

Social Networks, Identification and Participation in an Environmental Movement: Low-medium Cost Activism within the British Columbia Wilderness Preservation Movement*

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Cet article examine comment la structure des réseaux personnels (ou égocentriques) est liée à la participation continue des individus dans un mouvement social (le British Columbia Wilderness Preservation Movement). Les résultats présentés dans ce texte suggèrent que la communication, le recrutement continu et l'identification influent sur le rapport entre la structure des réseaux et le niveau de participation dans le mouvement. Différents aspects de la structure du réseau personnel ont différents effets sur ces processus de médiation. Finalement, dans le contexte d'un activisme comportant des risques/coûts faibles ou moyens, les liens faibles sont plus importants pour faciliter la participation que ne le sont les liens forts.

This article examines how the structure of egocentric (or personal) networks is related to the ongoing participation of individuals in a social movement (the British Columbia Wilderness Preservation Movement). The results presented in this paper suggest that: communication, ongoing recruitment, and identification mediate the relationship between ego-network structure and level of movement participation. Different aspects of personal network structure have differential effects on these intervening processes. Finally, under conditions of low-medium risk/cost activism, weak ties are more important to facilitating participation than are strong ties.

SOCIAL MOVEMENTS ARE COLLECTIVITIES OF PEOPLE who are engaged in trying to create or resist social change. Social movement organizations (SMOs)—organizations which are dedicated to fostering social change, and which may vary in the degree to which they are formalized and institutionalized—are key actors in contemporary social movements

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(McCarthy and Zald, 1977). While there is a variety of different types of social movements, social movement organizations, and social movement strategies, the success of social movement organizations is related to the extent to which individuals and groups mobilize to support them.

The participation of individuals and groups is important for a variety of reasons. First of all, SMOs need a critical mass of resources in order to continue to exist and operate. Second, in order for SMOs to be effective in liberal democracies, governments and other key actors have to be convinced that a substantial proportion of the population supports the beliefs and goals of the SMO. SMOs can foster the perception of widespread support in a variety of ways, including getting members and supporters to attend demonstration rallies, to write letters to the editor, to sign petitions, to attend community-based meetings, etc.

Among contemporary social movements in Canada, one of the most visible and effective has been the environmental movement. This paper provides an explanation for the participation of individuals in a particular segment of the B.C. environmental movement by focussing on the role of social networks.

This study aims to address several gaps in the social movement literature, namely: 1) to identify and measure *some* of the key network-based processes—such as level of movement identification—that mediate the relationship between personal (ego) network structure and the participation of individuals in social movements; 2) to examine social movement participation as a *continuous variable*; and 3) in contrast to much recent research in this area, to focus on the relationship between personal network structure and *low-medium cost* activism.

With regard to the first objective, researchers have examined the relationship of structural variables (e.g., class location, existence of a social movement organization network contact, prior organizational affiliation) to attribute variables (e.g., education, age, level of ideological support for the movement), and how both of these are related to recruitment (e.g., McAdam, 1986; Klandermans and Oegema, 1987). Scholars who have conducted empirical research on the relationship between social networks and the participation of individuals in social movements (e.g., McAdam, 1986; Kitts, 1999) have not measured the processes that intervene between network structure and movement participation, but rather have made conjectures (based on the theoretical literature) and inferred underlying mechanisms from the observed relationships between structure and participation.¹ I endeavour to advance our understanding of the relationship between personal networks and movement participation by examining the role that is played by network-based processes (e.g., frequency of communication, level of identification) in mediating the relationship between personal network structure and social movement participation amongst individuals.

1. Arguably, McAdam and Paulsen's (1993) work on recruitment context and identity marks an exception—but yet again, they do not have data on intervening processes.

With regard to the second objective listed above, I argue that participation/non-participation is not a simple dichotomous variable. Researchers who have studied the participation of individuals in social movements have tended to focus upon recruitment as the central dependent variable of interest (Diani, 1995: 82). In so doing, they have generally conceived of (and measured) recruitment as a discrete decision about whether or not to join a particular movement organization, or participate in a particular campaign or demonstration (e.g., see McAdam, 1986; Klandermans and Oegema, 1987;—Wiltfang and McAdam, 1991; and Diani, 1995 mark several exceptions to this pattern). While recruitment is of some analytical interest, activism should be conceived of as a continuum that ranges from non-participation to sustained and intense involvement in a full range of social movement activities. In other words, a full understanding of activism requires that we be able not only to distinguish activists from non-activists, but also, that we explain variation in the level and forms of social movement participation amongst those who are involved. This treatment of participation contrasts with most past research (e.g., McAdam, 1986; Gould, 1991; Kitts, 1999; Erickson Nepstad and Smith, 1999).

With regard to the third objective, this study focusses upon personal networks and activism under conditions of low-cost activism; this emphasis contrasts with much recent work that has focussed on high-risk/cost activism. McAdam (1986: 70), in distinguishing between low-risk/cost activism and high-risk/cost activism (lrc and hrc), states: "It becomes imperative that those researching movement recruitment clearly specify the type and extent of activism they are studying." Cost refers to the expenditures of time, money, and energy that are required of a person engaged in any particular form of activism (McAdam, 1986: 67). "Risk refers to the anticipated dangers—whether legal, social, physical, financial, and so forth—of engaging in a particular activity" (McAdam, 1986: 67). While risks and costs are positively correlated, they are analytically distinct.² In accordance with McAdam's dictum, the type of social movement participation examined in this study ranges from low to medium cost, and low to medium risk. No high-cost, high-risk activities are involved.

McAdam was partly motivated in drawing this distinction because at the time of his (1986) Freedom Summer study, much of the previous research on "activism" was focussed upon low-risk/cost or "safe" activism. McAdam argued that the processes underlying high-risk/cost activism—such as participation in the Freedom Summer project—are potentially quite different from those underlying low-risk/cost activism. One factor he emphasized is "biographical availability"—personal constraints that may increase the costs and risks of movement participation (e.g., full-time employment, marriage, and family responsibilities). I would argue that biographical availability may be a factor in both types of activism, but is

2. Furthermore, it is possible to have activities that are low cost and high risk, as well as vice versa (see McAdam, 1986; Wiltfang and McAdam, 1991).

perhaps most critical for hrc activism. Of more central concern to the present study is whether the network characteristics that explain social movement participation differ between lrc and hrc activism. (This will be considered further below.) Most recent research that focusses on the relationship between personal networks and social movement participation has involved studies of hrc activism (e.g., Gould, 1991; Erickson Nepstad and Smith, 1999). This focus may be partly due to the higher drama associated with such activism. Yet, the majority of contemporary social movement participation—such as most participation in contemporary environmental movements—is of the low-risk/cost variety, and thus understanding the network basis of ongoing participation in such movements is worthy of closer scrutiny.

Under conditions of *low-medium risk/cost activism* having ties to SMOs or organizers is not necessary for individual involvement. Hypothetically, individuals can donate money, attend demonstrations, write letters and so on without having ties to either organizers or SMOs—especially in contemporary western societies where a social movement's ideology and goals, and information about events are propagated through the mass electronic and print media. Thus, in the absence of detailed empirical examination, the role played by networks under these conditions is uncertain.

Literature

Social Networks and Individual Participation in Social Movements

There are two basic levels of network analysis: whole networks (or bounded groups) and personal (or egocentric) networks. Of course, the *raison d'être* of network analysis is to link these two levels. However, individual studies tend to focus on one or the other, and the present study focusses upon the movement-based personal networks of wilderness-preservation movement members.

Network centrality is one of the most important concepts developed by social network scholars. This concept was originally developed by researchers who were trying to understand the effects of social structure in human communication. The basic idea is that the more central an actor, the greater the degree of his or her involvement with others in a social network. A variety of centrality measures has been developed corresponding to different theoretical and analytical aims (Freeman, 1978-1979). Measures that focus upon a single unit or node (e.g., a single individual within a group, or a single group within an intergroup network) are referred to as indicators of point centrality. Measures that focus on the overall pattern of an entire social network are referred to as measures of centralization. The research described in this article focusses on personal or egocentric networks and thus utilizes measures of point centrality. The simplest and most intuitively obvious conception of centrality is one that is based on degree

(Freeman, 1978–1979: 219). The degree of a point is calculated by counting the number of other points that are adjacent to it and with which it is in direct contact. Degree is an indicator of an individual's potential communication activity, and thus theoretically influences social movement participation in a variety of ways. Degree centrality should be positively associated with frequency of interaction, amount of information flow and level of social pressure to participate. Two degree measures are investigated in this study: number of organization weak ties, and number of organization strong ties.

At the level of egocentric networks, a distinction is commonly made between *weak ties* (of low emotional intensity) and *strong ties* (of high emotional intensity). With regard to activism, some authors have argued that, under certain conditions, tie strength is the most important network correlate of activism (Granovetter, 1973; McAdam, 1986). Some analysts of networks have focussed upon how the existence (versus absence) of any strong ties is related to cognitive and behavioural outcomes, while others have considered whether the size of personal networks (e.g., the number of such ties) is important.

Another distinction made by network analysts (Burt, 1980) is between *network degree* (total number of direct ties) and *network range* (number of different social locations or groups one is connected to). *Network range* has been used by some network analysts as a measure of *social capital* (Coleman, 1988) and they have argued that network diversity is positively associated with cognitive complexity (Pinard, 1971) and social mobility (Lin and Dumin, 1986).

In the analyses that are to follow—in trying to understand how the structure of personal networks is related to ongoing environmental activism—I consider the relative importance of strong versus weak ties. I also compare and contrast the relative importance of network degree versus network range. The analyses presented here are organized around the following guiding hypothesis: *movement-based personal network centrality is positively associated with the participation of individuals in the wilderness preservation movement.*

Types of Network Centrality: Degree versus Range

Why is the distinction between *degree* and *range* important? Degree is important for *frequency* of interactions, which in turn is important in the processes of information dissemination, social pressure, and attitude formation. Range is important for *diversity* of interactions; diversity of interactions is associated with the variation of information one receives, which in turn may be important for more complex cognitive processes such as identity formation.

Network Range and Social Movement Participation

Social movement scholars who have examined the effects of network range (using the less technical designation—number of organization memberships/ties)³ upon social movement recruitment/participation, have found positive associations between these two variables (e.g., Fernandez and McAdam, 1988).⁴

Having ties to people from different organizations implies that an individual is more likely to come into face-to-face contact with a range of people who may provide varied information, opinions, and evaluations about movement issues and events. Also, the greater the number of different organizations a movement member belongs to, the greater the diversity of information s/he will receive through other modes (newsletters, etc.). The distinction between these two types of range measures is particularly relevant under conditions of low-medium risk/cost activism.⁵

It should be noted that the present argument regarding range of ties refers only to within movement ties. Other arguments have been made about cross-pressures associated with crosscutting ties.⁶ For example, McAdam and Paulsen (1993) have made the theoretical prediction that individuals who have ties to opposing groups will moderate their participation in a social movement (see also Stryker, 2000). For several reasons, this aspect of network range will not be included in the model to be introduced below. Firstly, the empirical case does not allow testing of this proposition. In B.C., with a few special exceptions such as Tofino, there is a general segregation of environmentalists from anti-environmentalists, with environmentalists overwhelmingly located in large urban centres (such as the one in which data collection for this study took place) and counter-movement participants located in non-metropolitan communities. Secondly, in another study recently conducted by the author (Tindall and Mauboulès, 2000), findings obtained from data on members of an anti-environmentalist counter-movement were exactly opposite from McAdam and Paulsen's proposition.⁷ These results suggest that more research needs to be done on this topic before the crosscutting ties principle can be incorporated into the model discussed here.

3. The terms "multiorganizational field" and "prominence"—utilized by several researchers in this area—are concepts related to network range.

4. Erickson Nepstad and Smith's (1999) findings provide a contrast. Controlling for "relational ties" and other attribute variables, network range was not a significant predictor in their study of participation in high-cost activism.

5. This distinction is less relevant under conditions of high-risk/cost activism, as it seems unlikely that range would have much of an effect on activism if the potential recruit never had interpersonal interaction with members of the organizations in question. Under conditions of low-medium risk/cost activism, however, it is more conceivable that individuals will be influenced by less direct forms of interaction with organizations—such as letters from strangers, newsletters, etc.

6. One of the anonymous reviewers of this article also made reference to this principle.

7. Tindall and Mauboulès's (2000) study of a community countermovement organization in Port Alberni, B.C. that mobilized against the provincial environmental movement found that number of outgroup ties (the range of ties to environmental organizations) held by individuals was the strongest predictor of countermovement activism amongst countermovement members.

Network Degree and Social Movement Participation

Two degree measures are investigated here: number of organization weak ties, and number of organization strong ties.

Tie Strength and Social Movement Participation Intuition suggests that strong ties should generally be more influential than weak ties because the people with whom we have strong ties are more motivated to help. Granovetter (1973), however, has talked about the paradoxical importance of weak ties. Most people have many more weak ties⁸ than strong ties.⁹ Further, weak ties stretch further in social space (strong ties tend to know one another, weak ties tend not to know one another).

Granovetter's insights have implications for collective action at both the whole network and egocentric network levels. Based on Heider's formulation of balance theory, Granovetter has argued that at the level of whole networks, weak ties are important because they are more likely (than strong ties) to serve as bridges between otherwise isolated cliques in a community. Of more direct relevance to the present study, Granovetter argues that at the level of egocentric networks, weak ties are important because they are more likely (than strong ties) to provide novel information (e.g., about social movement activities).

McAdam (1986), in considering differences between lrc and hrc activism, also talks about tie strength and ideological commitment. He cites empirical evidence that suggests that prior ties to a recruiting agent is the most powerful predictor of recruitment to low risk activism. McAdam points out, however, that ideological commitment to low-risk activism does not have to be high in order for individuals to participate. To provide a local example, in Victoria, there is a peace march every spring. There have been as many as 10,000 participants, a large turnout considering the size of the population. The benefits of participating include getting some fresh air and a bit of exercise on a (usually) nice spring weekend day with a cast of colourful co-participants, and feeling that one is part of a force that may exert some indirect pressure toward the goal of peace and disarmament. The cost is little more than giving up a few hours of one's time. It is easy to conclude that even low amounts of social pressure (e.g., from acquaintances at work or school) would be enough to tip the cost/benefit ratio in the direction of participating.

In contrast to lrc activism, McAdam suggests that under conditions of hrc activism, strong ties are more important (than weak ties). One reason for this, is that strong ties are much more likely to provide social support, and under conditions of hrc activism this may be crucial for participation. (See also Krackhardt, 1992, on strong ties and trust.) Consider the risks involved for many of those who participated in the civil rights movement

8. For example, people have hundreds or even thousands of acquaintances.

9. For example, people only have at most a handful of close friends, and a similar number of immediate family members.

in the United States during the 1960s. In discussing the Freedom Summer project, McAdam (1986) notes that some participants were attacked, and a few were even killed by segregationists. McAdam found strong ties (to other activists) to be one of the most important predictors of participation in the Freedom Summer project. The effect of weak ties upon participation, by contrast, was non-significant.

Most recent research on the relationship between tie strength and participation has been conducted under conditions of high-risk/cost activism (e.g., McAdam and Paulsen, 1993; Erickson Nepstad and Smith, 1999; —Kitts, 1999, provides an exception). Most research on networks and lrc activism has focussed on initial recruitment rather than ongoing participation (the focus of this study). Also, while McAdam provides some theoretical guidance about why strong ties are important under conditions of hrc activism, it should be noted that he does not provide empirical measures of this process (e.g., of the role of intervening variables). Thus, little is known about the relative of importance of strong versus weak ties for explaining ongoing participation under conditions of low-medium risk/cost activism. Therefore, the present study examines the importance of both types of ties in the micromobilization process under lrc conditions.

Network Structure and Network-based Processes

Network structures do not directly cause collective action to occur. Rather, such structures condition the nature of interpersonal interaction, influence, and resource flows amongst potential participants. Theoretical work has focussed on a number of possible intervening mechanisms; most prominent amongst these has been *incentives* (Marwell et al., 1988; Gould, 1993; Friedman and McAdam, 1992). Empirical work has generally failed to measure intervening mechanisms. In the low-medium risk/cost activism studied here, several intervening processes are examined: communication, ongoing recruitment, and level of identification. These by no means constitute an exhaustive list of the relevant mechanisms, but they provide a point of entry for empirical research on this problem.

Identification and Movement Participation

The importance of identity to collective action has been noted by numerous social movement scholars (e.g., Melucci, 1988; Gould, 1993; Friedman and McAdam, 1992; Stryker, 2000; Klandermans and de Weerd, 2000; Snow and McAdam, 2000; White and Fraser, 2000). Surprisingly, however, little empirical research has been conducted exploring the importance of movement identification to individual activism (Klandermans and de Weerd, 2000), or more notably, on the relationship between movement identification and personal network structure. (McAdam and Paulsen, 1993, provide an exception; also, a recent volume edited by Stryker, Owens and White, 2000, provides evidence of a renewed interest in this topic.)

Much of the theoretical and conceptual work on identity and movement participation is problematic because of a lack of detail on how identity is related to networks and/or participation. For example, various new social-movement theorists have stated that both networks and identity are important to participation in new social movements, yet they have failed to articulate in detail how these variables are related to micromobilization. Indeed, for some authors identity is a necessary condition for collective action to occur, while for others it is a desired outcome of collective action. Furthermore, as Stryker (2000) notes, the term identity has been used differently by different scholars. So while a variety of scholars have designated importance to identity, they mean different things by the term—thus making it difficult to synthesize work on this topic. Another criticism is that the term identity is sometimes used as a “category” (and thus a constant) rather than as a variable. As Stryker (2000) asserts, if identity is not conceptualized as a variable, it cannot be used to explain differential social movement participation.

While it is acknowledged that more theoretical, conceptual, and empirical work is needed on this topic, the present analysis takes some first steps in providing a model of how identity works. It argues that identity is formed in the context of personal networks, and that identification mediates the relationship between personal network structure and the social movement participation of individuals (see McAdam et al.’s 1988 discussion of solidary incentives in micromobilization contexts).

Collins (1981; 1988), drawing upon the works of Durkheim and Goffman, suggests that repeated interpersonal interactions or rituals provide the basis for the kinds of group solidarity that make collective action possible. By “interaction rituals” Collins does not refer only to the formal type of ritual evoked by a Catholic Mass (or some other analogous religious ritual) but rather to interpersonal interactions such as greetings and informal conversations. As Collins (1988: 208) notes, the “natural” ritual of conversation implicitly relays information about the relationship between the talkers and about membership groups that utilize symbols embodied in the conversation. Extending Collins’s ideas to the present study, I conjecture that the characteristics of one’s egocentric network facilitates the possibilities for, and likelihood of, conversations with others about movement events, issues and ideology. Such conversations—or interaction rituals—in turn strengthen one’s level of identification with the movement. (See also Friedman and McAdam’s 1992 discussion on selective incentives associated with identification and participation.)

It is argued here, that the greater one’s embeddedness (e.g., network centrality) into the movement through his/her personal network ties, the greater his/her identification. There are a variety of mutually reinforcing processes at work. One is the socialization function (Passy, 2000). While pro-movement values and attitudes predispose individuals to join a movement, it is through networks that people integrate these values and

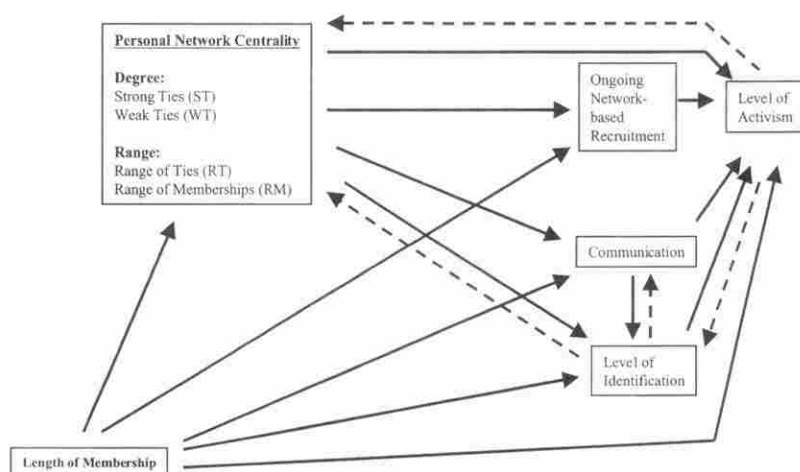
attitudes with a particular collective identity (see McAdam and Paulsen, 1993). Such values and attitudes are then reinforced through interaction in movement-based networks, and in conjunction with the process of identification. A second process is the social comparison function (Gartrell, 1987). The larger and more diverse one's personal network, the more opportunities there are to make social comparisons (e.g., with alters' values, opinions, activities), and such social comparisons are implicated in people accepting a social movement as being a positive reference group with which to identify. In both "socialization" and "social comparison" processes, the ability of network structures to provide information is important. There are a variety of other possible processes also at work, but the present model will be confined to considering the above arguments.

*A Model of Individual Participation
in Low-medium Cost Social Movement Activities*

Below I outline an argument for how personal networks are related to identification and ongoing low-risk/cost (lrc) activism in the micromobilization process. The core of the theoretical argument is illustrated in Figure 1.

Figure 1

**A Network-centrality Theoretical Model Explaining
Level of Low-risk/cost Activism***



* Processes illustrated in this diagram occur subsequent to initial membership, under conditions of low-medium risk/cost activism.

In terms of "ongoing recruitment" and communication, the model argues that *the greater one's integration into the movement through network ties to other members of the movement (or network centrality): 1) the more often s/he will receive requests to participate in organization activities (ongoing network-based recruitment); and 2) the more opportunities s/he will have to discuss movement issues with others (communication).* Receiving requests to participate in organization activities and discussing movement issues and events with others are two examples of network-based process variables that mediate the relationship between social structure and individual activism.

The model argues that communication has both a direct and an indirect influence on activism. Information and knowledge partly underlie the positive relationship posited between frequency of communication and level of activism. The more often that one discusses movement events and issues with others, the more informed, and the more knowledgeable, one will become about these. As people become more knowledgeable about various events and issues, they become more likely to participate in movement activities.

Frequent communication about movement events and issues can have another effect upon potential and budding activists. As Goffman, Collins, and others have demonstrated, frequent conversations between individuals in small groups can serve as interaction rituals that help to shape and reinforce group identities. As described above, network embeddedness and network-based interaction with other movement participants are important to information transmission and, relatedly, to processes of socialization and social comparison. The larger and more diverse one's social network, the more opportunities there are to discuss pro-movement values, attitudes and opinions. Through such discussions, values, attitudes, and opinions become integrated with a pro-movement identification, and also become strengthened. Numerous and diverse ties also provide greater opportunities for social comparison with other movement participants, which in turn reinforces the notion that one belongs to a larger community. *Hence, the more integrated into the movement one is through one's personal network, and the more frequently one communicates about movement events and issues, the more highly one will come to identify oneself as a member of the movement.*

Finally, as both social psychologists and social-movement researchers have observed, group identification can serve as a basis for collective action (McAdam, 1986). This is partly a result of values and norms for behaviours that are tied to identification. Further, as Friedman and McAdam (1992) suggest, acting is necessary in order to maintain a cherished identity "such as environmentalist" in the eyes of one's peers.

As noted earlier, the higher one's network degree the greater one's potential level of communication with other network members. Also, the higher one's network range, the more potentially diverse one's communications will be. I examine the effects of both network degree and network

range on all of the network-based processes (ongoing network-based recruitment, communication, and level of identification) and upon the main dependent variable (level of activism) to examine whether there are differential effects of "potential frequency of interaction" versus "potential diversity of interaction." For example, it may well be that the greater potential for interaction implied by degree is most important for explaining the frequency with which people get asked to participate (ongoing network-based recruitment), while it is the variety in information acquired through diverse communication—as implied by network range—that is most important for explaining level of identification.

Similarly, I examine the effects of both strong ties and weak ties on all of the network-based processes and upon the main dependent variable to examine whether there are differential effects of these variables. Strong ties are theoretically more influential in terms of "social pressure" to participate, and are more likely to provide "social support" that can facilitate participation. On the other hand, as people have many more weak ties, and because weak ties stretch further in social space, it may be that they are more important because they are more likely to provide people with novel information about the movement. Also, as McAdam argues, under conditions of lrc activism, because the risks and costs are lower, the minimal social pressure to participate from weak ties may be enough to tilt the scales in favour of participation. (By contrast, under conditions of hrc activism only social pressure from strong ties may be influential.) To recapitulate, weak ties are more likely to provide information and strong ties are more likely to provide support. Both can provide social pressure, but because people have many more weak ties than strong ties, and because the social pressure (and social support) needed to elicit participation under conditions of lrc activism may be minimal, it may be that weak ties are more important. However, for analytical purposes, I treat these as issues to be empirically resolved.

It should be noted that because I am examining participation over time, and because the processes that explain ongoing participation also occur over time, it is necessary to account for time in the model. Consequently, length of membership (the duration of time since the respondent joined the SMO) is controlled for in the analysis of these micromobilization processes.

Reciprocal Influence

While the theoretical model described above implies unilinear effects, it is possible, in fact probable, that some degree of reciprocal influence exists between pairs of variables included in the model. (See the broken lines in Figure 1, for some suggested reciprocal effects or feedback loops amongst variables in the present model.) Analysis of panel data is necessary in order to more fully examine the nature of such feedback loops.¹⁰

10. Elsewhere I examine the relations amongst *some* of these variables over time (Tindall, 2000).

Identifying and measuring the empirical associations predicted in the model is a first step toward developing a network theory of low-risk/cost individual activism.

Other Theoretical Explanations

Above, I have provided the details of a network-centrality model of individual participation in low-risk/cost activism. However, there are other explanations that have been provided for participation in environmental and other new social movements that focus upon social structure, demographic and cultural variables. In the results section I will provide two path analyses. One will examine findings corresponding to a large synthetic model (encompassing social structure, demographic, cultural as well as network variables) and the second will examine only the variables in the core network-centrality model described above. Appendix 1 illustrates the theorized linkages in the synthetic model. I will provide a thumbnail sketch below of the potential effects of the variables from these other explanations.

A set of arguments loosely drawn together under the rubric of new social-movement theory has been developed to explain the rise to prominence of contemporary social movements over the past several decades. There are two basic strains of new social-movement theory: 1) a cultural thesis; and 2) a social structural thesis.

The cultural thesis maintains that, because of relatively high levels of stability and security in Western countries since WWII, there has been a shift from materialist to post-materialist values amongst substantial segments of the population. Among younger cohorts, in particular, there is an emphasis on quality of life rather than economic standard of living. Also important is having more say in decision making; there is an emphasis on personal relations, and on the creation of new identities. The birth of new social movements is considered to have been facilitated by the rise of new values (see Inglehart, 1977). Thus in Appendix 1, a box (exogenous to the core model) labelled "Cultural Variables" contains the independent variables: post-materialist values (PMV) and Attitudes toward Protest (PA). These are depicted as having direct effects on level of activism, as well as on several other variables in the model.

New class theorists have argued that a new class of "knowledge workers" has become engaged in a struggle for power and status against the traditional holders of power in Western societies: business owners and executives. Those who have examined the composition of contemporary movements have put forth the claim that new social movements (NSMs) are comprised of members of the "new middle class" (or, at least, parts of the new middle class). Some writers equate the "new class" with a conglomeration of occupations described as "social and cultural specialists" (e.g., professors, writers, and artists; see Brint, 1984; Kriesi, 1989). Thus in Appendix 1, within a box labelled "Social Structure and Demographic

Variables" (that is exogenous to the core model), there is an independent variable designated as "class (CL)." This refers to membership in "social and cultural specialist" occupations, and is depicted as having a direct effect on level of activism, as well as several other variables.

In addition to "class (CL)" there are five other variables in the "Social Structure and Demographic Variables" box. Several lines of argument have suggested that younger people will be more likely to participate in environmental movements (e.g., Buttel, 1979). Youth are said to be more biographically available (McAdam, 1986), having on average more flexible work schedules, and fewer responsibilities related to full-time employment and parenting. Moreover, the environmental sociology literature suggests that younger cohorts hold more pro-environmental attitudes and values, having been socialized into "post-materialist values" (Inglehart, 1977). Thus age (A) is depicted as having a direct effect on level of activism and several other variables.

A variety of arguments has been made that women are more concerned about environmental issues than men, and thus are more likely to participate in environmental movements (Mohai, 1992). Therefore, gender (G) is depicted as having a direct effect on level of activism and several other variables.

The environmental sociology literature (e.g., Van Liere and Dunlap, 1980) suggests that people with higher levels of education are more likely to hold pro-environmental values and attitudes, and to have a greater sense of efficacy that facilitates their participation in movements. Thus, education (E) is depicted as having a direct effect on level of activism and several other variables.

The environmental sociology literature (e.g., Van Liere and Dunlap, 1980) suggests that income is positively associated with concern about environmental issues. Thus income (I) is depicted as having a direct effect on level of activism and several other variables.

A final demographic variable included in the model is "Sixties Cohort" (SC), indicating whether or not the respondent was between 19 and 25 at some point during the 1960s and the early 1970s. As the 1960s and the early 1970s were a period of critical socialization to social movements in North America, it may be that people from this generation will be more active (and this independent variable may also have an effect on several other variables in the model).

The British Columbia Wilderness Preservation Movement

The province of British Columbia (B.C.) is home to a substantial proportion of the world's remaining old-growth temperate rain forests. These forests are highly valued by a variety of stakeholders, including Aboriginal peoples, nature lovers, and forest-industry workers. In recent years a number of disputes have arisen over the plans of forestry companies to log old-growth rain forests on western Vancouver Island. During the late 1980s and early

1990s, environmental groups lobbied to have a number of these old-growth forests protected as wilderness areas.

This study focusses upon members of three formal environmental organizations in Greater Victoria: the Sierra Club of Western Canada (SCWC), the Western Canada Wilderness Committee (WCWC), and the Carmanah Forestry Society (CFS). These three groups are all formal environmental social-movement organizations, and all have been central in the movement to protect and preserve old-growth rainforests in British Columbia. (For more details on the movement and these organizations, see Tindall and Begoray, 1993; Wilson, 1998.)

Some of the activities undertaken by these groups include: organizing protest rallies on the lawns of the legislature in Victoria; holding public meetings and public slide show presentations; selling movement-related merchandise to raise funds (e.g., items like posters of old-growth trees, T-shirts, coffee-table books, coffee mugs, etc.) that promote wilderness conservation; lobbying bureaucrats and politicians; producing "educational" pamphlets and tabloids; and recruiting members and financial resources through door to door solicitation.

The groups studied here are all part of the same movement and there is substantial overlap in membership between the three organizations.¹¹ This overlap justifies combining members from these three groups into an aggregate sample for the analyses reported here. It should be noted that: 1) the data collected for the present study were obtained in 1992, prior to the mass demonstrations at Clayoquot Sound (where over 850 citizens were arrested for blockading logging roads in 1993); and 2) for ethical reasons (e.g., to protect respondents) systematic data were not collected about illegal activities (e.g., participation in road blockades).

Based on the nominal definition of group membership, all individuals included in the survey (described below) are movement members. However, while I use the term "level of participation" and "level of activism" synonymously, it is not the case that all survey respondents are activists. Inclusion of a heterogeneous set of movement members is consistent with the present study's conception of participation as being a continuum.

Methods

The primary data gathering procedure was a self-administered questionnaire mailed to members of the forementioned environmental movement organizations in the Greater Victoria Area.¹² A systematic random sampling procedure was employed for two of the groups. For a third, smaller organ-

11. There is a great deal of collaboration between these organizations, as well as overlap in their memberships. Fifty-five percent of Sierra Club members also belong to the WCWC, and 12% belong to the CFS. Forty percent of WCWC members also belong to the Sierra Club and 13% belong to the CFS. Thirty-one percent of CFS members also belong to the Sierra Club and 55% belong to the WCWC.

12. Additional data were also gathered through face-to-face interviews with environmental organization officials, observations made at movement events, and collection of available documents.

ization, a census of members was conducted. The response rates for the three groups were: Group A 35% (N = 146), Group B 35% (N = 64), Group C 11% (N = 187). The response rates for the surveys were relatively low in absolute terms, though not necessarily in comparative terms. For instance, Mueller and Opp (1986) obtained a response rate of 32% in their study of citizen participation in rebellious political behaviour in New York City, USA and Hamburg, West Germany. Opp (1986) also observed a relatively low response rate for a study of participation in the anti-nuclear movement in Hamburg, West Germany. With regard to this second study, Opp (1986: 106–07) states: “. . . since theoretical (and not descriptive) hypotheses were tested, we expect them to hold even for samples that are not necessarily representative.” (emphasis added; see also Opp and Gern, 1993: 664.) The arguments made by Opp and his colleagues regarding response rates are also applicable to the present analysis, which focusses on the theoretical relationships amongst variables, not parameter estimates for particular variables.

Measures and Descriptive Statistics

Appendix 2 provides some details on how each variable was measured. Also, for interval-ratio level variables, the table provides means and standard deviations (in parentheses); for categorical (dummy) variables the table provides the percentage of the sample who were members of the category (e.g., members of the category = 1; non-members = 0). (The univariate statistics are based only on the 223 cases with complete data—so that they are consistent with the cases included in the regression analyses.) The main dependent variable is presented in the first panel of Appendix 2. Other variables are listed in the order in which they are presented in the first path model. Full details about the measurement of variables and assessment of indexes are available at www.anso.ubc.ca/tindall/crsa01/index.htm.

Level of Activism

The main dependent variable of interest is level of activism. This is a weighted index comprised of 14 items. In the questionnaire, respondents were asked to indicate which types of activities, from a set of movement-related items, they had ever participated in.¹³ Items are weighted in terms of the time and effort they require (e.g., based on estimated cost). The weighted items are summed together to create the index. Items that require little time or effort, such as signing a petition, are weighted = 1; items on the list requiring the most time and effort, such as serving as a representative on an advisory board, are weighted = 4. Items that usually take more than 1 hour—such as attending a demonstration or community

13. The question was asked in this way, instead of asking for the frequency of participation in a given activity, in order to reduce measurement error. Colleagues have borrowed these questionnaire items to construct similar indexes (e.g., see Blake, Guppy and Urmetzer, 1997).

meeting—but that still involve a relatively limited time commitment are weighted = 2. The set of items included in the questionnaire are general indicators of participation—they are not specific to any one movement organization. However, activities that are undertaken in the context of an organization, such as participating in an information campaign, also tend to take more time and are weighted accordingly (e.g., generally weighted = 3). The values for weights were selected to make them roughly equivalent to those described by McAdam (1989).¹⁴

Factor analysis was conducted using the weighted items and revealed strong support for the existence of a general factor of activism (with higher cost activities having higher factor loadings). Reliability analysis also strongly supported the creation of an index based on this set of items.

Other measures Brief descriptions about how the independent variables are measured are provided in Appendix 2.¹⁵

Transformations The distributions for a number of the variables in the analyses straggle upwards. To correct for this problem, these variables were transformed by taking their logged values (see Erickson and Nosanchuk, 1977). Because log transformation can only be applied to positive and non-zero values, and it is possible to receive a score of zero for a number of the variables, .01 is added to all variables to be log transformed. One variable straggles downwards (years of education). To correct for this, its squared value is used in the regression analyses.

Results

The results will be presented in two path models explaining level of low-medium cost activism (level of activism hereafter). The first path model (Figure 2) corresponds to a synthetic model that includes social structure and demographic variables, cultural variables, as well as the core network-centrality model variables. The second path model (Figure 3) includes only the network-centrality model variables. The strategy is to compare the predictive power of the larger synthetic model, with the more parsimonious network-centrality model. The coefficients included in the path models and multiple regression tables are standardized betas.

14. The weighting scheme for the activities is purely based on cost and thus the title of this article and the tables and path diagrams refer only to "low-medium cost activism." (This contrasts with the theoretical diagrams, as the theoretical model applies to both low-risk and low-cost activism.) However, in this case, as well as other studies, risk and cost are often correlated (e.g., Wiltfang and McAdam, 1991, observed a correlation of .30). At first glance the items may all appear to be low risk. However, violence against movement participants has occurred at demonstrations and during trail building expeditions. Thus, I interpret the items comprising the index to range from low to medium in terms of both risk and cost.

15. While there are some limitations to the strong ties and weak ties measures (Marsden and Campbell, 1984), they are superior to those used by other researchers on this topic, especially with regard to weak ties—which are typically measured as "shared membership" regardless of whether ego and alter have any direct relationship. Also, the range of ties measure is superior to those typically used by other researchers in this area as it involves direct ties (rather than simply overlapping memberships).

Findings associated with the synthetic model (Figure 2) will be presented first. A few words should be said about the layout of the path diagram. Traditionally, there is one line corresponding to the linkage between an independent and a dependent variable in a path model. However, because there are so many variables, following this practice would have resulted in visual chaos. Instead, there is one line per dependent variable, and multiple path coefficients—individually designated by initials—are provided along each line. For example, in the line from the “Social Structure and Demographic Variables” box to Range of Memberships (RM) the path coefficient for gender (G) is $-.22$, the coefficient for age (A) is $-.01$, the coefficient for education (E) is $.10$, the coefficient for sixties cohort (SC) is $.12$, the coefficient for class (CL) is $.01$, and the coefficient for income (I) is $.17$.

A few words should also be said about the overall structure of the model. In the literature, the term “participation” is often used in connection with social structural and demographic explanations of environmentalism and participation in other social movements. However, “ongoing participation” is almost never measured. In practice, if there is some measure of “participation” this usually involves membership in an organization, or participation in a single event. Usually a connection is also made between social structure/demographic characteristics and values. Thus, in the model, direct linkages are depicted between the “social structure/demographic variables” and “level of activism” and also with the “cultural variables.” While all respondents in this study are already “members,” the general social structural arguments are extended to apply to “affiliation with other movement members” and thus direct links are also depicted between the social structure/demographic variables box and the personal network-centrality box. In the literature on values and participation in social movements, there is similar vagueness about participation. Thus, in the synthetic model direct linkages have been made between the cultural variables box and with both the personal network centrality and the level of activism boxes. In addition, as the theoretical literature associates values (e.g., post-materialism) with social-psychological variables such as identity, linkages are depicted between the cultural variables box and the network-based process variables and with level of identification.

Because the synthetic model is so complex, and because the main focus of this analysis is upon the core network-centrality model variables, only selected findings will be reported in the text. For the social structure/demographic variables and the cultural variables, summary statements will be provided, and only statistically significant results will be discussed regarding individual coefficients. The effects associated with the core network-centrality model will be discussed in more detail. Description of results will begin with the direct effects on level of activism (the main dependent variable of interest in this analysis), and then the effects associated with blocks of independent variables on intervening variables in the model will be examined.

Path Analysis for the Synthetic Model

Direct Effects on Level of Activism Column 1 (Model 1) of Table 1 provides the results for the final regression model in the path analysis (Figure 2) explaining level of activism.

Of the social structure and demographic variables, only age has a significant direct effect. Younger people are more active. This is consistent with McAdam's (1986) argument that younger people tend to be more

Table 1

**Multiple Regression Analyses Explaining Level
of Low-medium Cost Activism**

Independent Variables	Model 1	Model 2
Social Structure and Demographic Variables		
Gender	.07	—
Age	-.13*	—
Education (squared)	.02	—
Sixties Cohort	.06	—
Class (Social/Cultural Specialists)	.03	—
Income (log)	.01	—
Length of Membership (log)	.03	.02
Cultural Variables		
Post-materialist Values Index	.02	—
Attitudes toward Political Protest Index	.07	—
Network Degree Measures		
WPMO Weak Ties (log)	.16*	.16**
WPMO Strong Ties (log)	.03	.02
Network Range Measures		
Range of Organization Ties (log)	.15*	.17***
Range of Organization Memberships (log)	.18***	.17***
Network-based Processes		
Ongoing Network-based Recruitment (log)	.19***	.15*
Frequency of Communication (log)	.07	.14*
Level of Movement Identification	.25***	.25***
R²	.50***	.47***
Adjusted R²	.46***	.45***
N	223	223

— Variable not included in equation; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

biographically available for social movement participation. Neither of the cultural variables is significant. These findings suggest that while social structure/demographic variables and cultural variables may explain who joins a movement organization, (with the exception of age) once an individual has become a member then network and social-psychological processes better explain their ongoing participation. On this note, earlier work by the author (Tindall, 1994) showed that class, education, income, post-materialist values, and attitudes toward political protest all distinguished members of these organizations from the general public. Environmental organization members were more likely to come from middle and upper middle-class locations, had higher levels of formal education, had higher incomes, were more supportive of post-material values, and were more likely to support alternative forms of political protest.

Of the core network-centrality model variables: length of membership is not significant; of the degree measures only weak ties is significant; both of the range measures are significant; ongoing network-based recruitment is significant but frequency of communication is not; finally, level of identification is significant and has the largest effect.

While length of membership is not significant, as will be described below, it has an indirect effect on activism. Also, the zero order correlations between length of membership and all of the network-centrality model variables (not shown here) are positive and significant. Thus the results from the path analysis suggest that it is not the case that the network-process variables, identification, and activism are unrelated to length of membership. Rather, time is important in so far as people develop social ties to other movement participants over time, but once such ties have been established it is network processes that account for micromobilization—rather than time per se.

It should be noted that the findings regarding weak ties and strong ties are just the opposite of those reported by McAdam (1986) in his study of high-risk/cost activism. As will be discussed more fully later, this suggests that network mechanisms operate differently under these two conditions (hrc vs. lrc).

Generally speaking, these findings support the network-centrality model of low-risk/cost activism described earlier, though there are some individual findings that are worthy of brief discussion. Overall, the synthetic model explains about half the variation in level of activism ($R^2 = .50$, Adjusted $R^2 = .46$, $p < .005$), a substantial amount by social science standards. (The theoretical relevance of the findings will be explored in greater detail in the discussion section.)

Next, I will describe the effects on (and through) the intervening variables. Results of the regression analyses explaining the intervening variables in the path model (Figure 2) are provided in Appendix 3.

Effects of Social Structure and Demographic Variables on Intervening Variables Age is negatively associated with attitudes toward protest.

Thus, younger people are more supportive of alternative forms of political protest. This is consistent with McAdam's (1986) biographical availability argument, but there may be other factors at work as well. Age and education are significant predictors of post-materialist values. Younger people and those with higher levels of formal education are more supportive of post-materialist values, consistent with Inglehart's (1977) arguments. Gender and income are significant predictors of range of memberships, and thus also have small indirect effects upon activism through range of memberships. That women, and people with higher income, should have higher rates of environmental movement affiliations is consistent with past environmental sociology research. In sum, while the social structure and demographic variables do not have direct effects on level of activism (with the exception of age) several of them have direct effects on intervening variables, and modest indirect effects on activism.

Effects of Cultural Variables on Intervening Variables Post-materialist values is a significant predictor of weak ties and range of ties. Those who are more supportive of post-materialist values are more likely to develop weak ties to others within their organization, and to develop ties with people in other organizations within the movement. (Post-material values has a small indirect effect on activism through its effects on weak ties and range of ties, and thus also on the network-based process variables and identification). Attitudes toward political protest is a significant predictor of communication. Those who are more supportive of alternative forms of political protest communicate more frequently about movement issues. (Attitudes toward political protest has a very small indirect effect on activism through communication's effect on identification.) In sum, while the cultural variables do not have direct effects on level of activism they do have some direct effects on intervening variables, and thus modest indirect effects on activism.

Effects of Length of Membership on Intervening Variables Length of membership has significant direct effects on all four of the network measures, but not on any of the other variables in the model. It has indirect effects on the network-based process variables and activism through its direct effects on the four network variables. Over time people meet and develop relationships with other movement participants, and these ties influence other micromobilization processes (such as identification).

Effects of the Degree Measures on Intervening Variables Both strong ties and weak ties have significant positive effects on the two network-based process interaction variables (ongoing network-based recruitment, level of communication), but neither strong ties nor weak ties have a significant effect on level of identification. Thus, the degree measures are good predictors of interpersonal interaction, but not of identification (a more cognitive process). Both strong ties and weak ties have indirect effects on activism through their effect on ongoing network-based recruitment, and also through communication's effect on identification.

Effects of the Range Measures on Intervening Variables Both of the range measures have significant positive effects on level of identification. In terms of the two network-based process interaction variables, neither range measure has a significant effect on ongoing network-based recruitment, while only range of memberships has an effect on communication.¹⁶ Thus, both of the range measures (measures of potential diversity of interpersonal interaction) are good predictors of level of identification, but—with the exception of the relatively minor effect of range of memberships upon communication—the range measures are not good predictors of the frequency of interpersonal interaction. Both network range measures have indirect effects on activism through their effects on identification. (And range of memberships has a small indirect effect on activism through communication's effect on identification.) In sum, these results suggest that frequency of interaction (as inferred from network degree) is most important for explaining network-based processes, such as receiving requests to participate in movement activities and communicating frequently about movement issues, but diversity of interaction (as inferred from network range) is most important for explaining identification. The theoretical implications of these findings will be explored further in the discussion.

Effects of Communication on Intervening Variables Level of communication has a significant positive effect on level of identification. While communication does not have a significant direct effect on level of activism, it has an indirect effect on activism through its effect on identification.

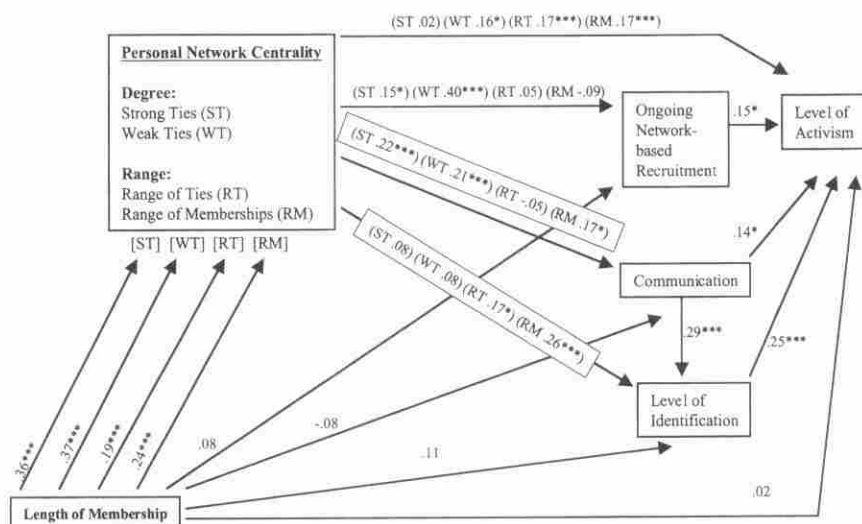
Path Analysis for the Network-centrality Model

Direct Effects on Level of Activism Column 2 (Model 2) of Table 1 provides the results for the final regression model in the path model (Figure 3) explaining level of activism. (Results of the regression analyses explaining the intervening variables in the path model are provided in Appendix 4.) Substantively, with one exception, the results for the path analysis explaining level of activism using only the network-centrality model variables is identical (for these variables) to the findings for the synthetic model provided earlier. The only difference is that frequency of communication is now a significant predictor of level of activism, as argued in the original theoretical model. (Thus some of the variation now empirically explained by communication was formerly explained by the social structure/demographic and/or cultural variables.) It should be noted that whether or not frequency of communication has a direct effect on level of activism, it plays an important role in the model by being the strongest predictor of level of identification (in both path models) and thus it has a substantial indirect effect on level of activism (in both path models).

16. It should also be noted that the standardized coefficients for both of the degree measures are substantially larger than that for range of memberships.

Figure 3

Network-centrality Path Model Explaining Level of Low-Medium Cost Activism



* $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

In sum, the findings for the network-centrality path model largely conform to the earlier stated theoretical arguments, though once again there are interesting contrasts in some of the effects of weak ties versus strong ties, and network degree versus range. These will be explored further in the discussion. Empirically, aside from these findings, what is most interesting about the network-centrality path model is that the percentage of variation in level of activism that is explained by the final regression of the path model is almost identical to the final regression of the earlier synthetic path model ($R^2 = .47$, Adjusted $R^2 = .45$). It only explains 3% less of the variation (using R^2 , or 1% less using the Adjusted R^2) than the synthetic model and has eight fewer variables. Thus, from the standpoint of parsimony, it is the superior model.

What is the theoretical significance of these findings? It appears that once people have joined an organization (initial recruitment) then the variables described in the network-centrality model of low-risk/cost activism are key to explaining social movement participation. This does not mean that the social structure/demographic and cultural variables are unimportant to explaining social movement participation, but suggests that these variables are more important to initial recruitment. This observation will be explored further in the next section.

Discussion and Conclusions

In the discussion to follow, I: 1) consider the relationship of identification to network degree and range, and to participation; 2) theorize further about the distinct roles played by the two degree measures: weak ties and strong ties; 3) consider the theoretical distinction between initial recruitment versus ongoing participation; 4) discuss the need for more theoretical and empirical research on intervening processes; and 5) conclude with a discussion of the need to incorporate an analysis of time into models of micromobilization.

Identification, Network Degree versus Network Range, and Participation

In the theoretical model it is proposed that identification has a simple positive association with all of the network structure variables; however, empirical reality is more complex. The fact that two of the network structure variables, as well as frequency of communication, comprise the three strongest predictors of identity provides considerable support for the theoretical model proposed here. Yet the fact that only the network *range measures* are positively associated with level of movement identification is somewhat unexpected and suggests that different aspects of ego-network structure have unique effects on different aspects of individual social-movement participation (e.g., receiving requests to participate versus identification versus participation).¹⁷

Earlier it was demonstrated that the network *degree measures* are better predictors of the network-based interpersonal interaction variables (ongoing network-based recruitment, and frequency of communication). Communication and receipt of recruitment attempts are related to the total number of ties one has. However, it would seem that *degree centrality* affects level of identification only indirectly (through frequency of communication).

These results suggest a somewhat different process is implicated for identification. Interacting with people from different groups implies that the types of interactions one has are more diverse in terms of activities or forms of interactions (compared to interacting only with those from the same organization). In part, these diverse interactions and the diverse information received provide one with a "more complex" experience of activism. Diverse interactions and information provide greater data for self-comparison and -evaluation, and thus provide conditions that facilitate higher movement identification for those individuals holding a pro-movement belief system.

17. As pointed out by one of the anonymous referees of this article, and noted by Friedman and McAdam (1992) a distinction needs to be drawn between identification with an organization, and identification with a movement. It may be that the degree measures would be stronger predictors of organizational identification than they are of movement identification.

In the present case, belonging to multiple organizations means that an individual will receive newsletters, telephone calls, etc. from a variety of sources. *Such information flows may be relatively more important under conditions of lrc participation.* Receiving and consuming such information may be enough to distinguish a typical SMO member from a non-member, and thus be salient to identification under these conditions.

It should be noted that these findings contrast with previous results and observations having to do with hrc activism. In reanalysing McAdam's Freedom Summer data, McAdam and Paulsen (1993: 659) state:

The conclusion is unmistakable: neither organizational embeddedness nor strong ties to another volunteer are themselves predictive of high-risk activism. Instead it is a strong subjective identification with a particular identity, reinforced by organizational or individual ties, that is especially likely to encourage participation.

The results presented here suggest that the above conclusion applies only to hrc activism. Under conditions of lrc activism, identification, weak ties, and range of organizational ties and memberships all have partial independent effects. Therefore, in the absence of an individual having a high level of identification, having network ties are enough to facilitate lrc social movement participation. Similarly, in the absence of movement-related network ties, a high level of movement identification is enough to elicit lrc activism.

It is interesting to consider the findings concerning network range in connection with those observed by Carroll and Ratner (1996), who examined how network range (inter-movement ties) amongst social movement activists is related to cognitive framings of social justice issues. Activists who invoked a political-economy injustice frame were more likely to be embedded in cross-movement linkages (described as cosmopolitans) than were others. Those who framed injustice in identity-politics terms were less embedded in cross-movement ties (described as localists). In sum, inter-movement network range was associated with the type of master frame adopted by activists. Just as having a more diverse intra-movement network may lead to a broader cultural representation of movement issues (e.g., a stronger movement identification as opposed to a more narrowly defined organizational affiliation), having a more diverse inter-movement network is associated with embracing a broader master frame. These parallel findings should motivate further research on the connection between inter- and intra-movement network ties and cognitive representations of movement issues.

The Degree Measures: The Effects of Strong versus Weak Ties

In the path model (for both the synthetic and network-centrality models), weak ties is a significant and moderately strong predictor of level of activism. By contrast (for both models), there is no direct effect for strong

ties—the beta coefficient for strong ties is almost 0, and is non-significant. This contrasts with McAdam's 1986 finding regarding strong ties and high-risk/cost activism. An explanation for this result is to be found in Granovetter's (1973) "strength of weak ties" argument. Weak ties are a more useful source of novel information than are strong ties. There are two reasons for this. First, the average individual has many more weak ties than strong ties. Second, weak ties stretch further into social space (Milgram, 1967; Granovetter, 1973). The present results suggest that one is more likely to receive requests to participate in movement events from one's weak ties. Furthermore, one is more likely to participate in movement events if one has a large number of WPMO weak ties because these ties are a better source of novel information. Through one's weak tie sector one has the possibility to participate in events one might not otherwise have heard about.

Another mechanism likely at work here (as McAdam, 1986 suggests), is social pressure. Under conditions of lrc activism, when an acquaintance (e.g., a co-worker, neighbour, fellow student, etc.) applies mild social pressure on an individual to participate this may be difficult to resist.¹⁸ The small cost (e.g., a few dollars, an hour of one's time) may be very small compared to the perceived cost of disappointing a member of one's personal network.

While these variables were not directly measured, it seems likely that the weak-tie and network-based interpersonal interaction results are largely related to "social pressure" and "information." Part of the social pressure effect is likely captured through the positive effect of ongoing network-based recruitment on level of activism. The fact that weak ties remains a significant and positive net predictor of activism probably indicates an "information" effect.

While weak ties may facilitate participation in lrc activism, strong ties are theoretically more important for hrc activism, as they are more likely to provide needed social support. Further, under hrc conditions the social pressure applied by weak ties is unlikely to outweigh the perceived costs of participation.

In the present study, strong ties are empirically most important for communication. While not significantly associated with level of identification and level of activism, the direction and size of the relationships between strong ties and these variables are suggestive—under conditions of low-medium risk/cost activism, the effects of strong ties on identification and activism are indirect, through communication.

18. The ideas about social influence presented here are loosely based on an exchange/rational choice theory perspective. However, one of the anonymous referees suggested an alternative interpretation from a symbolic interactionist/interpretive perspective: under conditions of low-risk/cost activism it may be easier to brush off pressure to live up to one's commitments in a strong-tie relationship because one has the depth of contact to explain away non-participation. In a weak-tie relationship this resource may not be available (e.g., consider the difference between front stage and backstage performances). This insight reinforces the need for more research on network processes under lrc and hrc activism.

Initial Recruitment versus Ongoing Participation in LRC and HRC Activism

This study has focussed upon participation in lrc activism and under these conditions the network-centrality model proposed here does a good job of explaining ongoing activism. However, as noted earlier, other factors (and hence mechanisms) may be important under conditions of hrc activism (such as biographical availability, and the existence of strong ties to other movement participants). It was also noted earlier that while the social structure/demographic and cultural variables (with the exception of age) are not good predictors of ongoing social movement participation, they may be important in explaining initial recruitment. In the context of distinguishing initial recruitment from ongoing participation, and lrc from hrc activism, a brief discussion of the role played by values in these different processes might be useful.¹⁹

As McAdam (1986), Klandermans and Oegema (1987) and others have noted, pro-movement values determine an individual's latitude of acceptance or rejection of a movement, but do not determine their initial recruitment or ongoing participation. People who do not support the values of a social movement will not join or participate. However, amongst the people who support the values of a given social movement, only a small proportion will get involved. Past research (e.g., Klandermans and Oegema, 1987) has shown that it is contact with an agent of recruitment (such as a network tie) that distinguishes those who hold pro-movement values and get involved, from those who hold pro-movement values but who fail to participate. Indeed, under conditions of lrc activism, ideological support of a movement needs to be only minimal; it is network and social psychological factors that explain participation once an individual falls within the "latitude of acceptance."

Values play a different role under conditions of hrc activism. McAdam (1986) argues that people must have high levels of ideological support for a movement under these conditions in order to participate in it. His research suggests that they must also be biographically available, have strong ties to other participants, and have a high level of identification with the movement. Several of these factors also facilitate participation in lrc activism (the biographical availability associated with youth, high levels of identification with the movement) but they are sufficient rather than necessary causes of lrc activism.

Intervening Processes: Gaps in Theory and Empirical Research

The model examined here proposes the existence of direct effects of network structure upon activism, and the empirical findings support these predictions. A few words should be said about the hypothesized and

19. In addition, as various researchers have shown (e.g., Inglehart, 1977, Van Liere and Dunlap, 1980), social structural and demographic variables have a tendency to be associated with pro-environmental movement values.

observed direct network effects on level of activism. Causally, there should not be a direct effect of network structure on activism. Rather, network effects should be mediated through various social interaction and cognitive processes. Direct network effects are proposed because the present model only includes a subset of possible intervening mechanisms. Thus, empirically, we would still expect to observe direct network effects—in the absence of the unmeasured intervening processes. (See Tindall and Wellman, 2001: 293–294, for a listing of potential intervening processes.)

One particularly obvious gap in the empirical literature concerns processes of social comparison (Gartrell, 1987). Many models (including the one presented here) assume that participants and potential participants make social comparisons between their own and others' contributions to the movement. In the present model, social comparison processes are assumed to play a role in the establishment of a reference group and, therefore, group identification. In other models, social comparison plays a role in evaluating incentives to participate (such as those associated with pleasing or disappointing alters) and in monitoring the contributions of others (assessing the fairness of one's own contribution relative to those of others, and monitoring for free riders) (see Oliver, 1984; Gould, 1993; Tindall and Gartrell, 1990). However, there is no strong empirical evidence that social movement participants systematically make these types of social comparisons, or systematically calculate incentives and disincentives. Further, these processes may operate differently (or not operate) under different types of collective action. For example, the information available to help one roughly calculate incentives and compare contributions in a collective action designed to enhance the physical qualities of one's neighbourhood are quite different from that in a social movement designed to preserve wilderness (Gould, 1993). The above suggests that further theoretical and empirical work is needed on the role of social comparison in micromobilization processes.

The Dimension of Time

Time is also an important but largely overlooked aspect of understanding the relationship between personal network structure, social movement participation, and intervening processes (Friedman and McAdam, 1992; Erickson Nepstad and Smith, 1999). Time is important both in terms of the history of individual participation and in terms of the history of the movement and location within the cycle of protest (Tindall, 2000). While some nascent level of movement identification usually exists prior to involvement in lrc activities, identification will tend to increase over time (unless the individual exits the movement—at least for a considerable period of time, after which the curve for identification will flatten out). Thus, long-time movement participants will tend to have stronger levels of identification than newcomers. Similarly, identification is likely to be

more salient at times of intense movement mobilization, and its effects upon individual participation greater than during low ebbs in the cycle of protest (Tarrow, 1994).

The data collected for this study were obtained near the peak of a cycle of protest (see Tindall, 2000). Environmentalists had just successfully saved part of the Carmanah Valley (it was turned into a park) and they were in the process of turning their attention to Clayoquot Sound. The Clayoquot Sound protests (constituted of large-scale civil disobedience and mass arrests) in the following year (1993) marked the peak of the cycle of protest. Because of the intensity of protest and increased news coverage at the time of the study, identification as an environmentalist likely had increased salience (Stryker, 1992) for movement participants, and this increased salience would have reinforced the micromobilization processes identified here. (See Tindall, 2000, for more on this issue.)

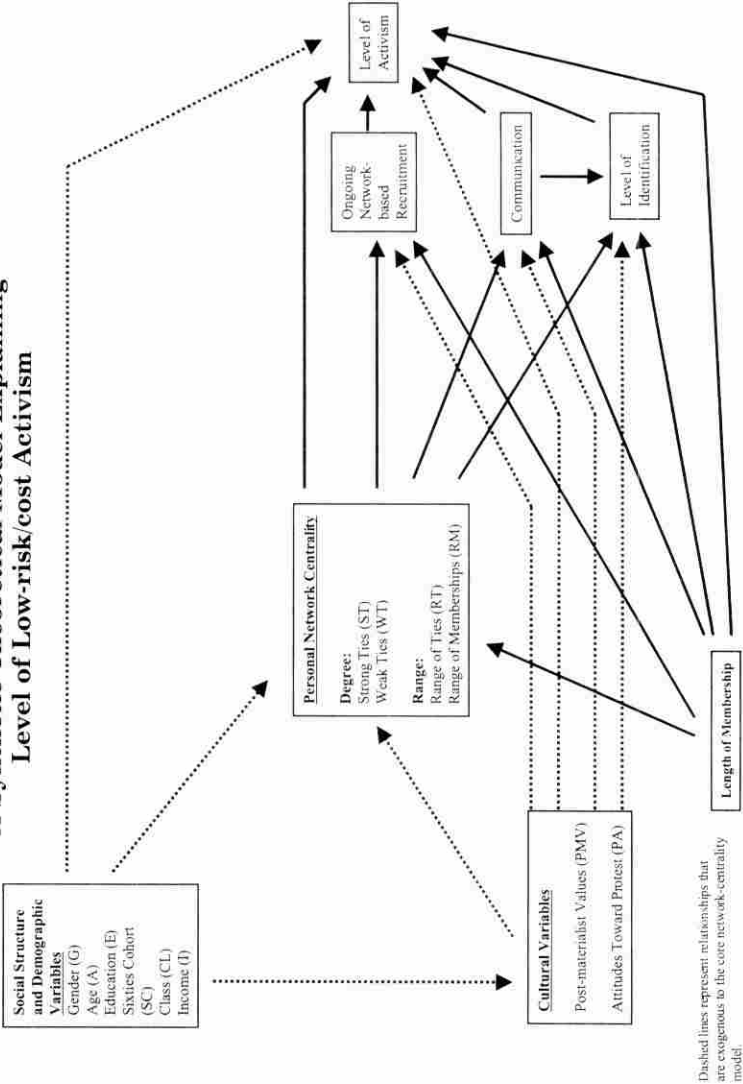
Time is also important in other regards, and while unilinear relationships are indicated in the path diagrams, a number of these relationships involve reciprocal influences over time.²⁰ For example, one of the best statistical predictors of activism is past activism (McAdam et al., 1988; McAdam, 1989). One reason for this is that people who have participated in previous social-movement events are more likely to get recruited for future actions. Past activism also has an effect on other variables in the model. For example, through participation people meet other activists, and build a network of such ties. Also, as self-perception theory suggests (Bem, 1972), people sometimes make attributions about themselves based on their behaviour (e.g., "I participated in the demonstration, thus I must be an environmentalist.") A fuller account of these reciprocal effects is best modelled using longitudinal data—an endeavour I undertake elsewhere (Tindall, 2000).²¹

In sum, future work on micromobilization processes relating to ego-centric networks needs to flesh out the mechanisms that intervene between network structures and participation. Results reported here and that concern tie strength, identification, and participation all contrast with those for studies on hrc activism (McAdam, 1986; McAdam and Paulsen, 1993). This suggests that more research needs to be undertaken comparing lrc and hrc activism, as this study provides evidence that micromobilization works differently under conditions of lrc activism. Finally, analysts need to incorporate the dimension of time into the analysis of micromobilization processes.

20. There are three reasons why these relations have been depicted as unilinear: 1) the author has made the assumption, based on the theoretical literature, that the direction of the solid lines in Figure 1 depict the primary direction of causal influence; 2) to develop a more parsimonious explanation; and 3) because the data examined in this study are cross-sectional.

21. Future research should examine the reciprocal influences identified in Figure 1.

Appendix 1
A Synthetic Theoretical Model Explaining
Level of Low-risk/cost Activism



Appendix 2

Measurement of Variables*

Variable	Mean/% (S.D.)	Description
Level of Activism	8.36 (6.95)	(Weighted Activism Index) Index created by summing 14 weighted items of participation. The items and weights are provided at www.anso.ubc.ca/tindall/crsa01/index.htm .
Gender	53.0%	Dummy variable. Men = 1, Women = 0.
Age	43.60 (15.16)	Chronological age at the time of the survey.
Education	247.13 (62.98)	Years of education. High school degree = 12, Bachelor's degree = 16, etc. This variable was transformed for the regression analysis by squaring.
Length of Org. Membership	.43 (.35)	Log transformation of number of years that the respondent had been a member of the WPMO.
Sixties Cohort	38.6%	Dummy variable. Whether or not the respondent was between 19 and 25 at some point during the 1960s and early 1970s. 1 = Yes, 0 = No.
Social/Cultural Specialist	6.7%	Whether or not a respondent was employed in a "social and cultural specialist" occupation. A dummy variable where 1 = membership in the category, and 0 = non-membership.
Income	4.33 (.94)	Log transformation of total personal income in dollars during the year prior to the study
Attitudes toward Alternative Forms of Political Protest	2.20 (1.63)	Respondents were asked about the justification of six different types of protest. For each item, a score of 1 was given for "often justified," otherwise a score of 0 was given. An index was created by summing together the six items.
Post-materialist Values Index	5.21 (1.33)	Respondents were asked to rank thirteen items relating to "materialist" and "post-materialist" values. An index was created by summing together the 7 "post-materialist items".

Appendix 2 (cont.)

Measurement of Variables*

Variable	Mean/% (S.D.)	Description
Strong Ties	-.87 (1.22)	<i>Network Degree Measures.</i> Strong ties is based on the number of close friends and immediate family members (e.g., living in household) a respondent knows within their organization. Weak ties is based on the number of other people a respondent knows in their organization. Both measures are log transformed for use in the regression analyses.
Weak Ties	-.41 (1.34)	
Range of Organization Ties	-.71 (1.15)	<i>Network Range Measures.</i> Respondents were asked to indicate, from a list of organizations involved in the wilderness preservation movement on Vancouver Island, whether or not they knew any members from each of these organizations, and also whether they are a member of each. Two indexes were constructed. Both measures are log transformed for use in the regression analyses.
Range of Org. Memberships	.22 (.21)	
Frequency of Communication	1.63 (.68)	<i>Network-based Process Variables.</i> Respondents were asked to indicate from a list of categories how often they talk with someone about wilderness preservation and other environmental issues, and how often someone encourages them to participate in organization activities. Both of these variables are log transformed for use in the regression analyses.
Ongoing Network-based Recruitment	-.39 (1.16)	
Level of Identification	2.27 (1.12)	Respondents were asked to respond to two questions asking them how strongly they identify themselves as a member of the wilderness preservation movement, and how strongly they thought others identify them (the respondent) as a member of the wilderness preservation movement. These two variables were then summed together to create an index score for identification.

* More details about the measurement of the variables are provided at www.anso.ubc.ca/tindall/crsa01/index.htm.

Appendix 3

**Multiple Regression Analyses for Explaining Intervening
Variables in the Synthetic Path Model
of Low-medium Cost Activism**

Independent Variables	PMV	PA	ST
Social Structure and Demographic Variables			
Gender	.06	-.02	.10
Age	-.18*	-.27***	-.02
Education (squared)	.19**	.04	-.02
Sixties Cohort	.00	.04	-.04
Class (Social/Cultural Specialists)	.09	.09	-.06
Income (log)	.01	-.00	.03
Length of Membership (log)	—	—	.36***
Cultural Variables			
Post-materialist Values Index	—	—	.08
Attitudes toward Political Protest Index	—	—	.04
Network Degree Measures			
WPMO Weak Ties (log)	—	—	—
WPMO Strong Ties (log)	—	—	—
Network Range Measures			
Range of Organization Ties (log)	—	—	—
Range of Organization Memberships (log)	—	—	—
Network-based Processes			
Ongoing Network-based Recruitment (log)	—	—	—
Frequency of Communication (log)	—	—	—
Level of Movement Identification	—	—	—
R ²	.06*	.08***	.16***
Adjusted R ²	.04*	.06***	.12***
N	223	223	223

— Variable not included in equation; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

WT	RT	RM	ONBR	COMM	ID
.11	.07	-.22***	—	—	—
-.04	-.10	-.01	—	—	—
.01	.08	.10	—	—	—
-.09	-.05	.12	—	—	—
-.01	-.06	.01	—	—	—
.01	-.08	.17*	—	—	—
.36***	.20***	.22***	.08	-.06	.12
.14*	.17*	.06	-.05	.07	.02
-.02	.02	.08	-.00	.27***	.16
—	—	—	.41***	.22***	.10
—	—	—	.15*	.21***	.08
—	—	—	.06	-.08	.15*
—	—	—	-.08	.13*	.25***
—	—	—	—	—	—
—	—	—	—	—	.24***
—	—	—	—	—	—
.17***	.10***	.16***	.28***	.23***	.39***
.14***	.06***	.12***	.26***	.21***	.37***
223	223	223	223	223	223

Appendix 4

**Multiple Regression Analyses for the Network-centrality
Path Model of Low-medium Cost Activism**

Independent Variables	ST	WT
Length of Membership (log)	.36***	.37***
Network Degree Measures		
WPMO Weak Ties (log)	—	—
WPMO Strong Ties (log)	—	—
Network Range Measures		
Range of Organization Ties (log)	—	—
Range of Organization Memberships (log)	—	—
Network-based Processes		
Ongoing Network-based Recruitment (log)	—	—
Frequency of Communication (log)	—	—
Level of Movement Identification	—	—
R²	.13***	.14***
Adjusted R²	.13***	.13***
N	223	223

— Variable not included in equation; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$

RT	RM	ONBR	COMM	ID	ACT
.19***	.24***	.08	-.08	.11	.02
—	—	.40***	.21***	.08	.16*
—	—	.15*	.22***	.08	.02
—	—	.05	-.05	.17**	.17***
—	—	-.09	.17*	.26***	.17***
—	—	—	—	—	.15*
—	—	—	—	.29***	.14*
—	—	—	—	—	.25***
.04***	.06***	.28***	.15***	.37***	.47***
.03***	.05***	.26***	.13***	.35***	.45***
223	223	223	223	223	223

References

- Bem, D.J. 1972. "Self-perception theory." In *Advances in Experimental Social Psychology*, Vol. 6. L. Berkowitz (ed.). New York: Academic Press, p. 1-62.
- Blake, D.E., N. Guppy and P. Urmetzer. 1997. "Canadian public opinion and environmental action: Evidence from British Columbia." *Canadian Journal of Political Science*, Vol. 30, No. 3, pp. 451-72.
- Brint, S. 1984. "New-class' and cumulative trend explanations of the liberal political attitudes of professionals." *American Journal of Sociology*, Vol. 90, pp. 30-71.
- Burt, R. 1980. "Models of network structure." *Annual Review of Sociology*, Vol. 6, pp. 79-141.
- Buttel, F.H. 1979. "Age and environmental concern: A multivariate analysis." *Youth and Society*, Vol. 10, pp. 237-56.
- Carroll W.K. and R.S. Ratner. 1996. "Master framing and cross-movement networking in contemporary social movements." *The Sociological Quarterly*, Vol. 37, No. 4, pp. 601-25.
- Coleman, J.S. 1988. "Social capital in the creation of human capital." *American Journal of Sociology*, Vol. 94, Suppl. S95-S120.
- Collins, R. 1981. "On the micro-foundations of macro-sociology." *American Journal of Sociology*, Vol. 86, pp. 984-1014.
- Collins, R. 1988. *Theoretical Sociology*. New York: HBJ Publishers.
- Diani, M. 1995. *Green Networks: A Structural Analysis of the Italian Environmental Movement*. Edinburgh: Edinburgh University Press.
- Erickson, B.H. and T.A. Nosanchuk. 1977. *Understanding Data*. Toronto: McGraw-Hill Ryerson Ltd.
- Erickson-Nepstad, S. and C. Smith. 1999. "Rethinking recruitment to high-risk/cost activism: The case of Nicaragua exchange." *Mobilization: An International Journal*, Vol. 4, No. 1, pp. 25-40.
- Fernandez, R.M. and D. McAdam. 1988. "Social networks and social movements: Multiorganizational fields and recruitment to Mississippi freedom summer." *Sociological Forum*, Vol. 3, No. 3, pp. 357-82.
- Freeman, L.C. 1978-1979. "Centrality in social networks: Conceptual clarification." *Social Networks*, Vol. 1, pp. 215-39.
- Friedman, D. and D. McAdam. 1992. "Collective identity and activism: Networks, choices, and the life of a social movement." In *Frontiers in Social Movement Theory*. A.D. Morris and C. McClurg Mueller (eds.). New Haven: Yale University Press, pp. 156-73.
- Gartrell, C.D. 1987. "Network approaches to social evaluation." *Annual Review of Sociology*, Vol. 13, pp. 49-66.
- Gould, R.V. 1991. "Multiple networks and mobilization in the Paris commune, 1871." *American Sociological Review*, Vol. 56, pp. 716-29.
- Gould, R.V. 1993. "Collective action and network structure." *American Sociological Review*, Vol. 58, pp. 182-96.
- Granovetter, M. 1973. "The strength of weak ties." *American Journal of Sociology*, Vol. 78, pp. 1360-80.
- Inglehart, R. 1977. *The Silent Revolution: Changing Values and Political Styles among Western Publics*. Princeton, N.J.: Princeton University Press.
- Kitts, J.A. 1999. "Not in our backyard: Solidarity, social networks, and the ecology of environmental mobilization." *Sociological Inquiry*, Vol. 69, No. 4, pp. 551-74.

- Klandermans, B. and M. de Weerd. 2000. "Group identification and political protest." In *Self, Identity, and Social Movements*. S. Stryker, T.J. Owens and R.W. White (eds.). Minneapolis: University of Minnesota Press, pp. 68–92.
- Klandermans, B. and D. Oegema. 1987. Potentials, networks, motivations, and barriers: Steps towards participation in social movements." *American Sociological Review*, Vol. 52, pp. 519–31.
- Krackhardt, D. 1992. "The strength of strong ties: The importance of philos in organizations." In *Networks and Organizations: Structure, Form, and Action*. N. Nohria and R.G. Eccles (eds.). Boston, Mass.: Harvard Business School Press, pp. 216–39.
- Kriesi, H. 1989. "New social movements and the new class in the Netherlands." *American Journal of Sociology*, Vol. 94, pp. 1078–116.
- Lin, N., and M. Dumin. 1986. "Access to occupations through social ties." *Social Networks*, Vol. 8, pp. 365–85.
- Marsden, P.V. and K.E. Campbell. 1984. "Measuring tie strength." *Social Forces*, Vol. 63, pp. 482–501.
- Marwell, G., P.E. Oliver and R. Pahl. 1988. "Social networks and collective action: A theory of the critical mass. III" *American Journal of Sociology*, Vol. 94, pp. 502–34.
- McAdam, D. 1986. "Recruitment to high-risk activism: The case of Freedom Summer." *American Journal of Sociology*, Vol. 92, pp. 64–90.
- McAdam, D. 1989. "The biographical consequences of activism." *American Sociological Review*, Vol. 54, pp. 744–60.
- McAdam, D., J. McCarthy and M.N. Zald. 1988. "Social movements." In *Handbook of Sociology*. N.J. Smelser (ed.). Newbury Park, Calif.: Sage, pp. 695–737.
- McAdam, D. and R. Paulsen. 1993. "Specifying the relationship between social ties and activism." *American Journal of Sociology*, Vol. 99, pp. 640–67.
- McCarthy, J.D. and M.N. Zald. 1977. "Resource mobilization and social movements: A partial theory." *American Journal of Sociology*, Vol. 82, No. 6, pp. 1212–41.
- Melucci, A. 1988. "Getting involved: Identity and mobilization in social movements." In *International Social Movement Research*, Vol. 1. B. Klandermans, H. Kriesi and S. Tarrow (eds.). London: JAI Press, pp. 329–48.
- Milgram, S. 1967. "The small-world problem." *Psychology Today*, Vol. 1, March, pp. 62–67.
- Mohai, P. 1992. "Men, women, and the environment: An examination of the gender gap in environmental concern and activism." *Society and Natural Resources*, Vol. 5, pp. 1–19.
- Muller, E.N. and K. Opp. 1986. "Rational choice and rebellious collective action." *American Political Science Review*, Vol. 80, pp. 471–87.
- Oliver, P. 1984. "If you don't do it, nobody else will": Active and token contributors to local collective action." *American Sociological Review*, Vol. 49, pp. 601–10.
- Opp, K. 1986. "Soft incentives and collective action: Participation in the anti-nuclear movement." *British Journal of Political Science*, Vol. 16, pp. 87–112.
- Opp, K. and Christiane Gern. 1993. "Dissident groups, personal networks, and spontaneous cooperation: The East German revolution of 1989." *American Sociological Review*, Vol. 58, pp. 659–80.
- Passy, F. 2000. "Socialization, recruitment, and the structure/agency gap. A specification of the impact of networks on participation in social movements." Paper presented at a conference entitled "Social Movement Analysis: The Network Perspective." Ross Priory, Loch Lomond, Scotland, June 22–25, 2000.

- Pinard, M. 1971. *The Rise of a Third Party: A Study of Crisis in Politics*. Englewood Cliffs, N.J.: Prentice-Hall.
- Snow, D.A. and D. McAdam. 2000. "Identity work processes in the context of social movements: Clarifying the identity/movement nexus." In *Self, Identity, and Social Movements*. S. Stryker, T.J. Owens and R.W. White (eds.). Minneapolis: University of Minnesota Press, pp. 41-67.
- Stryker, S. 1992. "Identity theory." In *Encyclopedia of Sociology*. E.F. Borgatta and M.L. Borgatta (eds.). New York: Macmillan, pp. 871-76.
- Stryker, S. 2000. "Identity competition: Key to differential social movement participation?" In *Self, Identity, and Social Movements*. S. Stryker, T.J. Owens and R.W. White (eds.). Minneapolis: University of Minnesota Press, pp. 21-40.
- Stryker, S., T.J. Owens and R.W. White (eds.). 2000. *Self, Identity, and Social Movements*. Minneapolis: University of Minnesota Press.
- Tarrow, S. 1994. *Power in Movement: Social Movements, Collective Action, and Politics*. Cambridge: Cambridge University Press.
- Tindall, D.B. 1994. "Collective action in the rainforest: Personal networks, identity, and participation in the Vancouver Island wilderness preservation movement." Unpublished Doctoral Dissertation, Department of Sociology, University of Toronto.
- Tindall, D.B. 2000. "Personal networks, identification and movement participation over time: A study of the British Columbia wilderness preservation movement." Paper presented at a conference entitled "Social Movement Analysis: The Network Perspective." Ross Priory, Loch Lomond, Scotland, June 22-25, 2000.
- Tindall, D.B. and N. Begoray. 1993. "Old growth defenders: The battle for the Carmanah Valley." In *Environmental Stewardship: Studies in Active Earthkeeping*. S. Lerner (ed.). Waterloo, Ont.: University of Waterloo Geography Series, pp. 269-322.
- Tindall, D.B. and C.D. Gartrell. 1990. "Social evaluation and collective dilemmas." In *Advances in Group Processes*, Vol. 7, Greenwich, Conn.: JAI Press Inc., pp. 105-28.
- Tindall, D.B. and C. Mauboulès. 2000. "The social bases of participation in a counter-new-social movement." Paper presented at the International Sunbelt Social Network Conference. Vancouver, B.C., April.
- Tindall, D.B. and B. Wellman. 2001. "Canada as social structure: Social network analysis and Canadian sociology." *Canadian Journal of Sociology*, Vol. 26, No. 3, pp. 265-308.
- Van Liere, K.D. and R.E. Dunlap. 1980. "The social bases of environmental concern: A review of hypotheses, explanations and empirical evidence." *Public Opinion Quarterly*, Vol. 44, pp. 181-97.
- White, R.W. and M.R. Fraser. 2000. "Personal and collective identities and long-term social movement activism: Republican Sinn Féin." In *Self, Identity, and Social Movements*. S. Stryker, T.J. Owens and R.W. White (eds.). Minneapolis: University of Minnesota Press, pp. 324-46.
- Wilson, J. 1998. *Talk and Log: Wilderness Politics in British Columbia, 1965-96*. Vancouver, B.C.: UBC Press.
- Wiltfang, G.L. and D. McAdam. 1991. "The costs and risks of social activism: A study of sanctuary movement activism." *Social Forces*, Vol. 69, No. 4, pp. 987-1010.

