CHAPTER 4
METHODOLOGY

Far away there in the sunshine are my highest aspirations. I may not reach them, but I can look up and see their beauty, believe in them, and try to follow where they lead.

— Louisa May Alcott

The Datum

Primary Data

Data for this Ph.D. thesis has been collected through two synchronous components. One entailed the survey of executives employed in the IT Sector in Bangalore and Mysore and the other was an interview of students of final semester computer engineering in a well-known engineering college in Mysore poised at the threshold of their IT careers.

The primary data collected for IT sector survey in the thesis is the outcome of responses elicited to a meticulously prepared detailed questionnaire filled by 510 executives - 273 women and 237 men, of various IT companies in Bangalore (Bengaluru) and Mysore selected through degrees of network connectedness, and exclusive conversations that constituted extensive interviews with a number of them including some influential people who let me be privy to vastly useful information. The respondents include serving personnel from the well-known IT majors as well as from some lesser known smaller companies and start-up companies. The questionnaire itself is the result of discussions with persons from the target group and a pilot run of the survey on a section of the population. The survey was then revised in order to obtain sharply focused responses on the selected topic. The end result is what one feels, a genuinely wholesome set of questions that really needed to be asked to establish linkages which would lead to an understanding of those relationships considered worth postulating in the context of the research problem. The entire process of research was conducted through the use of Network Analysis as opportunities for observation were limited.
Bound by the promise of confidentiality this research thesis is containing in its personal narratives provided by the respondents. Since individuals interacted with me as members of my social network I am limiting any inclusion of names of persons or organisations surveyed or any references that may compromise the confidence reposed in me.

Interview and questionnaire survey was also conducted among students of computer science engineering in a well-known engineering college in Mysore, in order to understand the origins and implications of the phenomenon of glass ceiling at the educational nurturing ground of IT, the engineering college. Over a hundred (104) enthusiastic young students participated in the survey. Students of the group were also individually interviewed, and along with which they answered a questionnaire devised for the purpose of eliciting more standardised data for cross-tabulation. In the ratio that they were present for the survey, 70 students were male and 34 were females. Some of their teachers also engaged in informal conversations on the theme. Recruitment of students for the survey was purely voluntary and care was taken to interact with them privately for the personal interviews so that they could speak their mind freely and not give in to peer-pressure in their responses. Further, focused group discussions were also conducted in and outside the classroom which also proved to be very animated and informative. The data collected in this manner turned out to be quite insightful.

Chapters 5, 6, and 7 describe in detail the results of the above surveys.

Secondary Sources

In addition to primary data from the field, various useful secondary sources have also been consulted for the study. These include reports of the Planning Commission and those of various relevant ministries of the Government of India, IT policy documents of the Government of Karnataka, Economic Survey of Karnataka, Government Handbook of Karnataka, Census of India 2011, and NASSCOM data, United Nations reports, reports of independent agencies and several web links. Pertinent literature, including books, journal articles and research papers relevant to the topic, was extensively reviewed and useful newspaper and web media reports were also extensively analysed. Some of these analyses have been incorporated at
appropriate places bearing due citation of the source. These secondary sources not only helped corroborate the research findings, they also provided the bases for placing the study in perspective, identifying gaps in knowledge, clarifying the research problem and as an aid to theorizing.

**Data Collection**

At the start of data collection when one went to the well-known IT firms in Bangalore and Mysore armed with evidence of one’s bona fides as Ph.D. researcher, I was greeted with seemingly endless waits that were followed by rebuffs and refusals. After what felt like infinite visits and inordinate delays I was told unequivocally by the top brass of most organisations that I visited, almost as if in collusion, that they did not as a policy allow field workers. One Human Resources Manager rationalised this behaviour saying that present times have witnessed a plethora of surveys by varieties of researchers, MBA students, journalists, market researchers etc.; and organisations themselves keep running their own internal surveys from time to time as well. Furthermore, many an occasion institutions have been mischievously misrepresented and personnel have been misquoted leading these firms to solidify their hard line when it comes to outsiders. Moreover, I was told the hourly billing system of work that the IT Sector commonly practiced literally meant that time was money and so in no way could a part of a work day be frittered away on frivolities like filling Ph.D. questionnaires or answering interview questions. To me this appeared to be an excuse if anything. I was curious about the protectionism of these organisations and how wary they were of outsiders. Was it that they were afraid of sensitive information being leaked through novel means of industrial espionage, or potential head hunters poaching on their prize personnel, or cutting edge technology being stolen? - Someone from the benign discipline of sociology can only conjecture up to a degree.

Sometimes organisations would agree to participate in the survey at the initial meeting more out of courtesy than earnestness and after a presumably closer scrutiny

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1 A fee arrangement wherein professionals charge clients by the hour for services provided. Hourly rate billing is what most service industries use. Hourly billing, as the term suggests, simply compensates the executive or firm for the number of hours expended on IT services for a client calculated by a fixed hourly rate.
of the questionnaire retract their assurance with a sheepish skin-deep apology. So invariably, one would get a politely worded terse little email that would convey that having reviewed my request they had come to the conclusion that their company’s policies did not permit external surveys.

“This has been discussed internally and we would like to inform you that as a company policy we have not rolled out any external surveys and would like to continue the same way for some more time in future.”

— Excerpt from email received by self

People somehow found it easier to convey rejection through the hyper connectivity of an email or through cellular text messaging. An email or text message that gets instantly relayed seemed to satisfy in them some base desire for control. I felt that in the dialectic between me and my field, these representatives expressed their power over me through these missives. There is certitude about an email that makes it emphatic. The content itself as well as the knowledge that it has reached the receiver make the email an eminently fulfilling means of communication.

There is a general difficulty involved in access to IT organisations and this appears common to all the IT companies as I was to discover during data collection. The domain of the IT is shrouded in secrecy - the emphasis placed on privacy and the measures taken to protect it almost bordering on the obsessive. It would make an interesting study to understand this claustrophobic privacy of the IT world and would be a noteworthy contribution to the sociology of secrecy. State of the art technology is used to screen visitors, and in many places visitors even with references of high order are denied entrance past the reception area. Even employees are not allowed access outside the portals of their own departments; all entry is through the technique of ‘swiping’ and only the privileged few have digital signatures to wade through departments. Members of a team would only have authorisation for information on their team and its objectives and no other except in a rather generalised fashion. In some companies employees are not allowed to leave the building except during specific break times.
Serendipity

That being as it may, whatever romanticised notion I had of ethnographic field work had wilted under the cold cynicism of these no-nonsense professionals before it even began. I had envisioned observation to be one of the techniques of data collection for my study. Here it was becoming impossible to even collect survey data let alone gain access to the field as an observer. So even as I took affront at the brusque ways of those I had dealt with there was no time for recrimination as I had the serious engagement of research to pursue. One was confronted with the paramount question: What now? How was one to go about collecting reliable and statistically sufficient data? This, one realised, was an almost career threatening deadlock that I was totally at loss to resolve. There were Ph.D. regulations to comply with. University protocols demand that research topics stay sacrosanct at registration and thereafter. This left me in a quandary. Furthermore, a lot of the pertinent literature had already been savoured by me, and most of all, this was a theme that was dear to my heart. I had been conceptualising this topic on glass ceiling in the IT world long before formal admission to the Ph.D. programme.

It is said that necessity is the mother of invention. In this case it was sheer lack of choice that spawned my first hesitant steps into Network Analysis, a methodology that I had high esteem for in the study of urban society, but one that I may not necessarily have chosen for this particular research for which I had fancied the case study method. I was reminded at once paradoxically of two divergent streams of sociological tradition, Durkheim’s construction of the social fact – its constraining nature; and sociologist Max Weber’s disillusionment with modernity.

As I fruitlessly manoeuvred my way through the plush portals of well-known IT organisations I was struck by the disturbing revelation that the interiors as well as the people that habited them could have belonged anywhere in this globalised world and yet not belong anywhere! What Max Weber had lamented about bureaucracy had a portent ring of truth about this unfathomable new world that seemed to have laws of its own:
For of the last stage of this cultural development, it might well be truly said: Specialists without spirit, sensualists without heart; this nullity imagines that it has obtained a level of civilization never before achieved.

—Weber, 1904/1930: 181

In retrospect my immense need and my self-righteous indignation must have bolstered my resolve to work my way around this impregnable fortress. Truly these events proved serendipitous for me. The situation brought to mind the sociological formulations of Georg Simmel and through that an understanding dawned that led the way to pursue research through the method of Network Analysis.

**The Method of Network Analysis**

Modern urban institutions are so vast and complex that they cannot be sought to be understood in totality. The city itself has often been regarded as a total network or a network of networks (Hannerz, 1980). It can only be understood in fragments and through networks. Network analysis is thus a recognised research tool in urban anthropology.

To understand what exactly network analysis entails the analogy of a chain letter becomes helpful. One sometimes receives a mail from somebody with instructions to forward it to a certain number. If people cooperate the chain starts growing rapidly. At times a branch may revert to the original sender effectively rendering the chain into a cycle. This is what more or less happens in network analysis. However, when we use the network chain for research it is not allowed to grow arbitrarily or indefinitely. It follows a more structured course with definitive parameters within which the intermediaries function, and we keep close track of the efforts of our intermediaries. A network can be defined as “a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved” (Mitchell, 1969: 2). In general, network analysis probes into the linkages between people and the manner and intensity of their interaction.

The network approach has its roots in the Manchester School of Anthropology with all its early protagonists namely John Barnes, Elizabeth Bott and Clyde Mitchell being credited with the combined influence of both Radcliffe-Brown to whom they
owe its strong structural-functional moorings and Max Gluckman, who brought with him a critical emphasis on conflict and relations of power within social structures. The first to use network analysis specifically for sociological research was John Barnes (1954) in his study of the Bremnes, a small Norwegian fishing and farming municipality. Barnes was particularly interested in understanding the Bremnes stratification system. The Bremnes were a *gemeinschaft* like community members of which had primary interactions with a number of others. As in any simple society people related through ties of kinship, friendship and acquaintance relationships. Barnes thought of these as people having networks with a number of others, some of whom were directly in touch with one another and others of whom were not. Barnes described this as:

The image I have is of a set of points some of which are joined by lines. The points of the image are people, or sometimes groups, and the lines indicate which people interact with each other. We can of course think of the whole of social life as generating a network of this kind.

— Barnes, 1954: 43

Barnes suggested that the difference between a small scale society and a complex society would be a difference in the network mesh. In a modern *gesellschaft* like social organisation the net would be not be as intricately woven as in a small scale society but would extend wider in its spatial dimension. In a simple society more people are likely to have intersecting associations and hence the mesh becomes densely woven. Barnes used the network concept principally to analyse Bremnes conceptions of class. Mostly, he noted, the people in the community interacted with whom they perceived as relative equals - social differentiation was rather limited. In this way by looking at the distance in their interaction Barnes was able to arrive at a conception of the status differential among the various individuals and groups (Hannerz, 1980).

**Networks as a Methodological Device**

The work on Bremnes was the starting point in the use of the network concept as a medium to understand society. Thereafter Elizabeth Bott's *Family and Social Network* (1957) was possibly the first to utilise networks for the study of social institutions in complex societies. From mainly intensive interviews with twenty
families with little support from observation Bott was able to derive her famous hypothesis that “the degree of segregation in the role-relationship of husband and wife varies directly with the connectedness of the family’s social network.” Bott’s study at the substantive level established the relationship between the internal structure of a family and the pattern of its external contacts. At another level that of methodology it demonstrated how an intensive study could be done without conventional ethnographic field work and with a small participating sample of just twenty families, by looking at social relationships through their networks. Bott used loosely structured terminology as ‘close knit’ and ‘loose knit’ to signify degrees of attachment using network as a working concept. Bott’s study became a landmark in the use of network analysis for sociological research.

Another study that expanded the boundaries of the method of networks is Adrian C. Mayer’s (1966) study of an election campaign in the town of Dewas in Madhya Pradesh. In his analysis Mayer was particularly fascinated by the campaigning styles of the two principal candidates, one from the Congress Party and the other from Jan Sangh. The Jan Sangh candidate spent a greater time in the field in trying to build a wide range of contacts. The Congress candidate on the other hand started mobilizing support through local intermediaries. His campaign took the form of creating what Mayer terms an ‘action set’ of a particular form. These action sets de-facto functioned as networks. Each set consisted of a set of finite chains of social relationships, spreading out from an ego. Further, each such set was diverse in its characteristics its only point of intersection being in its relationship with the candidate. The Congress Party candidate used an action set of quite long chains to reach into various groups. Each link in the chain used its domain of influence to broker votes for the candidate. This proved an astute move and in the final outcome the congress candidate won. The heterogeneous nature of the intermediaries brought in all varieties of support for the candidate without him going through the toil of showcasing his credentials or merits directly to the public. On the other hand the opposing candidate who ran a ‘hard campaign’ going directly to the electorate took the risk of exposing himself to their ire and any resentment they may have had for the candidate or his political group and consequently lost the election. Running a soft campaign through networks meant that each link in the chain used its own good offices with others in his range to bring in the vote. According to Mayer the soft
campaign proved more effective because brokers used their goodwill to fulfil the patron’s agenda – the patron has some resources but not the influence. The broker can make unrestrained promises on behalf of the patron without the patron getting directly implicated. This kind of technique generates a snowballing effect, if everyone recruited can himself recruit several more; and even if as Hannerz points out, the chain were to grow “more modestly, perhaps on the basis of ‘each one, teach one’ still a fairly extensive influence” (Hannerz, 1980: 171).

This is the idea of networks that is used in its methodological connotation. Networks as a methodological device can be used in two senses – a. the network as the site of interaction and thereby the unit of inquiry; and b. the network as the medium of enquiry. Both these meanings are not empirically discrete rather they are inextricably enmeshed into one another. When we look at society through its labyrinth of networks these very networks provide the researcher with the means of furthering the investigation.

The network thus is both the object and the mechanism of enquiry. In working with networks a set of relationships is extracted from the wider universe. This set grows through its interrelatedness and provides the researcher with both the field and possible recruits into ‘action sets’ for data collection. The ‘brokers’ soft pedal the researcher’s agenda and procure favourable response and compliance for the researcher from a potentially hostile field.

**Epistemological Basis of the Network Method**

Although network approach evolved with the British tradition notably the Manchester school, as a methodology it is eclectic in its orientation. In terms of the methodological basis of research, network approach belongs to the same genre as methodological relationsism and has affinity for the sociological formulations of Georg Simmel. Methodological Relationism takes the position that individuals are the basic components of social wholes such as groups and society, while at the same time acknowledging that the whole is important too and more than the mere aggregate of parts (Ritzer and Gindoff, 1992). In this manner methodological relationism takes an intermediate epistemological position from the methodological individualism of Weber (social action) and methodological holism of Durkheim (social fact).
Georg Simmel and Social Interaction

Sociologist Georg Simmel’s (1858-1918) sociology had a lot to do with the web of relationships especially interaction. It can be said that Simmel’s principal preoccupation throughout his academic career was with social relationships. Simmel has been called a “methodological relationist” (Ritzer and Gindoff, 1992) operating with the “principle that everything interacts in some way with everything else” (Simmel cited in Frisby, 1992: 9). As Frisby puts it, the bases of social life to Simmel were “conscious individuals or groups of individuals who interact with one another for a variety of motives, purposes and interests” (1984: 61). In fact Simmel defines ‘society’ as the name for a number of individuals connected by interaction (Coser, 1965). Simmel has tried to visualise geometry in social relations. Numbers are an important constituent in Simmel’s social geometry. The number of people involved in an interaction significantly affects the nature of the interaction. For instance there is a crucial difference between a two-person group – the ‘dyad’ and a group of three the ‘triad’. The process that leads to the transformation of dyad to triad continues in the formation of larger social groups and ultimately that is how societies emerge.

Along with numbers, ‘Distance ’is another aspect of Simmel’s social geometry. In his The Stranger2 (Levine, 1908/1971) Simmel has explained the role of the stranger in social interaction. He describes the stranger as the type of actor who is neither too close nor too far. There is an element of strangeness in every relationship no matter how close. The dictionary definition of a stranger would be an unknown or unfamiliar person. Simmel’s ‘stranger’ however is that outsider who has an interaction of a certain meaningful duration and intensity with a group, for example, a researcher to the field subjects. The stranger brings with him a mix of nearness and distance. If he were to be too far he would cease to be of importance to the group if he would be too near he would cease to be a stranger. The stranger then relates with a group but is not regarded as an insider. The interaction that the stranger engages in

with the group involves this peculiar combination of closeness and distance. For the duration of the interaction the stranger in fact becomes an organic component of the group. The stranger is uniquely posited with relation to the group. He can be objective in his relationship with the group members as he is not emotionally or otherwise connected with the group. Further, because he is not too close he instils confidence in the members to share their thoughts with candour. The field worker who spends time in the field can be compared to Simmel’s stranger. Strangeness itself then becomes a form of social interaction.

Another important element of human interaction that Simmel has noted is that of secrecy or the tendency of individuals to withhold information about themselves. Just like strangeness there is also some secrecy in even the most intimate of interactions. To Simmel secrecy is also a specific form of interaction. Simmel defines secrecy as the condition in which one person has the intention of hiding something while the other is seeking to unravel that which is being hidden (Ritzer, 2011: 174). The analysis of secrecy becomes crucial to cracking the code for effective ethnographic field work.

Simmel also contends that for an interaction to be successful we must have some prior knowledge of those we wish to interact with. At the very least one must know who they and are where they could be found so that we could get to know them better. This again is the precise requirement for establishing networks. People form mental images of one another from the available information about them. Individuals conceptualise one another based on shared knowledge. All relationships thus constitute a dialectic between what really is - the being; and what one imagined it to be - the conceptualisation of that being.

Through all this it follows that we can never claim to know others completely. The researcher is in the quest for information that individuals may be trying to conceal. We relate with only that much of an individual or group as it chooses to reveal to us. People selectively tell the truth about themselves to others. It is their choice whom to reveal themselves to and to what extent. We can only capture fragments of the inner lives of others. It is here that Simmel’s conception of the ‘lie’ becomes useful. Hence “in all our interactions we acquire not only the truth but also ignorance and error” (Ritzer, 2011). The lie is also a mechanism to safeguard the
private space of an individual. It is a form of interaction in which the actor (liar) intentionally withholds the truth from others. “In the lie it is not just that the others are left with an erroneous conception but also that the error is traceable to the fact that the liar intended others to be deceived” (ibid. 176). If truth is voluntary disclosure the lie is the outer bounds of that disclosure. In this Simmel’s notion of ‘confidence’ as a form of social interaction becomes important. It is through the confidence that individuals repose in each other that these barriers of privacy can be overcome and individuals reveal themselves to others. Thus it is not necessary for respondents in a field to know a great deal about the researcher, they need to have confidence in the genuineness of the researcher’s claims. For Simmel, “confidence is intermediate between knowledge and ignorance about a man” (1906/1950: 318). In a complex society it is not possible to have a great deal of knowledge about most of the people with whom we have associations, it is sufficient to have confidence in what they stand for. This confidence mediates between the researcher’s desire to know and the respondent’s ability to tell.

Simmel also discusses another form of association – ‘discretion’. Simmel describes discretion as staying “away from the knowledge of all the other does not expressly reveal to us. It does not refer to anything particular which we are not permitted to know, but to a quite general reserve in regard to the total personality” (Simmel, 1906/1950:321). We are usually discreet with our acquaintances and yet, even though people are guarded we often come to know more about them than they think they have revealed especially as while on the path of sociological research we set out with the precise purpose of finding out. Even for the researcher a certain amount of discretion becomes ethically mandatory. For Simmel human interaction rests upon both – our self-regulatory discretion and our knowledge of the other that pierces through that discretion.

**Working through Networks**

To me by far it is these travesties of human relationships that the method of networks uses to advantage. The more urban and modern we get the less are we receptive to the entry of others into our lives. The curious interplay of closeness and strangeness that social interaction holds becomes an effective scheme to study and understand social phenomena and groups. The researcher who spends meaningful
time with a group becomes Simmel’s ‘stranger’ in relation to the group. The
intermediary in the network who is the researcher’s ‘friend’ shares closeness to the
researcher and with the other respondents. In this manner the researcher remains far
enough from the group members so as not to make them feel self-conscious, and yet
close enough for them to inspire confidence. Members can share secrets because
closeness helps in scaling their self-protective metaphorical walls that Simmel talks
about and they need not lie as they likely would to a rank outsider, and yet the
researcher is not so embarrassingly close as to expose their secrets and thus again
necessitating a lie. The network thus helps create a delicate balance; the researcher
becomes both an insider and an outsider. Through the network intermediary the
researcher forges a chain of ‘strange-close’ relationships with other members of the
group taking this dual advantage of closeness and strangeness to elicit confidences as
occasion merits. The network builds a connectedness between the researcher and the
researched in such a manner that the researcher can be both participant and observer
in varying degrees in the context of the research in different domains of the world of
those being studied.

Network and Degrees of Connection

One may delineate a network in the following broad fashions: a. on the basis
of characteristics that define the network such as an occupational category,
membership to a certain group or a professional body. These become content based
networks for instance, political networks or families etc. and are usually called partial
networks as they are only one aspect of the individual’s total set of networks. And b.
on the basis of individuals by drawing person centred networks, locating networks
with an individual, group or dyad as the starting point. Such networks are defined on
the basis of the relationship to the central nucleus and are thus called ego centred or
egocentric networks. In these networks outer limits can be decided on the degree to
which it is necessary to reckon relationships in a particular context. c. A third way is
to delimit a partial network from the point of view of a particular ego (Hannerz,
1980).

\footnote{Mannheim too has talked about the problematic aspect of maintaining the balance between
closeness and distance in characterizing the position of the intellectual. This has significant}
\footnote{methodological implications. For the sociologist, Mannheim advocates both empathy and detachment.}
On a popular professional networking website\textsuperscript{4} that I also used for building contacts for data collection these network concepts are routinely used. People in one’s network are called connections and one’s network is made up of one’s 1st-degree, 2nd-degree, and 3rd-degree connections and fellow members of one’s professional groups. It elaborates the three degrees in a manner similar to networks of increasing orders with neat precision.

1st-degree - People you are directly connected to because you have accepted their invitation to connect, or they have accepted your invitation.

2nd-degree - People who are connected to your 1st-degree connections.

3rd-degree - People who are connected to your 2nd-degree connections.

Furthermore, the website specifies the different methods of contacting these networks. It also enables people to connect with fellow members of one’s professional groups and explains with a rather sound sociological observation that “these people are considered part of your network because you're members of the same group.” It lays down procedures how such members can be contacted and so forth. In fact all social media that occupy cyber space are built on the principle of networks put into practice.

When a network is thus defined, the next question especially for a research network may be where its outer limits should be drawn. At one level of analytical thinking though any social system including the entire world can be seen as a “total network”, however as a functioning unit a network has to have defined limits. In the case of the political campaign, one would go far enough to mobilize political support. In studies on the other hand the limits of the network are delineated much closer to the centre to make them practicable. In the present study the outer limits of the network were drawn numerically in the pre-designated spaces of IT companies in Bengaluru and Mysore. At the start of the research one had thought of a number of about five hundred respondents as being a sufficient unit for meaningful data analysis. Data collected through personalised contacts is richer in content than run of the mill survey information. Elizabeth Bott did a deeply insightful analysis of conjugal relationships in urban families with a sample size of just twenty families through the network

\textsuperscript{4}Name Withheld
method. Getting information from over five hundred people from different IT companies cosseted under a network umbrella with the intervention of proactive intermediaries was justifiably so an eminently satisfactory point of departure for inquiry.

**Orders of Networks**

The researcher has to delineate the manner of recruitment and draw boundaries around some unit which is deemed to be practical for further scrutiny. Taking the ego (in this case the researcher) as the centre of the (research) network the person having direct relationship with this ego becomes a network relation of the first order. The first order connections of these in turn become the networks of second order for the (researcher) ego and so on. If we consider only the direct links from ego to other persons this is called a first-order star (Barnes, 1969). If one includes the lateral relationships between those others also then the resulting set of relationships is called a first-order zone (Hannerz, 1980). If we take a further step outward one gets the second-order star and second-order zone. In this manner the matrix of interaction continues to grow spatially and numerically till the researcher deems appropriate to limit it in number and space as exigent to fulfil the requirements of research. Figures 4.1 and 4.2 illustrate the manner in which the network enlarges itself.

**Functioning of the Network**

This is the kind of methodological strategy that the present research has adopted. If the researcher were to be considered the ego in an ego-centred network so to speak, then people known to the researcher from the target groups become the first order of networks. These not only become respondents in the study but also constitute the ‘recruits’. Due to primary relationship with the ego, and at the instance of the researcher, these ‘hubs’ in the network participate as brokers.
Figure 4.1
Network of Relationships

(a) A First-order Star; (b) A First-order Zone; (c) A Second-order Star

Figure 4.2
Networks of Varying Density

(a) 10 actual linkages out of 28 possible among 8 persons - density 0.36
(b) 13 actual linkages out of 28 possible among 8 persons - density 0.46
(c) 17 actual linkages out of 28 possible among 8 persons - density 0.61

Source: Hannerz, 1980: 179
As a researcher here one has fewer resources in terms of access to the field. These brokers however being insiders wielded considerable influence. Further they acted as ‘gatekeepers’ who protected one from what would well have been failed attempts at data gathering. Hannerz has discussed the role of the ‘flak catchers’ who act as gatekeepers in the context of public-dealing bureaucracy:

The job of the flak catcher in the bureaucracy is to receive people making demands, suffer hostility and humiliation, and not make commitments - to make it clear to the visitors, on the contrary, that he is in no position to commit his superiors or the bureaucracy as a whole to any line of action. In other words, to decrease reachability. The flak catcher, too, is a kind of broker, since he stands at the nexus between the public and the real holders of power and channels contacts between them. There is probably a tendency, however, to regard a broker as someone who facilitates contacts among persons, groups, or institutions who are otherwise not within easy reach of one another. The flak catcher, if we may phrase it harshly, is an antibroker his purpose in life is to limit contacts. Perhaps the metaphor of “gatekeeper” has the more appropriate connotations, although it is not too exact either.

— Hannerz, 1980: 92

In the present instance however I discovered that my ‘gatekeepers’ were performing a dual role - not only would they weed out the unresponsive and/or the undesirable they were also letting in the potential recruits and willing participants. They introduced me to their inner circle through their informal associations taking me for instance to a local eatery that the IT executives frequented. Going there also proved profitable. The survey questionnaires would get filled and I could conduct free flowing interviews that generated insightful information. The brokers would thus introduce me to their close networks that I could approach and sign up as fresh ‘recruit-brokers’ to further my campaign. This network continued to grow much in the fashion of a chain letter. What’s more, feeling safe in the knowledge that I was a member of her/his network, each ‘broker’ would also let off his guard and share vital information with an ease and candour that would have been inconceivable in a regular survey study.

One lady who was my intermediary received the following adverse comments about my pilot survey:
1. “It is better to use online survey rather than a word document. Word docs are very complicated and tedious to use. Better to use survey monkey or some site like that. Considering the target audience is IT sector employees, online survey is all the more important.

2. Most people don’t feel comfortable with giving names and phone/email. Better to avoid it unless required.

3. Too many questions - Nobody has time to answer 125 questions. Based on my experience, anything that takes more than 10 mins to answer is too much. Better to reduce the number of questions and also put important questions at the beginning. Online surveys capture even partial responses and if people leave after few questions, you will get answers to some very important questions.”

—Email forwarded to me by a network ‘broker’ for my research

Taking this advice in the spirit it was meant I posted a much more fine-tuned survey on the most popular email and search website on the internet converting it into a form that could be easily filled. The survey was also made available on a popular social networking site for similar purpose. One also ‘friended’ people on another well-known professional networking site. IT professionals reacted very positively to my survey once it was conducted in this fashion. Use of mechanisms that they are familiar with seemed to inspire confidence in them. Through this confidence then my interaction with them started gaining flesh. Participants started readily agreeing to meet me and engage in dialogue. The response was so overwhelming that eventually I had to myself draw a line and ‘close’ the survey once the requisite target had been achieved.

Meanwhile my own network allies continued their efforts to link me with their own close professional groups for interviews. As I look back I am convinced that without networks it would have been impossible to elicit information from the field. Getting personal details out of obsessively private and more or less inscrutable sophisticated urbanites absolutely necessitates ‘middle men’ with persuasive potential. As Mayer (1966) had noted, a patron may find it useful to insert a broker as a buffer between himself and his clients, which would both widen the range of the network and provide insulation from the repercussions of failed transactions.
The Usefulness of Network Analysis

It is often asserted that Networks are to the anthropology of complex society what genealogy has been to the study of traditional kinship-based society. Network methodologies and notions have undoubtedly made significant inroads into the study of complex societies. Network Approach provides greater flexibility than the conventional structured study without compromising the form. The fluidity and manoeuvrability that network analysis provides is more fitting for understanding postmodern post-industrial social agents especially those as for instance in the present case, whose domain of work is the surrealist world of the IT. Purists might argue that network analysis lacks necessary rigour as rigour may be understood in the conventional sense. For our purposes, we would do well to emphasize flexibility rather than rigour and exhaustiveness. As Ulf Hannerz points out (1980) we try to find out more about how network ideas can help us throw light on urban life, methodological demands may at least temporarily adopt a lower profile. One may go so far as to aver that present day complex societies are virtually impossible to study without the application of network systems.

Sampling Paradigm

In a research design generated by the Network Approach the sampling technique that is employed is essentially Snowball Sampling though different from the commonly (mis) understood notion of snowballing. Snowball sample is a type of purposive sample so named because one picks up the sample along the way, analogous to a snowball accumulating snow. A purposive sample is a type of non-probability sample that is constructed to serve a specific purpose. A researcher may need to study a specific group such as high level business executives who may be difficult to access. The researcher then aims at the target group interviewing whoever is available. In this case this technique was taken further as the available subjects were deployed to recruit further subjects. It is in that sense that the sampling technique employed resembles the method of snowballing.

A snowball sample is achieved by asking a participant to suggest someone else who might be willing or appropriate for the study. Typically in a snowball sample the researcher collects data on the few members of the target population he or she can
locate, and then asks those individuals to provide information about other members
whom they know. Snowball samples initially used to be employed for the study of
deviant social groups, people that were ‘hard-to-track’, such as truants, drug users,
homosexuals etc. Members of these populations have not all been previously
identified and are more difficult to locate or contact than known populations
(Coleman, 1958; Goodman, 1961). Sampling these populations is difficult with
standard techniques. For a hidden population, constructing a sampling frame using
standard methods is not feasible when the population may be in a minority, it could be
geographically dispersed, or when its membership involves stigma or the group is
secrective in nature (Sudman and Kalton, 1986).

Having identified some individuals that serve as a nucleus, snowball sampling
employs the social networks that exist between members of the target population to
build a sample. Snowball sampling can thus be located under the methodological
umbrella of network analysis. It is also a useful technique for qualitative research and
provides a pragmatic strategy in sociological field work.

In the present research this method of network snowballing was put to good
use for a target population that is socially ubiquitous and voluble but similarly has an
exalted sense of privacy. High flown upwardly mobile executives are a
characteristically elusive lot necessitating the deployment of the network method and
its consequent snowball like sampling.

Critics usually point out that in the technique of snowballing the researcher
has minimal control over the sampling method and there is no guarantee of its
representativeness. But when snowballing is conducted as a part of purposive
sampling within the methodological framework of network analysis these
shortcomings are easily overcome. In this study for example the universe was well
defined, members of the population were and are socially visible, and there are
various demographic and other data available about them. Snowball sampling in fact
had evolved as a means for studying the structure of social networks. However,
historical debates aside; the chain referral process allows the researcher to reach
populations that are difficult to get hold of and fetches reliable qualitative data, and in
this case quantitative data also.
Statistical Tools

Data so collected has been statistically analysed to establish the linkages between various variables that impinge on the phenomenon of glass ceiling. Through analysis it has been made possible to eliminate the unlikely and hone in on the more likely factors causative of the phenomenon. Data analysis has been done with two primary ends in mind – a. to examine the existence prima facie, of glass ceiling, and b. to understand its possible cause/s from among the variables under scrutiny in the study. The quantitative data so analysed has been seen in the light of the qualitative inputs – the interviews and the prolonged and enduring interaction with my close networks from the field. If statistical correlations have given body to the data then one could say that these personalised interactions have breathed life into that body.

When sociologist Emile Durkheim did his pioneering study of suicide using statistics he established an influential basis of causal analysis for generations of sociologists to come. Today one has the benefit of highly sophisticated software packages that help in simultaneously analysing multiple factors, and if the tediousness of entering volumes of data be overlooked, then data analysis by itself is rendered simpler, the results manifesting themselves at the click of a mouse. There are even predictive modules in the software itself that steer the analyst into making bulls eye predictions achieving for the researcher what has often been described as the ultimate aim of science - that of being able to predict. Market researchers, psephologists doing election surveys, government and non-government agencies, routinely make use of these tools along with their eye catching graphics and life-like animations. The SPSS or Statistical Package for the Social Sciences is copyrighted software that contains the entire foreseeable gamut of data interrelationships and devices for analysis thereof, which make the task of the social scientist appear absurdly simple. It even offers templates for effective data collection that are suitable for market surveys, feedback forms and so forth.

However, this once again brings us to the question of ‘true’ sociology. Merely establishing statistical correlations and calculated predictions through the effective use of advanced techniques that are readily available cannot complete the research task. At best it only constitutes one half of the sociological research endeavour.
This thesis has resisted such temptation. In the present context instead of going for readymade data solutions one has chosen the path of computing only as a tool for grouping the data for calculation of the various parameters that had been taken into reckoning. The actual analysis of the data has been a complex process engendered by the combined effects of the results of computation as well as the qualitative inputs from the interviewees. These have then been related in the context of the prevailing sociological micro and macro theories and hypotheses on the concerned sub-phenomena to arrive at meaningful generalisations based on statistical revelations as well as sociological wisdom. Relevant charts and tables have been provided with the descriptive analysis alongside each such inference in all the three chapters containing the analysis of primary data. The questions contained in the two kinds of questionnaires have been systematically thematically grouped and dealt with in logical sequence through the text the synthesis of which constitutes a cogent whole that provides the basis for the conclusions of the study.

One has to look beyond mazes of data to answer one’s research questions for the findings to be meaningful and for such to have a life past the next set of data collected and so analysed. It took a Durkheim to make sense of facts to generate a theory. While all cannot be gifted theory builders yet one must, faithful to the tradition of sociology, try to understand the results of one’s data through sociological reason applying theory and attempting to generalise.

**Epistemological Concerns Revisited**

To a structuralist, a methodology that results out of the compliant participation of the actors themselves may seem inconsistent and jumbled up lacking necessary rigour. Those theorists who give credence to the fluidity of the social structure may uphold the volitional involvement of the actors under scrutiny as a methodological plus that far surmounts this supposed lack of conventional rigour. A still further phenomenological epistemological stance may question the very need for such rigour and even regard it as coming in the way of spontaneous understanding of human interaction. The real difference then that emerges is a difference in one’s methodological world view.
In the ultimate analysis the richness of a sociological study depends not so much on the meticulousness of the design as on the reflexive sensitivities and (perhaps) sociological imagination of the researcher. It is not only the science of sociology but a generous measure of the craft of sociology that constitutes the recipe for that timeless tantalising flavour that still whiffs from the great classics that have defined the discipline. If research designs and techniques were to ipso facto generate good or great pieces of research work then all of the governmental cornucopia of data gathering would have yielded classics.

Network analysis is not to be taken as a euphemism for methodological anarchy or an apology for methodological inadequacy. If Simmel’s methodological relationism throws up issues of objectivity then one has to argue that objectivity needs to be articulated not as signified in the positivist discourse but more as an adherence to the values intrinsic to scientific research. One of the aims of science is to be able to explain. The act of sociological explanation by its very nature has an element of subjectivity associated with it. This is the fundamental premise that constitutes the bedrock of the sociology of knowledge. While the understanding that Simmel provides of the nature of human relationships smoothens the course of one’s research it does not in any sense take away from the scientific merit of the research. The degree of ‘objectivity’ that a research attains is to do with the researcher’s own conceptualisation of objectivity, the philosophical and epistemological foundation of the enquiry, the methods and techniques brought into use and most of all the value framework of the study as well as the researcher’s allegiance to the values of science. Objectivity at best belongs to the researcher and not to any methodological position.

All reality is too vast and complex to be comprehensible in its totality. One cannot therefore understand reality in its totality; one can only make abstractions from reality. Max Weber’s ideal type formulation is one way of abstracting from reality. The idea of networks as a methodology similarly stands for abstracting for analytical purposes more or less elaborate sets of relationships from some wider system. When we look at society through the framework of puritanical structural-functionalism, it becomes a macro view - a perception of society as comprised of enduring structures - groups and institutions; the individuals moving through them (presumably) performing their roles according to normative prescriptions. This view becomes
restrictive in its ambit. In this dualism between agency and structure if we give
primacy to the human actor as the agent, the analysis takes on a phenomenological
colour calling a strain upon the established paradigms of objectivity in research.
What network analysis as a methodology innovates to accomplish is to bring closer
the structure to the agent in the analysis of action – it provides for fluidity in the
structure infusing the elements of interaction with a certain freedom and flexibility for
the actor while at the same time retaining the inherent structural and institutional
boundaries. It is a translation into practice the ‘methodological relationism’ of
Simmel. Structural-functionalism depicts society as an enduring edifice of groups and
institutions; individuals conforming to accepted norms. Networks enable us to venture
into the unspecified nebulæ, the grey areas in the domain of social conduct.

Network analysis thus provides a bridge between structure and action as a
mechanism for the study of urban and complex social institutions.

Conclusion

Network analysis is able to take into its fold non-institutional, quasi-
institutional, anomic responses⁵, the kinds of social behaviours which may occur
within or parallel to the institutional framework and may significantly affect it.
Network notions seem particularly useful as we concern ourselves with individuals
using and manipulating their roles rather than with roles being “like moulds in which
our actions are inevitably shaped”⁶. The glass ceiling for instance is a phenomenon
thought to be brought about not through standardised structured legally or formally
permitted patterns of institutional practice but through certain subtle manifestations of
behaviour that undermine the sovereignty of women in the organisational context.
Network notions and techniques help us to understand individuals in their assigned

⁵ Merton (1957) has elaborated upon such behaviours to extend and (radically) transform Durkheim’s
original conception of anomie (normlessness), to imply strategic responses to socially valued goals.
Anomie for Merton is to be inferred through the instrumental means of attaining goals rather than the
lack of consensus on social goals per se. Merton identifies five types of behavioural responses that
characterize the behaviours of individuals in roles – conformity, innovation, ritualism, retreatism and
rebellion. Each of these adaptive modes of behaviour assumes significance in the context of
organisational dynamics and requires study methods that probe beyond the surface manifestations of
phenomena.

⁶ Durkheim in his The Rules of Sociological Method writes this of social facts, “Far from being a
product of the will, they determine it from without; they are like moulds in which our actions are
inevitably shaped” (1938: 29).
roles not giving primacy to the roles per se with their *de jure* prescribed formats. Network analysis shows the frailty and permeability of institutional boundaries. When we work through networks we do not need a large mass of respondents to constitute our sample. Our networks provide us the quantity as well as the qualitative bases for generalisation. The intensity of interaction that one strikes with one’s network permits inferences that transcend any limitations of numbers and whose significance persists well beyond the immediate duration of the study. Network analysis recreates the intellectual and methodological ambience of ethnographic field work within the precincts of the survey method. One could go so far as to aver that network analysis is the ethnography for a complex social organisation. Quantitative data procured through the means of networks has been exposed to the scrutiny of stringent standardised statistical techniques and computing means and then along with the qualitative data to the rigours of theoretical reasoning. This synthesis of subjective reasoning with essential underpinnings of objectivity has by far proved the best methodological course to pursue given the theme of this doctoral research.
REFERENCES


