CHAPTER ONE

Social network analysis and criminology

1.1 Introduction

This study employs a network analytical approach to examine co-offending. The aim is to test whether a network perspective can provide new approaches and fresh insights into the character of juvenile crime in a metropolitan area.

The most fundamental difference between traditional social science and research which employs a network perspective is that network analysis stipulates the existence of observable relationships among the objects under study. Over the past few decades, social network analysis has become an increasingly common approach within the social sciences in general.[1] It is still employed only rarely in criminological studies,[2] however, despite the fact that clear parallels exist between a network perspective and many aspects of criminological thought.

Many of the classics of criminological literature contained formulations consistent with the use of a social network perspective long before this approach became popular within social science. Shaw and McKay (1942), for example, in their *Juvenile Delinquency and Urban Areas* state that 'delinquent boys in these areas have contact not only with other delinquents who are their contemporaries but also with older offenders, who in turn had contact with delinquents preceding them, and so on . . . This contact means that the traditions of delinquency can be and are transmitted down through successive generations of boys, in much the same way that language and other social forms are transmitted' (Shaw and McKay 1942: 174).

It is well established that juvenile crime is to a large extent a group phenomenon. Young people often commit offences with members of their peer

group (see for example Breckinridge and Abbot 1917; Shaw and McKay 1931, 1942; Sveri 1960; Short and Strodtbeck 1965; Klein and Crawford 1967; Gold 1970; Hood and Sparks 1970; Elliott, Huizinga and Ageton 1985; Sarnecki 1986; Short 1998a; Reiss and Farrington 1991).[3] We know too that delinquent juveniles often have friends who have themselves committed several offences.[4]

In an 'everyday' sense, social ties among criminally active young people are seen as a means whereby the young people in question exert an influence over one another to commit offences. Many parents express concern about the possibility that their teenagers may fall into 'bad company', for example.

In the scientific community too, the group-related characteristics of juvenile crime are often seen in causal terms. This is particularly true of learning and neutralisation theories such as those presented by Sutherland, Akers and Matza (Sutherland 1939; Matza 1964; Sutherland, Cressey and Luckenbill 1992; Akers 1998).

At the same time, we might also claim that all those theories which associate crime with a working class, or perhaps a more generally lower-class culture, or with different forms of subculture (e.g. Cohen 1955; Miller 1958; Cloward and Ohlin 1960; Ferrell and Sanders 1995) as well as the research tradition that has grown up around the American 'gang' (e.g. Thrasher 1927; Short and Strodtbeck 1965; Klein 1971, 1995), all stipulate the existence of a mechanism which both facilitates the spread of norms and values conducive to the commission of crime, and enables individuals to exert influence over one another. Even though the representatives of these traditions do not usually discuss how the process might operate in practice,[5] research of this kind requires an assumption about the existence of such a mechanism. Cohen, for instance, writes: 'The crucial condition for the emergence of new cultural forms is the existence, in effective interaction with one another, of a number of actors with similar problems of adjustment' (Cohen 1955: 59).

The most widespread view of the effect on crime of friendships among young people however is that having criminally active friends is *one of several factors* which increase the likelihood that an individual will commit offences.[6] The view expressed by Loeber and Farrington in this regard seems to be fairly typical. In summing up the most reliable predictors of serious and violent offending in youths aged between 12 and 14, they mention a 'lack of strong social ties, antisocial peers, non-serious delinquent acts, poor school attitude and performance and psychological conditions such as impulsivity' (Loeber and Farrington 1998: xxii). Associating with

antisocial peers is also mentioned as being among the strongest predictors of serious and violent offending among those aged between 6 and 11 years.

Like any other social activity then, delinquency can be explained, at least in part, with reference to the relationships an individual establishes with others. And it is just this quality that makes the network perspective so potentially useful in the analysis of crime.

The following section takes up the question of why studies focusing on relationships between delinquent juveniles may be more relevant in the context of modern society than they were in the past. Following on from this general discussion, the basic principles of social network analysis are briefly introduced, and the relevance of the network approach for a number of the classical criminological perspectives is explained.

1.2 Changes in the social significance of the juvenile peer group

As has been mentioned, the central axiom of network analysis, namely that the propensity to commit criminal offences is affected by an individual's social relations, is compatible with most of the central criminological perspectives specified above. The social relations that constitute the principal focus for the current study are those existing between young delinquents and their peers. It is my contention that relations among youths and their peers are of considerably greater significance in the context of modern society than they have been before and, this being the case, it is important that such relations become the focus of serious research.

There is much to suggest that the changes witnessed by western society during this last century have increased the peer group's influence on the behaviour of young people, at the expense of the influence previously exerted by adults (Sarnecki 1997). The reasons underlying this change are to be sought in the social changes common to late industrial societies, which have led to the exclusion of young people from the labour force and the prolongation of their stay in the education system.

The introduction of compulsory education was in the first instance intended to compensate a shortfall in control which young people were experiencing at the time as a result of their new position in society (Bauman, 1992). This process then continued with the vigorous expansion of both school education (which in most western countries today lasts for at least twelve years) and other institutions such as the social services, the police, organised leisure-time activities for young people and so on. At the same time, the control over young people exerted by the family, the work environment and the neighbourhood has become less important. The type

of formal social control exercised by authorities, however, has not been able to compensate for the reduced levels of informal control which resulted from the transition to new forms of production, urbanisation and so forth.

During the 1960s and 1970s this process was on the whole regarded as a positive development, since it was seen to have freed youth from the oppression of patriarchal society. Today the negative aspects of the process are more often those that receive the attention of social commentators, not least the low level of social control to which young people are exposed, and their lack of integration into mainstream society (Sarnecki 1997).

Many criminologists (e.g.; Clarke and Cornish 1983; von Hofer 1985; von Hofer and Tham 2000) feel that during the twentieth century the economic developments witnessed by the western world have increased opportunities for crime and thus led to an increase in the crime level itself. Such changes in the criminal opportunity structure cannot by themselves explain why the delinquency of young people has increased more than that of other age groups in most western countries, however. In my opinion (Sarnecki 1997) the remarkable increase in the delinquency of young people[7] seen in the West is related not only to the increase in criminal opportunities but also to the way that the vertical ties linking youths and adults have been weakened, whilst the horizontal ties linking young people to their peers have become stronger. Two visible results of this process have been the reduction in the control of youth exercised by parents and the emergence of the many so called 'youth cultures' so characteristic of the second half of the twentieth century. Young people today, excluded from the labour force and lacking the firm control exercised over earlier generations by adult society, have considerably more opportunity to participate in youth cultures which are often oppositional in terms of the mainstream culture.

There is thus good reason to believe that the altered position of young people in modern society has meant that they have to some extent been able to free themselves from the control (and probably also from the oppression) of the adult establishment, and have at the same time been given much more space in which to establish and develop relations with members of their peer group. This situation is described in the following somewhat uncompromising terms by Dishion et al: '. . . we have become a society where many children are essentially raised by peers' (1995: 821).

This is probably one of the macro-level factors underlying the observed increase in delinquency among youths in a large part of the western world. Against this background, I believe that micro-level studies of the social ties between young people are of particular interest for criminologists.

1.3 Network analysis and criminological theory

1.3.1 The network perspective

Since the network perspective remains relatively unknown within criminology, what follows is a short presentation of some of the concepts basic to this field of enquiry.

Stated simply, social network analysis looks at relations between social units (individuals or organisations), the patterns displayed by such relations and also at their implications (Wasserman and Faust 1994: 6). One of the most important tasks of network analysis is to attempt to explain, at least in part, the behaviour of the elements in a network by studying specific properties of the relations between these elements. Elements (in the context of this study, individuals) which are found to be close to one another (physically or socially) and which interact are generally assumed to affect one another's behaviour. It should be stressed, however, that 'face-to-face' encounters are not essential for this inter-individual influence to work, nor is it necessary that the interactions are *intended* to exert such influence (Marsden and Friedkin 1994).

Theories and empirical studies in this field appear to have developed in parallel and to some degree independently of one another in several different areas within social science. According to Borell and Johansson (1996) and Wasserman and Faust (1994) two different approaches are to be found behind the origins of the network perspective: the social-psychological and the anthropological.[8]

Barnes (1954) is widely held to be the first to have used the concept 'social network', but the research tradition in this area stretches back a good deal further than this. The network approach was first used in social-psychological research around the 1920s and 1930s, when the first sociograms were drawn up (Moreno 1934). Sociograms were used primarily to study relationships between individuals in a group, often a class of school children. The sociograms made it possible to see which of the pupils enjoyed the greatest popularity in a class, for example, and which of them were completely lacking in social contacts.

Sociometric techniques have also been used on occasion in the field of criminology (by among others Yablonsky 1962, Short and Strodtback 1965, Klein and Crawford 1967, and Sarnecki 1986). Klein and Crawford, for example, used this method to study how often the members of a thirty-strong Los Angeles gang had contact with one another in the space of a six-month period.

With time, analyses of this type were allowed to evolve thanks to the introduction of directed graphs (Cartwright and Harary 1956). Sociometric

analyses could now differentiate among types of relation and the direction in which the relations went. Relations can thus be either reciprocal, such as when two individuals commit an offence together, or one-way, such as when one individual victimises another without provocation.

The introduction of directed graphs paved the way for the use of network analysis in epidemiological research, looking at different stages in the spread of disease. And it was soon realised that this type of scientific tool could be used to study much more than just the spread of illness. The method was also suitable for the study of the diffusion of different types of ideas and social behaviours. Coleman, Katz and Menzel (1957, 1966), for example, used this method to examine how attitudes to the use of new medicines are spread among doctors.[9] They found that informal networks were decisive, especially to begin with while there still existed a great deal of uncertainty as to the new medication's usefulness.

The other social-psychological approach that contributed to the development of network analysis originated during the 1930s and 1940s primarily at Harvard University, where different aspects of 'informal relations' in large systems were being studied (Scott 1991: 16). Among the research produced by this tradition, we find the classic study of the Hawthorn Western Electric Company in Chicago (Roethlisberger and Dickson 1934), which pointed to the significance of patterns of informal organisation in a workplace. For Scott, this was the first study to use the sociogram to describe 'actual relations observed in real situations' (Scott 1991: 18).

The anthropological tradition of network analysis has its origins in a group of researchers working at Manchester University during the 1950s. One of the names emerging from this tradition is Barnes (1954), referred to above, who produced the first scientific definition of the network concept in connection with his field study of a fishing community on a Norwegian island. Barnes describes the small Norwegian village in terms of the relations among the people living there. Each of the inhabitants in the village had contacts with a number of other people, who in turn had contacts with still others. One of the study's important discoveries was that the social networks found in the village had no obvious organisation and no clear leadership structure.

Another anthropologist active within this tradition was Bott (1955), who examined families in metropolitan areas and their contact networks. Bott's results showed that 'external networks' affected relationships within the family.

Mitchell (1969) was an important figure in the evolution of the anthropological network analytical tradition. Mitchell saw society as an enormous

network of interpersonal relations. He felt that research should be focused on the study of the partial networks that together make up the complete societal network. The choice of which of these partial networks to study could be based either on individuals, whose personal (ego-centred) networks could then be examined, or on networks which served special functions, such as the relations within the extended family, between business contacts, friendship ties or other similar examples. In the present study, both of these options are employed. In some instances, the personal networks of actively delinquent individuals are examined, whilst at other times the focus shifts to complete networks comprising all directly or indirectly connected co-offenders.

Mitchell also introduced a number of concepts that are now commonplace in network analytical studies, and some of these will be used here. He made a distinction between two types of network characteristic:

morphological characteristics, which refer to the patterning of relations in the network, such as *anchorage*, the person or persons who constitute the centre of a network, *reachability*, the extent to which an individual can be contacted by others in the network either by direct links, for example, or via mediating others, *density*, the number of links that are actually present in a network compared to the maximum possible number of links if all network members were maximally connected to one another and *range*, the number of persons to whom a certain individual is linked.

interactional characteristics which refer to the nature of the relations, such as the *content* of the interactions (e.g. family, friendship or co-offending), the *direction* of the interaction (one-way or reciprocal), *durability* (how long the relation lasts) *intensity* and *frequency*.

The anthropological tradition within network analysis has focused much of its attention on personal (ego-centred) networks. One study using this approach is that of Granovetter (1974) which examines the ways in which educated men from a suburb of Boston find themselves jobs. The study shows that information relating to job opportunities is gleaned not in the first instance through close relations such as those with family and close friends, but rather through the considerably weaker ties formed in the course of one's working life. Another classic study of personal networks focused on women looking to obtain an illegal abortion (Lee 1969). In this instance it was found that women found abortionists through contacts with female friends of the same age. In order to find subjects for the study, Lees used similar techniques to those employed by the women to find an abortionist.[10]

Over the last few decades, the use of network analysis has spread to many other areas. This diffusion has been made possible by, amongst other things, the development of statistical methods with special relevance for the treatment of network data (see for example Frank 1991; Frank and Nowicki 1993; Wasserman and Faust 1994).

One area where the network approach is widely used today is in the treatment of individuals with various kinds of social and psychological disturbances. Network therapy is now an established form of treatment employed by both social workers and psychiatrists (e.g. Svedhem (ed.) 1985, and Svedhem 1991).

The network perspective is today firmly established within sociological, anthropological and economic thought. In sociological research, for example, the concept of social mechanisms (Hedström and Swedberg 1998) builds to a large extent on such social phenomena as diffusion and other factors affecting collective behaviour. Even though criminological thought seldom takes account of group behaviour, criminological theory does contain a number of perspectives that can be said to employ a network approach to the analysis of crime. These theoretical perspectives, as mentioned above, see the causes of crime as partially or completely associated with the individual's ties to different types of social network. The following sections discuss the network analytical aspects of a number of the classic criminological theories.

1.3.2 Differential association

Of the classic criminological theories, Sutherland's theory of differential association (Sutherland 1939 and 1947; Sutherland, Cressey and Luckenbill 1992) is perhaps the one that is closest to modern network analytical thought.

As we know, Sutherland is of the opinion that criminality, just like other forms of behaviour, is learned during interaction with other individuals, principally within primary groups. The learning process applies not only to the techniques necessary for the commission of offences but also to such aspects of offending as motivation, attitudes to crime, values and also to ways of rationalising what has happened. According to Sutherland, 'A person becomes delinquent because of an excess of definitions favourable to violation of law over definitions unfavourable to violation of law' (Sutherland, Cressey and Luckenbill 1992: 89). These definitions are learned primarily in the course of contacts with other individuals. In western society (Sutherland refers to the situation in America) one always has relations both to individuals who feel that legal norms should be adhered to uncondition-

ally and to individuals who feel that non-compliance with such norms is more acceptable. It is this variety of relational content that Sutherland refers to as differential association. He writes: 'Differential associations may vary in frequency, duration, priority and intensity' (Sutherland, Cressey and Luckenbill 1992: 89).

These characteristics of Sutherland's conceptualisation of differential association correspond well with the interactional characteristics ascribed to the links between network members by Mitchell (1969), who wrote that such links can vary in durability, intensity and frequency.

As I have argued, we can assume that in modern western society, it is principally the peer group, made up of friends of the same age (and slightly older), that contains models for deviant or delinquent behaviour in young people. Seen from this perspective, membership in a network of delinquent youths should thus be seen as having considerable significance for whether or not a young person begins and continues to commit criminal offences (Sarnecki 1986).

Sutherland also wrote of 'definitions favourable to the violation of law'. If an individual's perception of the law as something that can be broken is stronger than the same individual's perception of the law as something to be obeyed then, according to Sutherland, this will result in the commission of crime (Sutherland 1947). Sutherland never goes any deeper into the question of how the learning of criminal/conformist behaviour takes place. For this reason Burgess and Akers (1966) integrated Sutherland's theory from 1947 with 'modern learning theory' (Akers 1998). Akers describes in some detail the processes which lead to the reinforcement of pro- and antisocial behaviours at the individual level. In the matter of the conditions in which the learning of antisocial behaviour takes place, Akers too sees different types of primary groups, and not least groups consisting of peers, as the central factors.

> The reinforcement can be nonsocial (as in the direct physiological effects of drugs or in unconditioned reinforcers such as food). But the theory posits that the principal behavioural effects come from interaction in or under the influence of those groups with which one is in differential association and which control sources and patterns of reinforcement, provide normative definitions, and expose one to behavioural models. The most important of these are primary groups such as peer and friendship groups and the family, but they also include work, school, church, and other membership and reference groups. (Akers 1998: 63)

The approach to the learning of criminal/conformist behaviour formulated in the above quotation is fully compatible with the modern network perspective. It should nonetheless be emphasised that the model is

applicable not only to delinquency but to all forms of behaviour, of which criminality is but one. Methods used to study interactions between individuals and their networks are thus on the whole the same, regardless of whether it is a question of examining how membership in a 'professional' network affects doctors' choices in relation to new medicines (Coleman, Katz and Menzel 1957) or how young people choose to commit certain types of offence or to use certain types of drug.

Finally, it is worth mentioning that the term 'differential association' is today used even outside the field of criminology. Morris (1994: 27) for example talks of differential associations in connection with his description of the epidemiological spread of contagious disease. He makes the point that the methods of network analysis are particularly suited to this area of study.

1.3.3 Subcultures

Discussions touching on the significance of social networks in the aetiology of criminal behaviour highlight the issues of deviant subcultures and delinquent gangs. Criminological theory contains two different models for explaining the formation of deviant subcultures and gangs. The first explains these phenomena as the result of social disorganisation, the other in terms of strain.

Shaw and McKay (1942) saw the causes of crime in the social disorganisation prevalent in those parts of metropolitan areas populated by the poor, who often came from ethnic minorities. In these neighbourhoods, the predominant societal culture exerts only a weak influence and inhabitants choose a deviant rather than a conventional lifestyle relatively often. Such choices of lifestyle are often collective in nature. Young people, antagonistically disposed towards societal norms, and even their own parents, can thus find support for deviant lifestyles among their contemporaries. This sometimes leads to the formation of gangs. In turn, gangs evolve a delinquent tradition of their own which is then passed on to new recruits. Once a gang tradition has been established, it will often continue irrespective of any changes taking place in the neighbourhood. The tradition is thus passed on from one generation of juveniles to the next, or from one ethnic minority to another, as new groups come to predominate when the older inhabitants move away (Einstadter and Henry 1995: 133).

Shaw and McKay (1942) suggest that in such areas, a tradition of delinquent behaviour can evolve to become an established norm. Youngsters growing up in the area see a number of the older youths making a success of their delinquent lifestyle and use these as role models for their own