobs and marriages of higher status (even if they have diverse networks), because there is no gain for the other party by forming alliances with them.

According to signaling theory (Spence 1974, 1981), signals are activities or attributes of persons in an exchange market which by purpose or accident convey information to other people in the

marketplace. The purpose is to quell information uncertainty by creating a favorable impression of credibility. Signals of success or failure in the employment market affect chances and choices in the arranged marriage market.

The individual actor can manipulate the signals to create a favorable image such as using education credentials and past work experience (things such as race and sex are ascribed and cannot be changed). The employer buys labor in the market in the form of a lottery whose result is the actual labor service and sells the job and the work environment. Wages and salaries are paid as a result of a two-way exchange. Given that an employer cannot observe productivity prior to hiring, there is uncertainty. The employee also has uncertainty about the job. Since education can be acquired and improved upon, the applicant will make those alterations that make him or her appear in favorable light. The individual can and does influence the lottery he or she presents to the employer by changing some of the observable characteristics. It is assumed that this is the outcome of a rational decision. This activity is referred to as signaling and the various characteristics such as education, work experience and so on are signals (Erickson 2001; Spence 1974; pp. 1-10).

According to classical economic theory, labor is a commodity in a market relationship exchanged for remuneration by buyers. Some theorists claim that it is very difficult to judge quality in specialized and knowledge work, or even define it. This is because there is a lack of basis for comparison and both information and uncertainty characterize a market (Collins 1998; Frenkel et al. 1999; Spence 1974; Williamson, et al. 1996). Taylor et al. (2000) claim the contrary, that work can be assessed for quality. The IT/software industry shows that defining and measuring quality processes and standards of work is expensive, but highly necessary. This is made possible through certifications, like ISO (International Standards Organization) and CMM (Capability

Maturity Model) (see Arora and Asundi 1999; Paulk et al. 1993). Competition amongst firms makes it necessary to use the eminence of credentials of the professionals who are hired through a stringent filtering and training process as a marketing tool for quality assurance.

Work is a barter relationship where labor is exchanged for remuneration (Spence 1974; Williamson et al. 1996). This creates labor and job queues (Reskin 1991). According to this theory, employers hire workers as high in the labor queues as possible and workers accept the best jobs that are available to them. Hence, the most desirable jobs go to the most preferred workers and the less attractive jobs go to workers lower in the labor queue. In ordering the labor queues, employers consider productivity and cost. Reskin (1991) claims that when good jobs outnumber the labor supply, organizations are forced to hire actors lower in the labor queue to fill the vacancies. Amongst some employers, she argues that group membership such as race is the main consideration regardless of the workers' qualifications. Whereas other employers are indifferent to group membership except to break ties between equally qualified workers.

The queuing theory (Reskin 1991, pp. 171-175) has several positive implications. Firstly, it shows the link between rankings in queues to supply and demand for jobs. Secondly, it also shows how employers and employees rate each other. Thirdly, it shows when the supply of jobs outstrips demand, employers use non-traditional sources of labor, which has created jobs for women in male centered occupations. When many actors are competing for upward mobility, it results in a queue (ranking) as people with prior success or those having the right credentials in establishing satisfaction with employers/clients/alliances are at the front of the labor queue and those whose achievements reflect least accomplishment are at the back of the queue (less demand

for their credentials).[5] However, the main weakness in Reskin's (1991) theory is that it ignores the arbitrary stratification of credentials of actors with similar skills according to the employers' demand for symbolic capital. Furthermore, this theory ignores the status of the organizations that hire the labor and the resultant effects on the queues. Networks are derived and can be leveraged when people move higher in the queues and their resumes display this mobility.

Jobs are also ranked with the most difficult jobs at the front and the easiest or the least paid at the back of the queue (ibid.). This means the higher the competition for jobs through open networks, the more the need to cross ascribed boundaries and establish achieved criterion to get ahead of others through the show of credentials. In order to be hired by the top ranking firms and compete in the labor queues, actors need competitive life-strategies. Some of these strategies are the ways in which people build their resumes. Qualifications, professional experience and the type and ranking of firms worked for are important factors for upward mobility.

Firms support networking with clients, team building exercises of different actors based on project needs. Similarly, contemporary arranged marriages act as bridges to support career ambitions of the upwardly mobile middle classes by forming coalitions through sorting and matching socially and professionally viable partners as spouses. There is an attempt to adjust some of the norms for the type of spouse one is looking for to support career ambitions of both spouses. Finding the right spouse is social team building, whereby relevant achieved (defined by career interests) and ascribed characteristics (defined partly by the family and community rules) are recognized and validated in social and professional circles and provide contacts and reputation for each other. In this context, signaling theory (Spence 1974, 1981) and filtering theory (Arrow 1973) become useful ways to understanding the above.

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[5] See Reskin (1991) for discussion on formation of job and labor queues.

The firm and the professional play significant roles as they support and recognize alliances based on reputation. In other words, firms hire professionals with the required skills and qualifications namely validating the professional resume. Queuing theory has been used in employment studies (Reskin 1991; Reskin and Roos 1990) but not in marriage studies: there are observable similarities in the strategies used to forge ahead in the marriage and labor queues. This is because matching is used as a competitive strategy for partnering with the best available choices.

Actors find marriage partners and jobs according to matching factors that enable competitive life-strategies. The emphasis here is on the rational actor who is able to arrange or works with the existing traditional and modern social conditions to maximize gain. This is based on the premise that contemporary arranged marriages are not based on the emotive choices of the partners.

Contemporary arranged marriages also rationalize choices increasingly tied to reputation and functional importance of achieved status. Class mobility becomes an important feature as it provides the very avenue for achieved status. Ties between the traditional and modern are bridged through various strategic alliances. Both old (traditional) and new (industrial development) institutions can be complementary (they need not be mutually exclusive or contradictory in their interests). Arranged marriages have somewhat transformed, because the arbiters take into account new demands by the players. This assumes a rational choice element in matching or pairing. However, the structural constraints and adherents to closed networks or ascribed status were more rigid in the past (pre-industrialization). Caste and sub-caste are moderated with modern professional needs such as education and career choices, because networks and life-strategies have become the instruments of upward mobility. This ties in with the notion that matching with a partner with similar ranking gives access to each others networks as it signifies and signals the reputation of the actors.

The actor's position within the relevant labor market becomes an important social distinguishing factor to be categorized and recognized by new institutions such as IT/software firms which want a cheap, competitive and educated labor supply. Software firms and their hiring practices in India has become the indirect arbiter of social organization, which influences education, career choices and marriage alliances of software professionals.

Conclusion

This chapter has discussed the theoretical debates in the existing literature on the employment and marriage markets. While they provide useful insights, the connections between these markets and professional homogeny are missing. The various theories have ignored the symbolism of credential ranking of employees as signs of status in the formation of alliances. They have ignored the use of resumes to find partners on similar job ladders through the arranged marriage system. The Indian theorists have ignored the rise in employment and salaries in the service industry and its implications on the reduction of caste alliances in professional and marriage choices. Furthermore, they have ignored the bargaining power of women in both of these markets.

Chapter Three

Bangalore has benefited from the global outsourcing trend in the software industry. This has meant that new jobs, firms, international work practices and labor are constantly evolving in this city. This chapter provides a context for understanding the growth of the software industry in Bangalore, India. Bangalore is one of the major hubs for software customization and exports in India (NASSCOM 2006). Indian and foreign software firms have become the icons of success amongst the educated Indian middle class. As of April 2003, Bangalore had 1154 software firms (Bangalore IT, Government of Karnataka 2006). This was also the most appropriate field-site, as I have established contacts with several academics, consultants, entrepreneurs, IT/software and hardware professionals and researchers who acted as gatekeepers and referred me to others in the field.

Bangalore is located in the state of Karnataka in the south of India with a population of about 5 million people (see map of India in the next page). Due to the IT/software industry and the related investments in urban infrastructure, it has induced parallel forms of development, one which is gated with enclosed campuses and condominiums and the other that is poverty ridden, with potholed roads, chaotic traffic and frequent power outages (Rolee 2003). It has become an attractive place for IT/software investments and has overtaken other cities in India in this area (NASSCOM 2006).

Diagram 1: Map of India

Source: http://www.lonelyplanet.com/mapshells/indian_subcontinent/india/india.htm

Development of IT/Software Firms: Stages of Industrial Growth in Bangalore

The liberalization period in India started with the Rajiv Gandhi government in the 1980s and the IT/software industry came to Bangalore with the arrival of Texas Instruments (see Appendix I, Table 2). Other firms followed suit and the Indian software industry got noticed and so did Bangalore as a place for investments. Texas Instruments' main intention was to establish a base in the Asia/Pacific region.

India was chosen because of its education system in sciences and engineering and English speaking labor (NASSCOM 1995, pp. 384). Bangalore was also selected, because it was considered to be a location which would better suit the needs of Texas Instruments' international staff in contrast to other Indian cities due to its climate (Heeks 1996; Lateef 1997; Rolee 2003).

The initial IT/software development was also marked by the establishment of a number of companies, such as Computer Maintenance Corporation in 1978, Tata Consultancy Services in 1968 and HCL in 1976 (Evans 1995; Heeks 1996; Lateef 1997). There were very few local hardware companies (at the time the Indian Government was declining large foreign hardware manufacturers such as IBM), but eventually software firms multiplied (Evans 1995). These companies were the foremost contributors to India's software exports and promoted the country in gaining early exposure in software development, including international contracts. Complex and enormous programming tasks were undertaken such as Computer Maintenance Corporation's development of the passenger reservation system for the Indian railways. This enabled Indian software professionals to gain experience in large scale projects and learn about international standards. However, there is an argument that growth in these companies did not explode until the state moved from an import substitution role to a more economically exposed one in 1984, after which software production dramatically increased (Das 2000; Evans 1995; Lateef 1997).

Most of the currently successful larger enterprises started without much interference from the state, such as Wipro, Hindustan Computers Limited and Infosys Technologies. This stage of India's, and in particular Bangalore's, development was also noticeable by the arrival of international high-tech companies in the 1980s and 1990s (continuing even today). The rise in foreign capital came with reforms to improve the environment for foreign direct investment specifically, the creation of special software technology park zones which tried to enable and coordinate some dedicated infrastructure. One of the first multinational corporations to locate

during this period, which was discussed earlier, was Texas Instruments, which in 1985 opened a design facility in Bangalore. This company was attracted by the easy availability of staff, Software Technology Parks of India provision of a less bureaucratized channel for government approvals, and a dedicated satellite link with other amenities (uninterrupted power amongst others in the technology parks). The location of Texas Instruments in Bangalore lured other multinational corporations when they were looking for sites, since their existence helped with information networks and lowered the risks for new entrants (Greenspan 2004, pp. 77-91; Heeks 1996; Lateef 1997; Rolee 2003; Tschang 2001, pp. 6. See Table 2 in Appendix I which shows the timeline of software firms entering Bangalore).

In the case of Bangalore, the ILO report by Lateef (1997, chapter 4) quotes that Bangalore has been described as follows.

> A gateway to new global frontiers and a harbinger of a new global labor force that works in cyberspace and that, like much of the world's financial markets, operates beyond the reach of governments (Stremlau 1996, pp. 158).

The software development centre set up by Texas Instruments had a direct satellite link with its headquarters in Dallas, Texas. Since there was surplus capacity on that satellite link, Texas Instruments was able to share the line with other businesses that needed such a link. This opened the way for a lot of smaller domestic software companies and enabled data entry and basic software programming jobs for overseas clients (Lateef 1997, chapter 4).

Bangalore has been called the Silicon Valley of India. Many of the well known IT/software firms from core economies have wholly owned subsidiaries or joint ventures with Indian companies that are located in Bangalore, including Digital Equipment, Fujitsu, Hewlett Packard, IBM, Oracle and others. Citicorp, Deutsche Bank, Motorola, Siemens, VeriFone etc all have divisions

in Bangalore where software development occurs for their wide-ranging global requirements (Heeks 1996; Lateef 1997; NASCCOM 2006). As the IT/software sector has grown, so has the capabilities of the professionals. However, D'Costa (2002, 2003) and Saxenian (2000c, 2001) contend Bangalore's comparison with Silicon Valley which has multiple growth sustaining factors and caution the fascination with the software sector as it does not provide a sustainable answer to India's larger economic problems.

Arora and Asundi (1999); Arora and Athreye (2003) and Arora et al. (1999, 2000a, b) have extensive research findings and public policy analysis of the economics of exports, human capital, private equity capitalization, infrastructure, research and development, technical and business capabilities and government intervention of the Indian software industry. Unfortunately these have no analysis of professional networks. D'Costa (2002, 2003) and D'Costa and Sridharan (2004) are critical of the Indian IT/software industry's heavy dependence on the export market and low penetration into the local market. There is a serious lack of sociological analysis except by Saxenian (2000b, c, 2001) and Upadhya (2003a, b) who look at the business networks arising between firms in Bangalore and non-resident and resident Indians and their positive effects on entrepreneurship.

Bangalore Benefits as One of the Global Locations for Software Investments

Bangalore has benefited from the social and professional networks which augment software investments that came into the city after the economic liberalization period in the 1980s as discussed in the earlier section. It has also been one of the urban centers of creation and attraction for highly versatile business networks.[6] Cities build a reputation or a resume that attract

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[6] Economic liberalization took place in India between the 1980s to early 1990s which brought foreign direct investment into India. This has been discussed by Das (2000); Heeks (1996); Heitzman (1999); Joshi (1992); Kumar (2002); Kumar (2003); Lateef (1997); Parthasarthy (2000); Saxenian (2000b, c, 2001); Upadhaya (2003a, b) and others.

investments when knowledge workers or educated professionals with connections to that city build credentials and networks that accumulate social capital through their position in the labor markets for high status firms which compete for global contracts.

This has been the basis for competition, as firms are free to hire the best available labor force and attract them with higher salaries compared to other industries (NASSCOM 2006). What makes cities like Bangalore competitive is that educated people are available for industrial development by creating a reputation for themselves as knowledge workers and compete for credentials that are valued both by Indian and foreign multinational firms in the software sector. This is because work experience in well recognized Indian and foreign firms is valued in the labor market for high level entrepreneurial networks and other forms of status attainment.

India's and Bangalore's attraction, besides just 'cheap labor', has been that American and other global firms were used to working with Indian knowledge workers before India's economy liberalized. This, alongside immigration policies in countries like the United States helps to establish networks for entrepreneurship and makes it viable for multinational firms to outsource work or establish IT/software firms in India, as they are aware of the quality of output of Indian knowledge workers (Heeks 1996; Kapur 2001; Lateef 1997; Rosenberg 2002; Saxenian 2000c, 2001).

The other key factor that has made Bangalore attractive is also its own brand of industrial development. Starting with the British colonial rulers and later the Indian government's commitment to import substitution, industrialization took place in a largely rural economy which concentrated infrastructure in the cities of India (Lateef 1997). The educated communities involved in the IT/software sector have made use of the investment opportunities by becoming 'furthering agents' of the initial IT/software networks that came in by marketing their reputation

as 'knowledge workers'. The term 'furthering agents' means these are networks of professionals who have the reputation of attracting foreign venture capital and contracts through a domino effect of talent, networks and firms following each other into Bangalore.[7]

Greenspan (2004, pp. 124-140), looks at networks arising from Silicon Valley based organizations such as the Indus Entrepreneurs (TIE) as the motivating factor for linking overseas Indian investors to software start-up ventures in Bangalore and other Indian cities. As such, local fundraising through angel investing and venture capital has been limited in India due to government restrictions over the years on capital markets only to be relaxed for overseas investors in the 1990s (Saxenian 2000b, c). The other reasons, stated by Saxenian (2000b), is that senior management of large IT/software firms have been influenced over the years to open subsidiaries, outsource offshore and onsite contracts to Bangalore by Indian professionals with cultural links there. She proposes brain circulation as the brain drain returns to the peripheral economy with American education and networks to enhance the local software production. Indian education is an essential labor cost component for producing knowledge workers for the Indian IT/software industry making it competitive. Saxenian (2000b, c, 2001) ignores the role of Indian education in producing credential competition for the IT/software industry and the resultant social stratification of software workers according to firm status and their career choices.

According to Hang (1991), five main concerns motivate the choice of location for new software firms, which are as follows: a) availability of labor, b) quality of lifestyle, c) infrastructure, d) proximity to previous employer and residence, e) proximity to customers. While this study was carried out in the United States, Heeks (1996, pp. 91), points out that similar factors operate in choosing India and/or Bangalore as a location for IT/software investments. In other words,

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[7] Heeks (1996) is one of the early authors who has discussed the arrival and growth of IT/software multinational firms in Bangalore.

IT/software firms have moved to Bangalore due to the varying combinations of the above factors

(ibid. pp. 91). In a study of location choices of regional headquarters, Ho (2000) indicates that the

concentration of skilled labor at a particular place is a consequence of a firm's decisions. The

attraction factors of Bangalore according to the categories proposed by Ho (2000) are outlined in

the following table.

Table 1: Location Choices

Factors	Attraction Level
Lifestyle	High
Skilled Labor	High
Costs	Low
Infrastructure	Poor

The above factors have also been mentioned by Balasubramanyam and Balasubramanyam
(2000); Heeks (1996); Holmstrom (1998); Lateef (1997); Rosenberg (2002).

India does not have the infrastructure necessary to take off into an information economy. So the

real question is not why Bangalore is attractive, but rather why India is attractive despite

structural constraints? India has had the longest established software industry in the developing

world. There has been a software policy since 1970 which has given emphasis to exports but

liberalized since the 1980s when software was identified as a push factor (Heeks 1996, pp. 25).

Software production is skill sensitive depending on whether it is applications software (programs

carried out for specific tasks) or systems software which is in the form of compliers and controls

the operations of the whole computer system (ibid. pp. 24, 27; Medows et al. 1987).

There are two channels of software exports from India, namely through body shopping and

turnkey projects. Body shopping is the principal source of cheap labor where services are

rendered onsite (client sites overseas) and invoiced on a daily, weekly or monthly basis

depending on the amount of labor and time used. This form of contracting induces both

temporary migration and various middle level agents who might body shop for offshore firms.

Depending on the ranking of firms involved and the recruiting agents, body shopped

professionals may or may not consist of engineers. Generally, the labor force involved in body shopping has lower social status, than those involved in turnkey projects despite having similar skill sets and doing similar types of work.

Turnkey projects involve fixed price contracts whereby Indian firms take complete responsibility for all the states of software production and customization. This requires a greater range of skills and may involve greater offshore (taking place in India) participation (ibid. pp. 80-82). Larger firms that take on turnkey projects have a preference for engineers pushing them higher in the labor market. Bangalore attracts both turnkey and body shopping contracts.

Some of the attractions of India and Bangalore despite factors which demonstrate meager telephony and other infrastructure constraints can be explained as follows: several public sector companies such as MICO, the automotive components manufacturer, a subsidiary of Robert Bosch GmbH of Germany and the machine tool manufacturer WIDIA, accumulated huge debts with the advent of the liberalized economy in the 1990s when private IT/software firms started mushrooming. This was a push factor for professionals to seek jobs in the private sector making them very competitive (Heeks 1996; Lateef 1997).

The departure of IBM in the 1970s and the protection of the Indian hardware sector led to the development of local software skills and UNIX was used early on as the operating system for micro and mini computers (Kapur 2002; Narayan Murthy 2000).[8] Restrictive trade practices due to the (Monopolies and Restrictive Trade Practices Act) which limited the entry of large industrial houses in new sectors, meant that many local small and medium sized firms were operational in the 1990s when the larger foreign firms entered India.

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[8] UNIX is a computer operating system.

IT/software firms started to follow each other as trust patterns were established. The development of small and medium sized Indian software firms in Bangalore alongside the influx of multinationals have provided the basis for 'credential competition' for software professionals. Bangalore is one of the large Indian cities which have received this economic advantage, because the British and later the Indian government invested in infrastructure resources. The six key industrial clusters in India are Bangalore, Chennai, Delhi, Kolkotta, Mumbai and Pune. All have had a concentration of public sector research and development especially defense and state funded science and engineering education. The language policy in the 1950s, whereby English was made the official state language, became a crucial advantage for globalizing the labor force. In the IT/software sector, the state changed its stance from a protectionist role to more of that of a channel (Evans 1995; Heeks 1996; Lateef 1997; Tschang 2001). Policy decisions by the Indian government have borne the brunt of criticism by the private sector for slowing down the impetus for entrepreneurship (Heeks 1996). In general, there is an overall agreement in the IT/software sector that less governmental control but more governmental support in infrastructure development is necessary.

Observers and researchers of this industry such as (Benjamin 2000; Heeks 1996; Lateef 1997; Parthasarthy 2000) have elaborated on the city's transformation from low-end offshore software work location to a reasonably high-end software and services production center. Software work in India includes both custom designed software services and prepackaged products (Chakraborty and Dutta 2003). The following graph shows the software industry's work composition in Bangalore.

Graph 1: The IT Industry's Composition in Bangalore (2002) Involved in Reasonably High Technology Software Development

10%
17%
33%
13%
10%
17%

General Software   IC Design
Application Software   System Software
IT Enabled Services   Communication Software

Source: Government of Karnataka (2005)
http://www.bangaloreit.com/html/itsckar/itindustriesothercities.htm#Bangalore
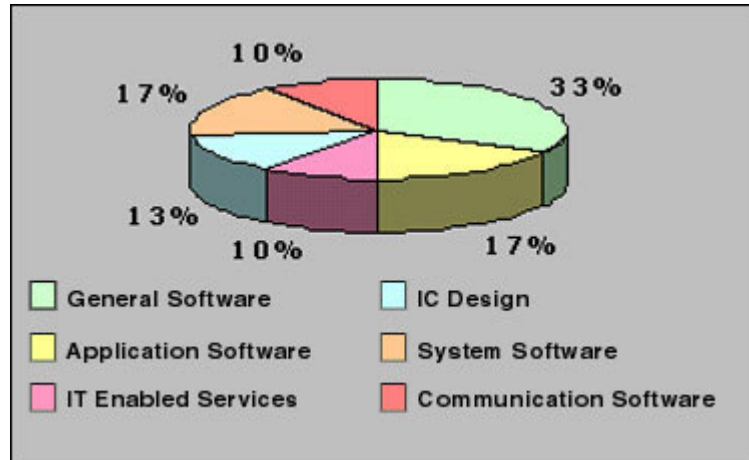
The three categories namely general software, application software, systems software and communications software comprise most of the work. IT enabled services which include call centers and integrated circuit designs are smaller in their work capacities.

There has been a significant rise of other related investments to cater to the consumer needs of software professionals making the city cosmopolitan which attracts firms and their employees to locate in Bangalore (Rolee 2003). The literature (Rolee 2003) relates to some of the spatial issues of why Bangalore is attractive to knowledge professionals and why the city is able to attract investment opportunities. This has very much to do with how the real estate market has been able to cope with some of the changes that an emerging economy can offer. The real estate prices in Bangalore have been much cheaper than Kolkotta, Delhi and Mumbai with the urban infrastructure not being as chaotic as the latter three cities making it competitive for IT/software investments (Lateef 1997). The low real estate prices in the early years were due to its reputation for being a 'pensioner's paradise'. The real estate prices in Bangalore have escalated since the advent of the 'Silicon Valley' of Asia image creating contenders such as Hyderabad and Pune for

IT/software investments (NASSCOM 2006). The following Table 2 indicates that Bangalore is one of the most attractive cities for IT/software investments in India.

Table 2: Location Attractiveness

Location Attractiveness of Key Indian States for IT-ITES

State	Location	Attractiveness		HR	Infra-structure	ITES BPO focus	Support group presence	Physical Resources
Andhra Pradesh	Hyderabad–Secunderabad	Current		●	●	◐	◐	◑
		Future		●	●	●	●	NA
	Visakhapatnam	Current		◑	◑	◒	◑	●
		Future		◑	●	◑	◑	NA
Gujarat	Ahmedabad–Gandhinagar	Current		◑	◑	◑	◒	◑
		Future		◑	●	◑	◑	NA
Karnataka	Bangalore	Current		●	●	●	●	●
		Future		●	●	●	●	NA
Kerala	Thiruvananthapuram	Current		◑	●	●	◒	●
		Future		◑	◑	●	◑	NA
	Kochi	Current		◑	◑	◑	◒	●
		Future		●	◑	●	◑	NA
Maharashtra	Mumbai-Navi Mumbai–Thane	Current		◑	●	◑	●	◑
		Future		◑	◑	●	●	NA
	Pune	Current		●	◑	◑	◑	◐
		Future		●	●	●	◑	NA
Haryana–Delhi-UP	National Capital Region	Current		◑	●	●	◑	◑
		Future		◑	◑	●	●	NA
Punjab	Chandigarh-Mohai–Panchkula	Current		◑	◑	◒	◑	◐
		Future		●	●	◑	◑	NA
Rajasthan	Jaipur	Current		◑	◑	◑	◒	◑
		Future		◑	●	◑	◒	NA
Tamil Nadu	Chennai	Current		◑	◑	●	◑	◑
		Future		●	●	●	◑	NA
West Bengal	Kolkata	Current		◑	●	◑	◑	◑
		Future		●	●	●	◑	NA
State	Location	Attractiveness		HR	Infra-structure	ITES BPO focus	Support group presence	Physical Resources

Very Attractive	Attractive	Adequate	Unattractive	Very Unattractive
●	◒	◑	◐	○

Source: NASSCOM-KPMG

Note: The list of cities analysed in the study is indicative and not exhaustive. There are also other emerging locations in the country.

Source: http://www.nasscom.org

Bangalore has built a reputation as an information and knowledge city. The production of software is also an opportunistic innovation of the local firms which benefit from competing with multinational firms. Paradoxically, Bangalore is not part of a developed information economy. Yet, it has developed some features of the networked society that Castells (1996, 1997, 2000) describes as a trajectory of post-industrialized economies where information and capital would flow freely.

The Indian government has reduced bureaucratic measures and given software firms a relatively free hand to set up offshore locations in India and Bangalore in particular (Balasubramanyam and Balasubramanyam 2000; Bangalore IT, Government of Karnataka 2006; Heeks 1996; Holmstrom 1998; Lateef 1997; NASSCOM 2006; Rosenberg 2002). Thus, it is easier for software firms to network through dedicated locales and build their campuses despite overall infrastructure underdevelopment. When software firms come into Bangalore, they build everything, as little is provided for by the state except for land allocation.

Software outsourcing is only one part of the Indian software industry's picture. Bangalore has VLSI (very large scale integrated circuits), telecom and other high technology services, out of which more than 150 are foreign equity companies. There are more than 100 multinationals that have operations in Bangalore (since Texas Instruments) came, as it is a smaller city than Kolkotta, Delhi and Mumbai but has much of the infrastructure discussed earlier (Bangalore, IT 2006; see Table 2 in Appendix I).

According to Holmstrom (1998, pp. 176), Bangalore offers some elements of flexible specialization where smaller diverse engineering firms depend on subcontracts from larger firms with access to a scientific pool of talent. Larger firms outsource work to smaller firms through employee, client and entrepreneurial networks. Software is not the only thing that is produced in

Bangalore; the city's reputation has brought in foreign investors that have established research and development units. IT/software investments move to Bangalore because of the knowledge workers rather than for the city itself

The following cases are examples of the type of software work and firms that are present in Bangalore.

> Cisco Global Development Center, Bangalore: the company's largest development unit outside its US facility. The centre has contributed to almost every technology Cisco has come out with in the last two years, says Cisco vice-president and head, India, S. Devarajan.
>
> GE John F. Welch Technology Center, Bangalore: the company is working to cultivate Asian R&D resources, and its biggest bet is in India. In fact, it is planned to rival GE's Schenectady, New York (its only serious research facility so far) in size. The centre will conduct research, development, and engineering for all of GE's diverse businesses worldwide, says GE vice-president and centre managing director Jean M. Heuschen…Apart from IT and e-business, the centre is also active in several areas of engineering. There is also a GE Center of Excellence for e-engineering and a knowledge centre to disseminate technical knowledge globally. It has already filed 50 patents.
>
> Hewlett-Packard HP India Software Operation, Bangalore**:** HP has so far invested $45 million in this wholly-owned arm and expects to invest another $10-15 million over the next three years. It already has twelve patents to its credit, and was filing twelve more.
>
> Today, HP focuses on three areas: e-services, applications and infrastructure and the Indian centre is the one across the world that is working on all three, says Subrahmanyam Vempati, director, HP India Software Operations.
>
> (Jayadev et al. 2001 in http://www.india-today.com/ctoday/20011101/trends2.html)

The networked society as defined by Castells (1997) involves a change in social form and social network construction which is particularly self-motivated, open-ended, flexible and unrestrained using networks as conduits of information and opportunity to create network enterprises. The network enterprise is a network made from firms, divisions of firms, or from internal segmentation of firms. It includes strategic alliances between corporations, networks of small and medium enterprises and links between larger and smaller firms.

The software industry in India enjoys benefits of network enterprises both between individuals and firms. These are due to capital flows, ability to circumvent import and export controls and outsourcing and subcontracting chains from larger to smaller firms to keep the costs of the services provided cheaper than the competition (Holmstrom 2002). These provide communication that can be globalized and customized by using competitive professionals higher up in the labor market to certify quality of certain work processes to international clients.

Outsourcing and subcontracting contracts arise from social and professional networks. The lesser valued workforce are lower down the software subcontracting or outsourcing chain. Software firms and professionals in Bangalore and other Indian cities activate, modify and update their networks as a business strategy. This is because the work that is received from international clients are outsourced within Bangalore itself even though it serves a largely export market (Holmstrom 2002; NASSCOM 2006). The major work goes to larger firms and the smaller more repetitious components go to smaller firms in the value chain. The following statement by a software entrepreneur suggests this.

> I can tell you what we did. I guess it is the same for others unless you start off with huge capital. One of the main reasons for us to start a software business in Bangalore is the amount of contacts we have. Clients you have worked with and your relationship with them and your friend's circle of ex-team members matter a lot. Most of the time, someone starts a company when they are working for someone else, as they generally walk out with a project. It didn't happen in our case though. You have to establish yourself mainly through your reputation (project execution, domain knowledge). Then rest is word of mouth. We never spent any money of advertising till now. Yes, larger software firms in Bangalore do pass on some of their business to us. We were development partners for a large software firm when we started off. They gave us lot of their work and some of their projects. Without that it would have been difficult for us. We did their work for nearly two years, after which they built their own in-house development team.

Growth of Human Capital in Bangalore

The IT/software labor pool in Bangalore consist of 25% of the total IT labor force in India which employs over four million workers. It is estimated that 100,000 software workers contribute to 3 % of India's software exports. Another 100,000 workers provide ancillary support services to the software industry (Rolee 2003). Software professionals are created at two levels in Bangalore: these are high-skilled value added labor and low-skilled support labor (Sassen 2000).

Bangalore creates knowledge workers and also attracts them from other places in India and returnees from overseas who seek IT/software related employment (Subramanyam and Subramanyam 2000, pp. 351-352). Some of the attractions stated in the literature are historical and socio-cultural as outlined below which have made the city likeable and livable compared to other competing metros in India. The Maharaja of Mysore, who ruled the then Mysore state in 1799 and again in 1881 of which Bangalore was a part in the pre-independence era, created active state participation in education which stressed engineering and higher learning at the Mysore Economic Conference in 1911. After Independence, the tradition of public sector involvement has continued in Karnataka (Bangalore IT 2006; Lateef 1997, chapter 4).

> Jawaharlal Nehru, India's first prime minister (1947-1964), had a vision for Bangalore...(C)alling Bangalore India's 'City of the Future', he sought to turn it into India's intellectual capital (Stremlau 1996, pp. 157).

Bangalore's IT/software professionals come out of primary and tertiary education institutions in India with the standards of instruction being varied in different parts of the nation. Engineering students graduating from universities in Bangalore and Karnataka are sought after by local and international software firms. Students from all over India come in and take the Common Entrance Test for admission into professional degrees. Some of the popular institutions which have contributed to human capital are the Indian Institute of Science, Indian Institute of Management

Bangalore, Indian Institute of Information Technology, and the Institute of Bioinformatics and Applied Biotechnology. The standard of education is trying to keep up to the standards of the knowledge sector firms. However, these institutions do have many infrastructural constraints and students have to make an extra effort to pass the entrance requirements of the major software firms.

Some of the local colleges are Bangalore Institute of Technology, B.M.S. College, M. Vishweshwaraiah Institute of Technology, MES College at Malleshwaram, Ramaiah Institute of Technology, R.V. College of Engineering and U.V.C.E. etc. In addition to the colleges, there are several computer training centers like the National Institute of Information Technology which produce diploma holders in computer programming specific to certain domains such as LYNUX, UNIX and Windows to train people for projects that use C++, Java, Oracle and so on.[9] There are many such training institutes where students can learn computer skills in graphic designing, networking, software applications, web designing and so on. When the computer industry grew in the 1990s, it was graduates from these institutes who served on many of the projects and export orders. Once local firms like Infosys, Tata Consultancy Services and Wipro became giants alongside the influx of more multinational corporations with research and development centers, engineers started to work for IT/software firms and became the dominant force in shaping the sector (Bangalore IT 2006; Discover Bangalore 2006). Engineers are in short-supply. Most multinational corporations prefer to hire engineers rather than other graduates who can be trained with programming knowledge (Arora et al. 2000b). They suggest that if India wants to make up for the shortfall of educated labor, it should train graduates in other fields to become employable by IT/software firms. Persons with engineering degrees feature well for local and transnational employment and in mate selection (discussed in chapters five, six, seven and eight).

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[9] C++ and Java are computer programming languages. LYNUX, UNIX and Windows are operating systems.

<u>Conclusion</u>

This chapter has presented an overview of Bangalore, India in relation to labor creation, industrial growth, birth and augmentation of the IT/software industry. Over the years, Bangalore has developed its own resume that has attracted investments from high caliber local and foreign software firms. The advantages of doing research in Bangalore are the proximity of many IT/software firms, software parks and professionals. A strong IT/software culture and awareness permeates the city's middle class, social discourse and urban development which made this research both interesting and feasible.

Chapter Four

> Reputations emerge if an actor's future partners are informed of his present behavior…
> (Raub and Weesie 1990, pp. 626)

Aims and Objectives of Methodology

How can a third party be informed about an actor's reputation and social mobility? One answer would be the credentials reflected in the resume. The methodology for this dissertation was designed to capture the process of building resumes and their uses in various social settings to establish the links between credentials sought by IT/software firms for hiring purposes, career advancements and marriage plans amongst Indian software professionals.

Introduction

This dissertation consists of a qualitative study of IT/software professionals in various social settings to understand their life-strategies. Networking and credential building have been researched to answer the questions proposed in chapter one.

Three field trips to Bangalore India were conducted. Each of the field trips lasted between four to six weeks from November 2002 to January 2003, November 2003 to January 2004 and May 2004 to June 2004. Data was gathered through interviews, participant and non-participant observations during the field trips targeted mainly at professionals in Bangalore, India.[10]Analysis of advertisements and documents collected through the internet was conducted over a period of four years (2002-2006).

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[10] There were two interviews with each of the seventy-eight respondents and one interview with each of the nine consultants.

Research Design

The research design involved multiple sources of data collection (see Denzin 1978; Hesse-Biber and Leavy 2006, pp. 317). Multiple sources were used to overcome the bias of relying heavily on one form of data collection. According to Greene et al. (1989), using multiple sources of data collection is useful to study the same research questions. Different data sources and qualitative methods included interviews, document analysis of publications, content analysis of sample advertisements from the internet, observations and secondary data. The use of multiple techniques for data collection as a part of the research design served the following functions. Firstly, it provided qualitative data from several sources and angles which are complementary in nature. Secondly, data from one source provided evidence on issues of validity and reliability to substantiate material evidence from other sources (see Hesse-Biber and Leavy 2006, pp. 317).

Considering that the various life-strategies of IT/software professionals involving credential building needed to be captured, the following steps were taken. Firstly, in-depth interviews were administered using open ended questions (see Interview Guide in Appendix I). The respondents were also asked for business cards, their company brochures and resumes for verification purposes. These were of prime relevance and importance, since the purpose was to track professional and social mobility displayed in respondents' resumes and how these have been used to find jobs and suitable marriage partners. Other techniques in the research design involved participant and non-participant observations; content analysis of the sampled matrimonial advertisements; document analysis of research publications and data from relevant company, government and software industry association websites on the internet; and interview excerpts of IT/software professionals from secondary data sources.

Pilot Study

In order to decide whether the research design should involve random or non-random methods of data collection, a pilot study was designed to test the field. A test survey of fifty firms (selected from a list of over 1154 firms obtained from the Government of Karnataka (Bangalore IT website 2002) was conducted. The selection involved systematic sampling with a sampling interval of five (choosing every fifth firm) from the sampling frame and contacting them for an interview by email and telephone call.

The pilot study yielded a very low response rate of 3% of firms who agreed for one of their employees to be interviewed after an initial screening in Bangalore by the public relations and human resources departments. Two of the companies that responded only agreed for a tour of the workplace without allowing me to conduct interviews. This test of sample selection was carried out in July 2002 and did not prove to be sufficient to be included. Subsequently, the project was redesigned to draw more heavily on snowball sampling.

Main Study

Since contacting companies directly from a published list did not yield a reasonable response rate, snowball sampling was chosen to interview IT/software professionals in Bangalore. Snowball sampling is a type of purposive sampling which entails a process of data collection through referrals (see Glasser and Strauss 1967 for definition). Ten contacts who were my friends were requested to recommend respondents in the software industry. These ten contacts were in varied professions such as academia, business consultancies, hardware and software engineering and software coding and were chosen on the basis of their extensive networks in the software industry.

In the first field study conducted from November 2002 to January 2003, referrals from the initial contacts mentioned above were made to their friends and colleagues working in the software industry. The total sample size grew to seventy-eight respondents who were interviewed in three time phases (details elaborated in the section on data collection). These respondents included forty-five males and thirty-three females. Since thirty-three of the male respondents were married, all their wives were interviewed to evaluate if there were any links between professional homogeny and marriage patterns.

Thirty-one wives were working specifically in software consulting, customization, production and sales. There were another nine respondents who were interviewed because they are connected to the industry in various ways such as professors, recruitment and human resource consultants, an independent sociologist who researches business networks in Bangalore and a senior research officer working for one of the largest IT/software firms in India.

Snowball sampling was chosen as the most workable option to maximize response rates because conducting survey research on employees in software companies was not possible as indicated earlier. Respondents felt comfortable being interviewed only when being referred by common contacts known both to them (due to privacy concerns) and myself which made snowballing the apt technique for sample selection. The criteria for sample selection were established as follows.

Respondents: Sample Frame

The respondent could be of either gender, working for, owning or running an IT/software firm and directly involved either in programming (coding and executing software components and projects), as team leaders (who manage teams of programmers as middle level managers) or as professionals marketing software services either in offshore (in Bangalore) or onsite projects (sent to overseas company sites). The respondents had to qualify according to a pre-determined list of

job descriptions or titles, such as software engineer, programmer, systems analyst, team leader, project manager, business development manager, domain manager/consultant, vice-president, sales, marketing, chief technology officer, director, chief executive officer and other relevant designations. These job titles and descriptions were selected after looking at the job titles and descriptions indicated in the websites of software firms (top ten Indian and foreign firms in Bangalore listed by Government of Karnataka, Bangalore IT 2002). The term tier is used by the National Association of Software and Service Companies (NASSCOM 2006) to indicate the size of firms in terms of gross yearly earnings, number of employees and export figures. First tier firms are rated as more prestigious than second tier firms.

A total of seventy-six respondents who fit the above categories were interviewed. Out of these, six respondents are business partners in startup software firms who acted as gatekeepers and three out of those gave me information about their employees and two arranged visits to their workplaces. The other respondents are employees working for small, medium and large IT/software firms. To further justify a purposive sample, a sociologist researching entrepreneurial networks of software professionals in Bangalore was consulted to determine what types of professionals should be included in the sample. Two interview guides were developed with open ended questions (see Appendix I). One questionnaire was for the primary respondents and the other one for the industry consultants. Thus, it became very important to find reasonably influential contacts in the first field visit to Bangalore to facilitate snowball sampling.

Consultants to the Software Industry

There were nine respondents in this category who were contacted through snowball sampling due to their consulting networks and/or business links to the IT/software industry in Bangalore. They provided services as business consultants (non-programmers), human resource/recruitment consultants, researchers and professors who research and train students in science and technology

education. These interviews were unstructured as they had to be tailored to each individual's specific roles (see Interview Guide in Appendix I). The purpose of these interviews was threefold: firstly, to understand the role of firm status and credential competition from human resources consultants who recruit IT/software professionals, and professors who train engineers and management students and have consultancy links to software firms. Secondly, to understand the software human capital makeup of foreign and Indian multinational firms versus smaller local companies. This helped with the sample selection. Thirdly, the consultants helped with access and insights into the field-site through their networks.

The interviews involved the following: recruiters from human resources firms who specialize in recruitment for small and large IT/software firms. The purpose of these interviews (telephone interviews conducted in Bangalore for an hour), was specifically to research the hiring practices of firms according to their size and status. The questions were aimed at the types of education credentials preferred, entrance tests, previous work experience of job candidates, salary structures of Indian and foreign firms and ranking of these firms as determining factors for hiring practices.

Other interviews included: engineering and management professors who gave me valuable insights about campus recruitment, research and development links between Indian firms and universities, and the types of credentials that are useful to avail jobs in software firms. Furthermore, they provided useful information about campus recruitment, training and human resource practices in the industry.

An independent sociologist who researches the development of business networks and its effects on middle class mobility in Bangalore was consulted. My questions to her were regarding the networking practices of entrepreneurs and professionals. She also helped me as a guide and recommended snowballing as the most suitable way of constructing a sample, as software

professionals in Bangalore are otherwise difficult to contact for interviews, if they are not referred by common or known contacts.

A senior research associate working for one of the most prestigious IT/software firms was consulted for one hour regarding the research and development practices in his firm. Of specific interest were the types of research networking between universities and IT/software firms in India; the types of education, work experience and credentials required by his firm for middle and senior level positions; quality certifications and their effects on the types of software services produced.

Property Developers

Four popular property development firms which build campuses for firms and gated living complexes primarily targeted at IT/software professionals were contacted for information and field visits to their relevant projects in Bangalore. This information was essential to understand the infrastructure development and how the city was building its resume and credentials to draw more software multinationals thereby attracting human capital. The issues of real estate development in the form of technology parks, modern IT/software campuses and gated living have largely been ignored in the earlier literature on Bangalore. These are some of the resource factors that attract human capital to search for work in high status multinational organizations which can provide the networks and opportunities for mobility in contrast to the majority who live and work in poorer infrastructure.

Spouses of IT/Software Professionals

Since certain questions in the interview guide required information on marriage choices, all (thirty-three) spouses of the married respondents were interviewed. Out of these, thirty-one are software professionals and two are in other professions. These lasted for two hours (each person

was interviewed twice) and were vital in understanding key issues of the software profession and its influences on mate selection.

Data Collection

The qualitative methods of data collection used in this study are enumerated as follows: in-depth interviews were conducted with the IT/software professionals in their workplaces, restaurants and homes. Interview settings were chosen by the respondents. The aim was to see their resumes, ask questions and construct case studies. With the other nine respondents who had business and consulting connections with IT/software industries, unstructured in-depth interviews were carried out due to the varied nature of questions and information sought from each of those interviewees. Participant and non-participant observations in settings such as workplaces, homes, parties, marriage negotiations, engagements and weddings were undertaken as tools to understand both verbal and non-verbal modes of lifestyles and processes of gathering social networks for job mobility, entrepreneurship and marriages to establish if there are any links between them.

The interviews were conducted in two phases: phase one involved a pre-interview session in a restaurant which acted as an introduction to the respondent (the initial contact person was not present in any of the interviews); phase two involved an in-depth interview in the workplace of the respondent, and an interview with the respondent and his or her family at home or in a restaurant. All the interview phases were carried out in the three field trips. There were no language barriers to conducting the research effectively as the respondents spoke fluent English and I can speak four Indian languages.

Pre-Interviews: First Phase

The interviews were arranged as follows: an introduction from my initial contact to the new contact through a telephone call or email. I then called the new respondent in the network and

arranged for a time, date and venue for a pre interview in Bangalore. In the pre-interview, visits to the respondent's workplace, home or a restaurant were arranged for the next interview session after ascertaining their willingness to answer the necessary questions. The pre-interviews lasted for ninety minutes usually during the respondent's lunch break. This involved an introduction of the scope of my research and getting details of the respondent's eligibility to be included in the sample.

In-Depth Interviews: Second Phase

In the second phase, in-depth interviews were conducted. An interview guide was used with open ended questions that were mainly descriptive in nature (see Appendix I). Descriptive questions were aimed at finding specific details about the respondent's age, education qualifications, position, type of job, list of firms worked for, brief history of the software industry in Bangalore, types of software produced by their firm, and the organizational chart with their position indicated. The purpose of this was to identify their position within their organization's hierarchy in relation to their resumes.

Further questions involved understanding ways of finding new clients and hiring practices of their firms; whether or not the respondents wished to work in India or move overseas; strategies for upward mobility in the labor market and reasons for wanting to remain employed or become entrepreneurs; and how engineers versus non-engineers doing similar types of jobs fared in the labor market; opportunities for women in the IT/software workplace; whether caste and gender are important factors in professional and social networking. The answers to the descriptive questions were recorded mostly by taking notes. Data recording on a voice recorder was carried out only in three interviews with the permission of the respondents. Most of the respondents and organizations did not allow me to use any electronic devices otherwise. All the married (sixty-six)

and unmarried (twelve) respondents were asked about their marriage choices, and key selection criterion.

The interviews of the seventy-eight respondents were conducted in settings such as the workplace or outside the workplace as per their convenience. The questions asked were descriptive in nature to find details about their social background (caste, community and regional origin); how the respondents had met and selected their marriage partners; their occupational status; the education and professional background of the family members; and social networks with other IT/software professionals. They were queried on how they traveled back and forth to work and some of their consumption and spending habits. Each of these interviews lasted between three to four hours. The respondents did not wish to be given any form of material compensation and requested strict confidentiality of their names and resumes.

Observations

I played the role of participant as observer and non-participant observer in several arenas. This type of data collection was vital in order to complement some of the interview findings, content analysis and document analysis. The research questions in this dissertation needed multiple sources of data, since they cover the life-strategies of software professionals in relation to building their social and professional mobility through networks and achieved status. Furthermore, it was not possible to conduct formal interviews in all the situations, for example in marriage negotiations, weddings and parties. The main purpose was to observe the social interaction of IT/software professionals in various social surroundings and record their negotiations and observe their networking processes. These observations included gathering data on the following: what the respondents were doing in the particular social setting? What were their activities? What sensory observations could be made about marriage negotiations, weddings

and workplaces? What was being said? This was a great source for noting attributed statements and quotes, while looking at cues of non-verbal communication as well.

The Workplace

While in the workplaces of three IT/software firms, I was taken on a tour of the workstations and spoke to nine software programmers. These conversations were over and above the interviews with seventy-eight respondents and nine industry experts. Questions were asked to understand their formal and informal associations with colleagues of different castes and communities in the workplace. Observations of the canteens, recreation centers, training facilities, workstations, and the socializing patterns of males and females were recorded. The visits to these IT/software campuses lasted between three to four hours.

Marriage Negotiations and Wedding Ceremonies

Four respondents (two males and two females) invited me to attend the marriage negotiations of their relatives searching for brides and grooms amongst IT/software professionals. I attended four arranged marriage negotiations. In these negotiations, I was a non-participant observer. Interviews could not be conducted in these settings, as they would have interfered with the negotiation process and not considered appropriate.

Key matching criterion or requirements of the prospective brides and grooms were noted with specific attention to statements. These included age, caste, class, education, material exchange (dowry, gifts), migration interest, phenotypes, profession, salary and type of employer. This data was used to construct cases which reflect the needs in the selection process. With each of the four respondents' families, two rounds of marriage negotiations were attended. The parents of the proposed matches and other relatives present were observed to understand their roles and

influence in matchmaking. Each observation period lasted for three hours. The couples were present with their mothers, fathers and other kin.

Two weddings and one engagement ceremony of software professionals were observed in detail. The purpose was to capture the outcomes of the arranged marriage process of two brides and two grooms (all engineers working for software firms as analysts). They had specifically found partners for themselves with similar education and employment histories so that the men could find jobs for their spouses in the same companies through the employee referral system.

Bars, Parties and Pubs

This included participant as an observer role where I actively socialized with three male and two female respondents. We socialized in bars, parties and pubs, where I met their friends. The purpose of these observations was to interact with IT/software professionals and find out whether their social circles and informal networks consisted of other software professionals. Of particular interest was to note whether or not the friends they socialized with were of varied caste backgrounds, education, professions, social status, and if these informal networks helped them to get jobs in the software industry.

Urban Settings

Several neighborhoods such as Electronic-City and Whitefield which are dedicated areas for IT/software firms were visited. The purposes of these visits were to look at the types of infrastructure development in these areas and the working environment for professionals in high status multinational firms. Two companies which invited me to visit their corporate campuses were located in these areas and the third firm was located in Mysore. Mysore is situated approximately ninety miles away from Bangalore where many software firms have a branch office or a campus (Government of Karnataka, Bangalore IT 2006).

It was relevant to visit gated properties (where ninety percent of my interviewees resided) to understand how IT/software professionals live and work in Bangalore. This included visits to homes of the respondents, where types of consumer goods and furnishings were recorded. The visits to gated urban settings were significant to note the type of facilities provided, and whether these communities promote social networking amongst professionals despite caste or language barriers. Specific information was sought about the marketing of such housing to IT/software professionals, the types of financing available to them, and the influence of colleagues and friends on buying decisions. Several visits were made to the older and more traditional neighborhoods of Bangalore where some of the parents of the respondents live in order to compare and contrast lifestyles and the types of friends and neighbors.

The Internet as a Data Source

The internet has increasingly become a viable research tool because of the vast amount of information gathering opportunities it offers from varied sources (Hewson et al. 2003). It was used in this research to avail data from reliable and verifiable company, government, industry association and matrimonial websites. The websites were visited to avail the following information: advertisements, graphs, interview excerpts, relevant data tables and reports.

This saved both time and money as publications and information on these websites could be accessed easily and frequent checks could be made (twice every month) for updates in information. No qualitative data analysis software was used. One website required membership which was sought. Anonymity of persons posting the marriage advertisements has been ethically maintained.

Secondly, the internet was used, because it provides access to published documents and matrimonial profiles that are not always available offline. This proved to be a better source for

official documents and information compared to gaining access to the same through visits to the various agencies that referred me to their relevant websites.

Sampling and Data Collection

Internet sampling is challenging, because it is biased towards well educated and technologically proficient users (ibid. pp. 26). This bias proved to be acceptable, as this dissertation required data about educated IT/software professionals in Bangalore. The population (unknown) of marriage advertisements by software professionals in India's most popular matrimonial website namely http://www.shaadi.com was selected in June 2006 according to age range (twenty-six to thirty-three years), city (Bangalore), first marriage, gender and profession (all software professionals). The selection criteria of marriage partners were determined according to how the respondents and advertisers had selected or were going to select their marriage partners. This yielded a sample frame of 1008 professionals with 50% males and 50% females. The sample selection was made possible using a random number generator. A total of 200 marriage advertisements (100 posted by males and 100 posted by females were included in the sample). The sample size was limited to 200 advertisements after taking an additional sample of fifty advertisements and noticing that there was no change in the findings.

Besides these, top ten Indian and foreign multinationals in Bangalore (list provided by Government of Karnataka, Bangalore IT 2006) were chosen for content analysis of executive biographies. Two information technology government websites and one national census website were purposefully selected according to their importance and popularity to source published reports and documents. Advice on website selection was sought after interviewing the nine industry consultants and seeking their guidance. Besides this, the software industry association website, the National Association of Software Service Providers (NASSCOM), was selected as it is the primary source of published data on the Indian software industry.

Table 1: Internet Data

	Marriage Website	**Government Websites**	**Company Websites**	**Professional Association Websites**
Number of Websites	1	3	10	1
Number of Advertisements	200 (100 Males) (100 Females)	0	0	0
Survey Data, Graphs, Interview Excerpts and Tables Sourced	No	Yes	Yes	Yes

Assisted Marriage Website

The use of matrimonial advertisements and profiles is increasing in India and they are becoming a vital part of the mate selection process (Medora 2003, pp. 216). The internet site that was chosen for marriage advertisements was http://www.shaadi.com. It is identified as the most popular and largest Indian matrimonial website for both men and women looking for marriage partners in India and abroad. This site was identified after asking the respondents and doing a thorough background search on the internet about its popularity for online marriage arrangements. The site provides detailed profiles (sometimes with pictures) of individuals with a combination of information on the following: age, appearance, caste, citizenship, education, family background, gender, hobbies, horoscope, migration interest, partner expectations and preferences, profession, salary, type of employer, relationship history, values etc. Almost all Indian communities are represented in http://www.shaadi.com.

Government and Professional Association Websites

Websites on the Indian IT/software industry from official sources are a good resource for figures and data. The data sourced from government websites and the industry association was chosen as per the requirement of the research questions. These sources are the National Association of

Software and Service Companies (NASSCOM); Bangalore IT (Government of Karnataka) and Census India.

Company Websites

Websites of the top ten Indian and foreign firms (based on their export figures from Government of Karnataka, Bangalore IT) with campuses in Bangalore were purposively chosen in 2002 to determine job titles and hiring practices of software firms. An updated list was chosen again in 2006 to find interview excerpts and executive biographies of their senior management teams. These websites provide information about the software services produced in India and the types of qualifications they are looking for hiring software analysts, consultants and programmers. The company websites are Infosys Technologies Ltd, Wipro Ltd, IBM Global Services India Private Limited, Tata Consultancy Services Ltd, Digital Global Soft Ltd, I-Flex Solutions Ltd, Texas Instruments, Cisco Systems (India) Private Limited, Mphasis BFL Ltd and Philips Software Centre. These websites provided detailed secondary data and understanding of the Indian software industry. They were also chosen after consulting the respondents and the nine industry consultants, who recommended them, because some have worked in these firms or have friends who are employees. For information about smaller firms, six entrepreneurs who are running those firms were consulted.

Data Analysis

> The phenomenologist views human behavior…as a product of how people interpret their world. The task of the phenomenologist, and for us the qualitative methodologist is to capture this process of interpretation…In order to grasp the meaning of a person's behavior, the phenomenologist attempts to see things from that person's point of view. (Bogdan and Taylor 1975, pp. 13-14, emphasis in original)

The data was analyzed using the following steps: notes were transcribed the same day after the interviews and observations. Various coding categories were assigned to the information from the respondents such as caste, education, family background, firm status, marriage choice,

neighborhood, networks, professional background, recruitment, salary, social events, workplace environment, etc. The principal aim was to construct case studies of individuals with information about their marriage choices, profession and social backgrounds. Advertisements from the shaadi.com website were coded according to the categories such as caste, career goal, education, horoscope, migration interest, partner expectations, profession, salary, type of firm worked for and so on.

The data were collected through several means indicated earlier and then compared to look for patterns to construct the concepts, theory and draw conclusions. To deal with issues such as missing or incomplete data, I contacted the interviewees again and repeated some of the questions and sought answers, or alternately did repeated or widened searches on the internet for documents and data.

Presentations of findings include tables with percentages, numbers and direct quotes framed within the appropriate background and context. These are in the respondents' own words to show particular opinions, experiences and understanding. The other form of evidence presented is attributed statements which work similar to quotes but do not rely on the respondents' exact wordings. These were useful when respondents did not answer in English or did not make succinct statements about issues or questions but gave descriptive narrations of their backgrounds, careers and social networking strategies. Since the actual name and resumes of the respondents have been kept strictly confidential, single letters of the alphabet have been used to indicate the first letter in the respondents' names. There were some respondents who had similar first letters in their names. Examples of this include multiple respondents with similar letters such as P, S, T etc, with different genders, education background etc. Information on the respondents' castes has been provided in chapters six and eight with some examples of their sub-castes. However, the sub-castes were too numerous and complicated to be expounded in detail. The main

purpose of the analysis and presentation of the findings on castes was to ascertain if there are deviations from caste homogeny in professional networking and marriage.

Other substantiation is presented in the form of case summaries. Case summaries were constructed for all the respondents to describe narratives about their employment and marriage choices. It was not enough in all instances to rely only on direct quotes or attributed statements. In the relevant sections of the data chapters, case summaries are presented as and when the need arose to demonstrate a point.

Since data were gathered about issues on effective life-strategies, employment, marriage and networking amongst all the respondents, it became necessary to elaborate uses of terms and concepts. Examples of such include symbolic capital, organizational cultural capital, social capital, social networks, caste, sub-caste and middle class. There are elaborated in the relevant chapters.

Profiles of Respondents

The age and gender profiles of the principle respondents working for IT/software firms are thirty-three females and forty-five males between twenty-six to thirty-three years of age. The presence of female employees and entrepreneurs is rising due to the merit oriented hiring practices of firms, but they still constitute a minority in high level software consulting, customization and programming due to the emphasis on business, engineering, science and technology degrees (NASSCOM 2006). Consequently, the access to female only networks was lower than male networks in this study.

Twenty-nine female engineers and two diploma holders in software programming between twenty-six to thirty-three years of age were interviewed. Two female respondents are not in the

software profession but were interviewed, because they are married to respondents who are software professionals. The engineers are employed in prestigious firms (sales of over U.S. $ twenty million a year) in Bangalore as middle level team leaders of junior programmers. The two diploma holders are middle level programmers in small local startup firms (sales of less than U.S. $500,000 a year). Thirty-two female respondents are Hindus and one is a Muslim. All are married to software professionals. The male and female Hindu engineers knew each other through their professional networks (they had come in contact with each other through previous work experience in one organization but in different teams). These engineers did not know the Hindu diploma holders or the Muslim engineer. They are from different networks (different organizations in their resumes). All had found their first job through campus recruitment.

The forty-five males have university/college/diploma education in technical/management fields, and work experience in software development. Two respondents are in the positions of chief technology officers, two are vice-presidents and two are technical directors of their companies and amongst the founding partner members of their organizations. Four are entry-level programmers, thirty-three middle level software programmers/analysts (team leaders) and two middle level software consultants who also have previous work experience in chemical firms. The turnovers of the companies they either own or work for range from U.S. $500,000 to $ 20,000,000 annually. While thirty-nine male respondents are qualified with engineering degrees (five of these respondents have additional Master's degrees in Business Administration, Computer Science Applications, Engineering, Science and Technology and Accounting), the other six are diploma holders in programming.

The respondents with professional degrees either work for first and second tier firms or are founding partners/owners of smaller firms with overseas joint ventures. The eight diploma holders in software programming are in middle level positions in companies with less than U.S. $

700,000 annual sales. All of them are Hindu. Thirty-three male respondents are married (thirty-one are married to software professionals) and twelve male respondents were in the process of finding a spouse. Only one male respondent was divorced (his ex-wife was an IT/software professional in the same company and they did not have an arranged marriage. For those respondents who are married, appropriate questions from the interview guide were also directed at their spouses.[11] The following Tables 2, 3 and 4 show information about respondents' education, marital status, and where they work.

Table 2: Respondents' Education

Age of respondents: 26 years to 33 years

Education	Males	Females	Total
University Degrees (Professional)	39 (50%)	29 (37%)	68 (87%)
Diploma Holders	6 (8%)	2 (2.5%)	8 (10%)
Non-Professional Degrees	0	2 (2.5%)	2 (2.5%)
Total	**45 (58%)**	**33 (42%)**	**78 (100%)**

Table 3: Respondents' Marital Status

Marital Status	Males	Females	Total
Married	33 (42%)	33 (42 %)	66 (85%)
Single	12 (15%)	0	12 (15%)
Total	**45 (58%)**	**33 (42%)**	**78 (100%)**

* The percentages have been rounded off to whole numbers.

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[11] This comprised of thirty-three female respondents.

Table 4: Types of Firms where the Respondents Work

Types of Firms	Males	Females
Multinational Firms	29 (37%)	27 (35%)
Second Tier (Small Firms)	10 (13%)	4 (5%)
Entrepreneurs (Startup Firms)	6 (8%)	0
Other Professions	0	2 (2%)
Total	**45 (58%)**	**33 (42%)**

* The percentages have been rounded off to whole numbers.

In Table 5, the nine respondents (six males and three females) are between thirty-five years to fifty years of age. Their education background is varied with the senior research associate and professors having engineering, business and economics credentials. The recruitment consultants have human resources credentials, whereas the business consultants have engineering tertiary education. All are from different castes and married to persons in different professions.

Table 5: Number of Consultants to the Software Industry

Gender	Human Resource Consultants	Business Consultants	Professors	Independent Sociologist
Male	2	2	2	0
Female	1	0	1	1
Total	**3**	**2**	**3**	**1**

*Sample Size=9

Strengths and Limitations of the Research Design

The key strengths of this qualitative methodology are a large sample of interviews complemented by a random sample of marriage advertisements from the internet. This innovative research design involving both interviews and the internet was very useful and appropriate for this study, as it was important to have detailed narratives and case studies about the respondent's career choices and marriage alliances. Furthermore, snowball/network sampling was useful in understanding how social networks of software professionals function for their careers and marriage choices.

The sample was biased towards those with science, engineering and business tertiary qualifications. This bias was necessary, because this dissertation is about those professionals who are making a significant contribution to the human capital sourced by reputed IT/software firms.

Some reasons why the sampling could not be representative of macro level influences of the IT/software industry's hiring practices on changes in social stratification are as follows: the Indian census does not release specific quantitative data about caste in the IT/software industry. Census India, which is the official government of India census website, states that there is no survey on upper castes and occupational status since 1931 due to the sensitivity of the issue. However, studies on the under privileged and illiterate exist (Census India 2006). There are no detailed sociological studies about the cultural factors of the software labor force either. None of the IT/software firms that were contacted were willing to discuss the castes of their employees and claim not to look for ascribed status when hiring. The interviewees verified this claim.

Furthermore, the IT/software companies that were visited and the entrepreneurs did not want to participate in a large scale survey research exercise, hence, limiting my sample size and the type of sampling to purposive snowball sampling. Entry into firms/workplaces, in-depth interviews and observations were made possible only through networking with initial contacts who were IT/software professionals. However, this proved useful, as the study was about networks and credentials amongst professionals to see if there were ascribed influences present in their career networks and marriage chances, choices and strategies. The limitations of using non-probability samples were overcome through the research design.

A certain amount of antipathy and misunderstanding was sensed towards social science research which some Indian IT/software firms and professionals believed to be left wing and in nature.

This required initial ground work in explaining the academic scope of this research exercise while assuring utmost confidentiality to the respondents.

<u>Conclusion</u>

This dissertation analyzes a variety of data sources and types of data. While quantitative studies are more useful in replication of large surveys, the purpose of this qualitative study was to interpret networks amongst a sample of IT/software professionals in Bangalore, India. The rationale was to construct in-depth profiles of software professionals, since there is no detailed study linking diverse topics such as credentials, firms and marriages. Software professionals provide indications of social change through their life-strategies and credential building, because the software industry has offered lucrative employment and migration opportunities for the educated middle classes after economic liberalization in the early 1990s (Heeks 1996; Lateef 1997; Shahe et al. 2003).

Chapter Five

> Technical fields such as programming appear to have a stronger reputation as a meritocracy-where merit alone is paramount … (Messmer 2003)[12]

It is not solely through merit or networks that software professionals find jobs and status attainment in software firms. Network theorists (Lai et al. 1998; Lin 1999a, b; 1998; Lin et al. 1981a, b; De Graaf 1988; Marsden and Hurlbert 1988) argue that contacts with high status actors increase chances of finding jobs. In particular, the research (Lin et al. 1981a, b) shows that occupational level of the first job affects the status of the contact reached for current employment prospects in high ranking jobs. While their research takes into account differences in skills and occupational levels, they ignore symbolic capital of credentials and career choices as key factors which determine professional attainment.

This chapter shows the following: while educational qualifications are important for organizational entry (Gangl 2000; Muller and Shavit 1998; Hannan 1999), where one works as a form of organizational cultural capital is also important in terms of status attainment through networking. Contacts with high status actors do not always lead to better jobs in high status firms despite the respondents having access to them through close and diverse networks and the necessary personal resources and skills. IT/software firms stratify potential employees which creates different career paths for people with similar skills. This stratification of the labor market has created a social and professional typology of IT/software professionals.

Popular opinion and research both substantiate the usefulness of networks as the key to occupational success and that human capital is an embedded resource in occupational success (Flap and Boxman 2001, pp. 159). Social network theories advocate that jobs are found through

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[12] http://www.networkworld.com/news/2003/0929women.html?page=1

informal and distant relationships (Burt 1992, 2001; Granovetter [1974], 1995, 1982). The

theories on networks concentrate on the supply side of the labor market (Flap and Boxman 2001,

pp. 160), while ignoring the demand side of the labor market.

> The hiring process is perhaps the single most important but least understood part of the
> employment relationship (Petersen et al. 2000, pp. 763).

The hiring process influences stratification of the IT/software labor and creates varied avenues of

future opportunities for employees. Studies tend to pinpoint the actor's exact location within a

particular network which is useful in getting a job (Erickson 2001, pp. 133). Network variety or

the types of networks a person has are seen as a resource or a form of social capital rather than

just a route to getting a job or other opportunity (ibid. pp. 127). According to Bills (1992) and

Marsden (1994), researchers have concentrated on employers using formal and informal

screening devices such as education, work experience, personal attributes and tests to determine

hiring and do not look at the possession of networks as an asset but rather as a means in the hiring

process (Erickson 2001, pp. 130). The sample of respondents shows a significant indication that

networks with high status actors are only useful in getting jobs in firms of similar status as the

current employer, but they do not always lead to jobs in high status firms, despite the possession

of the required skills in the market. The reasons and the cases of respondents are enumerated in

the following sections.

Firm Status

> Organizations as institutional settings are conducive to the development of high levels of
> social capital… (Nahapiet and Goshal 1998, pp. 242)

The status of the IT/software firm is determined by several factors: firstly, its size; secondly,

products and services produced; thirdly, business cycles which affect the firm's valuation and

growth; fourthly, the firm's overall performance in the market which determines its reputation.[13]

Firm status defined in relation to NASSCOM's (2006) ranking of firms is as follows. Large Indian and foreign multinational firms which NASSCOM ranks as first tier firms because of their size and earnings have the highest status amongst the respondents. Second tier or smaller firms have lower status. An interesting attribution derived after the observations and content analysis of the respondents' ideas and thoughts is indicated below.

> It's not just about being an engineer; it's about being an IBM, Sun Microsystems, Infosys, TCS or a Wipro engineer.

Firm status plays a very important role in how organizational cultural capital is valued and arbitrated in employee networks. The existing research on social networks and employment (De Graaf 1988; Lai et al. 1998; Lin 1999a, b; Lin et al. 1981a, b; Marsden and Hurlbert 1988) ignores the effects of the types and status of firms that actors work for and their significance on the actor's chances of getting a better job through high status or other contacts. In particular, the research (Lin et al. 1981a, b) shows that actors need to have high personal resources, such as education and family background in order to access a high status contact. Besides this, actors also need diverse networks rich in structural holes (Burt 1992, 2001) and weak ties (Granovetter [1974], 1995, 1982). Other conditions include having high occupational status in the first job, which influences the occupational status of the current job, because the latter is affected by achieved status rather than ascribed status. Their studies concentrate on occupational status. Few entry level positions or first jobs have high occupational status, even if they are white collar career paths (Prandy et al. 1982). My sample shows that occupational status is affected by firm status after the first job and the symbolic capital of credentials in all but two respondents who are in different occupations (total of seventy-eight respondents).

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[13] This inference was drawn from Bangalore IT, Government of Karnataka (2006) and NASSCOM (2006) websites which rank software firms. Furthermore, the interviews and media provided rich data sources on the reputation of firms according to their ranking as first and second tier firms.

From the qualitative interviews, it is noted that contacts and networks with higher status acquaintances lead to better jobs only if the actor's credentials are in demand in the labor market by high status firms. None of the respondents benefited from their father's professions for their first jobs. Lin and his associates (Lin et al. 1981a, b) claim that for the first job, personal resources such as education and the status of the father affect the status of the contact reached. The respondents were recruited through entrance tests and interviews based on their logical skills. All said that they had to make career choices which led to accumulating high organizational cultural capital in the employment market in order to benefit from high status contacts. The following is an interview excerpt with a prominent human resources consultant in Bangalore. The respondent had over ten years of experience in recruiting software professionals. The company she worked for also had a large online database for software professionals to post their resumes.

> I have been helping many types of software professionals to find jobs. We work for both large and small overseas and Indian firms in Bangalore. The large firms tend to hire those with professional degrees directly through campus recruitment for entry level positions. For more senior jobs, where the person has worked before is important. There is so much demand in this industry, but still the good jobs go to those with experience in large firms. The smaller firms are not so picky, but they also pay less.

Professionals accrue or deplete their social capital or reputation according to their career choices and where they work. Resumes display this to employers and team players when starting a business venture. The following examples demonstrate this.

> Project Manager-six years
>
> When I was in my final year in engineering, getting a job was the aspiration of every individual. Those were the days of resurgence of the software industry and recruitment for most IT companies was on a high. So, naturally the environment was conducive to be in an IT job. To add to that, Infosys was just about emerging as an IT powerhouse. Given all that, it seemed prudent to work for an emerging (as of then) IT company like Infosys. (Mukherji, Infosys Technologies Website 2006)

One female respondent from the qualitative interviews stated the following.

> When I graduated with a Bachelor's degree in Engineering there were many jobs available through campus interviews. I could choose from five companies and three different industries. I chose the software industry, because it pays the highest salaries. I choose the largest Indian software firm, because I figured that if I worked for a prestigious firm many doors would open.

According to Thurow (1972), more educated employees are on career paths that are prone to promotions. Their education is supposed to certify trainability because it certifies skills (pp. 68). In the software profession in India, education implies more than skills, because software professionals have different educational backgrounds (Arora et al. 2000b). Erickson (2001, pp. 127) claims that firms benefit from the social capital of their employees' networks and can use them for organizational goals. However, to elaborate further on this research, high status firms tend to hire persons with credentials of high symbolic capital in order to build on their own social capital.

Executive biographies from high status firms reveal the status of school attended, choice of degree, level of education, types of jobs held, status of the firms worked for, number of promotions and the types of career moves made by these professionals. The reputation accumulated by these employees is a result of the above factors and gives different access to information and opportunities. The following high level executive biographies are from high status software firms in Bangalore, India.

> Shanker Annaswamy, Managing Director, IBM India is responsible for all IBM's sales and marketing, services and global delivery operations in India. Prior to this appointment, he was the President and Chief Executive Officer for GE Medical Systems (GEMS), South Asia and Managing Director, Wipro-GEMS. Amongst the many achievements, he was responsible for building GE's CT business in Asia Pacific where he led the growth of the company's business in China...Shanker began his career with Philips Medical Systems. In his twenty-five years of experience, he has undertaken various positions in project management, sales and marketing and quality, including as an Advisor to the Ministry of Health in Oman...Shanker has a Bachelor of Engineering (BE) in Electronics

and communication from Madras University and a Diploma in Business Management Education from the All India Management Association, New Delhi. [14]

Another Executive biography:

> S. Gopalakrishnan (Kris to his colleagues) is one of the founders of Infosys Technologies Limited… Kris' initial responsibilities at Infosys included management of design, development, implementation and support of information systems for clients in the consumer products industry in the US. Between 1987 and 1994 he headed the technical operations of KSA/Infosys (a joint venture between Infosys and KSA at Atlanta, USA) as Vice-President (Technical). In 1994, Kris returned to India and was appointed Deputy Managing Director of the company. Kris holds [Masters of Science]. (Physics) and [Masters in Technology], (Computer Science) degrees from the Indian Institute of Technology, Madras. He began his career with Patni Computer Systems (PCS), Mumbai as a software engineer in 1979 and quickly rose to become an assistant project manager by 1981…[15]

Another example is the case of a respondent.

Respondent A had a Masters degree in Engineering from the Indian Institute of Science in Bangalore. His first job was in one of the top ten software firms in Bangalore. He worked his way through the managerial ranks of the firm and formed many networks with clients in high status firms. When some of his high powered colleagues left and joined other firms, he continued to network with them. He later quit his job to establish his own company with partners and became the chief technology officer with foreign investors. This company (name withheld) has grown to become a high status firm. The respondent, with his impressive resume, still gets job offers from larger multinationals who want to hire him in high level management positions.

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[14] http://www.ibm.com/in/ibm/ceopge.shtml

[15] http://www.infosys.com/about/management_profiles.asp

The examples show that employers benefit from the symbolic capital of their employees' credentials. This also means that if actor A applies for a job in firm X, firm X is also interested in the value of the actor's credentials to other firms in the market. Previous work experience, occupational status and the types of firms worked for are indicators of reputation, because these imply the actor's worth to third parties and clients. As explained before, in the case of the Indian software industry, firms have to prove their quality to overseas clients in a highly competitive export market. They want to hire employees whose degrees reflect the best symbolic capital to their clients and meet the requirements of international quality certifications. These firms can afford to do this because educated labor is still cheap in India (Aneesh 2006; Arora et al. 2000b; NASSCOM 2006).

However, employees also benefit from the organizational cultural capital of their firms. This has not been well documented either by the social network theorists or the human capital theorists. The employee has to make those career choices which reflect value and upward mobility established through the types and status of the firms worked for, the type of job performed and the types of career choices made and thereby the types of information and opportunities that can be accessed. The software firm in India has become the auxiliary university where it imparts organizational cultural capital to the incumbents. Studies on the Indian software industry by Agrawal and Thite (2003); Arora et al. (2000b); Khokova and Sukharev (2001) and Varma and Sasikumar (2004), touch on the training of software professionals in Indian education institutions and corporations in relation to organizational and state policies and the human resources challenges they pose without addressing issues of symbolic capital.

The qualitative interviews show that mobility between low status firms and high status firms is difficult when professionals are stratified according to the symbolic capital of their credentials and the organizational cultural capital of the firms they work for (including previous experience

and career choices) despite having the required programming skills. None of the respondents with diplomas (eight) could get jobs in high status firms at the same or higher occupational status as their current jobs. For some respondents (six) who had professional degrees, but had chosen to work in lower status firms, (this does not include entrepreneurs and investors), moving to high status firms was easier than for the diploma holders. Nevertheless, they still had a tough time justifying their previous work experience in low status firms. This is despite the fact that there is a labor shortage (NASSCOM 2006) and these respondents have the required skills and contacts with high status actors and diverse networks.

When mobility between jobs and firms is dependent on the reputation of the firms previously worked for and the sorting of education credentials in a hierarchy, it will determine the outcomes of information and opportunities sourced through networking. In other words, neither networks with high status actors or just credentials alone determine chances of being hired. The sample indicates a wider analysis of how networks function, that given a set of credentials, the career choices made by actors according to the opportunities provided by a market will also affect the **results of networking**. Besides this, categorizing people according to their credentials and career choices and the types of firms they work affect whether networking results in opportunities of status attainment or better jobs or they just reinforce social ties without presenting opportunities such as expressive ties as defined by Lin (1982, 1999a, b).[16] The resumes of the respondents reflect social ranking in terms of education, position, organization and skill sets. These also affect the reputations and status affirmations between professionals and organizations thereby leading to either upward or downward mobility in networks.

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[16]Instrumental ties lead to jobs and opportunities and expressive ties are those which affirm emotional and psychological bonding with group members (Lin 1982, 1999a, b).

Networks have filters (see Arrow 1973). These filters imply selection criteria of who will be included in a network and who will benefit from their networks. The network literature (Burt 1992, 2001; Granovetter [1974], 1995; Lin 1982, 1995, 1999a, b; Podolny 2001) ignores the use of filters in the process and outcomes of networking. The concept of idiosyncratic exchange of information between employers and employees (see Williamson et al. 1996), indicates that employers are uncertain about the quality of the employees they hire. The reputed software firms in India deal with this uncertainty through extensive testing of their entrants for logical abilities and train them for software and other required skills. They also try to assess quality through other means such as the status of previous employers, types of projects worked on etc.[17]

These filters are used to find signs and signals of competence (see Arrow 1973; Spence 1974, 1981) and achievement of the actors who want to be included in the networks. Those who pass the filters of high status firms gain reputation in their networks and benefit from both equal and high status contacts. Those who do not pass the filters do not benefit from high status contacts despite knowing them and having strong ties with them. The following Table 1 shows the factors that are beneficial to the respondents for networking with high status actors.

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[17] This information was sought from seventy-six respondents and three human resource consultants. Training requirements are cited in Agrawal and Thite (2003); Kokhova and Sukharev (2001) and Varma and Sasikumar (2004).

Table 1: Factors that are Beneficial for Networking with High Status Actors

Beneficial Factors for Networking with High Status Actors	Number of Respondents who Claim these Factors are Important Sample Size=78	Number of Respondents who have these factors Sample Size=78
Working for High Status Firms	97% (76)	72% (56)
No Opinion	3% (2)	-
Professional Educational Attainment	97% (76)	87% (68)
No Opinion	3% (2)	-
High Occupational Status	90% (70)	7% (4)
No Opinion	10% (8)	-
Entrepreneurship	35% (27)	8% (6)
No Opinion	65% (51)	-
Status of school attended	50% (39)	6% (5)
No Opinion	50% (39)	-
Caste status	0%	0%

* The percentages have been rounded off to whole numbers.

The professional educational attainment of sixty-eight respondents and the career choices of fifty-six respondents who work for high status firms give them better benefits from networking with high status actors. Occupational status of the respondents is important to the extent that high status contacts recognize and accept it to be beneficial in the job market for other high status firms. In addition, occupational status becomes crucial in networking when the respondent works for a smaller firm. Hence, the six respondents who are entrepreneurs and in high management positions in small sized firms have good social capital. However, in order to get to that position, their previous career history becomes crucial. Those working in high status firms facilitate better entrepreneurial networks with other high status actors. Caste status alone which is dealt with in the next chapter does not help the respondents accrue any benefits from networking with other high status actors from the same or different castes.

The Building of Social Capital through Symbolic Capital and Organizational Cultural Capital

At the entry level when professionals have little social capital in relation to contacts with high status individuals, the assessment and ranking of credentials and tests are used in lieu of social

capital (Gangl 2000, pp. 3). Most research on organizational entry looks at the effects of education credentials on hiring. Theories of screening by (Riley 1976); filtering (Spence 1973); (Arrow 1973); human capital (Mincer 1958) and credentialism (Berg 1971) are concerned with how employers use credentials to choose amongst candidates that they have little information about (Bills 1988, pp. 52). In all cases, employers are said to select people on the basis of educational credentials to ensure trainability in the job.

According to Arora et al. (2000b, pp. 26), software firms prefer engineering graduates because they fulfill the H1-B visa requirements for the United States. Engineering graduates are also more likely to have sixteen years of education compared to other graduates with non-professional degrees from India. The preference for engineers is also due to the intense filtering and screening (see Arrow 1973; Spence 1974, 1981) by engineering colleges which could be indicative of aptitude and skills of the entrants. Podolny (2001) looks at venture capital markets to suggest that firms in this market would rather form relationships with high status actors rather than low status ones, because associating with lower status actors might reduce the producer's own status in the market. This logic can be applied to high status software firms preferring engineers, because they have more status than diploma holders with similar skills in programming which reflects well on the reputation of the firm.

The word engineer is both an organizational category and a professional title (Kunda 1992, pp. 38). It also means to design and build things.[18] Software engineers are socially constructed as products of a credential system and economic strategies of software firms in India. The term 'software engineer' has become an operational term often used colloquially by the respondents to describe all types of software professionals.

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[18] See Cambridge dictionaries online (2006), http://www.dictionary.cambridge.org/.

There is a strong dependence on engineers from any background who are retrained to be software engineers rather than on computer science and other graduates. At the entry level, graduates are not really ready for computer science and software. Hence, the key factors of achievement have been the first cohort of entrepreneurs, networks and in house continuous training by IT/software firms. Typically a recruit goes through three to six months training in programming and human resource skills. The main focus has been on developing logical skills. There is less attention on research and development in the training (Arora et al. 2000b; Jalote 1997).

IT/software professionals in India are created, labeled and ranked by their firms. Examples of these have been found in the interviews when respondents often refer to themselves in terms of their corporate imagined community such as 'Infocian' if they work for Infosys Technologies or 'Wiproite if they work for Wipro.[19] Kunda (1992) and Kanter (1983, pp. 203) both claim that working for organizations with a strong corporate culture induces a sense of community and belonging, an almost communal feeling. The respondents (fifty-six) working for larger and famous firms 'name drop' repetitively in their conversations to assert their social status through their corporate identity. Their caste identity (which is dealt with in the next chapter) is hardly an issue with regards to informing their social status. If they have worked for several well known firms, they make statements like the following.

> When I was at Motorola…then when I moved to Philips….My wife is with Wipro…

Those working for smaller firms (fourteen) refer more to the status of the clients that they service or any unique products or services they produce.

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[19] Companies like Infosys have a strong corporate imagined community which is heavily inculcated through their training programs. See http://www.infosys.com and Raghuram (2001).

> We work on projects for major British companies…We developed this product which is only one of its kind used by [famous] company…

This is often in lieu of the names of the firms they work for (unless asked) which are relatively unknown. Sometimes if the founder of the firm is well known in the community, they refer to his background.

> Mr. N… the managing director of our company used to be the general manager of ….His father was the head of …a famous college…

The larger firms are also more popular, because they promote a high technology information environment and make it economically rewarding for employees. Strong organizational culture and cohesion is used to tap the knowledge talent. The following statement by Narayana Murthy of Infosys shows this.

> A successful corporation is one that introspects about internal transformation first before blaming the context, competition or external circumstances. Everyone bought into this philosophy and how we could bring about a fundamental transformation. We increased our salaries; we introduced a stock option plan so that our people would have much more money than any other Indian [multinational corporation]. We also decided to make it a fun place to work because our assets walk out of the door every evening mentally and physically tired. We must make sure that they come back with a zest to work.[20]

Note the reference to employees as assets. This example of strong organizational culture paradoxically makes the respondents' resumes more saleable to other jobs in larger and better firms. An Infosys or a Wipro trained professional is highly marketable. According to two human resource consultants, fifty-six respondents and seven industry experts, employees of these companies hardly ever need to look for other jobs. This is because their reputation is accordingly

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[20] See http://www.india-seminar.com/2000/485/485%20interview.htm.

high and jobs offers come to them. Their reputation is linked to corporate identity. The respondents and observations overwhelmingly reveal that identifying with a powerful corporate identity is useful for augmenting social status in networks even if the employees are not from elite socio-economic backgrounds. In the cases of five entrepreneurs, they had earned a good name in the software market before starting their independent businesses. They are known more for their own individual reputations in the market with clients and investors rather than their companies which are emerging. Only one entrepreneur's company is very successful and well known.

Software firms train their employees to become multi-skilled programmers. The larger firms are popularized by their comprehensive training programs which cover diverse areas and the expertise of the pedagogy that they bring. The software industry is volatile to constant changes in coding requirements, so even smaller firms have training programs. [21]

So the types and ranks of professionals hired for similar types of jobs with similar skills are based on the status of the firm and its reputation in the market. Table 2 indicates the hierarchy of firms according to their income and size in India. Table 3 shows the types of knowledge professionals that are hired in terms of credentials and Diagram 1 is an indication of a generic organizational chart of an IT/software firm which are rather homogeneous across various tiers. Table 4 is a model outlining the career trajectories of software professionals and the resultant networks and social capital. The purpose of these tables is to indicate that the status of the firm plays an important part in employee stratification despite professionals being trained for similar skills by the corporations and the respective organizations having similar organization charts.

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[21] Every new entrant in a software firm has to go through similar rigorous training in coding and programming regardless of previously held qualifications. While the incumbents do have a choice of courses they can opt for in various computer languages, domains and platforms, the organizations try to ensure that they are all trained for the required programming skills which are frequently upgraded (see Agrawal and Thite 2003; Kokhova and Sukharev 2001; Raghuram 2001 and Varma and Sasikumar 2004).

Table 2: Firm Status

Category	No. of players	Share of India's total IT/BPO Export Revenues	Performance
Tier I Players	3-4	• 45% of IT Services • 4-5% of BPO	Revenues greater than USD 1 billion
Tier II IT Players	7-10	• 25% of IT Services • 4-5% of BPO	Revenues USD 100 million-USD 1 billion
Offshore operations of Global IT majors	20-30	• 10-15% of IT Services • 10-15% of BPO	Revenues USD 10 million-USD 500 million
Emerging players	>3000	• 10-15% of IT Services • 5% of BPO	Revenues less than USD 100 million (IT) Revenues less than USD 10 million (BPO)

Source: NASSCOM (2006)

Table 2 shows that tier I companies and global IT majors (foreign multinational firms) are the most prestigious because of their earnings. Tier II firms are second in line and emerging players have the lowest status as employers.

Table 3: India's New IT Labor

Category	2000-01	2001-02	2002-03	2003-04	2004-05
IT Professionals from degree & diploma colleges	74,364	90,867	99,959	110,495	115,533
Non-IT Professionals from degree & diploma colleges	32,025	35,612	38,423	43,261	55,877
IT labor from non-engineering fields	26,597	31,620	34,595	38,439	42,853
New IT labor	132,986	158,099	172,977	192,194	214,263
Total number of Engineering seats	290,088	333,094	361,076	401,791	464,743
IT Professionals from degree & diploma colleges as a proportion of Engineering seats	26	27	28	28	25
IT graduates as a proportion of Engineering. Graduates	33	35	35	35	Not indicated

Source: NASSCOM (2006)

Table 3 indicates that the new IT labor from engineering fields has been on the rise from 2001 to 2005. In 2001-2004 engineering graduates consisted of 35% of the overall graduates hired by IT/software firms. However, the table does not give a clear breakdown of the various types of graduates hired by the various ranks of IT/software firms.

Diagram 1: Generic Organizational Chart of IT/Software Firms
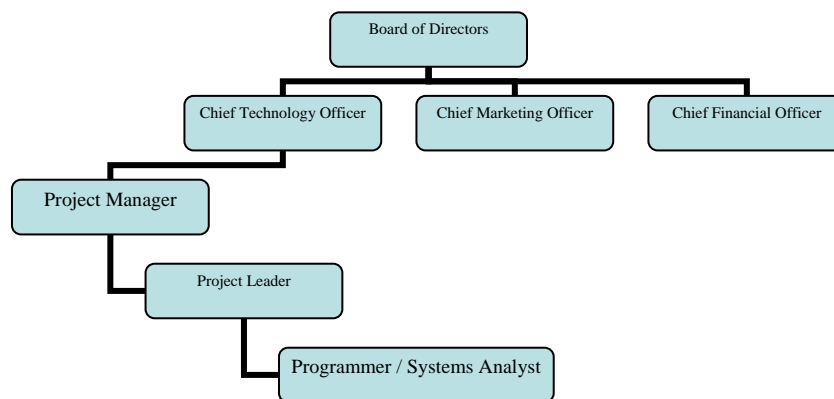
Source: Respondents working in IT/software organizations

Diagram 1 is a simplified generic chart of an IT/software firm given by one respondent and verified by two others. The purpose of this chart is to show the various types of positions for which the respondents were hired. For similar types of positions and occupational status, the various tiers of firms indicated in Table 2 pay differently. The reputed firms pay higher and vice versa. This also means that the reputed firms hire engineers for the same positions that diploma holders or non-professional graduates are hired for in smaller emerging firms (see Arora et al. 2000b). This is despite the fact that the industry claims that only 25% of the engineers who enter software firms have the necessary skills (NASSCOM 2006).[22] Hence, adequate training programs delivered by software firms to induce and standardize skill levels become crucial. According to the respondents and consultants, this is related to costs, marketability, firm status and international certifications rather than actual skill levels. Software firms in India are homogeneous in the types of work performed and their capabilities given their size and age (Arora and Asundi 1999, pp. 5; Arora et al. 2000b).

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[22] This was stated by Kiran Karnik the President of NASSCOM (2006).

Table 4: Career Mobility Processes of Software Professionals

Credentials	Status of Firm at Entry Level	Status of Firms Worked For After the First Job	Type of Network Facilitation	Usefulness of Symbolic Capital	Mobility for Jobs or Entrepreneurial Opportunities
High Status (degrees in demand by high status firms)	High	Medium to low	Medium sized firms and startups	Medium sized firms and startups	Within small and medium sized firms for entrepreneurship and higher rungs of management
High Status (degrees in demand by high status firms)	High	High	High status firms, multinationals	For all types of networks	Within all types of firms and for entrepreneurship and higher rungs of management
Medium to Low Status (degrees or diplomas in demand by lower status firms)	Medium to Low	Medium to Low	Medium sized firms and startups	Medium sized firms and startups	Within smaller and medium sized firms medium to lower levels of management

Source of information: qualitative interviews with seventy-eight respondents and three human resource consultants

Symbolic Capital and Employment

Table 4 shows the different projected outcomes of career choices of the respondents. Those working for low status firms (14) with lower credentials found it harder to move to high status firms despite having networks in high status firms. This is because their symbolic capital was useful for networking for jobs in firms that were similarly ranked. Those working for high status firms (fifty-six) did not want to move to low status firms, because they get paid less. If they did decide to move, it was for two reasons: firstly, they did not like the work pressure. Secondly, they wanted to gain work experience in smaller companies to eventually start their own firms. This is because high status firms prefer to hire employees that have the best credentials and work experience in similarly ranked firms and low status firms attract labor that is cheaper but can be trained to perform similar skills that employees in high status firms perform. According to the six entrepreneurs and two industry consultants, this is possible because low status firms operate with lower costs and get outsourcing contracts lower down the value chain (see Arora et al. 2000b).

Symbolic Capital and Entrepreneurship

The term entrepreneur is used in this dissertation to indicate those professionals who are investors in software firms. According to Weber ([1898], 1990, pp. 57), entrepreneurship means the controlling of some sector of an economy, in which people's needs are fulfilled through exchange, for the sake of making a profit at one's own economic risk. For a career path as an entrepreneur defined as an investor who is a high level manager of a software firm, the professional's resume becomes relevant in relation to the types of expertise, capital, contracts and team members that can become partners in the new investment. For entrepreneurship, contacts with high status actors are very important. However, these contacts result in business partnerships only when the previous employment status of the contact and ego are at par with each other. The six respondents who are entrepreneurs benefited from their previous employment status. Those who had worked for high status firms had high status contacts such as ex-bosses, clients and colleagues after they had proved their skills in the firm. The following case shows this.

Respondent S was an engineer. He started work in a high status firm in Bangalore. He quit his job after four years and a few short-term overseas assignments to form his own company. He said that working in a high status firm gave him the rapport to find clients, as the prestige gave him credibility in the market. He also said that working for a reputed firm gave him access to many high status clients. When he left the company to start his own firm, some former clients and their networks gave his new company some business because they related the quality of his work to his employment history.

Upadhya (2003a, b) looks at two types of entrepreneurial networks namely, desi-networks defined as local networks and NRI-networks defined as overseas non-resident Indian networks. The former involves networks with team members such as bosses and colleagues who form a new

startup venture together, whereas the latter involves networks between software professionals, venture capitalists and angel investors who are overseas Indians wanting to invest in an Indian IT/software startup. Her research specifically looks at how actors form networks through firms such as Wipro and entrepreneurial networking organizations such as The Indus Entrepreneurs (TIE). However, her research ignores issues such as stratification in networking determined by the career choices and options available to software professionals. Table 5 explains the career choices of the respondents and how that determines their reputation and negotiations for status attainment.

Table 5: Reputation Effects and Career Paths

High Reputation	**HIGH RISK TAKERS HIGH RESOURCES**	**LOW RISK TAKERS HIGH RESOURCES**
	6 Respondents	56 Respondents
	Ex-Employees of Prestigious Firms	Current Employees of Prestigious Firms
	Network with High Status Actors	Network with High Status Actors
	High Symbolic Capital High Organizational Cultural Capital	High Symbolic Capital High Organizational Cultural Capital
	Entrepreneurial	Non-Entrepreneurial
Low Reputation	**HIGH RISK TAKERS LOW RESOURCES**	**LOW RISK TAKERS LOW RESOURCES**
	6 Respondents	8 Respondents
	Employees of Less Prestigious Firms	Employees of Less Prestigious Firms
	They Cannot Activate Networks with High Status Contacts in Prestigious Firms	They Cannot Activate Networks with High Status Contacts in Prestigious Firms
	They Cannot find jobs in Prestigious Firms	They Cannot Find Jobs in Prestigious Firms
	Low Symbolic Capital Low Organizational Cultural Capital	Low Symbolic Capital Low Organizational Cultural Capital
	Plan to become Entrepreneurial	Non-Entrepreneurial

N=76 (two spouses are not working in the software industry)
Source: Respondents

Table 5 provides a summary of the career choices and reputation effects of seventy-six respondents (two females are not working in the IT/software industry) by choosing either employment or entrepreneurship as a career path. The symbolic capital of the first two categories of the **high risk takers with high resources** (six) and **low risk takers with high resources**

(fifty-six) are the highest for entrepreneurship and employment. However, in the second category, the respondents prefer employment in high status firms compared to entrepreneurship. The third category of **high risk takers with low resources** has six respondents. These respondents may choose to engage in entrepreneurial ventures in the future because they do not have the credentials to work in high status firms. They benefit from closer networks with colleagues and friends in similarly ranked firms (usually second tier and emerging firms). Most of the funding for their startup ventures was expected to come from local sources. They hope to engage in outsourcing temporary labor to larger firms and software coding which is sub-contracted from larger firms. Eight respondents belong to the fourth category of **low risk takers and low resources** and work in smaller firms. They did not want to become entrepreneurs and could not find jobs in high status firms.

Thus, far, it is has been established that software professionals have access to different career choices and opportunities. The next section will elaborate on the typology of software professionals and the various types of status they possess in the employment market.

The Varying Symbolic Capital of IT/Software Professionals

According to segmented labor market theory, primary labor markets involve white-collar work. Whereas secondary labor markets consist of a labor force from the lower socio-economic strata. This theory ignores stratification within the primary labor market and with it, the variations in symbolic capital of employee credentials arbitrated by the market prestige of firms and career choices of professionals. Rather the argument is based on segregation as an aspect of differing skill levels, wages and discrimination against women and minorities in hiring (Baron 1984; Cain 1976; Carline et al. 1985; Collins 1975; 1979; Kanter [1977], 2003; Raffe 1981; Rosenbaum et al. 1990).

The term IT/software professional has a myriad of definitions and relates to people who own, run or are employed as knowledge workers in an IT/software organization. Here knowledge workers are differentiated according to their degrees and diplomas using engineering, science and management degrees as the dividing line (as firms do when they hire employees). While the type of work and the projects that the various professionals fulfill are similar, the labor market is hierarchically organized in labor queues. The purpose of this section is to organize IT/software professionals into a typology based on education and professional experience. The status of the software firm promotes a new ranking of networks and status based on where one works. As a result, the networks of the respondents are ranked which affect their career trajectories and shape their resumes.

The symbolic capital of the following types of knowledge workers (respondents) is different, which in turn affects how they create and contribute to networks or benefit from contacts with high status actors. Those respondents who are degree holders and diploma holders in software firms include entry level programmers, project leaders, managers and upper echelons of management such as vice-presidents and chief technology officers both with and without engineering backgrounds. The professionals who work as employees in smaller firms have similar jobs as the degree holders but with lower pay, as most of them have (non-university) diplomas in programming.

Reskin (1991) states that the term 'labor queues' was coined by Lester Thurow (1969), and was elaborated by Hodge (1973) and Lieberson (1980). This dissertation partly rests on Reskin's (1991) queuing perspective that job and labor queues operate together (also Reskin and Roos 1990). Professionals who are not initially employable in an IT/software firm for various reasons may try to enter one at a later stage in their careers (middle level management and above) as consultants. Respondents who are consultants (two) have domain or area specialty knowledge

about a particular field for example pharmacy, chemicals, metals and so on. The consultant

provides knowledge to the IT/software firm on ways to service client projects and the

requirements of the relevant industry to the programmers. The paradox is that high status firms

would rather hire chemical or civil engineers with no software experience or training and retrain

them instead of hiring diploma holders who have years of programming and coding experience.

The Indian IT/software sector is arguably a complex network of professionals and firms who

provide local and transnational linkages through their own mobility and flexibility within the job

and labor queues making themselves and the firms gain reputation in the global outsourcing

queues. The following table indicates the labor supply of software firms.

Table 6: Supply Pool of IT/Software Professionals

Indian IT sector: Labor Supply				
(in '000s)	2003-04	2004-05	2005-06E	2006
No. of Engineering Graduates	215	284	348	382
No. of IT (Computer Science, Electronics, Telecom) professionals	141	165	181	193
No. of IT professionals entering the workforce	80	94	103	109
No. of non-IT engineers entering the workforce	40	40	40	40
No. of graduates (other disciplines) entering the IT workforce	30	30	30	30
Fresh IT labor supply	150	164	173	180

Source: NASSCOM 2006

Table 6 shows that the labor supply of engineering and professional graduates has gone up every

year since 2003. From the sample of seventy-eight respondents, sixty-eight have professional

degrees. Professional degree holders are categorized as persons with computer science,

accounting, management and engineering disciplines who are either employed in or own an

IT/software enterprise and are currently linked with IT/software development. They may or may

not be educated in premier tertiary institutions but are the top ranking graduates who have passed

the necessary entry standards of well known firms and comprise the higher end of the labor

market. These professionals benefit because their credentials have the highest symbolic capital for employment in the software industry. Consequently, they also benefit from the organizational cultural capital of working in reputed firms. This in turn gives them high social capital or influence to find better jobs or entrepreneurial opportunities.

University graduates with non-professional degrees and diploma holders are categorized as persons with lesser education compared to the above category (including diplomas in software programming instead of degrees). Table 6 does not give a clear breakdown of other disciplines entering the IT workforce. However, compared to those with professional degrees that are on the rise, these have been steady since 2003. Ten respondents belong to this category (including two in another profession). These people are also trained with software programming skills like the first category of professional degree holders when they enter software firms. These professionals have qualifications which have low symbolic capital and do not benefit from having high status contacts in the industry to move to better jobs in reputed firms.

Non-Mainstream IT/Software Entrepreneurs

None of the respondents belong to this category. These are businessmen primarily in other fields who use their experience, business skills and have ventured into IT /software as a sideline money earning enterprise and dabble in IT/software investments. They often act as angel investors, and/ or 'sleeping partners'. They are otherwise commercial entrepreneurs and may or may not have a university degree. [23]

University Graduates with Professional Degrees

High status corporate identity provides enormous organizational cultural capital for software professionals. Since professional degrees such as engineering are a prerequisite for jobs in

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[23] This information came from the respondents.

reputed firms, they provide enormous symbolic status. As a result professional degree holders

enjoy the best form of social capital within the IT/software community and in large organizations.

This shows that social capital is an accrued effect of symbolic capital and organizational cultural

capital acquired through the recognition of merit in social networks. This is because software

professionals with professional degrees are currently in demand by global multinationals in what

constitutes high-end knowledge work regardless of their ascribed status such as caste or gender.

An analysis of top ten software firms (indicated by Bangalore IT, Government of Karnataka

2006) in Bangalore shows that these firms prefer to hire university graduates with professional

degrees for all white collar programming jobs for both entry level and higher jobs. The outcome

of networking by the respondents with professional degrees became more favorable as their

reputation grew through promotions in large firms (fifty-six respondents). This is because they

were valued for their achieved status by influential networks. This means that they have met the

achieved status criterion set out by the education institutions and the organizations seemingly

without influence from their ascribed status. In order to maintain this status, it is very important

for them to show their skills in the workplace and be noticed within the team to impress upon

their colleagues and bosses through hard work. Hence, they need to be cohesive with people who

are from different castes (this is elaborated in the next chapter). The following case shows this.

Respondent U was working for [American multinational in Bangalore]. He had a Bachelor's

degree in computer science applications. When he entered this firm, he had few networks that

mattered. Although he was from a middle class family, he had made some rich friends in college.

His friends and their families were industrialists, but they did not help him to find a job. He did

not ask for their help either. He found a job in this company through campus recruitment even

though he did not graduate from a high status college (it is accredited). His professional degree

and the boom in the software industry had helped him to find a good job. In four years, he had

built sufficient networks in the software industry with people who valued both his credentials and

work experience. He was able to benefit from his connections because his resume was valued in large firms. He later found another high level managerial job in a reputed [Dutch multinational firm] in Bangalore.

The term 'cheap labor' when misunderstood ignores the complexity and the heterogeneity of IT/software professionals. The term 'cheap labor' is suggestive of people at the bottom of an industrial sector labor queue while ignoring the demand for knowledge professionals from developing countries on the basis of their credentials and skills. Recent figures by NASSCOM (2006) show that the cheap labor that India is famous for, is no longer cheap for Indian and foreign firms, as salaries for Indian knowledge workers have steadily risen.

The respondents with professional degrees could access job queues depending on their experience and qualifications and vie for the best paying firms. Cheap labor mainly refers to body shopping (a concept used to describe the global outsourcing of programmers on temporary contracts for low-end coding (Biao 2002)). Hence, a typology becomes necessary to elaborate the various types of professionals.

The respondents with professional degrees (sixty-eight) are able to find jobs in reputed firms (foreign multinationals and Indian IT/software firms). However, they all felt that if they work for lower status firms, it would affect their resumes and deplete their social capital in the market. Social capital is not depleted if they become entrepreneurs and find business partners who have work experience in reputed software firms. They have built expansive networks and could activate them, because they have organizational cultural capital and symbolic capital which leads to social capital. This shows that being recognized and associated with a high status corporate identity throughout one's career is a major factor in benefiting from high status networks.

Most of the IT/software jobs performed by Indian firms or even offshore firms based in India are producing software customizations and reengineering for software products (NASSCOM 2006). The status production of engineers involved in reasonably routine software servicing is very high. When the partners of a medium sized IT/software firm in Bangalore were asked what makes Indian IT/software firms and professionals sought after, besides the clichéd phrase 'it's cheaper' they also said the following.

> Indian firms send highly qualified people who provide a variety of services on a variety of platforms such as UNIX, MSDOS and Linux etc. It makes the client very happy to have cheap, highly educated and well networked engineers adaptable to do many jobs and deliver on time.

The following concepts such as **cosmopolitans**, **conservatives**, **local icons**, **non-resident Indian godfathers** and **diploma holders** are concepts to elaborate a typology. The purpose of this is to show that not all IT/software professionals can be equitably placed in the labor queues despite similar skills. This interpretation is different from Reskin (1991) who looked at stratification in the labor queues as a result of race, gender and skills in relation to demand and supply in the market. A differentiation is also made between employees and entrepreneurs. Education plays a significant part to the entry point, suggesting that there is a hierarchy in the labor queues for similar types of labor output. Professional degree holders and diploma holders are often hired and trained for similar types of skills in programming but their hierarchy within the labor queues for multinational firms is different because they are linked to the corporate identities of their current and previous work experience. Both can develop contacts for entrepreneurship depending on their networks, interests and opportunities. However, their sources of reputation are different. The former get their reputation from working in multinational firms, whereas the latter get their reputation from closer networks with friends and relatives who may act as employers and business partners in small firms. Entrepreneurship opportunities for those graduates, who are

upwardly mobile in multinational firms, can be an outcome of high reputation and diverse networks with other actors who recognize and value their status.

The Cosmopolitans

This group of respondents (forty) consists of well-educated and well-traveled professionals with large and diverse networks due to work exposure in several countries and in large or renowned firms. These people do not all belong to one caste or language group, but are middle class and well educated mostly in engineering, computers, management and sciences. They are likely to be entrepreneurial only if they can form links with reasonably high turnover cross border firms willing to invest in India. In other words, they are involved in global firms for status production. They avoid low paying software jobs in India or elsewhere. The networking skills amongst these respondents are highly predisposed towards career growth in large companies with ambitious positions in mind. If a particular company does not hold any more promise for their career growth, these people do not hesitate to switch firms or become entrepreneurial if their status is maintained by forming alliances with others who have high status resumes.

Podolny (2001) and Kim (2001) both endorse the positive effects of firms forming alliances with other high status firms which reduces the uncertainty of their quality to customers because of signals of their market reputation. Their theory can be applied to understanding endorsement effects of high status firms on software professionals. McPherson et al. (2001) propose the concept of homophily or similarity of status in the formation of social networks. For software professionals, network facilitation and reputation comes from the fact that they associate with other software professionals of similar class and status positions. However, the augmentation of their professional status is probable if their employers are well known and there are possibilities of future business transactions with their clients, bosses, peer groups and potential contacts for new entrepreneurial ventures. These people are less likely to help friends and relatives who do not

possess similar qualifications or work experience in similarly ranked firms even though they may have the necessary skills. The cosmopolitan respondents live in gated communities in various Bangalore neighborhoods. They also spend more money on promoting their cosmopolitan outlook to attract similar friends.

The cosmopolitans believe that beyond the initial entry into firms where the university, type of degree and the grades count for recruitment, the rest of one's career progress depends on building their resumes in high status organizations. In order to activate a network, they feel the need to have work experience in firms that have reasonable market value. Granovetter ([1974], 1995, 1982) talked about contact facilitation through weak ties to explain that people find jobs through distant contacts. He pointed out that networks with diverse contacts provide information and opportunities about jobs. Burt (1992, 2001) developed the concept of structural holes or disconnected spaces between networks and pointed that diverse networks are better for information and contacts than closely knit ones. Here, the concept of Burt's structural holes or spaces within the network becomes useful which means that some actors are sought after because they can connect A to B who are separated from each other's networks by a structural hole. Quantitative analysis by these authors misses the qualitative conduits that give rich interpretative information about the social lives in which network narratives are formed. In this sense, Goffman's approach (1988) is useful when trying to evaluate networks through social interaction with software professionals in various settings within and outside the work-place. The structural hole concept is not useful in every situation even if it provides diverse sources of information and opportunities. It is important to be competitive and show signs of upward mobility before actors can benefit from the information and opportunities from diverse networks.

The cosmopolitan respondent has status only if he or she has the required symbolic capital and work experience that is in demand and is thereby rewarded in high status networks. Third party

spread of information about the reputation of a professional is vital, if not key. This means that what people say about a person's reputation and resume in the informal networks play a major role in facilitating trust.

Favors are exchanged through the 'strength of mild innuendos' about the reputation of the respondent rather than outright requests or even weak ties as suggested by Granovetter ([1974], 1995, 1982) which are not considered appropriate amongst the cosmopolitan corporate executives. A good example from a respondent is presented below.

> C is much wanted in his present job, and his boss relies on him completely on major projects, if you need him for your new project you should chase him before someone else grabs him for another project. I can introduce him if you like. But the rest is up to you.

There is often exaggeration, if the contact being suggested is well placed, the extent of praise might be extreme. If the market gossip suggests that someone's career is failing due to recession and lack of a promotion and so on, there are 'negative reputation effects' and depletion of social capital is inferred. In other words, this person is unlikely to receive favors from his or her contacts because the latter do not want to deplete their social capital. One respondent, who is a vice-president of a software firm, said the following.

> We do not want to hire persons who cannot find jobs in other large firms on their own merit.

Another account,

> Please go to the human resources department of my company and give them your resume, if they need anyone they will call you. Or you can apply online for jobs. Our company hires only those who have the merit; you do not need my favor.

An example of positive contact facilitation from a cosmopolitan respondent is

> I know many people in [Indian multinational], this is because I did some important consultancy project for them, if you need to meet people there let me know, but do not make it seem like you want something. I will make the introductions and give them information about your past work experience, then it is up to them to approach you if they find your resume interesting.

There is sometimes third party or indirect references made for contact facilitation for entrepreneurship. A case scenario of a respondent's network is shown below.

A friend of a friend or a colleague's ex-colleague promotes certain segments of his or her network only if it boosts his reputation with high level clients. R will promote his network with S, a venture capitalist, by asking the latter's brother to become a partner in a high level entrepreneurial venture only because this is anticipated to enhance R's reputation in the software market. However, if S's brother does not have suitable professional credentials or a resume (despite having the skills and work experience), then R says he is unlikely to help professionally, as R's reputation might suffer for promoting the wrong kind of person for the venture, because of the person's lack of appropriate symbolic and organizational cultural capital.

Another example is of a cosmopolitan respondent who was a female engineer working in a high status software firm. She married her boss who also had similar credentials. Her husband later quit the organization to start his own software firm with the networks that he had gained over the years. She continued in her first job to rise in the organizational ranks. She did not wish to do favors for her friends to help them find jobs in her company even though she could recommend people who had the required credentials.

> Some people ask me for favors to help them find jobs in my company. Let them find jobs on their own merit, like I did. I will not waste my influence to help people. I would rather use it for my own mobility when the time comes.

How does friendship play a role in developing social resources for networks amongst the cosmopolitan respondents? Devine (2004) states that friendships are very important for educational and professional interests and provide rich sources of contacts for career development. Friendships are useful but can a friend help a friend get the right job? It is possible to recommend potential employees, as some firms have referral systems whereby the current employees will be rewarded a sum of money if the suggested candidates get jobs. This is especially true when there is boom in the market and those employees that are recommended have the necessary credentials.

Fifty-six respondents working for large firms implied that they would only recommend friends and relatives for jobs and entrepreneurial ventures if they are assets to the former's organizations otherwise it would deplete their social capital. Hence, the recommendations are not purely because of social influence. The following statement shows this.

> I have a good contact who knows the human resources manager in a large firm. She can easily recommend me as her firm is looking for programmers with my skills. But my friendship with this contact has not helped me in anyway. I can only find jobs in smaller firms even though I have the skills, experience and certifications.

Respondent R was a software programmer in a second tier software enterprise. He had a diploma in programming languages and had taught software coding for many years in an educational institute. He later entered a software firm which was a startup with overseas investors. He grew there in the organizational ranks to a medium level management position. He then changed jobs only to find one in a similarly ranked firm. He tried several times to get a job in a high status firm but without any avail. His cousin was the chief technology officer in a high ranked firm and could be categorized as a cosmopolitan. His relationship with this cousin with whom he actively socialized with did not seem to help him. The cousin's firm only hired engineers even though the projects they undertook were similar to those taken by the lower status firm where R worked.

Friendship plays a key part in entrepreneurship when one or more of the brokers need to rely on close contacts to mobilize capital or circumvent bureaucratic red tape. Four cosmopolitan respondents had formed companies with friends who are ex-team mates. Their entrepreneurial team consists of friends who have the capital, reputation, work experience and networks.

The Conservatives

Thirty respondents including spouses could be placed in this social category. This is an overlap with the above category except that unlike the cosmopolitans they are not concerned with the external objectification of status production. They tend to downplay their success and professional achievements but are nevertheless career minded. They are employed in foreign or Indian owned IT/software firms. These are highly educated people who prefer to be invisible or low key about their successes. They are also less entrepreneurial and prefer to have stable jobs. These people stress and emphasize Spartan living and do not venture into buying expensive consumer items. The professionals interviewed in this category place a strong emphasis on Indian culture and are very conservative in their tastes and lifestyles. Their education and lifestyle is mostly based on creating lucrative career opportunities for men and women alike. Most of them do not grow up with luxuries such as cable television, because their parents feel it is detrimental to their upbringing. They went to average local schools but performed well enough for the entrance criterion of engineering colleges in the state centralized board exams. One respondent said the following.

> I had never sat on an airplane till I was 28 and working for a software firm which sent me abroad for projects. Though my parents had the money, they never exposed my siblings and me to luxuries when we were growing up. We had no television and never ate out. All I did was study and took tuitions to pass the board exams for engineering. My aim was to become a gold medalist and get a good job. Most of my friends did the same thing. In engineering college, we had a bit more fun; at least my friends and I ate out in cheap places. I had enough money but would never take an auto rickshaw to college. I used to travel by public buses in Bangalore which is extremely crowded and filled with lower middle class and working class passengers. I was taught to value education and a simple life as the keys to success. It is incredibly tough in India, as thousands of students apply

to engineering colleges each year and we have to pass difficult entrance tests with high marks. Then there is also reservation of seats according to caste. The higher the caste the harder it is, as the marks required are higher. One has to study a lot to make it. My friends and I avoided the distractions that the rich kids had. We could not afford to loose, we don't have their influence.

The Local Software Icons

None of the respondents belong to this category. However, these people have to be considered because they are successful leaders of first tier Indian firms where some people from the first two categories work. They have achieved significant positions and wealth through their firms which produce software that is internationally certified for quality. The firms they represent attract knowledge workers because of their leadership. These firms arrest or recapture some of the migration, but are also stepping stones for some of the cosmopolitans and the conservatives who want to add reputation to their resumes and then move on to other corporate houses. Founders of companies such as Infosys and Wipro come under this category. These firms are the pride and marketing stations of Indian achievements in open management styles. Studies by Kunda (1992) about Tech, a large American technology firm, and Kanter (1983) who studied a similar organization show the following: firms that have a strong corporate culture, nurture their recruits with a strong corporate identity. High status IT/software firms nurture and reward their employees with signs and signals of international reputation while affirming their strong organizational culture.

One example of a local software icon is Narayana Murthy of Infosys Technologies who started this company with his wife and friends. Infosys is epitomized as one of the most professionally managed Indian IT/software firms (NASSCOM 2006).[24] All the respondents idealized the strong corporate culture of this firm and the success of its leaders. There is plenty of literature and

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[24]See http://www.karnataka.com/personalities/narayana-murthy/

interviews on Narayana Murthy and his achievements and some of this has social overtones. He comes from a middle class family, and his father was a school teacher. He is an engineer by profession and married Sudha, an engineer who is from a similar cultural background. Initially both had found jobs in large firms but decided to write software programs with a few friends. This company went public in the 1993 and within a few years it's share prices were sky rocketing. One of the many impressions I heard about this company and its founder is presented below.

Even Mr. Murthy's driver is a millionaire, as everyone gets stock options in Infosys.

When prime ministers visit Bangalore often Infosys is on their agenda. What makes Mr. Murthy and Mrs. Murthy so famous? Firstly, they represent a new breed of Indian professional elite (not from their ascribed status). Infosys is not a family run business surrounded by an old economy patronage system unlike many Indian run firms (typically non-IT/software).[25] Secondly, they are seen as the active promoters of middle class cultural values and nurture their entrants like university students and encourage team building. Infosys has enhanced the reputation of Bangalore based firms; it also attracts many of the brightest to Bangalore because of its high reputation. Interviews with several of its employees show a high level of loyalty to the firm and confidence in its training programs. Only two of the respondents quit Infosys because they feel that the workload is too intense, but nonetheless like the company. Both the company and its senior leaders are viewed as icons of middle class aspirations and the respondents (even those who do not work there) see them as fair and egalitarian with a professional approach.

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[25] See http://www.india-seminar.com/2000/485/485%20interview.htm.

Narayana Murthy and his wife publicly loath conspicuous consumption and propagate India's spiritual roots in terms of simple living, high standards of education and efficiency in the workplace. Their images are seen as uncorrupted by fame and the culture of new Indian management styles. As a consequence of this clean image, Mr. Murthy is constantly invited to sit on many international boards, give lectures at prestigious universities in India and abroad. He is highly sought after in the elite social circles who find him an enigma in terms of not wanting to display his wealth or position openly. Persons who were interviewed who have met Narayana Murthy notice a highly unassuming man. This is very unlike how the majority of the non-IT/software related business elite are depicted in the media. Narayana Murthy encourages compassionate capitalism a concept used by him when he refers to large businesses and the state in India to develop the infrastructure, lessen bureaucracy, corruption and poverty. What is interesting is that he represents a new wave of entrepreneurship amongst people whose castes and families have loathed capitalist activities in the past (Narayana Murthy 2000).[26]

University Graduates with Non-Professional Degrees and Diplomas

This category consists of eight software diploma holders and two other degree holders (not employees of software firms) outside of Engineering, Science and Business Management. Interviews and research in Bangalore revealed that the term 'IT/software engineer' is also used by diploma holders and other degree holders as a reference point to indicate involvement with the software industry. Biao's (2002) study was done in Hyderabad (and migration flows through agents to Australia) which is another major software producer in India. His concept of the computer-people refers to bulk of the programmers who do not fit into the cosmopolitans,

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[26] This information was sought from the following websites: http://www.infosys.com; http://www.karnataka.com; http://news.bbc.co.uk/2/hi/south_asia/3757843.stm; http://www.india-seminar.com/2000/485/485%20interview.htm.

conservatives or the local software icons that have been described even though they might refer to themselves as computer engineers.

The respondents (eight) who are diploma holders are also from middle class backgrounds as the degree holders, but are in middle level jobs in lower status firms, or as temporary IT/software labor pool subcontracted to larger firms. They are sometimes paid by agencies which subcontract them to firms on a project basis. These people are the typical targets of cheap labor, especially when they work for onsite and offshore small and medium sized firms. This group can also be entrepreneurial because their survival depends on being adaptable. However, much of their funding comes from local sources and close contacts. They are concerned with money production, whereas the professional degree holders are status conscious. The symbolic capital of these respondents is very different from the professional degree holders even though they are well networked and can easily find jobs in smaller firms. Their contacts are dependent on close friends, colleagues and relatives who act like joint investors in a new enterprise. It is harder for these people to get jobs in larger firms if they do not possess the necessary entry criterion, even if they have the skills and friends and relatives in the cosmopolitan group. Hence, they do not benefit from contacts with high status actors in the typology, because their resumes have lower symbolic capital.

Examples are given below of two respondents who are diploma holders and who did not benefit from high status contacts in first tier firms. This is unlike what many of the social capital and network theorists claim. They argue that people benefit from high status actors and diverse connections, if they have the personal resources and human capital (Burt 1992, 2001; De Graaf 1988; Granovettter [1974], 1995, 1982; Lai et al. 1998; Lin 1999a, b; Marsden and Hurlbert 1988).

Respondent R had a diploma in programming languages. He taught computer languages for many years and then started working for local second tier and emerging firms which were partly owned by foreign cross-border firms. He had friends in first tier firms with whom he actively socialized. He also had the programming skills that were required by first tier firms. There were many jobs available in the market. Yet, he was unable to find jobs in first tier firms, or team with software professionals from large firms for an entrepreneurial venture. He said that he had many friends who could not find jobs in reputed firms, as they did not have professional university degrees.

Another respondent, J, was working for a small firm. He had many friends working in reputed firms in Bangalore and was well connected. He had eight years of experience as a programmer. He wanted to move to a high status firm in Bangalore but could not find a job (despite the fact that there was a labor shortage for people with his skills), as he did not have an engineering degree. He decided to eventually form his own company with some of his colleagues.

The Non-Resident Indian Godfathers

None of the respondents are from this category, but these people (just like the **local icons**) have made the Indian software industry famous and well-networked. They were mentioned in conversations by the respondents. This is the venerated group of non-resident Indian businessman fostering international entrepreneurial networks such as the The Indus Entrepreneurs (TIE). The popular Indian names in the literature are Sabeer Bhatia, who jointly developed Hotmail with his Stanford networks and sold it to Microsoft; Vinod Khosla, who is one of the founders of Sun Microsystems; and Kanwal Rekhi, a Silicon Valley Godfather (angel investor) and co-founder of Excelan who formed The Indus Entrepreneurs (TIE) network as a support group for startups in the United States and overseas (Rajghatta 2001). Since the 1950s, the bulk of the highly educated migrant population went to the United States that constitutes this successful entrepreneurial group (Khadria 1999, 2004).

Non-resident Indians are often cited as getting into tussles with elements of the Indian bureaucracy (Rajghatta 2001; Deb 2004). There was a dramatic change when the IT/software revolution began in India alongside economic liberalization in the 1980s to early 1990s (Das 2000). Due to business opportunities in the IT/software sector, some non-resident Indians thought about venturing into the IT/software business even though professionally some were not in the same field. They set up parent firms in the United States. For example; a doctor would look into the needs of hospital administration software applications and find clients in the United States and outsource the work to India. This would be done by setting up a subsidiary or an offshore firm in India with partners who are ex-college mates or members of a professional organization. Some of the very rich non-residents Indians have become angel investors to fund new projects in India (ibid.).

The respondents (8) hired by these companies or subsidiaries of such companies did not receive the same level of training as the cosmopolitans and the conservatives who work for the large firms. These non-resident Indian godfathers, are sources of high status contacts just like the local software icons. Organizations such as TIE are supposed to create contacts between high status and low status IT/software professionals and encourage entrepreneurship. However, the respondents felt that it is incredibly difficult to get access to high profile godfathers to invest in their companies since there is too much competition. Only people who have already established a track record in their firms, or whose firms have become famous benefit from these contacts. Those respondents who have intermediary contacts who know other high status actors in the IT/software industry do not always benefit, as the intermediaries feel that their social capital will be depleted if they make recommendations that may not work. Hence, unlike what the social networks and social capital literature suggests (De Graaf 1988; Lai et al. 1998; Lin 1999a, b; Lin et al. 1981a, b; Marsden and Hurlbert 1988) contacts with high status actors do not always lead to information and opportunities.

Conclusion

IT/software firms stratify the labor market according to professional and non-professional degree and diploma holders inducing a status hierarchy of people with similar skills. Actors benefit from their networks when they gain work experience in well recognized firms. In terms of contacts and negotiations, the following ideas are relevant to the sample: educational qualifications (not necessarily skill levels) and career choices are important resources for networks only when a person works for a reputed IT/software firm. Employees at the top of the labor queue such as the cosmopolitans and the conservatives have better career prospects and in turn, more opportunities for negotiations to gain status attainment through their networks in high status firms. The local software icons and the non-resident Indian godfathers are employers who also have a high reputation. The software labor force with engineering and other professional degrees are popular and on the rise (see Tables 3 and 6) as aspirants can get high status jobs and eventually build networks through their career moves to larger and more famous multinational firms. The diploma holders and non-professional degree holders as seen in Tables 3 and 6 are on the decline, as firms depend more on the professional degree holders despite labor shortages (see Arora et al. 2000b; NASSCOM 2006).

The formation of networks requires resources which are based on access to symbolic capital and organizational cultural capital. This is built through using the status of the organization that one works for (corporate identity) and the positions/responsibilities attained. One does not have to initially enter the corporate world with networks, but needs the entrance into high status firms to build social capital. Contacts with high status actors are not beneficial for those who are lower in the labor queue (see Reskin 1991), because these contacts do not wish to deplete their social capital by extending favors to them.

The respondents are 'rational conformists' to organizational goals and culture. Hackers and innovators are rare within the Indian economy, because there is little social support for research and development for such risk taking. The industry experts (nine) that were interviewed claim that links between academic research and industrial innovation are minimal. Socially, it is hard to justify hacking. The corporations require employees to confirm to their management styles. 'Rational conformists' have high status value in Indian society when they enter internationally recognized IT/software firms. A 'rational conformist' would refer to professionals who are upwardly mobile through their cultural ideology, university education and career choices. The next chapter will show that the hiring practices of software firms have reduced the effects of caste in professional networking for employment and entrepreneurship.

Chapter Six

> Modern Industry, resulting from the railway system, will dissolve the hereditary division of labor, upon which rests the Indian castes, those decisive impediments to Indian progress and power. (Karl Marx, 1853)[27]

The Indian IT/software industry has influenced new forms of social networking in the workplace in favor of alliances based on signals of achieved status. Hence, caste ties have become more expressive in nature rather than instrumental for opportunities. This means that software professionals cannot rely solely on their ascribed status to get ahead in their profession. Professional networks in the software industry are intrinsically tied to the value of credentials, and individual career choices and how these characteristics can override more conventional notions of how networks function based on caste and gender status. Professional degrees like engineering and jobs in well-recognized multinational firms have encouraged achieved status and recognition of merit in social networks.

This chapter explains that homogeny or sameness in caste is not useful in comparison to the recognition of achieved status in employment and entrepreneurial networks in the Indian software industry and profession, which are dependent on global outsourcing and work processes. The chapter also discusses the rise of female employment opportunities in the software industry. The aim is to show that the symbolic capital of engineering and other professional degrees and the organizational cultural capital of jobs in high status multinational software firms discussed in the previous chapter influence social ties enforced by corporate and professional identities.

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[27] This is a compilation of Marx's writings on India for the New York Daily Tribune. In, http://www.marxists.org/archive/marx/works/1853/07/22.htm

Caste and Habitus in the Indian Software Industry

Sociologists have argued that caste ties are somewhat pervasive in the professional sphere in India despite the historical advents of British colonization and Indian independence from Britain and the subsequent development of reservation policies (for the economically and socially depressed castes), industrialization, modernization, urbanization and Western education (Béteille 1991, 2003; Ghurye 1961, 1969; Gould, 1988; Harriss-White 2003). Studies on caste and occupations by Béteille (1991, 2003); Ghurye (1961, 1969); Gould (1988) and Harriss-White (2003) do not discuss the effects of merit and competition on ascribed status and social ties. There are also no empirical studies in the following areas: firstly, the status of caste ties in knowledge-based professions and multinational firms affected by global outsourcing. Secondly, caste ties in white collar professional jobs in the aftermath of the end of India's import substitution economy, which is also colloquially termed as the 'License Raj' era.

This chapter does not claim that caste habitus has disappeared in all social, political and economic areas in the post-liberalized Indian economy. Neither is this chapter trying to claim that the dwindling impact of caste status in professional networks is a widespread phenomenon affecting the economically and socially depressed after economic liberalization of the Indian economy in the 1980s. However, it is important to bring to light that the Indian software industry with its influx of local and global investments has introduced unprecedented credential competition based on merit due to its complex and diverse global networking and skilled labor needs, as it primarily serves a very competitive export market (NASSCOM 2006). Hence, software professionals and firms cannot rely on non-technical caste ties to get ahead. Rather, they have to rely on merit in their professional networks. Just as the previous chapter shows that software firms benefit from the symbolic capital of their employee's credentials, software professionals also benefit from the organizational cultural capital of the software industry in general which is dependent on global

outsourcing needs. This deems that employees have to network across cultural boundaries in order to remain locally and globally competitive.

In particular, in the Indian software industry, this means that caste-based networks do not lead to better information and opportunities in an industry that is dependent on transnational capital and markets. Software firms in India are promoting a cultural habitus of continuous knowledge attainment, professionalism and standardization of work processes to promote competitiveness and organizational cohesion.[28] The concept of habitus is from Bourdieu (1984), which implies the cultural space that ego occupies in relation to education and family upbringing. Bourdieu's (1984) definition of habitus indicates that one's experience and relationship to a larger cultural space and set of values can be acquired through inheritance and socialization. It only partly accounts for changes promoted through merit and allegiance to corporate identity and status. The multinational software firm provides a cultural space where employees need to work and engage in a mixed caste environment in accordance with corporate values. This includes mixed dining, recreation and working areas regardless of caste and gender status. The main reason for this is that well ranked and large software firms hire labor and retrain employees to progress in their organizational goals and marketability of their services. In other words, the software industry has benefited from the "global professionalized" image of the firm and the professional.

Professional Education and Meritocracy in India

Phillip Brown argues that skills are a social creation which determines a country's competitiveness (Brown et al. 2001, pp. 1, 13). This makes education a critical resource for actors entering the employment market (Hannan 1999; Muller and Shavit 1998). Education provides skills to individuals and the necessary signals to employers (Ashton and Sung 1992; Becker 1993;

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[28] This information was sought from fifty respondents and nine industry experts.

Bills 1988, 2003; Breen et al. 1995; Gangl 2000; Hunter and Leiper 1993; Polacheck and Siebert 1993; Spence 1974, 1981; Spilerman and Lunde 1991). The credential capital angle illustrates the importance of credentials in determining skill levels which in turn determine the career success of actors. Getting the required education has been a crucial factor for Indians wanting to work in the software industry regardless of their caste status.

Collins (1979); Dore (1976) and Livingstone (2003) all criticize the rise of credential capitalism in the developed world, which they say has not led to a rise in actual skill levels and has left out some educated members of society because of underemployment. Their studies do not look at the importance of credential capitalism in promoting meritocracy. Nor do their studies look at the importance of corporate selection and training in inducing competition. The following quote shows the importance of higher education and skills development in helping India to increase its stake in global competition through meritocracy.

> Governments in the developed economies have yet to acknowledge the full consequences of countries such as China and India expanding their educational systems to compete for high-skilled work within key sectors of the global economy or trends towards the 'offshoring' of skilled along with semi-skilled and unskilled jobs. (Brown and Lauder 2006, 29)

The current workforce for IT/software firms comes from various castes because of reservation (quota) policies in Indian universities (see Department of Education, Government of India 2006). However, the workforce is overwhelmingly comprised of engineers, although not all are trained in computer science or programming when they first enter a software firm. In fact, software firms are constantly complaining about a crucial labor shortage in the industry and are urging the government to provide more professional tertiary education opportunities to all who qualify (NASSCOM 2006).

Furthermore, it is important to note that due to the reservation policies in India, the upper castes need higher CET (Common Entrance Test) and aggregate high school marks to enter engineering colleges and universities while those classified as scheduled castes and tribes require lower marks to give them a better chance to access higher education.[29] Once they enter university, they have to compete against each other to get the top ranks. None of the respondents could get admission into engineering degree programs on the strength of their contacts despite being from varied castes. They all had to pass the competitive entrance exams and earn the required qualifying marks. Upon completion of their degrees, graduates are employed by IT/software firms only if they qualify, which is determined through their aggregate performance in their tertiary education, a series of interviews, testing of logical skills and personality tests (Kokhova and Sukharev 2001, pp. 35; Varma and Sasikumar 2004). This shows that merit is significant for both education and subsequent employment in this industry.

Achieved Status and Reputation in Networks

Max Weber's (2001) distinction between class and status honor is useful in understanding the distinctions between achieved and ascribed social rank. He distinctly defines class as a social and economic group where members share similar life-chances determined by their social position, wealth, education, connections and power, which is often conditioned by the labor market. This makes class fluid in nature.

A synopsis of the study of Indian middle classes by Misra (1961) divides the Indian middle classes into four categories, namely the commercial middle class, industrial middle class, landed middle class and educated middle class. Of these categories, the commercial and industrial middle classes comprise the petit bourgeois, traders and industrialists. The landed middle class

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[29]This is an official government website which indicates the entrance requirements for engineering degrees. http://www.cetkarnataka.in/CET-news.html

are property owners, and lastly the educated middle class who expanded with education, urbanization and the inclusion of Indians into administrative positions by the British. Class-based occupations took over caste-based ones for those who had access to mobility resources and infrastructure through industrial modernization and social reform by the British and later in free India after 1947 (Greenspan 2004; Martinussen 2001; Patil 1991; Paulus 1968, pp. 49-56). Software professionals in the sample categorized themselves as the educated middle class regardless of their caste identity.

While various stratification theories and scales exist to rank European class structures according to income, occupation and social status (see Crompton 1998; Duke and Edgell 1987; Goldthorpe and Wright in Crompton 1998 pp. 54-78; Savage et al. 1992; Stewart et al. 1980), none can explain the rise of the urbanized educated middle class in India. The definition of the new middle class proposed by Crompton (1998, pp. 150-158) is somewhat useful in understanding the new shifts in the occupational structure, to include computer professionals. However, none of the above premises look at the issue of corporate identity having a significant impact on reshaping social identity.

The linking of class mainly to occupational status by Goldthorpe (1980, 1982) and Mills (1995) is also inadequate in explaining the social milieu of Indian software professionals. Goldthorpe (1982) combines managerial (organizational experts) and professional classes (knowledge experts) into a service class (Mills 1995, pp. 97-98). Mills argues that the service class is differentiated along lines of industrial sector, race and education (1995, pp. 99). In my sample, class and social mobility is linked to access to professional education and subsequent employment by large well recognized firms and the symbolic capital and organizational cultural capital accrued from such a reputation.

The software professional has to achieve status through occupational attainment, which is a sign of reputation in his or her professional networks. The sample shows that neither firms nor professionals are interested in seeking contacts with those who do not meet their criterion of professional achievements because of the need to build diverse networks based on signs of competence, a strategy for status attainment and profitability. The following examples show this.

One entrepreneur's ideas are presented below.

> I do not care about the social origins or family background of my employees, it is their quality of work that matters and where they have worked before. If they are on good terms with their ex-bosses, clients and colleagues all the better, because this means they can bring in contacts to the new company where they work.

Another respondent's account is presented below.

> I worked for a medium-sized IT/software house for 10 years. My boss left his job and joined a startup firm as one of the directors. He knew my working capacity and I got fished to the new firm too. I left the old job, because the new firm pays better and I got promoted to vice-president in charge of finding new clients for software customizations overseas. I will work in this job until I build some more contacts and then quit to form my own startup. I need to build a reputation with the key employees and bosses in the new firm and with clients so that I get noticed. It is my work and not my caste that is important for this strategy to work. This means socializing and networking with the scions in the industry regardless of caste or creed and diversifying who one knows.

A third respondent's description is shown below.

> I am a traditional Brahmin at home. I wake up early and do my poojas [prayers] according to the customs of my community [Iyer]. My caste is important to me. At work things are different. I am not interested in the castes of my subordinates or colleagues. I forget about caste at work and am more interested in performance. I love working in the software industry, because it really does not matter whose son or daughter you are or what your caste is in this industry, as being from a high caste does not pay.

A fourth respondent's thoughts are shown below.

> I choose to work in the software industry, because it is merit oriented. Here nobody cares about caste. Caste alliances get you nowhere here.

A fifth respondent's ideas are shown below.

> Software firms in India take pride in their work practices. This is because they are the icons of India's success in the service sector globally. Of course, there is no caste issue in

my workplace. But the types of companies I have worked for before and my occupational status gives me clout.

The respondents network according to career choices, employer status and occupational status. Hence, the networking opportunities of the respondents are determined by the filtering of credentials in the employment market. The software firm cannot afford to recognize non-technical caste status, because it has to depend on extensive networks to source clients and subcontract parts of its service customizations or products to other firms, which is also known as flexible specialization (Holmstrom 2002). Firms acquire status and reputation both from their performance and the networks and credentials of the employees they hire. Erickson (2001, pp. 127) argues that firms gain social capital from the type of employees they hire, because they can covert individual social capital into organizational social capital. However, no literature addresses the issue of organizational status converted into individual social capital. This affects networks and opportunities for mobility for software professionals between firms and in various institutions and markets that lessen the dependence on homogenous caste ties.

Devine's (2004, pp. 120-121) work focuses on how parents influence their children's education and careers through fostering contacts with similar families. She is obviously referring to similarity in class and not caste as the data drawn is from Britain. However, she implies that contacts become useful when people do not have the necessary credentials. The software industry clearly shows the contrary, as drawing on any contacts without the necessary credentials proves to be detrimental to status attainment and ruinous of one's reputation. As indicated in the earlier section on professional education and meritocracy in India, getting an engineering education through contacts is difficult because of the various entrance requirements for all castes. Even if one were to get an education through their use of high status contacts, this cannot ensure that they have the competence to score well on their university exams or the stringent tests imposed by software firms to filter all candidates. Software firms depend on international quality

certifications to source global clients (Arora 1999). They cannot afford to hire an incompetent labor force, which to some extent reinforces meritocracy in networking.

Both Devine (2004) and Goldthorpe (1996) contend that the exploitation of social resources, which is defined as involvement in social networks, is useful when the children have less educational success. In the software context, the sample shows that networking without credentials or the required educational attainment leads to little or no success in the job market even if the respondents and their families have high connections or ascribed status. The following cases show this.

Respondent S was from an upper middle class family. Both his parents were professionals from a high caste. The respondent did not pass the entrance criteria for engineering. He had completed a degree in commerce and a diploma in Java and C++ programming. He did not find a job in a reputed software firm, despite his parents having many friends and relatives of the same caste working in reputed software firms.

Respondent A had friends who were well networked and a good job as a programmer in a small-sized company. He had acquired several certifications in programming different software languages and had seven years of experience developing code for clinical trials in the pharmaceutical industry. He often went to parties to network with his high status friends (of the same and different castes) so that he could find a job in a better company or join a successful entrepreneurial team. His friends had many diverse contacts in high occupational positions in large software firms. They had been unable to help him improve his career prospects. They did not recommend him for jobs or other software ventures that were higher in status compared to the firm where he was working. He felt that he was not regarded as a software professional of high

status. He was from a high caste, but did not benefit from his contacts for status attainment. The respondent attributed this to his lack of an engineering degree.

The Decline of Caste Homogeny in Professional Networks

The term caste is a European categorization which means closed social groups. Max Weber defined this as status groups that are accorded prestige on the basis of their birth (in Bendix 1977, pp. 142-145). Caste can be viewed as a division of Hindu society into the categories of ascribed status that ideally have strictly defined endogamous boundaries in relation to food, kinship, marriage ties, rituals, social order, work, and so forth. One may only marry within one's caste and the children belong to the caste of their parents. Castes are hierarchical and are ranked as higher or lower according to their traditional occupations and social customs (Quigley 1993, pp. 1-4). Sub-castes are divisions within a caste group. These divisions can be cultural, linguistic, occupational, religious and territorial. There is also some dissimilarity of customs between sub-castes within the same caste group (Ghurye 1969, pp. 34). To understand the production of status, an imperative link is to know how and why people network to access certain resources. In order to find contacts or build them, one cannot be caste conscious but rather class conscious. Ratnam and Chandra's (1996, pp. 84) study shows that caste has always been a major organizing feature in Indian firms, because it is a source of diversity in Indian society. There are about three thousand castes in India which they claim that even religious conversion does not alter. Hence, in Indian society, traditions coexist with compartmentalized or contextualized modernization. In the 1960's, senior managerial positions were dominated by higher castes. With the growth of affirmative action programs and the public sector for the disadvantaged groups, the situation has changed to a certain extent (ibid. pp. 76, 83). The following is a table showing the caste background of the respondents.

Table 1: Caste Background of the Respondents

Caste (Hindus)	No of Respondents
Brahmins	23 (29%)
Kshatriyas	19 (24%)
Vaishyas	18 (23%)
Shudras	17 (22%)
Other Religions (Muslim)	1 (1%)
Total	78

Table 1 shows the representation of the different castes among the respondents. Examples of sub-castes amongst the respondents are Iyengars, Iyers, Madhwas which are Brahmin sub-castes; Singh and Ursoo which are Kshtriaya sub-castes, Gupta and Shetty which are Vaishya sub-castes and Goudas and Lingayats. The Muslim respondent did not mention her caste. Actual surnames of the respondents are not indicated in order to maintain their confidentiality. The Brahmins, Kshatriyas, Vaishyas and Shudras are more or less equally represented. Since this data has been sourced from a network sample, it shows that members of the same caste do not necessarily network with each other in the professional realm. However, not all the respondents knew each other.

Authors like Harriss-White (2003, pp. 176-199) and Joshi (1992) argue that the rigidity of caste barriers has not dissipated in the spirit of industrial capitalism. However, they do not specifically look at the human resources needs of India's software economy as an influential factor promoting meritocracy.

Thimmaiah's (1983) study on caste and status attainment in Karnataka, India empirically elaborates that class to some extent determines one's occupation and social status in India (pp. 37). It shows that there are rich and poor in every caste and that social status influences one's life-chances. His work does not deal with issues of quotas and is prior to economic liberalization and

the global demand for cheap but highly educated labor from India and some of the social changes. Béteille's (1991) work on social networks and caste in a village in Tamil Nadu shows that people might seek favors from someone in another caste if they share similar class interests.

Caste identity is highly politicized and India's answer has been affirmative action practiced as a quota system to help those who are classified as economically and socially disadvantaged. There are many contestations over the inclusions and exclusions of certain groups in the scheduled and backward castes categories in order to benefit from the quota or reservation system which affects higher professional education and government employment but not employment in the private sector. Hence, it is a very complex undertaking to define the influence of caste on social mobility in the workplace in a general way.

The respondents are linked by professional attitudes and interests driven by assimilation into shared corporate and occupational identity.

> The ideal employees are those who have internalized the organization's goals and values—its culture—…The company in this view harnesses the efforts and initiative of its employees in the service of high-quality collective performance and at the same time provides them with the 'good-life'… (Kunda 1992, pp. 10)

Indian university education while being well reputed and comprehensive is inadequate in imparting skills specific to the IT/software industry, research and development or promoting entrepreneurial networks, requiring more investments and better collaboration (Arora and Athreye 2002). Therefore, Indian IT/software corporations impart training for new entrants in management, soft and technical skills (Varma and Sasikumar 2004).

The IT/software training environment within the corporation takes on the role of the modern 'Gurukul,' a term which implies the archetypal learning center of ancient India. This is where

new recruits are indoctrinated into the firm's vision of success and make it one's personal goal.

Firms like Infosys and Wipro have huge campuses where the recruits are inducted and nurtured as

'Infocians' or 'Wiproites' in a culture of commitment, precision and innovation (Singhal and

Rogers 2001). Large Indian IT/software firms have become gated communities of the so-called

information class.

The difference between the 'Gurukul' in the traditional sense of ancient India and my version

used to rename IT/software corporate training is that the former trained entrants for the sake of

knowledge alone while the latter trains for production and profit maximization. This amongst

other things results in the IT/software corporation influencing its recruits' networks, thereby

creating an information class to serve the corporation.

According to all the respondents, they do not seek to network only with members of the same

caste and sub-caste. The respondents (56), who work for multinational firms, have a strong

corporate identity and prefer to network with professionals working for firms with similar

organizational cultural capital or status. The corporate status of the IT/software firm has become

an important source of reputation for professionals. Some examples of the statements they gave

are as follows.

> I am proud to be an Infocian.
>
> As a Wiporite my resume is highly marketable to other firms.
>
> Working for IBM has put me on the global map of software firms.

Well known multinational firms provide the respondents who are aspirants of merit or achieved

status the reputation and the identity to build contacts. Consequently, it is the assortment of

organizations on the respondent's resume that helps to build reputation as a 'knowledge worker'.

Peter Drucker created the term 'knowledge worker' in 1959 as a differentiation from 'service workers' (1996). The former involves higher end labor. Majumdar (1997) provides the following definition of knowledge workers.

> Knowledge workers are those who have been successfully educated and/or trained to reach the higher levels of proficiency in some or other branch of knowledge— intellectual or applied. They are destined to constitute the intellectual, technocratic, and managerial elite in every country of every country in the modern era. The more modestly endowed service workers constitute the rest of the work force. They will lack the necessary education to become knowledge workers, but will constitute in every country, the majority. They will be trained adequately, but not more than adequately, to perform their (unskilled and semi-skilled) tasks well. Some futurologists predict that the knowledge workers will be swiftly globalized, for soon they would be welcome in most countries, their incomes being determined in the world market... (As quoted in Khadria 1999, pp. 25)

About 70% of the respondents felt that if they work for non-multinational manufacturing or trading firms, they may not be recognized or rewarded as knowledge workers on the basis of their merit. The corporate culture of large multinational IT/software firms in India has been greatly influential in creating high quality labor through extensive socialization of knowledge workers by tapping educated middle class values popularly phrased 'simple living and high thinking', a phrase also used by Upadhya (2003a, b). She also refers to the iconization of non-resident Indians and famous Indian software entrepreneurs and their firms whose image building exercises of clean, honest, intelligent and hardworking people are popularized among global Indians. However, there are many issues in this type of packaging of the educated and upwardly mobile as global Indians. The research suggests that thirty respondents are conservative and local, both in terms of investments and networks, even though they work for firms that are international and serve core economies with possible migration opportunities. However, even these respondents did not rely on caste ties to get ahead in their professions.

Overall, there is very sparse literature on the effects of the knowledge economy on caste and class status in India. Asser (1998); Shrumer-Smith (2000) and Upadhya (2003 a, b) elaborate on economic liberalization and the rise of the transnational middle class in India with little qualitative or quantitative evidence provided for their claims of a Brahmin-dominated IT/software workplace.

The literature by Béteille (2003; Ghurye (1961); Harriss-White (2003) and Paulus (1968) provide studies on caste stratification in relation to industrialization. The main problem is that they provide a very rudimentary analysis of the educated service class or the new middle class and do not deal with issues of social change promoted by the global search for cheap labor and competition in a borderless economic sector where both people and corporations compete in an international market.

Béteille's (2003) enormous work on social stratification provides both crucial insights and contradictions inherent in the Indian caste system and his analysis of caste in India. On one hand, and rightly so, he recognizes the changes in the caste system and modern occupational practices prompted by industrialization and India's post-independence constitution. On the other hand, he also states that it is the family that perpetuates values rather than the caste system itself. However, he also notes that caste still has a significant influence on occupational status because opportunities are influenced by family decisions. Even this recent work on caste cited here fails to address a very crucial factor affecting social change which is economic liberalization and the influx of foreign direct investment. He tends to treat India as a country which still exists in isolation from foreign influences and liberalism.

The much older but classic study by Ghurye (1961) looks at influences of caste on the shift from traditional occupations linked to ascribed status, concluding that industrialization has not driven

away the ascribed social barriers for achieved status. He gives a detailed description of the various castes and sub-castes in India to show that close community networks dominate their occupational status. Harriss-White (2003) has an updated study on the effects of caste on occupations and implies a similar conclusion as Ghurye (1961), but lacks an analysis of meritocracy and the knowledge economy.

Paulus (1968 pp. 54-55) did a detailed study of social stratification in Bangalore and states that the new social structure in Bangalore as a result of technological change is not without a social hierarchy. However, he states that caste has been replaced by class in urban areas and that Brahmins no longer have the hegemony in high status work in urban areas because of social resistance and equal opportunities in employment and education for other castes supported by reservation policies in India. Nevertheless, he claims that the traditional Brahmin occupations in priesthood and education have given them the advantage in entry into professional white collar occupations. However, this advantage does not account for non-hereditary shifts in the education patterns of other castes because of issues of economic, political and social reforms. His study indicates an overall shift in Bangalore from hereditary caste occupations to those determined by urban industrial vocations with different recruitment criterion.

Max Weber (2001) talked about the efficacy of status groups and the various types and modes of status recognition in society. In this context, status negotiation factors of one group may not be relevant or functional in another. For example, status recognition for the respondents is getting the best paying jobs in well recognized IT/software firms. All the respondents felt that their class status is useful in promoting the exchange of information about opportunities with similarly ranked professionals in terms of firm status and occupational status regardless of their caste origins.

Blau's (1975) exchange theory looks at the various approaches to social structure, which according to Cook and Whitmeyer (1992, pp. 110) explains the configuration of social exchanges amongst players (both individual and corporate, where the associations involve the barter of valued things (which can be informational, material, symbolic etc). Social exchange theory is based on the following premise: that the exchange of social and material resources is a fundamental form of human interaction. Social exchange theory is useful in explaining professional networking based on merit and achieved status. The sample shows that respondents avoid doing favors for caste members who are friends and relatives if they lack the required credentials. Furthermore, they feel that helping people who cannot find jobs on their own merit weakens or depletes their social capital. Even the six respondents who have made investments in startup enterprises had not chosen their business partners on the basis of homophily in caste relationships.

Caste networks in entrepreneurship are not very popular amongst the respondents for the following reason: caste ties are seen as network inhibitors, because members are likely to know each other's contacts (closed networks have redundant information, (see Burt 1992, 2001; Granovetter [1974], 1995, 1982). Furthermore, in closed caste networks actors have limited access outside of certain ethnic and regional ties, which are closed to outsiders. It does not allow the ease of mobility to bring in new partners, and finally it does not convey the same prestige as working for a large multinational firm with diverse networks based on merit.

Respondent T was an entrepreneur and owned a small software firm. He said that he had developed diverse networks through his work experience in large firms with colleagues from different castes and communities. He and his colleagues had met during corporate training programs and team projects and had formed similar interests in their career choices. Although

they had quit their jobs and joined other firms, they continued to keep in touch and passed each other contacts for clients and entrepreneurial opportunities.

Six respondents claimed that they have become entrepreneurs despite cultural constraints or views about traditional occupational roles within their particular castes' social structures. According to the six entrepreneurs, the most popular entrepreneurial team arrangement seems to be combinations with former work colleagues and friends who have resumes and resources reflective of networks in high status firms. This is also shown by Updhaya (2003a, b) who talks about ex-Wipro employees being well networked for entrepreneurial ventures because of their high reputation. The respondents said that they like to network with other professionals who are equally or more successful in their careers regardless of their caste positions. In this sense, networks which bring access to global business and work opportunities in large and well recognized corporations are increasingly popular in comparison to closer cultural ties that are local. In other localized and protected industries, trust and profit sharing is insular to certain caste groups for social and economic protectionism within the caste or the community (Ghurye 1961; Sinha and Sinha 1990).

When and where do negotiations begin forming to promote career interests through class ties rather than caste ties amongst the respondents? The interviews and observations affirm that college networks are very important, because they form the basis for homophily (see McPherson et al. 2001) that is not caste based. Not all the friends of the respondents are from similar castes or sub-castes. The respondents said that most of their close friends were interested in a similar profession. However, it is the issue of how and why they keep in touch over the years and how this communication affects their career growth in the IT/software sector that is interesting. Friends who are known to be bright gain a lot of popularity regardless of their caste. According to the majority of the respondents (90%), the middle class with professional degrees are stereotyped

as the ones interested in career mobility in multinational firms, because they come from families who cannot take wealth, status or caste connections for granted. Therefore, they need to work really hard and get high scores so that the best paying multinational firms recruit them. The following case shows three respondents who are friends and share information and contacts with each other.

Respondents K, T and P are three close friends who are not related to each other and do not share a similar caste or regional identity. They had met at their engineering college. All three are middle class and their parents do not have any connections in the software industry. One of them passed the entrance test in a first tier software firm and became a high ranking manager in eight years. The other two friends decided to become entrepreneurs after their work experience in multinationals. They have chosen a similar profession but slightly different career paths. They often keep in touch to share market information about the industry. The respondent working for the high status firm said that he preferred to work there because of the status and stability associated with this firm. His friends, on the other hand, wanted to take more risks for higher rewards by becoming entrepreneurs. They feel that their friendship is crucial, because it keeps them informed of potential career opportunities and clients.

The Gender Issue in IT/Software Firms

Software firms are relatively open to anyone regardless of gender if they pass the entrance filters of firms which are based on credentials and entrance tests.[30]

> In IT, women are equals…(NASSCOM 2005, excerpt from Revathi Kasturi, founder and President of Trarang).

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[30] Software firms have entrance tests and training for their employees. See case study of Infosys Technologies by Raghuram (2001).

Beechey and Perkins (1987) say that the employment market is not gender neutral which is true for majority of industries and work situations. Crompton and Sanderson (1990) argue that the employment market is influenced both by economic and social structures. Thirty-one female respondents prefer to work as programmers in the software industry, because they feel it has better employment terms than other industries and social status as high-end knowledge based work. Furthermore, they appreciate that both Indian and foreign multinational firms provide better status than start-up firms. The male respondents thought similarly. The following are statements from three women and their views about working for the software industry. One female respondent said,

> I like working for [Indian multinational]…I get a lot of respect socially, because I am associated with [corporate identity]. A lot of this is understated, but it is part of the reality. When I go to parties and weddings, I notice that those working for the smaller firms get status only if they have high positions or are investors in successful startups. I get noticed due to the company where I work. I even receive job offers from unknown people in the industry. They think I have good training and connections because of my job. Even my family feels comfortable, because I am working for a good organization with decent perks. I am excused from a lot of household duties, since I have late but flexible working hours…. In this industry, it does not matter whether one is male or female. It's about where you work and how well you are doing and who recognizes it.

Another female respondent said,

> I love working for this industry. It has transformed Bangalore and even my lifestyle. I work in a first world type campus in a third world environment. I don't even have to leave India to work in a good job and hi-tech environment. There are so many jobs available, that my sister and some of her girlfriends are becoming engineers just so that they can work in this industry.

A third respondent said,

> The men don't bother me. We are more or less treated equally. It's pretty much performance based. I like that. Gender is not a major issue here. It is merit.

The employment figures indicate that 76% of software professionals in software companies are men, whereas 24% are women. This ratio is likely to be 65:35 (men/women) by the year 2007.

The ratio is reversed in the IT enabled services sector such as call centers where the proportion of men to women is 31:69 (NASSCOM 2006).

> I can definitely say that IT-ITES [Information Technology and Information Technology Enabled Services] sector provides more career options for women. Women are generally good at computing (Ada Byron who was a pioneer), customer focus and creativity. IT-ITES sectors provide lot of opportunities such as product development, software development, customer relations, marketing etc. As the IT sector provides flexibility in working hours, it is friendly to women employees who need to juggle with career aspirations and home. (NASSCOM 2005, interview with Ms Ushasri, Managing Director of Force India)

Respondent S was a female working for an American multinational in Bangalore. She liked her job and above all her working conditions. She said that she did not feel discriminated against by her male colleagues and bosses. She felt that in India, the working conditions in most industries for women needed to drastically improve. She said that her friends working in other industries did not have an egalitarian or gender friendly work culture. They complained about not having female only toilets and not being promoted etc. The respondent was happy in her work environment in this American software firm in Bangalore.

Another respondent P talked about the campus culture in the company where she worked. She liked the facilities in her workplace which was one of the best in India with all the modern luxurious amenities. She said that men and women mingled freely despite caste, class or creed. The dress code in this company was conservative for both men and women with varied requirements for different days of the week. She remarked that she felt protected and safe working there and that her chances of a promotion were high.

To become a knowledge worker in India, one has to significantly get ahead in the labor market regardless of gender. In this context, recognition of certain qualifications is more important in the ordering of the queue. Whether or not it is easy for women to get ahead in the Indian software

industry is a question of demand and supply for educated labor with professional degrees. Reskin

(1991, pp. 175) says that change in the gender composition occurs when there is not enough

supply from the preferred group of candidates. She argues as follows.

> Only when occupations grow faster than the traditional labor supply must employers
> resort to non-traditional sources of labor. This is especially likely for jobs whose high
> entry requirements limit the number of qualified male prospects.

Indian women's entry into engineering degree programs is partly linked to affirmative action

which most universities in India have to abide (Department of Education, Government of India

2006). Therefore, the ordering of the labor queues in terms of gender is also affected by education

policies. Granovetter ([1974], 1995, pp. 147, 169) and Roos and Reskin (1984, pp. 241-246) both

claim that women have may lower access to social networks despite having higher rates of

success in hiring. The sample shows that men and women experience similar networking

outcomes which are dependent on education, career choices and work experience in reputed firms

rather than caste.

Just like the male respondents (expect for the six entrepreneurs) the female respondents like

working for larger firms unless they cannot find jobs. They believe that they can benefit more

from their networks when they work for high status firms. When I visited campuses of software

firms (both large and small), I noticed that men and women mingle freely in the food courts and

that their dress sense is conservative, mostly Indian clothes for women and for the men semi-

formal business wear with ties. The work environments in the larger firms are luxurious by Indian

standards. Five female respondents said that they live in modest accommodations and

neighborhoods, and working for large software firms provides sporting facilities. Most of all, they

like the order and cleanliness in large software campuses in otherwise chaotic Bangalore. The

smaller firms in comparison do not provide good facilities. The respondents said that software

firms on the whole provide subsidized food, transportation and many other benefits for both men and women.

Conclusion

IT/software firms do not work in isolation; they constantly need to look for new markets to cut costs and to save on time (Saxenian 2000a, b). They affect societies through the globalization of technology (Castells 1996) which carries investments and networks across borders. When it is nighttime in the United States, it is daytime in India, enabling twenty-four hour work days and the flexibility of time and space flows. This type of business model also works on offshore and onsite IT/software work (Rajghatta 2001). Thus, it requires people to be networked across borders and cultures to source global clients, as Indian firms are mainly export oriented (NASSCOM 2006). Knowledge professionals need to fit well into this model to succeed either as employees or in their own businesses. Crossing the boundaries of caste and gender is useful for the respondents to become more competitive in the labor market. Firms benefit from promoting Indian middle class values of hard work, lifelong learning and simplicity rather than caste values. This is possible, because the IT/software industry has a huge demand for all types of knowledge workers regardless of ascribed status. IT/software firms and professionals do not benefit from closed community networks of caste even if they are connected to high status actors.

Status production and networking is related to class status. Homogenous caste alliances are being challenged because of the following reasons: a) economic liberalization, b) high demand for educated and professional labor, c) caste homogeny inhibits network formation. One of the obvious reasons is the entrance criterion in the IT/software profession. In order to find networks and build a reputation, respondents are not caste conscious but rather merit conscious. Secondly, the networking demands of IT/software professionals encourage team formations on rational grounds of professional reputation and resource diversification. This has made some people

within this sector more entrepreneurial despite social constraints or views about traditional occupations. The respondents' resumes show that they are moving up in the labor queue (see Reskin 1991) on their achieved status regardless of their castes. This is the reason they are linked by professional attitudes and interests driven by the global spread of IT/software production.

Chapter Seven

This chapter shows that selection in arranged marriages is based on signs of professional compatibility and achieved status. Symbolic status of educational credentials and organizational cultural capital of working in high status and reputed firms have become significant in assessing the suitability of marriage alliances. Hence, resumes which are valuable in the labor market become valuable in the arranged marriage market.

Chapters five and six show that the career progress of software professionals is based on signs of merit and reputation recognized by software firms. The link between employment in the software industry and arranged marriages is that software firms have significantly influenced social alliances because of their highly selective hiring practices. As a result, software professionals value rational economic symbols and credentials of success in match making. Thus, social networking for marriage is significantly influenced by signs of merit in employment. This is because social influence or social capital in the marriage market is no longer just a result of non-technical ties such as caste or inequality in gender roles. This is particularly shown in the respondents' adaptation of professional resumes to filter marriage candidates. An indirect effect of this is that software professionals form alliances with marriage partners who are employable in similar types of firms.

Arranged marriages are still a common practice in India (Mandelbaum 1970; Medora 2003; Moore 1994; Mullatti 1995; Nanda 1995; Rao and Rao 1982; Reuters 2000; Uberoi 1994). Arranged marriages are preferred over love marriages by most young Indians (Saroja and Surendra 1991; Sprecher and Chandak 1992; Umadevi et al. 1992; Uplaonkar 1995). This chapter examines contemporary arranged marriage partnerships sought amongst the educated middle class IT/software professionals. The sample shows that software professionals use their resumes

and credentials to facilitate contemporary arranged marriage alliances. The propositions that will be explored are as follows.

1. Actors in the contemporary arranged marriage market filter and sort resumes of potential candidates.

2. The education and career paths of software professionals and the status of the firms they work for affect their chances in the contemporary arranged marriage market.

3. Contemporary arranged marriages are enabled through three types of networks. These are caste networks, cyber networks and professional networks.

In relation to the propositions, the following questions are relevant. What is the link between contemporary arranged marriages and professional resumes? How do contemporary arranged marriages suit modern professional needs? In other words, can contemporary arranged marriages be considered modern strategic choices in certain contexts? In order to answer these questions, definitions of arranged marriages will be elaborated followed by the various selection criteria in resume matching to find partners.

The Definition of Arranged Marriages

Arranged marriages involve parents and family members to choosing husbands or wives for their kin (Medora 2003; Uberoi 1994). It is a union between families rather than just the couples themselves. Arranged marriages have multiple definitions and contexts. They range from forced marriages where the potential spouses have no input, to assisted courtship, or semi-arranged marriages where the children are introduced and can court potential spouses.[31] Semi-arranged

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[31]See Lessinger (2002); Medora (2003); Moore (1994); Mullatti (1995); Nanda (1995).

marriages are more prevalent amongst the educated and urbanized middle class (Medora 2003, pp. 218). According to Batabyal's (2006) understanding of arranged marriages;

> The search for a partner in the modern arranged marriage is conducted by parents, family members or matchmaking intermediaries who weed through available candidates, reducing the uncertainty associated with finding suitable prospects. Potential couples meet on a few occasions that can be, depending on the specific circumstances, more like job interviews than dates. They talk openly about their preferences, expectations, and determine whether marriage might work for them. [32]

The generalized conception of a contemporary arranged marriage by the respondents is more explicit: a man and a woman who are introduced to each other through a network or referral system endorsed by credentials, family members, friends, relatives and traditions. In this version, couples are not obligated to marry each other even though parental consent and credential filtering are involved through rigorous background checks and negotiation procedures. Family and community members keep both achieved credentials and traditional values in check.

Contemporary Arranged Marriages and Social Competition

The contemporary studies on Indian arranged marriages (Mandelbaum 1970; Medora 2003; Moore 1994; Mullatti 1995; Nanda 1995; Rao and Rao 1982; Reuters 2000; Saroja and Surendra 1991; Sprecher and Chandak 1992; Uberoi 1994; Umadevi et al. 1992; Uplaonkar 1995) cannot explain immense social competition to marry people who have the credentials to work for well paying and prestigious firms. To find partners through contemporary arranged marriages, some actors have widened their instrumental networks by placing advertisements in matrimonial sites on the internet. Others use caste and professional networks to find partners.

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[32] This quote was sourced online from Rochester Institute of Technology News, July 16, 2006. In
http://www.thetigerbeat.com/news/?r=arranged-marriages-in-contemporary-times-whats-lov

The purpose of studying arranged marriages alongside the status hierarchy of firms is to emphasize the usage of signals of achieved status. That wives affect the roles and the networks of their husbands in corporations has already been pointed out by Kalmijn (1998) and Kanter ([1977], 2003). With the advent of various forms of industrialization and multinationals, the movement of people away from closed networks to find jobs dictates that arranged marriages follow this trend amongst the upwardly mobile.

Since competition is an economic and social process, actors in the developing world face intense competition for jobs in a global industry and high status firms. Market competition represents a form of social competition. Max Weber saw this as an ideal type of instrumentally rational action through which an actor seeks to attain a goal by applying certain means to be in competition with other actors (Zafirovski 2002, pp. 256). Granovetter (1990, pp. 106-107) relates market competition to social constructions of economic actions and organizations. The very existence of arranged marriages amongst IT/software professionals suggests that the pursuit of instrumentally rational actions for career progress does not necessarily mean the abandonment of traditions, if such traditions can coexist to serve mobility interests. Finding jobs and marriage partners requires networks and credentials of high symbolic capital. However, networks are a result of building a reputation based on the demand for credentials for matching and exchange in the market (see Blau 1964; Cook et al. 1993; Cook and Whitmeyer 1992 for exchange theory).

Exchange theory proponents argue that people tend to exchange things that they have of value with the other party for something that they lack (Cook and Whitmeyer 1992). As an example of this, Becker (1973, 1981, 1991) proposes that men with high levels of earnings marry women who have high domestic capabilities.

Research on the marriage market depicts very limited measures of economic prospects; rather there is use of education and employment status to reflect general projections in the labor market (Sweeny 1997). The study on occupational status, prestige and social stratification using occupational scales by Stewart et al. (1980) has not been used in assessing stratification in the marriage market. Furthermore, the effects of firm status arbitrarily defining educational status, occupational status and thereby affecting chances in the marriage market have not been considered either in stratification studies or marriage studies.

Brooks (2000) demonstrates that professionals tend to marry each other. For example, doctors marry lawyers. With his extensive qualitative research of wedding announcements in the New York Times, he showed that people tend to marry across cultures but from similarly ranked universities. For example, Harvard graduates marry each other or persons from other Ivy League or top ten schools. Other research (Kalamijn 1998) shows that marriages tend to be homogenous and endogamous. This means that actors compete to marry within their own class and social group.

William Goode (1970, pp. 8) writes that all courtship arrangements involve market or exchange systems. Both in the arranged marriage market and the employment market there is considerable filtering and sorting to find potential candidates based on competition and matching of needs in order to enable exchange of resources. Actors with very marketable resumes in high status firms can attract similar and higher status partners and have a wide choice. Actors with resumes and networks that lead them to lower status firms attract similar or lower status partners and have less bargaining power for upward mobility in the arranged marriage market. Hence, the firm plays an indirect role in marriage negotiations.

Barbara Reskin (1991) proposes the idea of job and labor queues where actors are sorted and ranked by employers. This idea has been developed further to suggest a queuing system for the marriage market. Arranged marriage queues are based on the rational needs and networks necessary in the labor and job queues. One's position in the labor and job queues gives access to opportunities to find marriage partners. Actors look for similarity in status in the marriage market (see Kalmijn 1991, 1994, 1998; McPherson et al. 2001). However, these studies do not suggest that firm status and the stratification of credentials of actors with similar skills create queues in the marriage market.

Indian software workers maximize opportunities by attempting to rationalize job and labor queues with marriage queues. In other words, the mobility reflected in the resume affects marriage chances. Actors try to find others that they consider similar or higher than their own position in the queue. Here again it is important to note that the firm and its hiring practices become the arbiter for marriage negotiations even though it is not directly involved. By competing to get credentials that are in demand in the software labor market, professionals aim to get the best paying jobs. One woman IT/software professional remarked that engineering has almost become a basic degree to get a good job in a large firm in the software industry.

Those who aspire for a good job in the software industry would choose engineering as one of the basic steps to getting there. An engineer marrying another engineer compounds diverse sources of networks and queues, if they pass the entrance criterion of the firms. This brings reputation to persons whose resumes reflect this mobility.

Resume Matching in Contemporary Arranged Marriages

The resume basically informs an employer about the credentials and work experience of a potential candidate. Aspects of professional resumes are used for matching partners in contemporary arranged marriages amongst the sample of software professionals.

The concepts of signals proposed by Spence (1974, 1981) and filters by Arrow (1973) have been used to understanding the ways employers and higher education institutions choose potential candidates. These concepts can also be used in relation to software professionals seeking contemporary arranged marriages and using the available signals to filter potential partners to fit their needs. As one online marriage advertisement says,

> …thought finding a partner was an easier task than writing a resume.[33]

The arrangement of marriages in this context involves finding partners who are deemed suitable for each other, because they have acceptable credentials to match the lifestyles and networking needs of both partners. Actors are more likely to benefit from new opportunities and information from network structures which are open and diverse (Burt 1992, 2000, 2001; Granovetter [1974], 1995, 1982). However, to benefit from such networks, their credentials have to be recognized, valued and rewarded by the influential members in their networks, third party observers and the new networks they wish to facilitate which leads to instrumental ties in the contemporary arranged marriage market.

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[33] Part of an online marriage advertisement found on http://www.shaadi.com 2005.

The Screening Process

Berger et al. (1998) discuss the use of indicative cues in social interaction. These are cues such as degrees, jobs etc that situate ego's social status. The respondents pointed to the usage of several indicative cues of status in mate selection.

According to Medora (2003, pp. 216) Indian arranged marriages involve careful screening of family background and assessments of educational and social homogeny factors. In addition, caste, class and cultural compatibility are taken into account in the selection process (Mullatti 1995).

The initial screening process involves exchange of information to enable short-listing of prospective candidates. Those who do not meet the credential requirements are ruled out at this stage. Once someone has been short-listed, they are either contacted by telephone or email to arrange a meeting for further screening. At this level, resumes are explicitly compared for further short-listing. The prospective bride and the groom only meet after the initial rounds of scrutinizing resumes and backgrounds by their parents and other family members. Both men and women can withdraw their interest from the matchmaking negotiations even if their parents have agreed. The marriage decision could either result in a courtship, engagement or immediate marriage, if the groom lives overseas. The latter is termed as an 'airport wedding', when people quip that as soon as an eligible software groom arrives in Bangalore, he will be grabbed and garlanded (Indian wedding ritual).

The theory of inequality in social capital proposes that not all individuals or social groups uniformly acquire social capital or receive expected returns from their social capital (Portes and Landholt 1996). Inequality of social capital occurs when a certain person is placed at a relatively

disadvantaged socio-economic position due to the general tendency of actors to associate with those of similar socio-economic status (Lin 2000). This theory is useful in understanding why actors seek homogeny (same class status) or hypergamy (higher class status) in arranged marriages. However, what this theory does not explain is ways in which social capital can be depleted even from those who might have high status. Social capital can be depleted if persons recommend and process ill-suited matches. To find marriage partners, compatibility is measured through assessments of all the factors indicated in Table 1. Ideally partners wish to find matches in all criteria. Recommendations are usually made if the prospective bride and groom have most of the required matching criteria listed in Table 1. The priorities are usually set by the brides' and grooms' families.

Han (1994) and Stuart et al. (1999) argue that an actor's pattern of market relations are informational cues which other market actors rely on to make inferences about the quality of the actor. While their study looks at business enterprises, the idea can also be applied to understanding career choices and its consequence on marriage choices. Career choices can contribute either favorable or unfavorable information about categorical status cues in the marriage market.[34] In this context, career choices mean more than just occupational choices. It also means the various career moves that ego makes and how they are rewarded in the market. Within the same profession, there can be status variations, because of the type and market status of the firm where one works.

According to Podolny (1994) and Podolny and Phillips (1996), the status of alliances or partners that an institution or an actor has signifies their quality to third parties. If high status institutions

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[34] The idea of categorical status cues comes from Berger et al. (1998) who look at identifiers, indicators and markers of the different types of social ranks that people have. In particular, categorical status cues refer to things like degrees, schools attended etc.

or actors ally themselves with those lower in status, it creates negative signals in the market about the former's reputation. A similar approach can be applied to understanding why people look for homogenous relationships in the marriage market. Marriage alliances with equal or higher status actors are signs of ego's rank to others. However, the literature on the search for homogeny in marriage alliances does not address the conferral and recognition of multiple signals of social status by matching manifold factors to find potential partners like in the Indian arranged marriage market. Brooks (2000); Halpin and Tak (2003); Kalmijn (1991, 1993, 1994, 1998) and McPherson et al. (2001) look at patterns of matching according to race, class, profession, education, income, culture etc, as individual variables, but their studies do not emphasize the multiple and complex mechanics of screening potential partners. They also ignore the symbolic capital of resumes in mate selection.

The systematic matching of multiple factors becomes significant in evaluating the extent of homogeny. Table 1 indicates the percentages and frequencies of the various screening factors used in partner selection. There were a total of seventy-eight respondents (sixty-six married respondents and twelve unmarried respondents looking for spouses). The matrimonial advertisements included a sample size of 200 (see research methodology for sample strategy). Prospective partners are assessed according to signs of compatibility and status attainment. The screening factors in Table 1 are age, education qualifications, salary, firm status, similarity of profession, occupational status, migration options and status of colleges and universities attended. These screening factors are used for first marriages. They reflect functional importance and practicality rather than emotive concerns. Each of the factors for partner selection will be analyzed in the following sections. Other important screening factors will be considered in Table 1 in chapter eight.

Table 1: Screening Factors for Partner Selection

Factors for Partner Selection	Percentage in Interviews Sample Size=78	Percentage in Advertisements Sample Size=200
Age difference (Few Months-5 Years)		
Men older than Women	100% (78)	51% (102)
No Mention	-	49% (98)
Education Qualifications		
Important	100% (78)	100% (200)
Salary		
Important	100% (78)	74% (148)
No Mention	-	26% (52)
Firm Status		
Important	97% (76)	66% (131)
Not Important	3% (2)	-
No Mention	-	34% (69)
Similarity of Profession		
Important	95% (74)	53% (105)
Not Important	5% (4)	47% (95)
Occupational Status		
Important	97% (76)	10% (20)
Not Important	3% (2)	
No Mention	-	90% (180)
Migration Options		
Important	26% (20)	30% (60)
Not Important	74% (58)	70% (140)
Status of College/University		
Importance of High Status	6% (5)	10% (20)
Importance of Accreditation	94% (73)	-
No Mention	-	90% (180)

*The percentages have been rounded off to nearest whole numbers
*The numbers in the brackets are raw numbers

Age of First Marriage

Becker (1981); Davis (1985); Espenshade (1985); Farley (1988); and Cherlin (1992) claim the independence hypothesis, that women interested in their careers might delay or deter their desires to be married. According to Oppenheimer (1997), there is no supporting evidence to show that education or professional interests deter interest in marriage. By the age of twenty-five, 94% of Indian women are married (Cassen et al. 2004). The age of females at the time of their first marriage is approximately eighteen years and for males is twenty-three years (Bloom and Reddy 1986, pp. 509).

All the respondents claimed that they had faced social pressures to get married before they become thirty years of age, and that their employment status made them more marketable in the marriage market. According to Buss (1989) Indian men prefer to marry younger women and Indian women prefer older men. The female respondents had married men with age differences of few months to five years, with the men being older than the women. The same age difference stipulation is prevalent amongst the married male respondents. All the married male and female respondents (sixty-six) had followed this pattern. This, they said is similar to their friends and relatives in other professions. The single respondents (twelve males) intended to get married to younger women. In the matrimonial advertisements, 102 (fifty-two males and fifty females) advertisers had indicated the preferred age range of the partner to be few months to five years. The men preferred younger women and vice versa.

Here successful matchmaking is defined by the respondents as being able to find a partner with all the required achieved and ascribed credentials in the desired age range, location and time. Marriage is seen as an avenue to fortify the career interests of both partners if it increases chances of information and opportunities to new and better jobs.

The subsequent excerpt from a case study shows this.

Respondent A, a twenty-seven year old female engineer who had worked as a programmer in a multinational corporation in Bangalore, had several marriage offers from eligible men whom her relatives had screened. The marriage proposals were coming from her distant aunts who lived in the United States and were looking for a suitable groom for her. Her family had exchanged her resume, or bio data which is the popular colloquial term, with many prospective grooms and their families. She was getting pressured by her family to short-list her choices, as some of these men were moving to Bangalore and wanted to meet her and her family. Her mother was keen, as she

felt that if her daughter postponed her marriage, the most suitable matches would diminish as her daughter aged. Respondent A wanted to marry someone with a similar professional background, as she felt that this would secure her career interests. Her criteria were as follows: the groom should be two to five years older than her; qualified with a university degree in engineering or computer science; work for a reputable multinational organization; have a steady income; no extended family entanglements; and support her career ambitions. If the first marriage offer worked, then she would settle for him. Otherwise, she would continue to look at others. She met and married a thirty year old engineer who had a job in a multinational corporation in Bangalore.

Educational Qualifications

Halpin and Tak (2003); Kalmijn (1994, 1998); Rosenfeld (2005) and McPherson et al. (2001) emphasize homogeny in education as one of the important factors in mate selection. In particular, Halpin and Tak (2003, pp. 473, 474) state that people with the same or similar qualifications tend to marry each other and that occupations tend to hire similarly qualified people. According to (Mare 1991), those who get married shortly after leaving school tend to marry classmates who have similar educational qualifications.

The sample shows that none of the married respondents were classmates. Software firms in India hire a variety of people with different types of qualifications (NASSCOM 2006). The analysts, consultants, programmers etc do not possess the same qualifications even though they are trained for similar skills. Furthermore, only four respondents (including spouses) work for the same firm. Rather, sixty-two respondents and their spouses work for similarly ranked firms. This helps to diversify their professional networks and reinforces the idea of compatibility of their marital alliances.

All the seventy-eight respondents stated that educational qualifications were important for mate selection. Sixty-eight respondents had professional qualifications. Eight respondents had diplomas and two respondents had other degrees. Sixty married respondents (including their spouses) had professional degrees. Out of the thirty-three married males, thirty-one had married spouses with similar qualifications. Two males with professional degrees had married partners with different qualifications and in different professions. The female respondents (twenty-nine) with professional degrees had married partners with similar qualifications. The eight unmarried males with professional degrees wished to marry someone with similar or higher qualifications. The symbolic capital of different professional qualifications is assessed according to its status and marketability to software firms. Professional degrees include any type of engineering degrees which are acceptable credentials for employment and training in software firms. Persons with engineering degrees are in great demand, as their credentials have the highest symbolic capital.[35]

Amongst the diploma holders (five males), one was married to someone with similar qualifications and the four unmarried diploma holders (males) wished to marry someone with higher professional qualifications (university degrees) but found it hard to find higher qualified partners in the same profession despite similarity of occupational status. The two female diploma holders had married someone with similar qualifications and in the same profession. For the diploma holders, the most desired qualifications were programming languages certified by Microsoft, Oracle etc.

When the diploma holders tried to marry persons with professional university degrees, they could not find matches, because their friends and relatives with high social status did not wish to deplete their social capital by recommending them to degree holders.

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[35] This information was sought from NASSCOM (2006) and three human resource consultants.

All the 200 advertisements stated their educational qualifications. Out of these, 198 had professional university qualifications. Two males had diplomas in programming and wanted to find partners with professional degrees in the same profession. Forty males and sixty-five females (105) wanted their partners to have similar qualifications.

There are two cases below that show educational homogeny is an important factor in mate selection (see Halpin and Tak 2003; Kalmijn 1994, 1998; McPherson et al. 2001; Rosenfeld 2005). These respondents with diplomas could not find partners with higher qualifications in higher status firms despite doing similar types of software work. This was despite the fact that they had high status connections that could broker marriage deals for them. This shows that high status connections do not always lead to opportunities as suggested by Lai et al. (1998); Lin (1999b) and Lin et al. (1981b).

Respondent B, a twenty-six year old female, was working for a small firm as a programmer. She had a diploma in Java and C++ programming. Her family was looking for a suitable groom for her. They had many friends with eligible sons working in the software industry. They wanted her to marry an engineer working for a multinational firm. Despite several attempts, they were unsuccessful. Her diploma put her in a vulnerable position in the marriage market because of her limited career options in high status firms. The engineers and other graduates were not interested in marrying her even though she was attractive and in the same profession. She ultimately settled for someone with similar qualifications and a similar career path.

Respondent M, a thirty year old female, had a diploma in programming languages. She was working in a local bank and performing well in her career. She wanted to marry an engineer working for a multinational firm. There were many such men in her caste that her parents knew. However, none of their proposed matches with engineers went through, as the respondent did not

have the symbolic capital of a software engineer working in a multinational firm. Her family found her a match, a software developer (diploma holder) working for a second tier firm.

Respondent P, a male aged thirty-three years, wanted to get married. His family was looking for a wife for him and had advertised his credentials through a matchmaker. The choices that this respondent had were varied. There were some offers from women who were not working, or working in another profession. He wanted to marry a software professional, but his choices were limited. This was because he was not working for a large firm and had low chances of finding a job in a reputed firm. He did not have an engineering degree, but had several years of programming experience for diverse international clients and a middle-level managerial position. His career prospects were bright, as there were many ongoing projects in his firm. He said,

> I am doing the right type of job, but cannot get a job in a high status firm, because I do not have an engineering degree.

In the above cases of software professionals, the educational qualifications of the proposed brides and grooms did not match each other's career tracks or status despite being in the same profession. This shows that homogeny is desired in as many factors as possible. Their symbolic capital was mismatched despite being in the same profession and did not lead to either expressive or instrumental ties.[36]

Firm Status

Corporate identity and firm status have a strong influence in the respondents' arranged marriage preferences and negotiations. It is not just about marrying any IT/software professional but rather marrying someone whose resume enables a career in a reputed firm. As one respondent said,

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[36] Expressive ties reinforce membership and social capital within tightly knit groups of similar social status. Instrumental ties are those which bring information and opportunities to the actor (Lin 1999a).

> I work for a top ranked IT firm and would prefer to marry someone in the same firm or a similarly ranked firm.

The literature on matching and marriage (Brooks 2000; McPherson et al. 2001; Halpin and Tak 2003; Kalmijn 1991, 1993, 1994, 1998) does not consider homogeny or homophily in terms of matching corporate status and identity as an important and value added factor to professional, occupational and educational similarities. The types and status of software firms are as follows: Indian or foreign owned multinationals, foreign subsidiaries, medium and small local firms with foreign investors or locally funded business ventures. As discussed in the earlier chapters, both Indian and foreign multinationals have the highest status and so do first tier firms (NASSCOM 2006; Bangalore IT 2006).

When families exchange bio data of the bride and the groom, corporate status and identity are significant factors in the negotiations. Software firms indirectly influence the contemporary arranged marriage market amongst software professionals from India. Actors with professional degrees who pass the entrance criterion of high status firms have high social capital in the employment market, and thereby in the marriage market. This type of study has not been undertaken in the Indian arranged marriage literature (Das 1980; Mandelbaum 1970; Medora 2003; Moore 1994; Mullatti 1995; Nanda 1995; Rao and Rao 1982; Reuters 2000; Uberoi 1994).

In the matrimonial advertisements of sixty-six males and sixty-five females (131 total), terms such as "multinational", "reputed" or the actual names of firms are used to indicate firm status. Furthermore, because people with professional degrees have a good chance of finding jobs in software multinationals, other advertisements only indicate educational and professional requirements such as 'professionally qualified', or the actual qualifications to short-list potential partners as an indirect way to assert firm status. This is because the reputed firms only hire people

with the best credentials and pay them well. People with similar education and qualifications are likely to work for similar ranks of firms. Halpin and Tak (2003, pp. 473, 474) only address this issue in terms of people with similar qualifications being hired by similar occupations. They and others researching matching and homogeny in the marriage market (Kalmijn 1991, 1994, 1998; Kalmijn and Flap 2001; Mare 1991; McPherson et al. 2001; Rosenfeld 2005) do not discuss the influence of the rank or status of employers affecting marriage choices.

All the respondents (sixty-six married and twelve unmarried respondents) indicated the names and ranks of the firms in their resume. Another way of implying firm status is by announcing one's salary. Hence, firm status is either directly or indirectly implied though a combination of the above signals.

A resume indicating high status multinational firms attracts significant social capital. Contrarily, a resume with low status firms depletes social capital. Resumes reflect how and where social capital is attained in terms of various achievements such as type of degree, educational institution, types of firms worked for and the various positions held by the respondents. Resumes can be used to gain social capital in some networks but not in others. In other words, the social capital one has may be recognized in some networks as an asset and in others as a liability, if there is no demand for a particular set of credentials.

Respondent B was a twenty-eight year old male graduate in accounting who had been trained to become a software professional. However, the respondent did not begin his career in a multinational first tier firm. He had worked for three startups firms in Bangalore on temporary contracts. He tried to get married to someone in a high status software firm, but the symbolic capital of his resume was low, because his employment chances in high status firms were low. He eventually married someone in a similar career path.

Another case was a male professional aged thirty who could not find a female professional in a higher status firm, as he worked in a second tier (ranked by NASSCOM 2006), startup software company. He had met several women working in similarly ranked positions such as 'software systems analyst'. Yet, the marriage proposals did not go through, because the women worked in higher status firms and wanted to find partners in similarly ranked firms. In this case, the respondent had started his career in a reputed multinational firm but changed his job to join a startup firm (lower status than a multinational). The reasons the respondent had for joining a startup were as follows.

It is less pressure and affords more flexible working conditions.

This respondent had a degree in accounting but had been trained in his first job to become a software programmer. He was experiencing problems when trying to find a woman with an engineering degree working for a large firm, because his social capital had somewhat depleted when he joined a startup enterprise and was earning less money than other programmers at the same occupational level in larger firms. Finally, he settled down with an employed woman from another profession.

The most contemporary study on arranged marriages Medora (2003) looks at occupational, class and family compatibility as some of the criterion for mate selection. However, the study ignores the indirect impact of the IT/software industry on contemporary arranged marriage negotiations. The competition to work in multinational firms tends to dictate marriage networks. With the advent of the IT/software sector and its effects on the labor market, the arranged marriage system has not been phased out. In many instances, it fits family expectations and exogamous professional ties. Arranged marriages are transformed to rationalize traditional social alliances with the hiring strategies of a global industry.

The education qualifications of the arranged marriage aspirants are also judged according to where they work. This means a software programmer with an engineering degree working for IBM is deemed suitable to marry a Hewlett Packard programmer with an engineering degree regardless of the status of the institutions from where they have received their university degrees. The rankings of the firms where the professionals work are used to rationalize the variety and differences in the professional degrees that they have attained.

Sameness of Profession

McPherson et al. (2001, pp. 415, 416) state that when actors interact with others who are similar in status, anything that they experience as a result of their position gets reinforced. While they relate this to the occurrence of status homophily in social networks leading to marriage, there are also other reasons explaining the preferences for professional homogeny in the marriage market. From the sample of 200 advertisements of software professionals, 105 (forty males and sixty-five females) stated that they wanted to marry someone within the same profession. Thirty-one respondents had married someone within the same profession. Two respondents had married outside their profession. All the twelve unmarried respondents stated that they wished to marry software professionals. The respondents felt that marrying someone within the same profession increases the chances of marital compatibility, cooperation, reputation and the chances of finding jobs through each other's networks. While Kalmijn (1998, pp. 399) suggests that husbands benefit from their wives' employment networks, there are no clear examples or indications of professional homogeny and similarity of firm status between partners. Marriage partners within the same profession but working for different firms can provide diverse sources of contacts to each other. Here the respondents' preferences point to the benefits of partnerships with actors within the same profession. For the minority of those wanting to move overseas, professional homogeny is important in order to find jobs and work visas for both partners.

Salary and Occupational Status

In marriage alliances where both the potential partners are in highly placed careers, the company name, position, education backgrounds and salary are well advertised within the community networks. This is with the intention that high status jobs will both alert and attract someone similar.

From the respondents, it is noted that salaries are linked to occupational status, education qualifications and firm status. The respondents (entry level programmers) working for lower status firms (two males), despite performing similar types of work and in similar occupational status, had lower salaries than the respondents (two males) working for multinationals. The male and female respondents who are diploma holders (eight) in middle level positions in second tier firms, earned lower salaries than the degree holders (thirty-five) at the same occupational level in higher ranked firms. All the respondents mentioned their salary when selecting mates and vice versa. The men and the women who had partners in the same profession did not expect to earn the same salaries, (but in a similar salary range).

From the sample of 200 marriage advertisements, 148 (seventy-eight males and seventy females) provided information about the person's salary range. Those working for high status firms (sixty-six males and sixty-five females), with professional educational qualifications (hundred males and ninety-six females) and high occupational status (ten males and ten females) had the highest salaries. Salaries are often mentioned in lieu of occupational status in the advertisements. Occupational status details are usually exchanged upon contact and short-listing of candidates.

An interesting finding in sixty-four advertisements shows that the term 'software engineer' is used to indicate occupational status and profession (such as a white collar technical job in a

software firm) even if the advertisers do not have engineering degrees but other professional degrees.

Respondents (six males) who classify themselves as entrepreneurs or owners of software firms have high occupational status regardless of the size of their firms. This is if their resumes indicate work experience in high status firms and they have professional qualifications, investment capital and contacts with other high status investors. Only two advertisements show male entrepreneurs who want to marry partners who can help them in their businesses.

Migration Options

Indian IT/software professionals with professional qualifications and certifications have plenty of opportunities to migrate through overseas education, entrepreneurial tie ups, company transfers and demand for cheap and qualified labor by overseas employers. Biao (2002); Khadria (1999, 2004); Rajghatta (2001) and Saxenian (2000b, c, 2001) have addressed this issue in relation to the IT/software industry. Consequently, firms in India have a high employee turnover rate (NASSCOM 2006). Fourteen respondents including their spouses wished to consider migration if they found good jobs overseas. Three respondents and their spouses moved overseas after their marriage. The advertisements show that twenty males and forty females would consider migration if they found suitable partners.

Migration interests and the visa status of brides and grooms are important factors if both partners wish to migrate overseas. Often, if the man or the woman wants to work overseas, they attempt to find partners who can easily find a job and visa to move there. Those with H1B visas and green cards to work in the United States prefer to marry someone who can also qualify to work in the United States. Similarity in education and type of profession are some ways of ensuring that migration interests are possible, if both partners wish to continue working after marriage or help

each other find jobs in similar types of firms. The following case is about three respondents who are brothers.

Three brothers from Bangalore were engineers working in software firms. They worked in global multinationals as software systems analysts. They found wives (arranged by their parents) that had similar resumes and capable of finding jobs in overseas multinational firms. Their parents felt that it was harder for their sons to find eligible wives after thirty years of age, as most professionally employed girls marry below thirty years of age. The preferred age gap was between a few months to five years (maximum) with the wife being younger than the husband.

In the case of the first son, his parents found him a wife who was an Indian with American citizenship. The criterion was her ability and willingness to find a job where the groom lived, and the groom in return would find her a job in his company through referral. This was only possible, as the bride had engineering qualifications similar to her husband and was accepted by his firm on a similar pay scale but in a different team.

In the cases of the second and third brothers, the situation was similar except that their wives were engineers from India who had received visas and were transferred by their companies to the United States. This was suitable for the brothers, as they had received offers from American firms which would sponsor their work visas.

A husband and wife couple, in the sample of IT/software professionals interviewed, suggested that their families did not pressurize them to make social sacrifices to accommodate long-distance marriages to benefit their careers. The husband said the following.

> I do miss my wife. We have had some marriage difficulties. She lives with my parents in India, but we both understand that it is about feeding the stomach. I would like to work here in my present organization, as the job is good. They pay for everything including when my wife delivered babies. And besides, it is a reputed American firm. It would be foolish to give up my job. My wife does not like to leave India, as she has her own profession there. But money is important, so we have been forced by our families (even consulted some astrologers) to live with our present living arrangements.

Status of Colleges and Universities Attended

Only five male married respondents and twenty (ten males and ten females) advertisements stated that they had attended high status universities, institutes and colleges such as the Indian Institute of Technology, Indian Institute of Science, Indian Institute of Management and other prestigious regional engineering colleges. These respondents had not married spouses from high status universities. The rest of the married fifty-six respondents, including their spouses, mentioned that they had been to accredited colleges, institutes and universities. The twelve unmarried respondents mentioned that they wished to filter potential spouses according to type and level of educational qualifications, firm status and other criteria and not primarily on rankings of college or university attended. This is unlike what Brooks (2000) suggests in his findings about the educated elite in America for whom the status of the university attended is an important factor in forging homogenous marriage partnerships. If the advertiser or the respondent has been to an elite school, this is stated alongside the type of educational qualification attained. However, the type of qualifications attained show greater significance in the filtering process. The following cases show this.

Respondent S had a degree in electronic engineering from one of India's highest rated engineering institutions, the Indian Institute of Technology, Mumbai. He also had a Master's degree in Business Administration from the premier Indian Institute of Management in Bangalore. He was an entrepreneur (founding partner) of a well recognized software firm. His marriage requirements were to marry a woman with an engineering degree working for a reputed

software firm so that his firm could benefit from her work experience and contacts. He was not concerned about where his marriage partner got her degree from as long as her degree enabled her to have work experience in a reputed software firm.

Respondent P, an Indian Institute of Technology, Chennai engineering graduate, owned a medium sized software firm in Bangalore. He married another engineer who was a team leader in a first tier Indian multinational software firm. She had not graduated from an elite school.

The above cases show that the status of schools and colleges attended makes little difference in mate selection if the partner's credentials are valued by high status firms and they have white collar professional status.

The Changing Context of Networking in Arranged Marriages

A study by Kalmijn and Flap (2001) about why people interact with people who are socially and culturally similar to themselves is as follows: the opportunities to meet people who are socially or culturally similar are greater than those that are not. Their study focuses on five meeting settings that couples have in common before they marry such as work, school, neighborhood, common family networks, and voluntary associations. They also focus on five types of homogeny such as age, education, class destinations, class origins and religious background. Their findings show that schools promote most of the variables of homogeny that they tested, whereas workplaces only promote homogeny in relation to what partners aspire for in terms of class destinations. Neighborhoods and family networks promote religious homogeny, but they are not related to class origins. They suggest that meeting a pool of available partners in the marriage market is shaped by institutionally structured arrangements and these hinder the types of people with whom we form personal relationships.

However, this study does not consider multiple matching factors as conscious and rational choices rather than just chance oriented opportunities for the 'desirability of sameness' in mate selection. Furthermore, their study was not intended to consider caste, professional and cyber networks as avenues to purposefully increase the chances of homogeny in mate selection.

The sample in this dissertation indicates the desirability of marrying partners with similar education, profession, etc through contemporary arranged marriages. For the purpose of being competitive, professional concerns become negotiating factors in private life such as marriage. It is a laborious process to find potential partners with the required qualities without diversifying networks. In order to deal with this, respondents use a variety of networking methods to find partners. The respondents favor arranged marriages, because their choices and demands have been taken into consideration by their families. The following statement by a respondent expresses this idea.

> If I can find a spouse through an arranged marriage with the required criterion which fit both traditional and occupational concerns, everyone concerned is happy.

The diversification of networks to find marriage partners is made possible by a) caste networks, b) cyber networks and c) professional networks.

Caste Networks

In this type of marriage brokerage, the match makers are usually from the same caste and sub-caste. Caste networks are used when people want to maintain caste boundaries and find persons with credentials within their own caste and sub-caste. This is the most stringent form of networking to find marriage partners, as it limits the number of available choices to those the appointed matchmakers can find within the community through 'word of mouth' referrals. Only one respondent had married someone strictly within his own caste and sub-caste and had used caste networks to find his partner.

Cyber Networks

Ninety advertisers require marrying someone within their own caste, but using cyber networks instead of caste networks to find partners. According to Medora (2003, pp. 216) the use of matrimonial advertisements is increasingly becoming part of the process of mate selection in India. The internet provides a rich source of possible connections through Indian marriage websites specifically used to widen opportunities to find mates. As one woman said,

> It is difficult to find a suitable Indian match overseas for my daughter who is a software engineer just sitting in Bangalore. While there are many suitable young men here, I would rather she have more options by widening her selection, since she is interested in working abroad. So we look at marriage websites to find information about suitable grooms overseas.

While traditions and boundaries might still be defined in cyber networks, there are cases where caste boundaries are partly relaxed or completely ignored to find the best available in the marriage market. The partner profiles in these websites are placed by the family, friends or the individuals wanting to get married. The respondents stated that this is a better way to find potential partners with similarities, than through their caste networks, because anonymity could be maintained while filtering a variety of available choices locally or globally.

Professional Networks

Twenty-four (twenty males and four females) respondents had used professional networks to find partners. The twelve unmarried male respondents planned to use either professional or cyber networks to find partners. These networks arise from the various firms one has worked for and the opportunities for interactions in that setting. Sometimes friends who have studied together might work for the same firm or similar profession (see Halpin and Tak 2003, pp. 474). The single respondents who have degrees in science, engineering and management, prefer to work for multinational firms in cities, where they feel more networking opportunities are possible to find potential mates with similar credentials. Professional networks provide more avenues for dating

and 'love marriages' besides arranged marriages. Interactions are made possible through team work, onsite and offshore projects, corporate training, informal interaction in the IT/software campus premises and socializing outside the workplace. There are four cases of male and female respondents working in the same firm whose marriages were arranged, because their parents became friends.

Conclusion

The symbolic capital of the varied educational qualifications of the IT/software labor force that is hired by different ranks of IT/software firms has meant that not all IT/software professionals possess similar chances in the arranged marriage market due to the differences in their status. This is shown in various selection factors that are important such as (firm status), salaries, occupational status, professional ladders and migration interests. Thus, the system of matching potential spouses works on assessing resumes for signs of achieved status.

Well placed IT/software professionals in top tier firms are interested in rationalizing matching in many areas, including the degree, type of firm, etc. Those lower in the labor queues, namely programmers with diplomas, find it harder to marry someone of higher employment and firm status. As one respondent said;

> It is a wise choice for an engineer working in a [reputed Indian multinational] to marry someone from [a similarly ranked firm], as this a compatible alliance.

It is assumed that this type of arranged marriage is workable as both partners have similar resumes and can supply each other with contacts to further their careers. In other words, if person A works for a first tier firm, he or she is unlikely to want an alliance with someone who is either less educated or works for a relatively unknown firm. Exceptions occur, if the potential spouse is a founding partner of a successful startup firm and has an established professional reputation from previous work experience in large firms. However, an Indian Institute of Technology (which is

India's most prestigious tertiary educational establishment, (see Deb (2004); Rajghatta (2001)) graduate may opt to marry someone with similar qualifications but from a non-elite school, if their resumes can lead them to similarly ranked professions and firms.

The very purpose is to use matching to find professionally homogenous relationships. In order to do this, both men and women have to have the types of qualifications that are in demand by similarly ranked software firms. Men have to compete for women with similar resumes and use a queuing system to rank potential spouses and be ranked likewise. So the level of homogeny here is more than just matching of education qualifications. It is how these credentials are ranked, rated and rewarded by software firms in the market and the professionals that work for them.

Contemporary arranged marriage networks and negotiations expand through caste, cyber and professional networks for professional mobility. From the internet advertisements, interviews and observations, it could be estimated that the role of contemporary arranged marriages in this context is to attract partners with similar or better resumes as a way of diversifying networks for professional opportunities. This is particularly prevalent for actors in well paying jobs who have credentials that are in demand by high status multinational firms. Cyber networks are used as mediums for advertisements to reach a wider audience, so that arranged marriages can be negotiated by families who live in different parts of the world but often come to cities such as Bangalore to meet and marry their chosen partners in accordance with family traditions. The professional labor market dictated by the demand and ranking of credentials and resumes of people with similar skills influence negotiations in the marriage market. Professional resumes and access to mobility in the labor market are used as bargaining tools in the contemporary arranged marriage market by both men and women. Other non-professional features that are relevant in mate selection are discussed in the next chapter.

<u>Chapter Eight</u>

This chapter deals with non-professional factors of mate selection. It also shows that men and women have equal bargaining power in the contemporary arranged marriage market, if their professional resumes have similar symbolic status in the employment market. The findings in this chapter are linked to the findings in chapter six. They show the transformation of non-technical caste ties; and the increasing opportunities for female software professionals, due to the global competition and hiring practices of the software industry.

Strict endogamous boundaries of caste are sometimes relaxed to include members of sub-castes and other castes in favor of achieved status. Other important filtering criteria such as astrological matching, parents' education and profession, phenotypes, dowry and values (see Table 1), show that formal rationality, as defined by Max Weber ([1920], 1968), has not driven away all traditions. Professional women have equal bargaining power to their male counterparts in the contemporary arranged marriage market.

Table 1: Screening Factors for Partner Selection

Factors for Partner Selection	Percentage in Interviews Sample Size=78	Percentage in Advertisements Sample Size=200
Caste Homogeny		
Important	3% (2)	45% (90)
Not Important	97% (76)	55% (110)
Attractive Looks		
Some Importance	57% (45)	59% (117)
Not Important	43% (33)	-
No Mention	0%	41% (83)
Parents' Education and Profession		
Important	100% (78)	18% (36)
No Mention	-	72% (144)
Values		
Important	72 (56)	48% (96)
No Mention	28% (22)	52% (104)
Dowry		
Important	-	-
No Mention	100% (78)	100% (200)
Indian Horoscope	92% (72)	18% (35)
Western Zodiac Sign	8% (6)	82% (165)

*The percentages have been rounded off to whole numbers.
*The numbers in the brackets are raw numbers

Caste and Contemporary Arranged Marriages

According to Bottero (2005, pp. 4), the process of differential association implies that people make contacts, partners and friends according to their socio-economic position and status in society. Those sharing a similar social position and status are more likely to interact with others of the same group. This to some extent explains the 'desirability of sameness' sought in contemporary arranged marriages in India. However, in this dissertation the idea of homogeny is drawn from the ideology of achieved rather than ascribed status.

Similarity breeds connection, (McPherson et al. 2001, pp. 415) which means that relationships are homogeneous with regards to socio-demographic, behavioral and inter-personal characteristics. McPherson et al. (2001) claim that homogeneity in networks limit people's social worlds by

restricting attitudes, information and interactions. Homogenous relationships exist, partly because ties between dissimilar individuals dissolve at a higher rate (ibid. pp. 415). Rosenfeld (2005) challenges the status caste exchange theory by Davis (1941) and Merton (1941) which states that people exchange racial status and caste status for the other partner's socio-economic status. In Rosenfeld's (2005) view, partners look for similarity in education and class status despite differences in caste or race. Other research on marriage shows that most marriages subscribe to endogamy (marrying within a group) and homogeny or homophily (marrying within a class) (Kalamijn 1998; McPherson et al. 2001). The sample shows that caste and sub-caste homogeny is relaxed in favor of educational, professional and occupational homogeny and similarity of firm status.

Whether Indian couples and families conform to endogamous marriage rules is open to interpretation from the sample. However, research on Indian arranged marriages is dominated by the premise that such marriages take place within the same caste to maintain endogamous principles (Das 1980; Katti and Saroja 1989; Uplaonkar 1995). This is not always the case.

To some Indian families, marrying within the same caste but a different sub-caste is considered exogamous and entails some level of modernizing their traditional outlook. To some others, marrying an Indian from any caste could be conforming to an endogamous definition of marriage because of sameness of nationality. This refers to the contemporary arranged marriage system in India being flexible and selectively modernized to accommodate new social arrangements induced by competitive professional strategies to work in high status software firms, and establish one's career track. Endogamous marriages within the same community under the umbrella of a caste may not always be imposed. Matches may be sought in other communities or sub-castes within the same caste grouping or even across castes. Parents, third parties and the marriage candidates involved in the arranged marriage system decide on which selection factors meet the

rationality or the justification process of matching. This makes the arranged marriage rules regarding matching both endogamous and exogamous.

Expressive ties with similar caste members do not always lead to marriage alliances.[37] The sample shows that sixty-four respondents had married different sub-castes and castes. Examples of this are Iyers marrying Iyengars. Even though both groups are categorized as Brahmin, intermarriage between them consists of breaking caste and religious boundaries. Other examples include one couple where a Brahmin woman is married to a Shudra male. Yet, another Brahmin Iyengar is married to a North Indian Punjabi of the Takhur or landlord caste. Out of the twemty-three Brahmin respondents, all but two were married either outside their caste or sub-caste. The respondents who had married outside their sub-castes had done so with parental approval. These marriages were arranged through colleagues, friends, relatives and matrimonial advertisements on the internet. The twelve single male respondents were all open to marrying outside their caste but still opted for an arranged marriage. The advertisements also show that 110 (sixty males and fifty females) have relaxed caste barriers and are open to considering partners from other castes and sub-castes. The following is a case study of a respondent and his marriage choice.

Respondent D was an engineer working in the software industry. He belonged to the Brahmin, Iyengar caste. His parents were looking for a suitable wife for him. The respondent wanted to marry an engineer working in a multinational firm in the software industry. His parents were willing to relax their caste rules and look for someone in other sub-castes. The respondent said that this was not possible in his parents' generation, as breaking caste rules would have lead to severe consequences and depletion of the family's social capital. He described his family as

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[37] Expressive ties reinforce membership and social capital within tightly knit groups of similar social status (Lin 1999a).

traditional, but agreeable to breaking some caste rules in order to improve his marriage networks and choices.

Social connections based primarily on ascribed status are no longer interesting to those wanting to fortify career aspirations through marriages. The reason for this can be attributed to the development of open networks in a context where education and career placements are deemed to be more useful to access global professional links and opportunities in multinational firms within local cultures. The marriage advertisements (sixty males and fifty females) illustrate the above factors.

The following case is about a professional working in a high status firm looking for a marriage partner with similar credentials but from another caste.

Respondent S was working for a multinational firm for five years after passing his engineering degree. His family was looking for a wife for him. They wanted their son to marry an engineer working for a multinational software firm, and be three years younger than their son. They had started dialogues with many prospective brides and their families. The process involved the following: firstly, exchanging 'bio data' which are resumes of the prospective bride and the groom. Secondly, the short-listing of resumes, according to astrological matching, education, employment history, family background, goals and ambitions, phenotypes and profession. The family was open to short-listing women from other sub-castes and castes, if they had the required achieved status. The women with the reputed resumes were invited for a meeting with their son for several rounds of negotiations to find the best match.

Rosenfeld (2005) proposes that despite differences in racial status, partners are likely to have similar socio-economic and educational status. In a contemporary Indian arranged marriage, one

cannot exclusively rely on exchanging their high caste status for achieved status in their partner. Both partners need to be of similar professional status regardless of their caste. The cases below exemplify this.

Respondent R did not have an engineering degree and was working in a medium sized software firm. His age of thirty-three years was considered a bit old by his community for the arranged marriage market. Hence, his family relaxed the caste barrier even though they belonged to a high status caste. This strategy enabled him to augment his marriage networks but not his choices in terms of status attainment. He was expecting to marry someone with a diploma in programming. This is because he did not get marriage offers from engineers or others with higher qualifications, since his credentials and networks did not lead him to jobs in high status firms. He had met many prospective brides from different castes and sub-castes, but the matches did not finalize into a marital union, as the brides were looking for grooms that were qualified and working in better firms.

Respondent P worked on short-term contracts in software firms. This was because he preferred to take breaks between his jobs. His work experience was in smaller firms, where he was often body shopped to work as temporary labor in software programming projects for larger firms. He found it very difficult to find a wife in his own caste that had a permanent job in a reputed software firm, as his own professional status became a hindrance in the negotiations. Hence, he had to look for someone with a similar career history or someone in another profession of similar status. His family decided to widen his marriage networks by relaxing the caste barrier, and the respondent married someone from a different caste who was a dress designer.

Respondent D was male and from the Vaishya (business and trading) caste. The respondent's two brothers worked in the family business and had married partners within the same caste. However,

the respondent was a software engineer working in a top five Indian multinational firm. This respondent had received many marriage proposals within his own community, but refused them, because the women were not working. He wanted to marry an engineer and met a girl from a higher caste in his workplace. He asked his parents to approach her family for their consent. The respective parents approved the alliance after checking the horoscopes. In the traditional definition of an arranged marriage, this alliance would not have been possible. However, in this case the parents gave their consent, since they felt that the couple was compatible in their professional status.

Another respondent, T, was an engineer in an American multinational firm in Bangalore. Her family arranged her marriage with another engineer working for a reputed multinational. He was from another sub-caste.

One woman (a parent of a respondent) said.

> It is likely that my son will have support in his career, if his wife does the same thing. If we cannot find him a suitable Tamil Iyer Brahmin [caste] girl then we will look for a girl from another sub-caste who fits the measure.

Once a person has a proven track record in terms of his or her resume and reputation, then many offers of jobs, businesses and marriages are open to them regardless of their caste status. On the account of caste, professionals who are very conscious about their achieved status and the status of the firm they work for, are likely to relax caste and sub-caste barriers, if they cannot find someone of similar professional status within their own caste. This is found amongst male and female respondents.

Attractive Looks

According to Buss (1989) and Verma (1989) one of the important factors in mate selection for men in India is requiring their partners to have good looks. Photographs are exchanged by families and often posted in the selected matrimonial website. According to forty-five male respondents, looks are important for partner selection, but not the only decisive factor. The thirty-three female respondents said that they had not based their selection primarily on good looks. The advertisements show that twenty-four men indicated the term beautiful to describe an ideal partner. However, (thirty-nine males and fifty-four females) advertisements also indicated height range, body type and skin tone requirements. The advertisements by females are not very specific about the type of looks they desire in partners.

Parents' Education and Professions

Information about parents' education and professions are exchanged in the screening process. All the seventy-eight respondents revealed this. However, none of the respondents felt that their parents' careers have influenced their careers and thereby marriage choices in any way. They felt that they did not need any high status connections from their future parents-in-law for their jobs prospects. This is unlike what Devine (2004) proposes that parents use their social capital to help their children get good jobs. Amongst the advertisers, seventeen males and nineteen females mentioned their parents' professions in their profiles to indicate their family background.

Values

Medora (2003) discusses the importance of determining the moral values of prospective marriage partners as part of the mate selection process in India. None of the respondents divulged detailed information about this. Nevertheless, fifty-six respondents mentioned family values of their spouses as being one of the important factors (not a primary factor) in mate selection. The advertisements (fifty-six males and forty females) briefly specify personality traits such as

friendly, humorous, cosmopolitan etc as partner requirements. They also indicate terms like traditional, moderate and liberal values (this is part of the profile requirement in the website) without any additional details.

Dowry

Indian marriages involve some form of dowry exchange (Banerjee 1999; Medora 2003; Mullatti 1995). There is no indication from the respondents or the advertisements of dowry requirements and exchanges.

Horoscope Matching

According to Sureender et al. (1998), horoscope matching is common in rural and urban Hindu families. In a study by Umadevi et al. (1992) of professional and non-professional degree holders, they reported that fifty percent matched horoscopes before marriage. The astrologer matches various parameters of compatibility in the horoscopes and predicts whether or not the couples will enjoy marital happiness together (Gupta 1976).

Thirty married respondents and their spouses had matched horoscopes when finding partners. The twelve unmarried males said that it is up to their parents to match horoscopes. All the advertisements had indicated their western zodiac signs. In the advertisements, seventeen males and eighteen females had details such as virtual Indian horoscopes or other indications of Indian astrological matching requirements. For example, some advertisements indicated the term Manglik; this means that a person's horoscope can create marital problems. A person with this astrological weakness can only marry someone with the same in their horoscope to ensure the success of the match.

This information is very interesting, as it shows that the rationality of finding partners on the basis of achieved status has not driven away all traditions. Even those who had relaxed caste barriers had indicated their star signs. This expands on Max Weber's concept of formal rationality where decision making is based on calculation, efficiency, predictability, and scientific measures, geared towards personal or institutional goals.

While factors such as matching firm status, salary, etc show the existence of formal rationality in arranged marriages, there are concerns about hidden compatibility factors that are unknown. According to the traditional understanding of formal rationality and rational choice by Weber ([1920], 1968), an effect of modernization is that people use scientifically calculable means which enable the quickest and most efficient routes to achieving their goals. Astrological matching would be considered irrational from this point of view, because of its perceived lack of scientific foundation. Astrology involves calculability and logic but of a non-substantive nature unrecognized in modern scientific evidence. However, for those respondents and advertisers who want predictability of unknown or futuristic factors, alongside their formal rational goals, astrological matching is also a factor they consider.

The following case shows an arranged marriage proposal that was rejected, because the star signs of the couples did not match despite other matching factors being fulfilled.

Respondent N was in the process of mate selection. His mother had viewed many horoscopes of prospective brides. The respondent's mother asked for their date of birth, Indian star sign, and time of birth. This information was then taken to one of the thousands of computerized astrological centers in Bangalore. The data was fed into a computer, and two books with charts were produced. The books contained horoscopes of both the proposed marriage partners with the strengths and weaknesses in their horoscopes. A point system was generated to show the

compatibility of the bride and the groom. In this situation, the points were low. The computer astrology had predicted that the couples are not compatible and that marriage between them would be a failure. The groom's mother was perplexed, as she had liked this proposal. The prospective bride, a twenty-eight years old engineer, was working as a software programmer in a reputed American multinational in Bangalore and pretty. The groom's mother toyed with the idea of ignoring the astrology but decided to be safe rather than sorry. This marriage brokerage fell through. The respondent himself was agreeable to the horoscope matching process. He did not meet the girl. His mother said that she would find him another engineer with whom the stars would match.

The horoscopes of two unmarried software professionals were compared to determine marital compatibility. According to the astrologer who was consulted (this was verified in the Indian Almanac), the stars of the prospective bride and the prospective groom clashed. Her star had divine qualities, and his had demonic traits. This would result in martial discord. This marriage proposal was dropped by the families, despite the woman being a computer science graduate, and a team leader in a software firm.

Women, Software Employment, Social Stratification and the Arranged Marriage Market

Becker (1973, 1991) suggests that since men and women compete to seek partners, there exists a marriage market which results in the sorting of mates according to wealth, education and other preferences. He claims that men with excellent labor market skills are predicted to marry women with exceptional domestic skills (ibid.). Marriage patterns are reflective of both preferences and opportunities (Kalamijn 1998, pp. 398). Those with the best resources choose amongst each other, and those with lesser resources rely on each other. However, opportunities dictate preferences in terms of defining certain conditions in finding a spouse. The concept of a marriage market involves the premise that unmarried men and women consider a set of spouses based on

their resources and individuals compete with each other for the partner they want by offering what they have in return. Several kinds of resources play a role such as socio-economic and cultural resources. When married, families pool their resources to produce family goods such as status and economic well being besides other factors (ibid.). This argument says that the exchange of resources and competition varies with the role that women play in the labor market. When marriage is based on the division of paid and unpaid labor, men have an advantage in paid labor so that the wife's time is spent in reproductive effort. Male prestige is exchanged for female qualities such as class, physical attractiveness and cultural compatibility, if the family depends on the husband's occupation (Jacobs and Furstenberg 1986; Stevens et al. 1990; Uunk 1996).

Both of the above theories suggest that men do not compete for socio-economic resources when finding spouses (Kalamijn 1998). However, increases in women's participation in the labor force and the lessening of the gender gap in education has changed the nature of bargaining in the marriage market, where both men and women compete for socio-economic resources (Sweeny 1997).

Parsons (1942) and Becker (1981) propose that married couples are divided according to gender roles with expectations of high degrees of specialization where men focus on productive work and women on reproductive work. This view suggests that as a result of increased workforce participation of women, the institution of marriage will weaken or will be delayed (Sweeny 1997). Oppenheimer (1988) and Sweeny (1997) claim that the changes in the labor market for both men and women have altered the nature of the marital agreement and propose that the economic foundations of marriage are shifting. Kalmijn (1994, pp. 422) states two hypotheses: firstly, the cultural matching hypothesis that people prefer to marry someone of similar cultural status; secondly, the economic competition hypothesis, that people prefer to marry someone of high economic status. Hence, he suggests a semblance of status positions between newly weds.

According to Buss (1989), prospective partners having financial prospects, being ambitious and industrious, are important qualities for Indian women when selecting mates. Das (1980) states that men look for education in women and women look for men that do well in their profession. Pal and Mathur (1989) found that both men and women wanted partners in the same social class.

Matches that are preferred in the contemporary Indian arranged marriage market are those of equal socio-economic status while matching multiple factors indicated in this and the previous chapter. The rationality of making choices across broader disconnected networks is plausible, because the criteria may not be available within the known circles. Ranking becomes an important tool with cut off points of what is not acceptable. Here the points are not tailored to Parsons' (1942) and Becker's (1973, 1991) interpretation of gender roles in terms of males involved in productive work and females in reproductive work. In this context, men and women compete amongst themselves to find similarities in education and employment, because these are good pointers to career paths and status of the firms worked for in the software industry.

Third party influences in terms of defining and setting partner preferences are strong and clearly visible in contemporary arranged marriages. Marriages negotiations involve filtering of achieved and ascribed characteristics of both partners as increasingly men and women compete for productive work in Indian and foreign multinational firms. Class homogeny is achieved through a status hierarchy of ranking credentials and firms worked for and redefining caste boundaries to access networks with similarly resourceful marriage partners.

The presented theories only partly answer why arranged marriages persist and are preferred even by women who have access to highly paid work in modern institutions. Arranged marriages are not just about exchanging male and female roles and responsibilities but fortifying similarity in career paths through matching of credentials. Match making in this context enables rational and

strategic choices to find people that have similar symbolic capital that is acceptable in the companies where they aspire to work. Looking for homogeneity in several factors for mate selection does not always restrict people's social worlds, if they widen their choices by accessing various networking methods such as cyber networks (finding partners on Indian match making sites on the internet) or professional networks (finding marriage partners through the workplace).

According to Halpin and Tak (2003, pp. 474), if married women are expected to contribute to family income through productive work, other things being equal, women with high earning potential would be more desirable as marriage partners. Highly qualified men would be in a stronger position to attract highly qualified women. Men with lesser qualifications would have to settle for a lesser qualified match. Their research demonstrates that people with the same or similar types of education prefer to marry each other.

Women's employment has been seen as secondary in relation to the destiny of the economy of household (Stacey 1981). Crompton (1999) argues that the decline of the male breadwinner model has been ignored in much of the sociological literature on stratification (see Blau and Duncan 1967; Goldthrope 1980) and that women's increasing contributions to employment should be taken into account (Crompton 1995, pp. 58, 65). In other words, women should be seen as determining their own class situation (Acker 1973; Allen 1982). Crompton (1999) in her work on employment and gender stratification suggests that the male breadwinner system has waned, despite the continual existence of differences in male and female access to occupational status and jobs. The cases below shows that women have credential criteria that their potential partners need to fulfill in order to qualify for a marriage alliance. These cases illustrate that contemporary arranged marriages do not necessarily demote women's interests. There does not seem to be any indication from the samples promoting the sole breadwinner status of men.

Respondent L was in his late twenties and his wife in her early twenties when they got married. They were both from different castes. Their first jobs commenced in a high status firm in Bangalore. They had met through their professional networks and then got parental consent to get married. They continued to work in the same firm in various onsite projects in different teams. They preferred not to be on the same team at work, as they feared that official competition might interfere with their domestic cooperation. Since both had late working hours in a similar environment, they felt that domestic cooperation was a must in order for their individual careers to progress. They hoped to rely on their extended families in Bangalore to help them when they decide to have children. They thought that family approval at the time of marriage was imperative, as parents provide considerable ancillary support for childcare, food, maid monitoring and other services.

In the advertisements by people with professional qualifications working for multinational firms, amongst the list of compatibles required by the groom and his family is that the girl should be educated with a professional university degree, and work for a multinational firm. There are several reasons for this. Firstly, educated men in the IT/software profession do not wish to marry a lesser educated wife. Secondly, the prestige of the firm in which the wife works points to her aptitude, employability and networks. The interviews show that women are equally selective of their husbands as revealed below.

Respondent R, a twenty-four year old engineering graduate from a traditional family, worked in Bangalore as a project leader for an Indian software multinational firm. Her parents and extended family came to the prospective groom's parent's house. The groom and his family were from a different sub-caste. This prospective groom was one amongst a list of five eligible bachelors that R had to see in between her onsite projects in Holland and the United States for her employer's software clients. What were some of the groom's qualifying points? He had earlier worked for a

foreign aid agency in Bangalore. Although this was not a private firm, it was still classified as multinational (as it was foreign owned). However, the groom was not an engineer, a disappointment for the bride's family. Furthermore, his non-technical undergraduate degree made him less eligible for R, as he was not employed in the IT/software sector. Contrarily, what made the girl's family short-list him was his perceived multinational work experience.

However, the girl's parents who were comparing resumes of many prospective grooms, wanted to ascertain certain conditions. Firstly, their daughter would not be expected to cook or clean as she worked late hours. Secondly, the husband was required to understand her frequent travels overseas for client customizations (part of software services). So they conceded to opt for an extended family household, as the future mother-in-law and the maid were expected to provide for the domestic needs.

The father of the female respondent was very proud of his daughter's educational and career achievements. He was a retired government officer from rural Karnataka who had strived and saved to give her an engineering education in a regional engineering college. He stressed that his daughter had received her education through a merit seat, as she had to pass a competitive state wide entrance exam along with thousands of other students.

As for the groom's mother, she did not particularly want a girl who was an IT/software professional to marry her son. She said that she rated them as Spartan and badly dressed. This marriage negotiation did not go through, as the groom's mother wanted a bride with a less demanding career than software programming. Since this initial parental screening failed, the prospective bride and groom never met each other. The father of R was surprised, as girls like his daughter were highly sought after in the professional market and hence, in the marriage market. As it turned out, respondent R's best chances were with another IT/software professional with a

similar resume from another sub-caste. She got engaged to an IT/software engineer (one in a long

list of suitors) who was living and working for a multinational software firm in Bangalore.

> Were increasing numbers of women to begin to undertake –even at a relatively modest level –'service class' careers, then this could have a substantial impact on the internal cohesion of the service class. Crompton (1995, pp. 65)

Due to the internal gender cohesion of the service class, which might be happening owing to

increased opportunities for women in IT/software workplaces, there is better negotiating power

for women in the marriage market. In the context of arranged marriages of Indian software

professionals, the male breadwinner model still exists only to be complimented and fortified by

the female breadwinner model. This is because the male professional in many instances may not

use his breadwinner status to attract a marriage partner, if the woman is not of similar rank and

position. Female professionals in the IT/software industry, despite being a minority (NASSCOM

2005), display bargaining power similar to that of their male counterparts in the marriage market.

According to Prandy et al. (1982, pp. 8),

> …those with higher incomes tend to also enjoy a higher occupational status, a greater opportunity for self actualization in their work, greater security and potential, at least, for developing social relationships.

While the above statement is referring to the employment situation, the following statement about

success [in the workplace] raises expectations (see Atkinson 1964, pp. 258-267) can be applied to

the Indian arranged marriage market.

A study of Indian middle class working couples in Bangalore has been conducted by Ramu

(1989) with regards to their marriage ties and gender responsibilities. His study is based on

quantitative and qualitative research from data collected in Bangalore. The sample size included

245 single and 245 dual working couples from public sector companies. He chose these firms as

they had a high concentration of women workers in order to look at domestic marriage roles.

Ramu (1989, pp. 16-18) claims that religious and cultural values still dominate the structural status of women both within and outside the household. Traditionally, upper class and upper caste women are discouraged from finding jobs, but this has changed due to education, economic and legal reasons. Women in dual-earning families seek employment purely for economic reasons. As a result, women experience conflicting roles, overload of both productive and reproductive duties as husbands do not compromise their domestic roles.

The interviews and the advertisements show that female software professionals are very popular in the arranged marriage market regardless of their caste. Software work increases female social capital and their bargaining power. Well-known Indian and foreign software multinationals provide the means for women to travel and work late hours as revealed in the interviews and by Varma and Sasikumar (2004). This impetus for women to work comes from the strong cultural notions of linking multinational software firms with successful careers, because of their hiring, training, promotion and workplace practices. This is because there is a huge demand for educated professionals which creates increasing job opportunities for women who have access to similar types of education as male professionals. In the corporate discourse with employees and the public, there is adherence to universalistic Indian values rather than values specific to any caste, gender or religion. This makes it acceptable for many traditional families to have both their sons and daughters working there, as the following statement shows.

> Software work has high status in the Indian cultural ethos. It is seen as clean work that is not gender specific or restrictive. Software professionals achieve status through application of their credentials to knowledge which makes them respected in society. It celebrates the middle class way of life and identity regardless of social origin or mobility (Female, lead software programmer aged thirty working in a multinational firm in Bangalore).

Another respondent said,

> Being a programmer is safe and culturally acceptable for women even by orthodox families, because of its links to a knowledge profession.

The following case of a Muslim IT/software professional, and many others throughout this chapter, demonstrates this.

Respondent T was very nervous about traveling alone without her husband. Since she had been hired by a Dutch software multinational, her husband supported her training sojourn overseas. She was a traditional Muslim lady, but her husband encouraged her to work and travel when necessary by her employer. Her domestic helper, mother-in-law and parents took care of her domestic duties while she was away on work.

Respondent Y, a highly placed female executive working for a software multinational, said that her family life was adapted around her professional needs. Her job made her travel very frequently to overseas locations. Her two daughters were brought up by her cook, father-in-law, husband and mother-in-law. Her high pay and status in the firm she worked for helped her to justify this arrangement. Her husband, who had an equally high paid job in a multinational, did not have to travel as much and took care of the household affairs while she was away.

According to Chakrabortty (1978), many middle class Indian women with tertiary education prefer to perform their roles as wives and mothers. They seek employment to improve their families' living standards. As a result of this, married women find it very difficult to succeed in both avenues. Hence, married women give lower priority to their productive work than their reproductive work. Chakrabortty (1978) also argues that middle class women in India have an unsure position moving towards modernity which is illustrated in the following statement.

> This is quite natural, because in a society in transition such as the contemporary Indian society is, the tradition undergoes continuous change but what is modern is not defined,

established and acceptable fully. Hence, a great deal of ambiguity in social values, moral norms and cultural standards is only to be expected. As such the likelihood of conflicts becomes greater. (pp. 54)

These findings tend to homogenize middle class women, where the type of work they do, and the firms they work for are not taken into account. The following case indicates the contrary of the above statement.

Respondent A was married and working for a major software firm in an entry level position. She was from a very conservative Hindu joint family. After she started working in the software industry, which her family of procreation encouraged her to do, the major burden of child care and cooking was taken away from her in favor of her employment status.

Other research on the marriage market in India suggests that females have a disadvantage in the marriage market compared to males (Banerjee 1999, pp. 648). Research on personal advertisements for partners placed in the New York Magazine and The Washingtonian magazine show that men are more interested in physical the attractiveness of their potential mates, and women are more interested in money, educational status, intellectual status, and occupational status of their male partners (Hirschman 1987, pp. 103). The sample shows that both male and female software professionals have similar matching requirements from each other to forge marriage partnerships.

Respondent M, a twenty-seven year old female with a Master's degree in Management Information Systems was working for a high status software firm. Her family environment was conservative and middle class. Her father was a businessman trading in industrial products and her mother an ex-government official. The family had roots in Bangalore. M got engaged to a software professional through an arranged marriage alliance set up by her father's relative. This

wedding was arranged in three days of actual courtship between the prospective bride and groom with much networking and checking of credentials done on their behalf by their parents and relatives.

The main factors for the selection of a bridegroom were family reputation, income, professional capabilities, and the status of the company where he was employed. The matchmaking was initiated mainly through email. The aunt who facilitated the initial networking contacted both sides with recommendations urging the viability of this marriage proposal. Hence, the prospective groom popularly and culturally termed as the boy and the prospective bride, the girl, were introduced to each other and given private time to understand and discuss their individual, family and career concerns. In this case, the strong point for consideration was the fact that the groom was an engineer working for a large American multinational firm based in India. The employment benefits and the high pay were very attractive to the girl's family. They saw this as a rewarding career and opportunity for affluence while being able to conform to traditional values, as the marriage was arranged by them.

"My son, the groom, has had many marriage proposals", said the groom's father.

He wanted his son to marry a southern Indian girl who looked northern Indian with fairer skin, ate northern Indian vegetarian food but had southern Indian values and a high worth resume to work in a multinational software firm. So when the groom was introduced to M, he immediately agreed as she met all the conditions. M said that she would look for a job after marriage, as they would hire a domestic helper who would do all the household chores. She was very keen on pursuing her own career interests and looked for a job in programming. She took computer language courses with certifications by Microsoft in order to use her education and husband's networks to find a

job. M's groom, R was basically interested in securing sound career progress for himself and his bride.

The family decided to hold three wedding receptions after the main wedding for all their different networks: one for close networks of relatives; a second one for friends, and a third one for the groom's colleagues to attend. This included bosses, subordinates and team members. This was an attempt to reinforce professional networks in social events and impress upon the social reputation of the families involved. There was an underlying caution that 'important people should not be left out'. While subordinates may not have the same professional reputation or status as their bosses, they are invited if they are popular in the team networks and provide support and favors for the former.

During weddings and family occasions, children's resumes are orally compared by their parents. While educational and professional qualifications are important assets in forming marriage alliances, they are displayed according to the people, circumstances and occasions in order to activate networks. Resumes are used in the initial stages to compare and form alliances. However, once an alliance is formed, the families downplay the position and the salaries of the brides and grooms to maintain a low profile with other relatives. When negotiating for marriages, persons working for multinational firms are likely to win negotiations with similarly ranked or higher placed partners regardless of gender. Hence, there is a clear attempt to find people that are well educated and stationed in well recognized firms.

Conclusion

The advertisements and cases of respondents suggest that strict definitions of caste endogamy are often relaxed to include sub-castes. Caste boundaries are sometimes relaxed in favor of professional homogeny in relation to finding someone with a similar resume. Both men and

women have equal bargaining power in the marriage market should they be employable by similar types of firms and jobs. This is regardless of the fact that women are still a minority in software firms (NASSCOM 2006).

The families that were observed spent time in these negotiations often leading to marriages of their kin sometimes after several attempts and interviews. All had ranked potential spouses according to their resumes. This includes both men and women alike and no cases from the sample reflect biases towards employed women. However, despite the prevalence of formal rationality in most of the selection criteria, horoscope matching is still rampant, which shows that modernization does not necessarily drive out all traditional practices.

Resumes are prominently used in negotiations to openly ascertain status, wealth and prestige for upward social mobility. For example, both men and women who are well employed in the IT/software sector are widely sought after for several reasons. Firstly, they contribute to the household income (the respondents stated that they did not wish to pay or receive dowry from their spouses which has been verified by their families). The women's education and professional status replace dowry. Secondly, within middle class educated families, IT/software is seen as a suitable profession for women in terms of legitimizing rather than defining modernization (adapting and linking cultural practices with social change) which rationalizes working outside the home.

A significant part of the marriage negotiations are tailored to make domestic responsibilities more comfortable for working women. All the people interviewed preferred to have part-time maids or have their in-laws or spouses help with some domestic chores. Women, who are engineers in large multinationals with high paying jobs, enjoy this status more than women in lower paying jobs. Whether or not IT/software professionals find partners through contemporary arranged or

love marriages, the selection of partners is quite similar. They look for partners with professional compatibility amongst other factors such as relaxed barriers of caste matching. In a love marriage, the meeting is fueled in institutional settings such as offices, clients, university and overseas assignments. In arranged marriages, the meeting is organized by another institution, namely the family, either the immediate or extended nucleus. The conditions are mostly about matching credentials.

Chapter Nine

This dissertation looks at credential competition which influences life-strategies of educated middle class professionals who are working for software firms. It suggests that the software industry is a new institution of social change because it is global in nature and has benefited from credential competition in hiring, which in turn has influenced the nature of social alliances. It documents the impact on the contemporary arranged marriage market of the rise of this industry and shows how ideas about the importance of professional homogeny in the Indian marriage ideologies are being applied in this traditional context. The samples are drawn from networks arising from Bangalore, India.

The key contributions in this dissertation are as follows: status attainment in networking is based on attaining high levels of education that are in demand in the market and professional achievements in well recognized firms. Hence, caste rules are often relaxed in favor of achieved status and female professionals have increasingly similar bargaining power to their male counterparts. Furthermore, professional degrees like engineering and jobs in recognized Indian and foreign firms or entrepreneurial ventures enhance social capital for networking with other high status actors. Contact with high status actors is beneficial, when actors have the achieved status that is valued and recognized in the employment and marriage markets where status attainment is sought. On the other hand, social capital is also depleted if actors try to leverage their contacts with high status actors without having the necessary credentials that are valued in the employment or marriage markets. Actors do not always benefit from their alliances with high status contacts for mobility into better firms or hypergamous marriage networks despite having instrumental and expressive ties and personal resources (concepts from Lin 1982, 1999a, b). This is because the variety in their education is stratified according to the symbolic capital or

reputation of their credentials by a hierarchy of firms despite the labor force being able to perform similar skills.

The employment and marriage markets are linked, because of the actors' focus on signs of achieved status and professional similarities. This is indirectly influenced by the strategies employed by reputed firms which hire professionals with signs and signals of quality to third parties and clients. The data chapters have extrapolated and analyzed the findings from a developing and modernizing economy, namely the software industry in Bangalore, India in relation to theories of exchange, filtering, human capital, marriage, rational choice, signaling, social capital, social networks and symbolic capital. There are several significant theoretical and empirical contributions in the area of symbolic capital, organizational cultural capital and social capital. Besides this, there are several implications on caste, arranged marriages and professional homogeny all in relation to the rise of new industry which is affected by global outsourcing, competitive work practices and largely export driven. These are outlined as follows.

- A micro analysis of modernization and globalization in relation to a new industry and economic liberalization and a focus on credential competition of knowledge workers from a developing country. No such study has been done before on India.

- The importance of credentials, corporate identity and employer status as forms of symbolic capital, organizational cultural capital and social capital for software professionals which influences their chances in employment and marriage alliances.

- Having high status contacts means little in terms of opportunities in employment and marriage if the person's credentials and resume do not have prestige. This is contrary to the dominant premise in network theory.

- Arranged marriages are highly rationalized and there is an adaptation of cyber networks.

- Arranged marriage alliances involve multiple factors of matching professional homogeny both by men and women.

- While modern arranged marriages are based on concerns of professional compatibility, traditional practices like horoscope matching are still popular and have been rationalized to suit modern needs.

Social Networks and Forms of Capital

This dissertation provides empirical data on a previously neglected area of theoretical research between symbolic and organizational cultural capital and their effects on social networks. It particularly illustrates the importance of credentials, corporate identity and employer status as forms of symbolic capital and organizational cultural capital for software professionals which determine their chances in finding employment and finding marriage alliances. In this model, social capital which means social influence is an outcome or effect of symbolic capital and organizational cultural capital.

Engineering and other professional degrees are signs of achieved status for software professionals. Despite their caste or gender status, those without professional university degrees find it hard to attain occupational status or join better firms even if they have the skills and contacts. Although the following concepts have been defined and debated, the link between organizational cultural capital acquired by working for reputed firms and the symbolic capital of varied educational qualifications of people who can be trained to perform similar skills is not fully developed in the literature on networks and status attainment (Burt 1992, 2001; Granovetter [1974], 1995, 1982; Lin 1982, 1999a, b); filtering (Arrow 1973); signaling (Spence 1974, 1981); queuing (Reskin 1991; Reskin and Roos 1990); human capital theory (Coleman 1988, 1990; Gangl 2000); social capital theory (Bourdieu [1983], 1986; Flap, 1991, 1999; Portes 1998; Putnam 1995) and hiring practices (Bills 1988, 1992, 2003; Erickson 2001; Flap and Boxman

2001; Rosenbaum et al. 1990). Firm status is defined either as first or second tier according to their earnings and size (NASSCOM 2006). The reputed firms prefer to hire those with professional degrees such as engineering and the smaller firms hire cheaper labor that do not pass the filters of first tiers firms, mainly that is non-professional degree and diploma holders (Arora et al. 2000b). This creates stratification that is based on status hierarchies of where one works. Career choices also affect status attainment in networks.

The reasons stated for the popularity of this sunshine industry by the interviewees are as follows: firstly, the industry is the highest paying economic sector in India (NASSCOM 2006); secondly, it has helped the educated middle classes become globally mobile (back and forth from India to overseas locations and vice versa); thirdly, it has provided opportunities for skills upgrading, professional training for both men and women; fourthly, it has influenced perceptions and opportunities regarding entrepreneurship for those whose castes are traditionally non-entrepreneurial; lastly, high status corporate identity provides social status and leverage in finding marriage partners with similar resumes and networks.

Those with engineering degrees (high symbolic capital) and career paths in high status firms or entrepreneurial ventures (high organizational cultural capital) had the highest social capital for status attainment. Those with professional or other degrees and diplomas and jobs in lower status firms found it harder to find jobs in high status firms despite having the necessary skills. They did not benefit from their connections to high status actors who feared depleting their social capital by helping them. The large software firms prefer to hire those with professional degrees despite a labor shortage (Arora et al. 2000b). The labor shortage is artificially induced by software firms, as India has a large educated labor pool. Software firms claim to retrain all their entrants in software skills to standardize quality (see Agrawal and Thite 2003; Kokhova and Sukharev 2001; Raghuram 2001; Varma and Sasikumar 2004). Nevertheless, they wish to have full control over

the type of professionals they wish to hire. This is because they are competing both in terms of quality and cost in a largely export-oriented market (NASSCOM 2006).

The diploma holders find it challenging to find jobs in larger firms where the engineering, technology and management graduates work. They talked about the structural constraints and the bias towards hiring the former by multinational corporations for software product engineering and consulting jobs. The entrepreneurs of smaller startup enterprises said that they hire professionals that are cheaper but paradoxically can deliver similar programming requirements even though they are lower in professional status (these are people who do not meet the entrance criterion for reputed firms).

Firms also hire software professionals who want to work on a short-term contract basis and pay them lower salaries called 'body shopping' (see Biao 2002). While headhunters and software professionals reported the average starting salary in Indian rupees of an engineer in a large scale IT/software firm between twelve thousand and fifteen thousand, the diploma holders start at a much lower salary (three to ten thousand Indian rupees) with job opportunities in smaller software (also see Varma and Sasikumar 2004, pp. 48-49).

The interviewees (sixty-three) who are educated in regional colleges and universities for professional degrees administered through the state and private funding have similar job opportunities compared to those respondents (five) who have graduated from elite universities. However, 50% felt that graduates from elite schools fared better in sourcing entrepreneurial networks and venture capital from overseas, if they go overseas to study and work. Only about 40% in the highest management cadre of the reputed Indian IT/software firms have at least one degree from these schools (not all the executive biographies of the senior management of the top ten software firms in Bangalore indicate education from high status universities). Five

respondents are from premium institutions such as the Indian Institute of Technology, Indian Institute of Management, Indian Institute of Information Technology Bangalore and Indian Institute of Science.

The diploma holders that were interviewed are trained in institutions such as National Institute of Information Technology and Aptech which teach people programming skills in the various computer coding languages. These training schools also produce their own in-house software components.

None of the interviewees have an overseas education and do not perceive it necessary for improving their career prospects or migration interests due to the availability of visas for Indian trained professionals. Only 5% of the engineers interviewed had a specific degree in software engineering, as the software industry hires other types of engineers, science and business graduates depending on their proficiency, trainability and experience. Interviewees with engineering degrees came from varied disciplines such as civil, chemical, electrical, electronic, mechanical etc. Their symbolic capital is similar if they work for firms that are similar in status. They are able to get software jobs, because the software firms that hire them have extensive programs to train persons with good mathematical and logical abilities for programming.

Only fifty percent of the interviewees claimed to be adequately networked for an independent IT/software venture or startup. All the respondents pointed to the success stories of Indian software entrepreneurs abroad. Professionally, creating networks for entrepreneurship based on the credit worthiness and the reputation of members in the network group is highly rated. In other words, financial stability and work experience is considered very important before entering into an entrepreneurial venture. The issue of caste is not brought up, rather the geographical origin of the business partner is more relevant. For example, is the person from Bangalore? Is he or she of

northern Indian or southern Indian descent? The purpose of this information is to perform credibility and background checks. Previous work experience together as a team is a very desirable aspect of choosing a business partner, as credentials, efficiency, reputation, working styles and so on can be established in advance. Education background, such as where the business partners went to university and what they have studied, are verified. The most favored business partners are those with a professional reputation that gave access to overseas clients and venture capital funding. Only one of the interviewees has a business venture with a relative (father of the respondent was previously the head of a famous medical school in Mysore). However, all have at least two relatives working in the software industry such as spouses or other kin. They profess that it is not just enough to know someone or be related to someone or be of the same caste, but rather be recognized first for their own achievements before any network can become a viable source for entrepreneurial opportunities.

Success in networking is rated in terms of professional achievements. The interviews reveal an extensive referral system whereby Indian IT/software companies compete with each other through niche market segmentation whereby a competitor may subcontract modules of a project to another company that specializes in part of the specific product development. This way, entrepreneurs help each other without too much undercutting of prices, as not all of them want to crowd the market with the same types of products and services. Clients need different specifications, which give an edge to companies that specialize in customizations. Low value-added software contracts are subcontracted from high status firms to other firms down the hierarchy through social networks of trust which are considered reliable for mutual advantage, whereby firms do favors for their competitors and vice versa. Hence, most small business IT/software advertising is by referrals or through investors overseas who have extensive networks bringing in business to the parent firms which can then be passed on to their Indian counterparts (Holmstrom 2002).

The Transformation of Caste Homogeneity in Social Networks

The sample shows representations of multiple castes and sub-castes in professional networks. Caste is a network inhibitor in the software knowledge economy. Seeking homogeneity in ascribed status does not seem to benefit the employers or employees in the job market owing to the increased benefits of diversifying networks on the basis of merit due to the global nature of this industry which is both technologically innovative and fast changing. None of the respondents were able to give me any statistics about the overall caste representations of their employees or colleagues and said that it is a sensitive issue. This was a limitation of the study. However, the strength of this study understood in detail through multiple data sources the network processes which indicate multiple caste representations and lack of caste homogeneity. The high level executive biographies of the top ten IT/software firms in Bangalore also indicate multiple caste representations.

All the respondents claim that credential recognition and competition for jobs in well-known organizations enriches their social status despite not receiving favors from rich or influential caste members, friends or relatives. They demonstrate that credential building and work experience in reputed firms are the key resources to enter influential and high status networks and possibly better jobs or business vestures. The most useful contacts and networks that can be facilitated for information and resource exchange are with professionals who have similar credentials and past experience of working together and the display of achievement (tertiary qualifications and working for well known organizations). There is a validation process consisting of recognizing others based on the reputation of the firms they work for and past work experience.

Ascribed status is not considered a significant issue in career progress or accessing job networks. The type of firm worked for is categorized according to social and business name brands. While

organizations such as NASSCOM (National Association of Software and Service Providers) constantly provide information and rankings of IT/software firms, the respondents also rely on informal sources. They prefer to work for and become recognized by branded (well known firms that are socially recognized by others. The influx of foreign firms like Texas Instruments, Motorola, Sun Microsystems, IBM etc and Indian giants such as Tata Consultancy Services, Infosys Technologies and Wipro have helped to create the popular prototype of the Indian software professional. Although in reality they feel that there are many types of people represented under the term 'software engineer'. The typology suggested in chapter five shows that software professionals have different types of networks based on their education, career choices and where they work.

The document analysis, interviews and secondary data (Arora et al. 2000b) provide similar leads that engineers, management and science graduates are more in demand by the larger firms than diploma holders with similar software skills which creates a hierarchy according to credentials and work experience arbitrated by high status organizations. Ninety-eight percent claim that the best outcome of their professional experience would be to work for an international firm, or become partners in successful startup ventures. Those employed by the large firms felt positive about their career mobility to other firms and ability to network for possible promotions and business ventures with bosses, ex-colleagues and team members.

Gender and the Indian Software Industry

While women are still a minority in the software industry (NASSCOM 2006), the female respondents like working there because of occupational status and salary. All the female respondents feel comfortable with the human resource practices in the large software firms. Beechey and Perkins (1987) say that the employment market is not gender neutral. While they are largely right, the software industry shows some exceptions. The female respondents like working

for the software industry because of its global and competitive nature. Those working for larger and well-known firms enjoy more status than those working for smaller firms. There were no female respondents who are entrepreneurs. Unlike the findings of Reskin and Roos (1984) which show that men benefit more from their networks than women, the sample shows otherwise. The female respondents are able to find the same types of jobs and occupational status as their male counterparts due to the demand for qualified professionals. In her queuing theory Reskin (1991) says that when there is a demand for workers with certain skills, then employers look for non-traditional sources of labor to circumvent labor shortages. This is particularly so in the software industry because jobs are being outsourced to countries like India where the demand for educated labor outstrips the supply because employers are highly selective of credentials.

Arranged Marriages, Caste and Gender

This dissertation draws upon various methods of research to establish these findings. These are internet sampling, interviews and observations. This was useful in augmenting findings about the marriage market which is otherwise mainly dominated by Western literature. Western literature on marriage concentrates on homophily in networks (Brooks 2000; Halpin and Tak 2003; Kalmijn 1991, 1993, 1994, 1998; McPherson et al. 2001). Sweeny (1997) and Oppenheimer (1988, 1997), talk about the change in nature of the marital bargain and age of first marriage. This is because of increased participation of females in productive labor. Other literature by Becker (1973, 1981, 1991) shows the existence of a marriage market where men and women exchange productive labor for physical attractiveness and reproductive labor. The Indian literature on arranged marriages is less theoretical while there have been studies indicating the existence of class and caste homogeny, dowry practices and the popular existence of contemporary and traditional arranged marriages amongst the educated and urban Indians (Mandelbaum 1970; Medora 2003; Moore 1994; Mullatti 1995; Nanda 1995; Rao and Rao 1982; Reuters 2000; Uberoi

1994). Arranged marriages are preferred over love marriages by most young Indians (Saroja and Surendra 1991; Sprecher and Chandak 1992; Umadevi et al. 1992; Uplaonkar 1995).

All of the above studies have ignored the importance of filtering, ranking and matching multiple factors of professional homogeny, some of which are more important than others. In arranged marriage networks, ascribed status still has some influence but is diminishing in its importance compared to alliances of achieved status. The sample of 200 advertisements is larger than the seventy-eight interviews and the percentages of the various factors of mate selection are different. This difference is not statistically relevant for this study which is not based on quantitative measures for hypothesis testing. The strength of this study lies in showing the incidence and relevance of the various factors of mate selection which are common to both methods of data collection.

Unlike the findings of Ramu (1989) who did a study of married working women in Bangalore, the female respondents claim to have increased agency in marriage choices, because their credentials and employment have added value to their social status and bargaining power. This is also noted from analyzing cyber networks for arranged marriages, document analysis, in-depth interviews of IT/software professionals and observations.

All the respondents believe in traditional Indian customs and practice some rituals of their respective communities. While some caste rules and rituals are followed, marriage boundaries are relaxed in favor of class interests after a considerable filtering process. For marriage purposes, matching similarities in career interests is stated as one key factor in finding a suitable marriage partner. There are other issues as well, such as family background, looks etc (determined on a case by case basis). As the findings of Sureender et al. (1998) and Umadevi et al. (1992) suggest, matching horoscopes is a reasonably significant requirement amongst the advertisements and

some respondents, despite their rational choices in other factors of mate selection. This is particularly so when men are seeking educated and career-minded women. The women did not want to give up 'good jobs' and preferred to balance their domestic and professional status. While modern professional aspirations are clearly identified, they still use traditional values such as parental approval. Those who are married and working for higher status firms, with professional qualifications and chances of improving their occupational status had set high filters and found it easier to find similarly ranked marriage partners regardless of gender or caste. Those working for lower status firms had to be more flexible in their conditions for finding marriage partners. The twelve unmarried male respondents have been filtering marriage candidates according to the market value of their resumes and other factors discussed in chapters seven and eight.

However, all but two of the married respondents said that traditional values had not stopped them from either marrying outside their caste, or networking with persons from different communities for improving their job prospects. Career and migration interests are established prior to agreeing to marry their spouses. One condition identified is career support. For example, men and women wish for their spouses to be supportive of flexible working hours and simplistic lifestyles. Both husbands and wives are expected to have similar credentials and work for similarly sized firms to accentuate social and professional networks. Female respondents opt for a part time domestic helper in the household and say that they have negotiating powers with their husbands and kin to help in domestic chores.

A Conceptual Model of the Key Findings

In summary, the following model outlines what is missing in the earlier literature and what has been proposed and supported in this dissertation. Actor X has symbolic capital from credentials. Caste and community networks are not beneficial for working in the IT/software industry. Education, career choices, firm status and work experience on the other hand definitely count.

Initially X can only gain entry through making a rational choice in his or her education. That is if the market requires engineers for the IT/software industry, then X (assuming X has the credentials and passes the entrance tests) can get a job, because there is a huge demand. Actor X is not likely to benefit from high status actors at this point to find a job. Actor X benefits from the cultural capital of reputed institutions that recognize and validate his or her credentials. Once X enters the organization, and establishes a reputation, then the status of the firm, promotions and career choices come into play in the formation of new networks and how X benefits from those networks.

Actor X builds a life-story in many ways which reflect these negotiations. Some of these are through achieved status. For example, with the available achieved and ascribed resources what is the best university degree one can major in which will enable entry into a firm of repute? What is in demand by these organizations? What is their entrance criterion? These can change depending on economic and business cycles. In India, accessing a modern career network in a credential hungry enterprise requires a show of validated signs and signals, because these organizations are in search for skilled but cheap labor that is adaptable to international standards of training. So those interested in accessing these opportunities have to adapt strategies for competition and form alliances with those that have similar ambitions.

So if X chooses a marriage partner (Y) with a similar career disposition so that both benefit from this alliance, they can access each other's career networks. This is made possible through contemporary arranged marriages. Some of the caste and sub-caste rules can be broken if necessary so that X can find an equally qualified or better match. The ideal fit would be that all the resources such as caste, community, education, physical and emotive traits and professional ambitions match. However, this is not achievable in all cases so compromises are made based on a hierarchy of needs. These are reasoned out with a few trade offs so that X and Y prefer

professional homogeny. Hence, the software industry becomes the new institution for social alliances, because it brings people and organizes them according to value rational goals.

Future Research Suggestions

The samples of seventy-eight respondents and 200 marriage advertisements are not representative of all the educated Indian middle classes, or all IT/software professionals in India. However, they provide interpretative and detailed qualitative analysis of networks and status attainment of a small group of people from the successful software economy of India. This is missing in the copious literature on social networks and status attainment (Burt 1992, 2001, 2002; Granovetter [1974], 1995, 1982, 1990; Lin 1982, 1990, 1999a, b; Lin and Dumin 1986; Lin et al. 1981a, b). The studies by these authors and Portes and Landholt (1996) which looks at the downside of social capital are quantitatively based on data from the developed world and ignore issues such as depletion of social capital. There is an over-emphasis on the positive effects of social capital. Not everyone who has networks with high status actors, benefit in terms of status attainment. More research is required on the depletion of social capital to understand why some actors lose out despite their networks being wide and diverse. Furthermore, more research needs to be done on the emergence of cyber networks and how they influence caste barriers. While caste has not disappeared from India, it has undergone a drastic change in the software workplace. Large scale studies on the new service economy and its effects on caste barriers would prove beneficial to policy makers.

The sample shows an overwhelming consensus with regards to issues such as the decline in caste networks and rising gender neutrality in the software workplace and professional networks. There are no respondents who convey that caste ties are an important factor in successful networking. The global structural and marketing factors of the IT/software industry support this argument, because the industry is highly competitive and transnational with an increasing demand for

educated labor with professional qualifications. With regards to arranged marriages, caste rules are likely to be bent if the required set of resume criterion is not available in matches from the same caste or sub-caste. According to Batabyal (2006) arranged marriages amongst Indians are complex, because one does not know when to stop looking in terms of finding an optimal choice. This points to an interesting issue of diversifying networks either through professional and or cyber networks and overlooking caste endogamy as is the case with many respondents.

A macro quantitative survey will reveal further insights about the breakdown of caste with the advent of economic liberalization and global software investments entering India and their networks with local firms. Furthermore, much research is need in the area of meritocracy. The studies by Collins (1975, 1979); Dore (1976); Livingstone (2003) discuss the debate of meritocracy in the developed world and show the pitfalls and weakness of underemployment and credential systems that do not guarantee skill levels of certain sections of society. A study needs to be carried out on Indian universities and the types of human capital they produce. Although India exports a lot of knowledge workers (Khadria 1999, 2004), it also relies on its own graduates rather than importing them from overseas despite the shortages of skills. There has been some reverse migration of skilled Indian professionals back to India because of the opportunities provided by the software industry (Saxenian 2000c). The conclusions lead in the direction of Indian firms preferring professional Indian graduates although they need not be from elite schools. Much research has to be carried out to understand the networks between Indian universities and the needs of the software industry in terms of human capital. The numerous studies in relation to Indian software firms are mostly about business models and economic policy besides the works of Agrawal and Thite (2003); Kumar and Srinivasan (2001) and Varma and Sasikumar (2004) who look at the human resource challenges and career anchors of software professionals. Studies on the educated and professional upper class and the impact of high paying

jobs on gender relations in the corporation are lacking in India. More needs to be done in terms of qualitative and quantitative studies on social networks and status attainment of women.

Bangalore is progressing well despite many infrastructure constraints in capturing outsourcing, onsite software customization, and consulting contracts. The statistical and demographic data is weak and has many missing links. Research suggestions include surveys on caste, community and ethnic and female representations in the international and local IT/software firms. The impact of resource allocations to IT/software firms on the digital divide, gender segregation and urban planning need to be looked at in detail.

The research on arranged marriages needs to include large scale representative surveys on the effects of high pay, occupational status and firm status on gender relations. Lin (1999b) has suggested the understanding of social capital permeated through cyber networks. More research needs to be carried out on the uses of websites and how that either preserves or transgresses caste identity in the transnational Indian Diaspora. Additional empirical research is needed to substantiate the predominance of either the human capital or the social capital angle in status attainment. It is difficult to decide in favor of the following popular statement.

It is not what you know but who you know.

This dissertation has added an interesting and important contribution to understanding the role of corporate or firm status and the demand for certain types of credentials as determinants of symbolic capital and status attainment in the software profession and contemporary Indian arranged marriage markets.

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Karnataka
http://www.karnataka.com/personalities/narayana-murthy/.

National Association of Indian Software and Service Companies
http://www.nasscom.org

Shaadi Online Matrimonial Website
http://www.shaadi.com

Appendix I

Questionnaire for Respondents

Respondent's Professional Background
1. Please show me a copy of your business card, company brochure and professional resume.
2. What is the name of the company where you are currently working?
3. Where is your office located?
4. What is your salary range?
5. What is your position in your company?
6. How would you describe the software output by your firm? Does it involve high-end or low-end software customization, production and services?
7. Describe the organizational chart of the firm you work for and identify your position
8. In what type of company would you like to work for in the future? Is it a multinational corporation, or a small local firm? What size?
9. Do you think that the ranking of your present employer or the ones in your resume have any influence on your future job opportunities or networks?
10. Why did you choose to work in the IT/software industry?
11. Describe the recruitment process in the IT/software industry for new recruits and for middle and top level job openings.
12. What is the most common method of recruitment?
13. How would you describe the career choices and job opportunities available to holders of engineering/professional degrees versus holders of non-engineering/non-professional degrees/diplomas in the IT/software industry?
14. How is the quality of work process measured in the IT/software industry?
15. Why do you like to work in Bangalore?
16. Do you wish to stay in India or migrate overseas?
17. Have you worked overseas before? If so, where and for how long?
18. Describe the IT/software industry in Bangalore?
19. Are there various types of IT/software professionals? If so, what are they?
20. What do you understand by the term modernization?
21. How do you think the IT/software industry has changed Bangalore?
Respondents who are Current or Prospective Entrepreneurs
22. Would you like to become an entrepreneur?
23. If you are an entrepreneur, what made you become one?
24. Describe the startup process of your IT/software firm.
25. What credentials did you look for (did your business partners look for) when forming a partnership?
26. How did you meet your partners and investors?
27. In your opinion why do some professionals choose to become entrepreneurs and others work for someone?
28. How do you source investors/funding for your business?
Respondent's Education Background
29. Please give me details about your education background.
30. What is your highest level of education?
31. What are the degrees/diplomas that you have earned?
32. How many years did you spend in tertiary education?

33. Where did you study?
34. Why did you choose this field of study or college major?
35. What process did you have to go through to get admission in the major/program of your choice?
36. What social influences were present (other than yourself) in your selection of college program/major?
37. Did the ranking of your university have any influence in your ability to get a job?
38. How has your education qualifications/credentials influenced your chance of getting a job in a higher ranking firm or what you consider a better job/employer?

Respondent's Networking Practices

39. What efforts do you make to improve your networks or contacts in the IT/software industry?
40. What do you consider to be your most valuable credentials and networks for finding jobs, business partners and investors?
41. Did you get your first job through campus recruitment? Please describe the process.
42. How were you recruited for all the jobs listed in your resume?
43. What part do networks play in your career moves?
44. Do you benefit from your high status contacts in the industry?
45. Describe your most influential professional networks. How many people are there in each network? What is their relationship to you? What are their credentials?
46. How can one optimize networks in the IT/software industry?
47. Are your colleagues and bosses from the same caste group as yours?
48. What influences do you think caste and gender have in the IT/software industry in India?
49. Do you think that caste and gender matter when you are sourcing clients for your firm?
50. What is the most effective way to look for a new job in the IT/software industry in India and overseas?
51. Do you prefer to source information and resources about other jobs from members of your caste or community?
52. How do you diversify your professional and social networks?
53. Describe the links between your professional and social networks.
54. Do the influential people you know socially help in anyway in providing information, contacts or influence for your career/job/clients?
55. Do you belong to or benefit from any professional or social organization?

Respondent's Social Profile and Marriage Choices

56. What is your age?
57. What social/economic class do you belong to?
58. What is you caste?
59. What is your community?
60. From which city/town/village/state is your family/ancestry?
61. What languages do you speak?
62. How many members do you have in your family/living in the same household?
63. Describe your family values and upbringing.
64. What are your parents' highest level of education and professions?
65. What is their caste?
66. Where do your parents live?
67. Are you married?
68. What is the caste of your spouse?
69. How did you meet your spouse?
70. Is your spouse an IT/software professional?

71. What is his or her education background? (Ask to see spouse's resume)
72. Which company does he or she work for?
73. How do you define an arranged marriage?
74. To what extent is the family involved in mate selection?
75. How does one's gender and caste affect the marital bargain?
76. Is your marriage an assisted or arranged marriage? If so why did you opt for this? If not, how did you meet?
77. Describe the process of mate selection leading to your marriage.
78. What do you identify as the most important selection criterion/credentials/factors when selecting a marriage partner?
79. Do you have any children?
80. If yes, who takes care of them when you and your spouse got to work?
81. If you are not married, but are planning to get married through an arrangement, what are the main decisive factors in selecting a spouse?
82. Will you opt for an assisted or arranged marriage? If so, why?
83. What introduction methods do you or your family plan to use to meet a potential spouse?
84. How important is caste in the mate selection process?

Thank you. Your confidentiality is my utmost priority.

Questionnaire for Industry Consultants

1. Kindly show me copy of your business card, company brochure and resume.
2. Describe the nature of your links to the IT/software industry.
3. How did you join your present firm or business?
4. What is the nature of your professional or social relationship with your business partners?
5. How do you promote your business links with the IT/software industry?
6. Describe some of your networking efforts.
7. Are you a member of any professional organization?
8. What are some of the key links between recruitment firms, universities and IT/software firms?
9. What are the types of credentials and labor that various tiers of IT/software firms look for and recruit?
10. What role does the prestige of the university play in getting a job in the IT/software industry?
11. Is your spouse or kin an IT/professional? How do you benefit from that?
12. Do your caste networks have any influence on you getting contracts with IT firms?

Thank you. Your confidentiality is my utmost priority.

Table 1: Multinational firms in Bangalore and the State of Karnataka

USA		
IBM	T&T	Amphetronics
Texas Instruments	Digital Equipments	Verifone
Hewlett Packard	Motorola	Kodak
Intel	Novell	General Electric
ELXSI	3M	Spicer
Tektronix	AMP	Moog Control
SK & Beecham	City Corp	Megatromech
Lucent Tech	Sun Micro Systems	Analog Devices
Cisco Systems	Apple Development	Oracle
Hughes	Honeywell	Cybercash
Network Associates		
Japan		
Yokogowa	Mitsubishi	Sony
Citizen	Komatsu	Nissan
Fanuc	Sanyo	Toyota
Sharp		
UK		
British Aero Space	Moog Controls	British Petroleum
Unilever	Rolls Royce	Wilkinson Sword
Index Computing for ANZ	Alfred Herbert	Rover
British Telecom	Forbes	
Germany		
Bosch	Stump Schule	AFG
Siemens	Widia	Fritz Werner
SAP	Lapp Cables	Daimler Benz
France		
Bull	Citel	Alcatel
Alsthom		
Others		
L&T	Pieco (Philips-Holland)	Brooke Bond
Britannia	Ericsson	Rotary Mec Engineering
Nortel Networks		

Source: Bangalore IT, Government of Karnataka 2006

Table 2: The Evolution of the IT Industry in Bangalore

1984	Texas Instruments enters India for offshore development.
1986	Department of Electronics (DoE) announces software policy.
1991	Software Technology Parks of India (STPI) is set up
1992	Exclusive satellite international gateway for export industry is set up.
1997	Government of Karnataka announces IT Policy and Karnataka becomes the first state in India to do so.
1998	Number of IT companies (software) under STPI grows to 253, with total projects worth US $840 Million.
1999	Indian Institute of Information Technology Bangalore (IIITB) and the KITVEN FUND are established.
2000	Number of IT companies (software) under STPI grows to 782, with total projects worth US $1.1 Billion.
2001	Number of IT companies (software) under STPI grows to 928, with total projects worth US $1.58 Billion.
2001	Number of hardware companies under Electronic Hardware Technology Park (EHTP) grows to 24, with hardware exports worth US $0.076 Billion.
2002	Number of IT (software) companies under STPI grows to 1038, with total projects worth US $2.06 Billion (as of May 2002).
2002	Number of hardware companies under EHTP grows to 27, with hardware exports worth US $0.17 Billion (as of May 2002).
2003	Number of IT (software) companies under STPI grows to 1154, with total projects worth US $2.67 Billion (as of April 2003).
2003	About 41 Business Process Outsourcing and IT enabled Services (BPO/ITES) companies were approved with the investment of Rupees. 5120 million, i.e. US $ 0.11 Billion (as of April 2003).
2003	Number of hardware companies under EHTP grows to 31, with hardware exports worth Rupees. 14,038.5 millions i.e. US $0.30 Billion (as of April 2003).

Source: Government of Karnataka, Bangalore IT 2006