kinds of structures are relevant or interesting. Obviously, the approach of using a full matrix of who-to-whom ties becomes computationally impossible with very large groups such as the tens or hundreds of thousands in city populations, and seems most appropriate for modelling the relationships between groups.

Modelling Protest and the Media

Protesters generally seek news coverage as the mechanism for having influence on a wider public and the authorities. Protests that receive no news coverage are often construed as failures. Protests that receive news coverage are likely to be invigorated, and activists are likely to prolong their activism and emit more total protests when they have received news coverage. But, of course, the news media do not cover all protests that occur, and their coverage is dependent on the amount of protest. There are 'media attention cycles,' which are diffusion cycles: news media tend to ignore a protest campaign in its small initial phases and then, when they do begin to cover it, there is a flurry of coverage for a while until it becomes 'old news,' and then coverage dies down again.

Adding media effects into a model requires specifying how the media work. This is a complex problem, which will need to be the subject of a separate analysis. We need to consider both how the media affect protest, and how protest affects the media. In this chapter, we will assume that the media are simply a channel of communication, so news coverage of events affects protest by conveying to actors information about the protest rates of others. This means that we will assume that media coverage acts just like full feedback or network communication, in terms of the algorithm for the effect of others' actions on an actor's probability of acting. In terms of the relation between protest and the probability that the protest receives news coverage, there is some information from recent empirical work. We know that there are issue attention cycles that may be functions of factors exogenous to protest, or may be set off by protest; an issue attention cycle raises the probability that an event will be covered. In addition, we know that the probability of an event being covered increases with its size, and recent large events may draw a higher rate of coverage to immediately subsequent events. There are also whole news effects, so that there is a limit on the amount of action that can be reported on one day. Myers and Caniglia (2000) found, for example, that the New York Times under-reported riots at the peak of a riot cycle: even though they reported that there was a lot of rioting going on, any particular riot was less likely to be mentioned when there were many riots happening.

In this chapter, we cannot provide a full analysis, but illustrate a possible approach to such a problem by showing the effects of several kinds of media factors separately. We begin by showing the effect of a flat percentage of news coverage on the rate of 'adoption' of action compared to full information. Figure 8.4 shows the rate of action diffusion with news coverage at a constant 50 and 20 per cent probability as compared with the full information model (equivalent to
100 per cent probability of news coverage). In this initial model, the specification is that the news media has a single probability of news coverage. If it 'covers' action at all, it covers all the action that is occurring on that round. A more detailed specification would say that the media could be differentially sensitive to different actors, so that actors could have different probabilities of coverage or that different proportions of those acting on a round could be covered. That would yield different patterns of results.

Figure 8.5 shows how the diffusion of action is affected when the probability of news coverage is not a flat percentage, but increases with the size of the action, for example, the number of actors. The 'functional' relation is parameterized so that actions involving all ten actors have a 50 per cent rate of coverage, while the probability for smaller actions is proportionately smaller. This dependence of news coverage on event size markedly slows the spread of action.

In most research, newspapers are the source of data and thus only news coverage of action is empirically observable. Figure 8.6 shows both action and news coverage of action when the probability of news coverage is a constant 50 per cent (upper panel), and when the probability of news coverage is 50 per cent for the largest actions (involving all ten actors) but is proportionately lower for smaller actions. Two patterns are clear is these figures. First, if the probability news coverage is proportional to the size of the events, diffusion is delayed relative to a constant probability of coverage, because the earlier smaller events (involving just one or two actors) are less likely to get news coverage. Additionally, the apparent level of protest from news coverage is even lower than the actual level, due to the lower probability of coverage. Secondly, note that the cycles of news stories differ
Fig. 8.5. Media coverage affected by the size of action, i.e., the number of actors, compared to flat coverage rates.

Fig. 8.6. Action and news coverage of actions. Comparison of actual event series with events reported in the news. Top panel shows a flat 50% coverage rate. Bottom panel shows coverage proportional to number of actors.
Networks, Diffusion, and Cycles of Collective Action

FIG. 8.7. Independent issue attention cycle can wholly distort apparent protest cycle. Dashed line is events reported in the news. Solid line is actual events.

markedly from the cycles of action. This is especially true when the probability of coverage is a function of event size. But even after action has reached unanimity, random fluctuations in news coverage give the appearance of protest cycles where there are none. However, in both these cases, news coverage does successfully track the difference between high-action and low-action periods.

There is substantial reason to believe that the news media's probability of covering protest is often determined not by the characteristics of the protest, but by external events or political cycles (Oliver and Maney 2000). In Fig. 8.7, the probability of news coverage is exogenously determined as a sine function, that is, a wave that goes up and down independently of protest levels. As before, past news coverage of protest raises future protesting. In this example, there is an early news cycle that helps to spark a diffusion process. Then the news coverage dies down while the protest is still rising. Coverage comes and goes again later when action is unanimous. Because very often the news coverage of protest is the only 'data' we have about protest, it is very important to recognize how easy it is for news cycles to be unrelated to protest cycles, and it is obviously important to do a more detailed study of how protest and news coverage relate to each other.

INFLUENCE

There are many network theorists working on influence models which assume that people's attitudes are shaped by those of the people to whom they have network ties, and in particular that the degree of influence will be affected by the homogeneity/heterogeneity of the opinions in the networks to which one is tied. If virtually all of one's acquaintances share the same political perspective, one's mobilization level or attitude extremity will be greater than if one's acquaintances
vary in political perspectives (Pfaff 1996; Kim and Bearman 1997; Soule 1997; Van Dyke 1998; Chwe 1999; Sandell 1999). This suggests that there is an interesting dynamic in the way networks affect mobilization. The same factors that create higher influence (all one’s acquaintances are similar) are likely also to reduce the extent to which a group has network ties into nonmovement organizations. Thus relatively closed, politicized networks tend to increase diffusion through self-reinforcement processes, while relatively open networks have more potential to foster diffusion through mobilizing new participants, although the force of such a diffusion effect is likely to be weaker. Of particular concern is whether a group is relatively inbred, with ties only to itself or to other movement groups, or whether it has ties out into the general population of people who are not already mobilized. For example, Ohlemacher (1996) develops the concept of the social relay to distinguish the networks in two communities, one in which the protesters were relatively isolated, and the other in which protesters had substantial ties to non-protest organizations in the community: the relatively isolated protesters were viewed as more radical and failed to generate a broad mobilization, while the protesters with substantial non-protest ties built a broader, less marginalized, mobilization.

We may begin to model these processes by adapting Gould’s (1993a,b) influence model, in which each person’s probability of action is affected by the average of the action level of all the others to whom she/he is tied. If there are zero network ties, each person’s probability stays the same; if there are 100 per cent of all possible network ties, everyone’s probability fairly rapidly converges to the same probability, with the initially higher probabilities dropping and the initially lower probabilities increasing. If we put a simple who-to-whom matrix in this system, network ties affect the speed with which these processes occur, but not the final outcomes. We can see how this works by setting up a two-clique network with radically different initial values of opinions. If the cliques are completely unconnected, they will each reach their own equilibrium, as in the top panel of Fig. 8.8. Here, then, we have the gap between the isolated radical terrorist cell, for example, and the larger population. The radical cell can maintain its radicalism, but at the cost of having no influence on the larger population. If there are any bridges between the networks, however, influence will ‘leak’ across the system and the two cliques will move toward each other and will ultimately reach system-wide equilibrium, as in the middle panel of the figure. However, the move toward equilibrium can take quite a while to happen and, in the mean time, there can be radical disjuncture between subnetworks. These two cliqued cases may be compared with the bottom panel, which shows how one random network fairly rapidly converges to a system-wide equilibrium. In this particular case, it happens that one actor has no ties to other actors and so remains unchanged while everyone else converges toward equilibrium.

Network analysts usually treat the structure of network ties as fixed and unchanging. But, of course, movement actors devote a great deal of effort toward