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What is This?

Antisocial Capital: A Profile of Rwandan Genocide Perpetrators' Social Networks

Omar Shahabudin McDoom[1]

Abstract

Although popularly perceived as a positive force important for objectives such as economic development and democracy, social capital may also be linked to less desirable outcomes. This article highlights a dark side to social capital by pointing to its role in a particularly pernicious phenomenon: genocidal violence. Drawing on a survey of residents from one community that experienced violence during Rwanda's 1994 genocide, I show that individual participation in the violence was partly determined by the features of residents' social networks. Perpetrators possessed larger networks in general and more connections to other perpetrators in particular. The quality as well as quantity of connections also mattered. Strong ties generally, and kinship and neighborly ties specifically, were strong predictors of participation. In contrast, possession of countervailing ties to nonparticipants did not reduce a resident's likelihood of participation. Drawing on in-depth interviews to explore the possible mechanisms behind these findings, I suggest participants' networks fulfilled functions of information diffusion, social influence, and behavioral regulation. More broadly, the findings suggest the importance of social structure and social interaction for participation in collective violence. Relational data should complement individual attribute data in predicting participation. The findings also suggest, contrary to the neo-Malthusian interpretation, that the role played by Rwanda's extraordinarily high population density in the violence may have been

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more sociological than ecological in origin. The diffusion, influence, and regulatory effects of social connections are likely to be amplified in communities where individuals live in close spatial proximity to each other.

Keywords
social capital, social networks, genocide, collective violence, Rwanda

Ever since Putnam lamented the significance of bowling alone for the quality of democracy in the United States, the concept of social capital has entered popular consciousness as a beneficial force to be promoted in communities. Yet this popular perspective overlooks that the social networks and connections in which this capital resides also have a dark side. Today, a small but growing body of research evidences the vicious potential as well as the virtuous value of these networks. They can promote coordination, cooperation, and cohesion to solve dilemmas of socially undesirable collective action. Participation in criminal gangs, terrorist cells, deadly riots, and ethnic violence has been linked to the interpersonal ties that bring and bind participants together. These social bonds then can be harnessed for ill as well as for good.

This article extends the exploration of social capital's dark side to a particularly heinous and uniquely human form of collective behavior: genocidal collective violence. It examines the extraordinary events observed in Rwanda in 1994 in which an estimated one in five ethnic Hutu men mobilized to commit intimate acts of violence, overwhelmingly in groups, and primarily against their ethnic Tutsi neighbors. It asks the simple question of what determined the participation of one-fifth and the nonparticipation of four-fifths of this segment of the population. It finds that the answer lies in part in the particular interpersonal networks in which individuals were embedded, which facilitated or constrained their participation. Participants had social networks and social connections that differed to those of nonparticipants. It was the particular features of these participants' networks and connections that facilitated their selection into the violence, while it was the characteristics of nonparticipants' networks and connections that constrained their recruitment.

Specifically, the article makes three central claims. First, the size of an individual's network is an important determinant. Compared with nonparticipants, participants in genocidal collective violence possess more social connections within their communities in general and more connections to other participants in particular. Second, in addition to the overall network characteristics, the characteristics of individual connections matter. Not all connections are equal and some connections matter more than others. In particular, kinship and neighborly ties—when compared with economic, social, political, and religious ties—are the strongest predictors of participation. Related to this, the strength of a connection also matters. The stronger the connection an individual has to a participant, the more likely he is to be drawn into the violence. Third, countervailing ties to nonparticipants in an individual's

network do not lower the likelihood of participation. Individuals may have connections to both nonparticipants and participants, but it is the connections to other participants that prevail. I suggest several mechanisms may be at work in explaining the significance of social connections. Networks fulfill the functions of information diffusion, social influence, and behavioral regulation. Overall, the evidence suggests that social interaction is a strong predictor of differential participation. Whether you participate depends in part on whom you know.

The article begins with the theoretical framework for the relational approach and sets out several hypotheses based on this. It then describes the research design, data, and methods before presenting the results and alternative interpretations of the data. It concludes with a discussion of the theoretical implications of these findings.

Theoretical Framework

The article's theoretical point of departure is two simple but fundamental observations from sociobiology and sociology, respectively. First, humans are a social species and naturally seek connections to each other (Morris 1967). Second, through social organization humans are able to accomplish more collectively than as individuals (Durkheim 1960).

Social Capital

The contemporary notion of social capital flows naturally from these twin axioms. The concept, however, has proved susceptible to diverse formulations. Its classical conceptualizations, originating with Coleman and Bourdieu, confounded the sources and resources of social capital. Whereas its sources lay in the connections, networks, and structures linking individuals and families, its resources encompassed trust, norms, sanctions, information access, obligations, and expectations among other things (Coleman 1988). Thus, Bourdieu (1993) defined social capital not only as "what ordinary language calls connections" but also as "the aggregate of the actual or potential resources which are linked to possession of a durable network" (Bourdieu 2008). Similarly, Coleman (1988) defined social capital not only as "some aspect of social structures" but also as "a particular kind of resource available to an actor" or the substance that "inheres in the structure of relations between actors and among actors."

The more contemporary notion, introduced by Putnam, did not resolve the conceptual confusion between the sources and resources of social capital, but did imbue it with a distinctly positive connotation and extended its application from individuals and families to whole communities and nations. For Putnam (1993), who originally focused on the civic-mindedness created by participation in voluntary associations, social capital might "overcome the poverty and violence of South Central Los Angeles ... or nurture the fledgling democracies of the former Soviet empire." Fukuyama (2001) made similarly ambitious claims, stating social capital is "important to the efficient functioning of modern economies, and is the sine qua non of stable liberal democracy." The concept also influenced thinking within the

development policy community. The World Bank launched a "Social Capital Initiative," and one vice president stated "social capital contributes significantly to sustainable development . . . . Without social capital, society at large will collapse, and today's world presents some very sad examples of this" (Grootaert 1998).

Such thinking has since advanced and theory now more explicitly acknowledges the potentially dark side of social capital. Putnam refined the concept to distinguish between bridging capital that links heterogeneous groups and bonding capital that links individuals within homogenous groups. The latter is exclusionary of outsiders. Portes (1998) has explained how social capital can also constrain individual freedom and lead to excessive claims by group members as well as downward-leveling norms. Ostrom and Ahn (2009) point out that the mafia, cartels, and criminal gangs all depend on the cohesive power of social capital. Yet, notwithstanding the scholarly rebalancing of the concept, its positive perception persists in popular consciousness and in certain policy communities.

Social Networks

Although often conflated with social capital, social networks represent a distinct, expanding field of research. They merit analytical differentiation from social capital for two reasons. First, the distinction avoids the conceptual confusion between the sources and resources of social capital. Social networks are a source of social capital but are not the actual resources that comprise social capital (Lin 1999). Second, a social network is a normatively more neutral term than social capital and can more readily be thought of having positive and negative consequences.

As social organisms, almost without exception we each belong to some community and are embedded in some network structure. Social network theories acknowledge the empirical reality that our choices and actions are often interdependent (Marwell, Oliver, and Prahl 1988; Gould 1993). We do not inhabit a theoretical universe of atomized individuals pursuing choices and actions independently of each other. What others choose to do influences what we choose to do. Atomistic approaches that emphasize individual attributes in accounting for individual actions overlook the importance of the social context within which individuals operate.

Given the interdependence of many individual decisions, social networks feature in explanations of a wide variety of human phenomena, but their role is particularly prominent in theories of episodic *collective* behaviors. They have, for example, been identified as a determinant of participation in social movements (Snow, Zurcher, and Ekland-Olson 1980; McAdam 1986; Passy and Giugni 2001), electoral mobilization campaigns (Huckfeldt and Sprague 1992), and political revolutions (Opp and Gern 1993). Certain scholars have argued more formally that social networks represent another solution to the collective action dilemma. Ostrom and Ahn (2009) argued that the trust generated through repeated interactions between networked individuals facilitates collective action. Others pointed to structural characteristics of networks. Marwell, Oliver, and Prahl (1988) first showed through computer simulation that the

prospects of collective action increase as the density and centralization of ties increase and the cost of communication decreases in a network. Gould (1993) demonstrated that the effects of network density and size on collective action were in fact nonlinear and contingent on how centrally located volunteers are in the network. Siegel (2009) argued participation in collective action is a function of network structure type—small worlds, villages, opinion leaders, and hierarchical—and the distribution of individual motivation levels in the network.

A separate and growing area of research has recognized the sociological foundations to participation in various *violent* phenomena. Social networks demonstrably have a dark side. The study of terrorism has made important advances using social network analysis techniques (Perliger and Pedahzur 2011). In civil wars, voluntary recruitment in rebel movements is partly determined by an individual's preexisting friendship and family ties to other rebel group members (Humphreys and Weinstein 2008). The concentration of social ties in a community also mediates who is denounced and targeted at the local level in civil war violence (Kalyvas 2006). In genocide, preexisting social ties facilitate recruitment into the violence, as do group ties forged through participation (Fujii 2009). In rebellions, participants are drawn in through preexisting interpersonal ties and rebel solidarity is maintained through trust among connected participants (Petersen 2001). In communal violence, the weakness of interethnic ties and strength of intraethnic ties predispose communities to violent confrontation (Varshney 2001). In riots, participants are better connected and more involved in community life than nonparticipants (Scacco 2009).

I draw together these two separate lines of research—on the role of social networks in collective action and in violent phenomena—to test hypotheses on differential participation in *collective violence*. By collective violence, I mean episodic behavior that (1) inflicts physical harm on people or property; (2) is the product of individuals acting in groups, not individuals acting alone; and (3) involves ordinary civilians as participants, not security professionals such as soldiers, policemen, or others already authorized and organized to use force. Collective violence then encompasses a diverse set of behaviors that includes riots, communal violence, ethnic massacres, pogroms, and lynchings among others (Tilly 2003). I examine a particular form of collective violence—genocidal collective violence—where the violence is additionally either passively or actively supported by the state. Collective violence may become genocidal in character if the state deploys its symbolic authority and material capabilities to support it (Verwimp 2005; Straus 2006). The state's involvement then affects the scale of the violence. It does not, however, determine differential participation of individuals into the violence.

Mechanisms and Resources: Linking Social Networks and Social Capital

Although distinct research areas, there is striking overlap between social network's "mechanisms" and social capital's "resources." Social network studies have generated a diverse array of mechanisms to explain how connections work: (1) information

Table 1. A Typology of Network Mechanisms by Function.

Diffusion	Influence	Regulation	Cohesion
Information flow	Homogenization	Norms	Trust
Idea contagion	Recruitment appeals	Incentives	Identity
Communication	Socialization	Sanctions	Bonding
	Imitation	Obligations	Exclusion
		Expectations	
		Peer pressures	
		Social approval	

transmission (McClurg 2006), (2) norms of fairness and efficacy (Gould 1993), (3) incentives and sanctions (Klandermans and Oegema 1987), (4) coordination (Marwell, Oliver, and Prahl 1988) (5) peer pressures (Gerber, Green, and Larimer 2008), (6) social approval (Della Porta 1988), (7) social influence (Christakis and Fowler 2007), (8) identity (McAdam and Paulsen 1993), and (9) socialization (Morrison 2002). In social capital research, although "trust" is now the most commonly cited resource (Ostrom and Ahn 2009), in its original conceptualization it additionally comprised (1) norms and sanctions, (2) obligations and expectations, (3) information-flow capability, and (4) the absence of "structural holes" (Coleman 1988).

For coherence, I propose a unifying typology to capture the similarity in functions of social network mechanisms and social capital resources. Table 1 identifies four primary functions: (1) diffusion: networks circulate resources, tangible and intangible, among connected individuals; (2) influence: they alter the thoughts, feelings, and behavior of connected individuals; (3) regulation: they encourage or constrain the choices and actions of connected individuals; (4) cohesion: they build solidarity among connected individuals and reinforce differences with unconnected individuals. Importantly, these functions are not mutually exclusive. The mechanisms they underlie may operate simultaneously in a given network.

Hypotheses

Network-Level Characteristics. Social network researchers have considered the significance of various structural characteristics of networks: size, density, centralization, reachability, inclusiveness, transitivity, and connectedness among others. In predicting participation in collective violence, I focus on the size of an individual's network. The theoretical logic is that the more connections an individual has, the more opportunities he will be presented with to participate. Information on opportunities diffuses through the network so that better connected individuals will acquire more information and more quickly. Granovetter (1973) in his seminal study of job hunters found that a high number of ties increased an individual's chances of finding a job opportunity. Weak ties in particular mattered for diffusing information as an individual could sustain more of them, given the relatively low investment required and thus be exposed to more

information. Theoretical simulations have also identified the effect of tie frequency on participation in collective action (Marwell, Oliver, and Prahl 1988).

> *Hypothesis 1A:* The greater the number of social connections an individual has, the more likely he or she is to participate in collective violence.

It is not only the number of ties to people generally but also the number of ties to participants specifically that may matter. The theoretical logic here is that individuals with preexisting connections to other participants are likely to be influenced to participate themselves. The more participant ties they possess, the more influence they may experience. Research on social movements (McAdam 1986), riots (Scacco 2009), civil wars (Humphreys and Weinstein 2008), and terrorism (Sageman 2004) has pointed to existing ties to other participants as determinants of participation. Snow, Zurcher, and Ekland-Olson (1980) in their pioneering social movement study explicitly identified recruitment appeals as one particular form of influence other movement participants may bring to bear.

> *Hypothesis 1B:* The greater the number of ties to other participants an individual has, the more likely he or she is to participate in collective violence him- or herself.

Connection-Level Characteristics. In addition to the quantity of interpersonal connections, the quality of these dyadic ties may matter. Existing research has distinguished connections in several ways: type, strength, thickness (multiplexity), symmetry, stability, and direction, among others. Intuitively, different connection characteristics may produce different effects.

I examine connection type and hypothesize that certain connections may be more influential than others in predicting participation. Varshney (2001) distinguished between informal "quotidian" and formal "associational" ties within an ethnic group and finds the latter better at reducing communal conflict in India. Yet the panoply of potential connection types is richer than this dichotomous categorization. Kinship, economic, social (friendship), political, religious, and proximity (neighborly) ties each represent distinct forms of social interaction and may also involve distinct mechanisms. For example, whereas kinship ties may influence through love or affection, friendship ties may do so through peer pressure or social approval.

> *Hypothesis 2A:* An individual's likelihood of participation in collective violence will differ with the type of connection between him- or herself and the participant to whom he or she is connected.

Tie strength is another theoretically important connection characteristic. Granovetter (1973) defined tie strength as a function of "the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services

which characterize the tie.'' I hypothesize that stronger ties will be better at draw-ing individuals into collective violence, given the high risk involved in such an activity compared with the low-risk activity of job hunting. Stronger ties exert stronger influence. The importance of strong ties in high-risk, costly behavior has already been recognized in recruitment into activism (McAdam 1986).

> *Hypothesis 2B:* An individual's likelihood of participation in collective violence will be higher, the stronger the connection between him- or herself and the par-ticipant to whom he or she is connected.

Countervailing Connections. Ties are multivalent. They may serve to inhibit as well as to promote participation (Kitts 2000). If ties to other participants represent a positive influence on participation, then ties to nonparticipants may exert a negative influence. Snow, Zurcher, and Ekland-Olson (1980) found that an individual's extra-movement ties reduced his or her structural availability to join the movement. McAdam and Paulsen (1993) tested the relative importance of competing ties on par-ticipation in a social movement and found that parents and movement peers exerted a stronger positive influence on participation than did friends, religious figures, and civil rights organizations. Alternate ties then may work to prevent participation.

> *Hypothesis 3:* The more countervailing ties to nonparticipants an individual pos-sesses, the less likely he or she is to participate in collective violence.

Research Design

I present evidence of participation in Rwanda's genocide of 1994 to illustrate the relational theory of collective violence. The project employs a multimethod approach and relies on three principal data sources: (1) a survey mapping the social networks of 116 residents from one Rwandan community; (2) semistructured, in-depth interviews of participants and nonparticipants from two communities on events during the genocide; and (3) a broader survey of 294 participants and nonpar-ticipants across the country on events during the genocide. I begin with a synopsis of the violence at the national level and in the chosen research site before describing the data, research techniques, and robustness checks undertaken.

Brief History of Rwanda's Genocide

Although certain historical aspects of Rwanda's genocide remain deeply contested, the following account is based on a set of facts on which there is a reasonable scholarly consensus. In April 1994, a small group of Hutu extremists seized power in Rwanda and initiated a genocidal campaign that targeted the country's Tutsi minority for exter-mination. All told, an estimated 507,000 to 850,000 Tutsi would be killed, along with several tens of thousands of the Hutu majority, by the time the violence ended some

100 days later (Prunier 1998; Des Forges 1999). The killers were soldiers, police, militia, and ordinary Rwandans. The genocide was the culmination of a civil war, begun in October 1990 and fought between a mainly Tutsi rebel army, the Rwandan Patriotic Front (RPF), and Rwanda's Hutu-dominated government. The war's roots lie in a revolution, shortly before Rwanda's independence from Belgium in 1962, which toppled the long-standing Tutsi monarchy and installed Rwanda's first Hutu Republic that would exclude Tutsi from political power for the next three decades. The revolution had sent hundreds of thousands of Tutsi into exile, and these exiles would make several unsuccessful armed attempts in the 1960s to return to Rwanda. However, it was not until the exiles' descendants initiated the civil war in 1990 and the reintroduction of multiparty politics in 1991 that the Hutu monopoly on power would weaken. In August 1993, the international community brokered a peace deal that envisaged power sharing between the incumbent regime, the newly formed opposition parties, and the rebel RPF. Hutu hardliners opposed the deal, however, and when Rwanda's Hutu president was assassinated on April 6, 1994 (by assassins still unknown), these hardliners seized the opportunity to take control, reignite the civil war, and initiate the genocide. The international community failed to intervene, and it was not until the RPF finally defeated the extremist government in July 1994 that the killing would end.

Explanations of the genocide abound. The cornucopia of contributing factors suggested include Rwanda's move to democratize, the ongoing civil war, intense demographic pressure on land, ethnic fears, ethnic hatred, a racist ideology, abject poverty, a strong state, an obedient population, the colonial legacy, and indifference from the international community, among others. While scholars contest the relative importance of these factors, there is little disagreement on the genocide's extraordinary characteristics. Rwanda experienced collective violence on a massive scale. In just over 100 days, an estimated three quarters of its Tutsi minority were eliminated. Furthermore, Rwandans mobilized as soon as one day following the president's assassination, and by one estimate, one in five Hutu men between fifteen and fifty-four years old committed an act of violence (McDoom 2009).[1] Overwhelmingly, in rural communities the violence was conducted in groups, by ordinary civilians, and sometimes with, sometimes without the support of local state authorities (Straus 2006). Tilly (2003) recognizes Rwanda's massacres as archetypal collective violence. Yet, notwithstanding the extraordinary speed and scale of civilian mobilization, it is important to remember four in five Hutu men did not commit violence. It is this statistic that motivates the central research question of this project.

Profile of Research Site

I surveyed sector Tare in Butare prefecture in southwestern Rwanda. Tare was a demographically representative community for Rwanda. In 1994, it comprised 647 households and 6.3 percent of its population was ethnic Tutsi, in line with national averages.[2] Its experience of the genocide was also not atypical. In all,

63 percent of its Tutsi population were eliminated and 24 percent of its adult Hutu male population were implicated. Tare was also one of the pilot sectors for gacaca, Rwanda's experimental system of local courts created to foster truth, justice, and reconciliation following the genocide. As a pilot, Tare was one of the first sectors to complete the gacaca process. Comprehensive microdata on participants and victims then were available at the time I was in the field in 2009.

Tare experienced three principal episodes of violence on April 19, 21, and 22, 1994. It did not erupt into violence immediately after the assassination of the president on April 6, 1994. The delay was due to the local prefect of Butare prefecture, Jean-Baptiste Habyarimana, himself a Tutsi. Habyarimana had resisted directives from the new Hutu extremist government in the capital, Kigali, and had managed to keep the peace in the prefecture for nearly two weeks. In response, Rwanda's new Hutu hard-liner president, Sindikubwabo, visited Butare on April 18 to replace and assassinate the rebellious prefect. Having done so, later that same day President Sindikubwabo traveled to Maraba commune, where sector Tare was located, and incited the Hutu population to attack the Simbi Parish church where a large number of Tutsi had gathered. His speech signaled the start of the genocide in the prefecture.

Tare's Tutsi left their homes that same evening and many sought refuge in a local church, Rugango. The following morning, April 19, a group of Hutu men from Tare launched the first attack against a group of Tutsi gathered in the nearby Sovu health center. This first attack, however, was repelled. The next day, April 20, a security meeting was held in Tare and a new plan of action made to attack the Tutsi in the Rugango church. On the morning of April 21, a large group of Hutu men confronted and killed the Tutsi at Rugango and in the afternoon went on to kill those gathered at the Gihindamuyaga monastery close by. The following day, a renewed attack was made against the Sovu health center that was successful. The majority of Tare's Tutsi were killed in these three attacks. The hunt for the remainder, however, continued until the rebel army reached the area on July 2, 1994.

Data and Method

A total of 116 individuals from among Tare's 647 households were surveyed to obtain data on their individual egocentric networks. The sample was stratified by participant status and comprised seventy-nine nonparticipants and thirty-seven participants in the genocide. Participants were selected randomly from a list of convicted perpetrators. Nonparticipant respondents were selected from a census list of all Tare inhabitants resident in the sector in April 1994. The census list was compiled from a series of smaller lists drawn up by Tare's *nyumbakumi*, representatives of blocs of about ten households, as part of the national gacaca process. The nonparticipant stratum purposively sampled male Hutu residents aged fourteen and older to ensure the most realistic comparison with participants. I personally conducted the interviews with prison

inmates using a Rwandan interpreter and trained a team of ten Rwandan enumerators to administer the questionnaire to those at liberty within the community.

Given the sensitive subject matter, self-reports of personal connections to genocide perpetrators may be biased toward underestimating the true number. I purposively chose a community where the gacaca process had been completed to reduce the anxiety of self-incrimination. I additionally relied on two distinct techniques to collect data on individual's social networks: a roster and a name generator. Neither technique revealed to the respondent that I knew who the killers and nonkillers were in the community or that the purpose was to identify their connections to these two groups specifically. The roster technique involved reading a list of thirty named individuals from Tare to each respondent and asking him which of the thirty individuals he personally knew. The thirty individuals comprised fifteen participants and fifteen nonparticipants from Tare selected at random and whose names were also listed randomly on the survey questionnaire. If a respondent knew one of the thirty individuals, he was then asked to specify his connection to the individual. Respondents could specify more than one connection to a particular individual to allow for multiplexity. Importantly, the questionnaire asked for connections *before* the genocide. While clear for kinship relations, for other types of connections respondents were asked to specify when they first met an individual. If uncertain, enumerators were trained to prompt respondents using key life events as temporal markers. Respondents, for example, were asked whether the relationship was first established at school, before marriage, after children, or while their parents were still alive.

The second name generator technique reversed the roster technique. It involved first specifying a connection type and then asking respondents to name individuals connected to them in this way. To establish the range of most common connections between individuals in the community, I conducted a focused group interview with eight Tare residents. Altogether thirty-four different types of connections were identified that I recoded as kinship, economic, social, neighborly, religious, and political ties.

To corroborate and contextualize the quantitative network data, the project also included in-depth interviews with residents from Tare and a second nearby community, Zivu. I purposively interviewed participants and nonparticipants from each community identified as reliable and willing informants. For nonparticipants, a preliminary indicator of reliability was membership of the gacaca committee, and for participants, their status as self-confessed convicts. The interviews were semi-structured and covered, inter alia, events in respondents' communities during the genocide. I conducted interviews using an interpreter and changed interviewees' names reported in this article to safeguard their anonymity. To improve the generalizability of the interviews, I also conducted a stratified two-stage cluster survey of 294 Rwandans from across the country. The stratification was by region and by participant status and comprised 151 northern respondents and 143 southern respondents. The survey instrument posed questions to 273 Hutu and twenty-one Tutsi respondents relating to events in their communities during the genocide.

Dependent Variable

The dependent variable took a binary form of participant/nonparticipant. Participation was defined as the commission of at least one act of violence against the person during the genocide. While a superior dependent variable would have been continuous in nature, no reliable data on the quantum of violence committed by individuals were available. Participation in the genocide involved many acts other than violence: looting, manning roadblocks, mounting night patrols, denouncing individuals, and encouraging participants among others. Nonetheless, an act of violence against the person represented an important threshold in antisocial behavior to cross, and this category of participant was distinguished to be consistent with other studies measuring participation in Rwanda's genocide (Straus 2006).

To distinguish participants from nonparticipants, I compared the official list of perpetrators convicted through the gacaca process with an unofficial list of perpetrators identified by prison inmates already convicted of genocide crimes in Tare. To minimize measurement error, an individual was classified as a participant only if his name appeared on both lists. To compare the networks of participants against nonparticipants, I conducted *t*-tests on the difference in mean number of ties and multivariate logistic regressions to measure the relative importance of the quantity and quality of ties using the binary dependent variable of participant/nonparticipant.

Robustness Checks and Control Variables

Four principal robustness checks were undertaken. First, as described, network data were generated using both roster and name generator techniques. Reliance on two techniques minimized the risk that respondents, either intentionally or unintentionally, misreported their connections to others in the community. Second, two alternate dependent variables of participation were tested: convicts and suspects. As perpetrators may have subverted the gacaca process and distorted trial outcomes through the co-optation of judges or intimidation of witnesses, I looked at both those initially accused and those finally convicted. Results from the name generator technique and from specifying suspects as the dependent variable may be found in an online appendix on the author's personal website. Third, I tested and reported separately the multivariate models using backward stepwise elimination to exclude unnecessary variables and to confirm the significance of included variables. Fourth, I tested for multicollinearity and determined variables exhibited no problematic levels of correlation. Finally, there were no missing data for the 116 respondents, no individual was an isolate with connections to no one else, and only one individual reported a homogenous network of nonparticipants only.

The identification of suitable controls was not obvious as the extant literature is divided between an emerging consensus that genocide perpetrators are ''ordinary'' with few distinguishing attributes and studies that examine individual-level characteristics to predict participation. I favored caution and included controls

for age, marital status, education, ideological commitment (proxied by support of an opposition political party), occupation, and wealth measured objectively (proxied by ownership of cows) and subjectively. There were no controls for gender or ethnicity as the sample purposively comprised Hutu males only.

Results

Network-Level Characteristics

The size of an individual's network is a robust predictor of participation. Participants possessed significantly larger social networks than nonparticipants. The descriptive statistics in Table 2 indicate that the mean number of connections to other residents listed on the roster reported by convicted participants was twenty compared with only thirteen connections reported by nonparticipants. The difference in means is statistically significant for both convicted and suspected participants. The multivariate logistic model corroborates this finding, controlling for individual-level attributes, and shows that for each additional resident to whom a resident was connected, the odds of their participation increased by 9 percent (Table 3, model 1). This finding holds for convicted participants and suspected participants. Hypothesis 1A was confirmed. Participants were significantly better connected in their community than were nonparticipants.

It was not merely having a larger social network that mattered, however. It was also the particular individuals in this network who were important. The more *participants*, as opposed to nonparticipants, in a resident's network, the more likely the resident was to participate in the violence. Convicts, on average, were connected to eleven other participants compared to only six for nonparticipants. Suspects had ten participant and six non-participant ties on average. The multivariate models confirm this finding and indicate that each additional participant to whom a resident was connected increased the odds of the resident also participating by a remarkable 24 percent for convicts (Table 3, model 2) and 15 percent for suspects. The finding is also robust to the use of the name generator technique instead of the roster method. Hypothesis 1B was also confirmed. The more connections a resident has to other participants, the more likely he is to participate himself.

Connection Characteristics

Connection Type. The descriptive statistics *prima facie* suggest that kinship, proximity (neighborly), social (friendship), and economic connections were more important for participation than political or religious ties. However, when all six types of connections are specified in the multivariate model, the only significant connections that persist are those based on kinship and proximity. For each additional family member who participated in the violence, the odds of the related individual also participating increased by a noteworthy 75 percent for convicts (Table 4, model 5) and 51 percent for suspects. The "name generator" model corroborated the significance of family ties identified in the roster model. The

Table 2. Descriptive Statistics Comparing Participants and Nonparticipants.

	Nonconvicts	Convicts only	All nonsuspects	All suspects
Age (years)	35.52	35.86	35.88	35.27
Marital status (married)	0.62	0.78*	0.60	0.77*
Occupation status (nonfarmer)	0.06	0.24***	0.07	0.19*
Education (years)	3.84	3.38	3.99	3.27
Wealth subjective (poor)	0.73	0.76	0.84	0.60
Wealth objective (cows owned)	0.49	0.41	0.51	0.40
Opposition support (yes)	0.46	0.54	0.43	0.56
All ties	12.73	20.16***	12.24	19.17***
To nonparticipants	6.30	9.03***	6.01	8.81***
To participants	6.43	11.14***	6.22	10.35***
Voluntary ties				
To all residents	1.73	2.16	1.59	2.25
To nonparticipants	0.78	0.84	0.72	0.92
To participants	0.95	1.30	0.87	1.33
Involuntary ties				
To all residents	1.53	3.00**	1.46	2.77**
To nonparticipants	0.73	0.86	0.68	0.92
To participants	0.80	2.14***	0.78	1.85***
Kinship ties				
To all residents	1.87	3.62***	1.72	3.44***
To nonparticipants	0.94	1.22	0.87	1.25
To participants	0.94	2.41***	0.85	2.19***
Economic ties				
To all residents	0.70	1.24	0.57	1.29**
To nonparticipants	0.41	0.41	0.32	0.52
To participants	0.29	0.84**	0.25	0.77**
Social ties				
To all residents	0.96	1.38	0.78	1.54*
To nonparticipants	0.47	0.59	0.38	0.69
To participants	0.49	0.78	0.40	0.85*
Political ties				
To all residents	0.27	0.43	0.28	0.38
To nonparticipants	0.09	0.05	0.09	0.06
To participants	0.18	0.38	0.19	0.31
Religious ties				
To all residents	0.48	0.30	0.50	0.31
To nonparticipants	0.20	0.16	0.22	0.15
To participants	0.28	0.14	0.28	0.17
Proximity ties				
To all residents	8.57	13.46***	8.50	12.44**
To nonparticipants	4.29	6.65***	4.22	6.21**
To participants	4.28	6.81***	4.28	6.23**
Kinship first degree				

(continued)

Table 2. (continued)

	Nonconvicts	Convicts only	All nonsuspects	All suspects
To nonperpetrators	0.24	0.16	0.21	0.23
To perpetrators	0.24	0.51**	0.24	0.46*
Kinship second degree+				
To nonperpetrators	0.70	1.05	0.66	1.02
To perpetrators	0.70	1.89***	0.62	1.73***

Note. Mean values, $n = 116$.
*, **, and ***indicate difference statistically significant at 10 percent, 5 percent, and 1 percent, respectively levels using t-test.

importance of family ties makes intuitive sense if we see connections as channels for social influence. Given the violent, antisocial nature of the collective action involved, the emotional power of kinship bonds could exert a particularly strong influence and overcome prosocial, peaceful norms that may otherwise govern individual behavior. I discuss possible mechanisms in more depth in the qualitative analysis.

The significance of proximity ties is somewhat different. Ties to neighbors increased the likelihood of participation regardless of whether the neighbor was himself a participant or not in the violence (Table 4, model 5). This may make intuitive sense if we also see ties as channels for the diffusion of information. As social interaction likely increases with spatial proximity, the more neighbors one has the more information one would likely receive. I present the evidence of such a diffusion mechanism later. Although tests for multicollinearity did not indicate problematic levels, it is worth noting the potential correlation between kinship and proximity ties in the Rwandan rural sociocultural context. Rwandan families often lived close together, sometimes occupying the same hill, in part because Rwandan fathers customarily gifted land to their sons upon marriage to establish their own households. The significance of proximity ties then may also reflect some of the significance of the kinship ties.

Connection Strength. In addition to the type of tie, the strength of the tie mattered. Ties based on the first degree of canonical consanguinity—parents, siblings, and children—are a substantively stronger predictor of participation than ties based on weaker, more distant degrees of consanguinity—uncles, grandparents, cousins, and so on. In probabilistic terms, using convicts as the dependent variable, the odds of an individual joining the violence more than doubled when a close family member also participated in the violence (Table 4, model 8). If a more distant family member participated, the odds of participation also increased but only half as much as if it were a close family member (Table 4, model 9). Some caution, however, is needed in drawing an inference about tie strength as a statistically significant result is not

Table 3. Predictors of Participation (roster method, convicts as dependent variable).

	Model 1	Model 2	Model 3	Model 4
Age (years)	0.95 (0.03)	0.96 (0.03)	0.96 (0.03)	0.98 (0.03)
Marital status (married)	3.41 (2.71)	3.54 (2.88)	4.25* (3.27)	2.91 (2.32)
Occupation status (nonfarmer)	8.82*** (6.43)	8.00*** (6.04)	6.29*** (4.35)	7.40*** (5.36)
Education (years)	0.97 (0.08)	0.98 (0.08)	0.93 (0.07)	0.92 (0.07)
Wealth subjective (poor)	1.02 (0.12)	1.02 (0.13)	1.08 (0.13)	1.05 (0.13)
Wealth objective (cows owned)	0.89 (0.43)	0.94 (0.46)	0.72 (0.33)	0.73 (0.36)
Opposition support (yes)	1.23 (0.62)	1.20 (0.61)	1.19 (0.57)	1.19 (0.59)
All ties to residents	1.09*** (0.03)			
To nonparticipants only		0.96 (0.07)		
To participants only		1.24*** (0.09)		
All voluntary ties			0.98 (0.08)	
To nonparticipants only				0.83 (0.21)
To participants only				1.18 (0.21)
All involuntary ties			1.20** (0.11)	
To nonparticipants only				0.73 (0.19)
To participants only				1.71*** (0.31)
Pseudo R^2	0.196	0.221	0.139	0.192

Note. $n = 116$. Logistic regressions. Odds ratio reported with robust standard errors in parentheses.
*, **, and ***indicates statistically significant at 10 percent, 5 percent, and 1 percent, respectively.

replicated when suspects are specified as an alternate dependent variable. Nonetheless, the finding for convicts would be consistent with the interpretation suggested for the more general finding that family ties exert a stronger influence on individuals than social, economic, political, or religious ties. Stronger ties may be needed to draw individuals into high-risk activities such as violence and to break basic prosocial bonds of humanity between individuals. Tie "strength" then may be closely related to connection "type."

Countervailing Connections

While a high number of countervailing ties to nonparticipants appears substantively to lower the likelihood of participation, the effect is not statistically significant. This is true for both convicts (Table 3, model 2) and suspects. It is also true for kinship, social, economic, political, religious, and neighborly ties (Table 4, model 6). Having a family member who does not participate, for example, does not appear to counteract the influence of a family member who does participate in the violence. One possible interpretation of this finding is that inaction has a less influential effect than action. If a nonparticipant did not act to stop another individual from participating, then the actions of a participant would likely prevail. To borrow a popular adage, "all it takes for evil to triumph is for good men to do nothing."

Table 4. Predictors of Participation by Connection Type (roster method, convicts as dependent variable).

	Model 5	Model 6	Model 7	Model 8
Age (years)	0.96 (0.03)	0.99 (0.03)	0.96 (0.03)	0.98 (0.03)
Marital status (married)	3.75* (3.00)	2.36 (2.00)	4.07* (3.12)	3.19 (2.53)
Occupation status (nonfarmer)	13.16*** (10.73)	15.53*** (13.84)	6.72*** (4.65)	7.61*** (5.57)
Education (years)	0.97 (0.09)	0.99 (0.10)	0.93 (0.07)	0.92 (0.07)
Wealth subjective (poor)	1.02 (0.14)	0.90 (0.14)	1.06 (0.13)	1.05 (0.13)
Wealth objective (cows owned)	0.80 (0.42)	0.62 (0.36)	0.73 (0.34)	0.67 (0.33)
Opposition support (yes)	1.58 (0.88)	1.56 (0.92)	1.17 (0.57)	1.18 (0.59)
All kinship ties	1.36*** (0.15)			
To nonparticipants		1.19 (0.33)		
To participants		1.75*** (0.36)		
All economic ties	1.07 (0.20)			
To nonparticipants		0.70 (0.37)		
To participants		1.54* (0.40)		
All social ties	0.95 (0.11)			
To nonparticipants		0.83 (0.37)		
To participants		1.20 (0.32)		
All political ties	1.45 (0.50)			
To nonparticipants		0.61 (0.52)		
To participants		2.63 (1.63)		
All neighbor/proximity ties	1.13*** (0.04)			
To nonparticipants		1.20 (0.15)		
To participants		1.08 (0.13)		
All religious ties	0.49 (0.23)			
To nonparticipants		1.17 (0.92)		
To participants		0.31 (0.22)		
Kinship first degree ties			1.19 (0.25)	
To nonparticipants				0.35* (0.22)
To participants				2.10** (0.71)
Kinship second degree + ties			1.22** (0.11)	
To nonparticipants				0.96 (0.22)
To participants				1.60** (0.35)
Pseudo R^2	0.276	0.339	0.152	0.207

Note. $n = 116$. Logistic regressions. Odds ratio reported with robust standard errors in parentheses. *, **, and ***indicates statistically significant at 10 percent, 5 percent, and 1 percent, respectively.

Control Variables

Notwithstanding the theoretical disagreement over whether perpetrators possess distinguishing characteristics, the most robust individual attribute—beyond being

male—was occupational status. Individuals who had income other than from farming—mechanics, guards, carpenters in my sample—were more likely to participate. One possible interpretation is that those dependent on farming could not as readily afford the opportunity cost of participating in a risky and time-consuming activity as collective violence. The data also provide more contingent support for age and marital status. Middle-aged, married men appear more likely to participate. In sum, these findings suggest that both relational and attribute variables should be considered in predicting participation in collective behaviors.

Qualitative Evidence on Mechanisms

While the quantitative data predict that well-connected individuals are more likely to be mobilized, the interview data provide better analytical traction on the mechanisms behind the observed correlation. They suggest the operation of diffusion, influence, and regulatory mechanisms. To illustrate how networks fulfilled these three functions, I present survey data and interview testimony from Rwandan communities on (1) information diffusion: how information on the target and rationale for violence first entered and circulated within communities; (2) recruitment appeals: how individuals were selected and organized for violence; and (3) incentives and sanctions: how material opportunities and the perceived costs of nonparticipation regulated individual behavior.

Information Diffusion

Information on the genocide entered and circulated within communities through preexisting networks. Immediately following the president's assassination on April 6, 1994, it was initially unclear to many Rwandans in rural communities what had happened or what would happen next. The sudden end to the twenty-one years of autocratic rule represented a major macropolitical shock and created acute uncertainty about the civil war's outcome. Information quickly arrived in communities, however, that (1) attributed the assassination to the Tutsi and identified them as the enemy and (2) called upon Hutu to defend themselves and mobilize against the Tutsi enemy. The majority of respondents reported they acquired this information locally. Only 6 percent indicated the radio was the source (Table 5).

The survey data illustrate the initial uncertainty created by the president's assassination and the subsequent arrival of information from outside of communities. Sixty-four percent of Hutu respondents reported initial cooperation across ethnic lines following Habyarimana's death (Table 5). Tutsi participated alongside them in night patrols (*irondo* in Kinyarwanda) to look for the enemy, a fact corroborated by 80 percent of Tutsi respondents. Yet more than 70 percent of Hutu respondents also report that the enemy would eventually come to be identified as all Tutsi in their communities. The implication is that information reached communities that altered interethnic relations and defined Tutsi as the enemy out-group.

Table 5. Survey Data Supportive of an "Information Diffusion" Mechanism.

	Hutu	Tutsi
During the genocide, when the night patrols (*irondo*) first started, did the Tutsi in your community also participate?		
	(*n* = 260)	(*n* = 20)
Yes	64.0%	80.0%
No	36.0%	20.0%
During the genocide who did people in your community think was the enemy? (open-ended)		
	(*n* = 268)	(*n* = 21)
All and only Tutsi	70.5%	90.5%
All Tutsi and certain Hutu	20.6%	9.5%
RPF rebels only	1.9%	0.0%
Other response	1.1%	0.0%
Did people from your community organize to form attack groups?		
	(*n* = 255)	(*n* = 16)
Yes	66.9%	100%
No	33.1%	0%
Unable/unwilling to say	5.9%	0.0%
Who told people in your community to organize attack groups to hunt Tutsi? (open-ended)		
	(*n* = 72)	(*n* = 8)
Individuals inside community	41.0%	62.5%
Individuals outside community	53.1%	37.5%
Radio	5.9%	0%

Note. RPF = Rwandan Patriotic Front.

Interview testimony corroborates the change in interethnic relations following the assassination and suggests the information responsible for the shift often entered communities through preexisting local networks. The following interview illustrates how the arrival of this information divided the community into Hutu in-group and Tutsi out-group:

> *What happened in your community after the president was killed?* When Habyarimana died the politicians said they [the Tutsi] had killed our leader. Then people's hearts changed. They said the enemy had killed our father. That extremist Rekeraho said

we should wake up and fight for our survival. *Who was Rekeraho?* He was an MDR [an opposition party] politician who lived in Mwendo. After a few days we started to see smoke from Gigonkoro [the neighboring prefecture] from burning houses. Soon everyone was afraid. Both Hutu and Tutsi. Who was burning the houses? They said those who were doing the burning had covered themselves in banana leaves so you could not see who they were. When people found out what was happening, the fear of the Hutu decreased while the fear of the Tutsi increased as they now knew who was the enemy. After a few days it was clear there were two groups: those being hunted and those who hunted. (Leopold, nonparticipant, aged 32, Tare sector)

Leopold told us then that a local politician supplied both the information that Tutsi were responsible for the assassination and that they were deemed the enemy. The same politician also provided a rationale for mobilization: self-defense. In a joint interview, a perpetrator and his wife described how this local politician obtained the information through his political networks that contributed to his own attitude change:

What was Rekeraho's attitude toward Tutsi like? [Husband] On the 10th [of April 1994], there was a baptism of a Tutsi baby and Rekeraho was to conduct the ceremony. The evening before, he went to Kambanda's [the Tutsi father] house and there he even offered a cow to a young Tutsi boy, who was single still, and said he would ask for a girl's hand in marriage. He had good relations with the Tutsi. *When did he change?* [Wife] He attended meetings in Butare town and that is when he changed. *What kind of meetings?* They were secret meetings involving other politicians. *And when did it change here in Tare?* Rekeraho then began to hold secret security meetings at his house with members of the MDR here and his old soldier friends. That is how the genocide started here. (Oriel, Hutu participant aged 51, and Beatrice, wife aged 54, Tare sector)

Initially, Rekeraho had outwardly good relations with Tutsi in his community, but later learned through his party political connections outside of the community that the Tutsi were to be targeted. He then acted as a "bridging" connection between a central and a peripheral network. He brought information from the main town to the rural community. Rekeraho then circulated this information within the community through his network of party supporters and friends who had also served in the military.

Influence: Recruitment Appeals

Once information on the target and the rationale for action reached communities, residents were then organized into attack or hunting groups (*ibitero* in Kinyarwanda). Two-thirds of survey respondents indicate that the violence in their communities was not spontaneous, but in fact organized (Table 5). The recruitment process was often face to face and recruiters targeted individuals in their social networks as the following interview illustrates:

Who told you to man the roadblock? It was the *responsable* of the cellule, Sibomana. *How did Sibomana summon you to the roadblock?* It was before the *umuganda* [compulsory labor] that he came to my house and told me to work on the roadblock. He said no-one must stay at home. *Do you live near Sibomana?* Yes, I live nearby. *How far?* It is on a hill. I live at the bottom, and Sibomana lives near the top, but you can call from one to the other. *Do you have family ties to Sibomana?* No. We had an alliance founded on religion. Sibomana's mother was the godmother of my sister. *Do you have any economic links to Sibomana? Did you work for him?* I was not poor. I did not work for Sibomana. *Were you friends?* Yes. ... *How did you first know Sibomana?* We grew up together on the same hill. And we kept cows together and we went to each other's house because Sibomana's mother was the godmother of my sister. (Deogratias, Hutu participant, aged 48, Tare sector)

In a community of more than 1,000 individuals, it would be impossible for the cell *responsable* to recruit everyone in this manner in such a short span of time. We learn, however, that the two also share a personal, multiplex connection. They had been neighbors since childhood, and the *responsable's* mother was the godmother of his sister. These ties may then explain why Sibomana selected Deogratias to work at the roadblock.

Kinship ties were also important in recruitment. In the following interview, a participant told us that the core group of killers in his community comprised three related individuals. The senior relative, Karimunda, recruited his junior kin:

How did the genocide start in your community? Karimunda started it. People from another cellule, Musekera, kept coming and asking why have you not started yet? At first they burned some houses. Then, on Sunday the killing began. Karimunda found his younger brother Philip and his nephew standing by the roadside with some other young men and he told us we have work to do. We followed him and we burned houses. ... The next day the *ibitero* started at 7.00 a.m. People gathered at the bar as Karimunda had told them to and they went hunting again. Then at night they went on patrols. *Why did you go?* They forced us to do it because if you missed it, they would fine you. *Who forced you?* It was Karimunda and his relatives. Even the *responsable* of the cellule was forced to do it. (Jean-Paul, Hutu participant, aged 38, Zivu sector)

In the next interview, a nonparticipant from the same community told us that the same nephew was a "good man" before the genocide and implied that it was his uncle who influenced him into committing "bad things":

What did people think of the organizers of the genocide? [read list of organizers] *Karimunda.* He was a butcher and knew how to use a machete. He was the kind of man who liked conflicts. When you met him you could see he was different from anyone else. Even the councilor was afraid of him. *Jean-Claude N.:* He was Karimunda's nephew. Before the genocide he was a good man. But afterwards, because he was

Table 6. Survey Data Supportive of "Regulatory" Mechanism.

	Hutu	Tutsi
During the genocide, why do you think people joined attack groups (*igitero*) to hunt the Tutsi? (open-ended, multiple answers permitted)		
	(*n* = 186)	(*n* = 21)
They stood to gain financially or materially	53.1%	53.2%
It was the law/ordered by the authorities	16.9%	19.0%
They had been exposed to propaganda/ideology	13.9%	9.3%
They thought Tutsi were the enemy/collaborators	11.3%	18.8%
They believed the authorities would do nothing	9.4%	0.0%
They hated the Tutsi	7.6%	14.0%
They believed they were fighting for their country	3.5%	4.7%
They were physically threatened	3.2%	4.9%
They were defending themselves	2.4%	0%
They just did as everyone else did	1.1%	0.0%
They were angered by Habyarimana's death	0.4%	0.0%
They stood to lose financially or materially	0.2%	0%
Some other reason	10.1%	14.4%
Unwilling/unable to answer	11.4%	0.0%
During the genocide, what happened to people who refused to join the attack groups? (open ended)		
	(*n* = 262)	(*n* = 20)
Nothing happened to them	65.2%	54.7%
They faced sanctions (social, monetary, or physical)	34.8%	45.3%

related to Karimunda, he went everywhere with him and did bad things together with him. *Philip S. [Emmanuel's brother]:* He worked together with Karimunda. They were both very bad people. There was a time when he went to Buhoro with Karimunda and they took spears with them. They came back smelling of blood. (Dionysie, Hutu non-participant, Zivu sector)

Regulation: Incentives and Sanctions

Once the violence began, residents rapidly learned that there were material benefits to joining attack groups as well as costs for refusing to participate when recruited. More than half of survey respondents cited the opportunity to gain materially or financially as the reason why other residents joined attack groups (Table 6). It was by far the most common motivation reported. Participation in attack groups then presented an opportunity to loot. To benefit, however, you would need to know of the opportunity and the plan of action. In the following interview, Leopold told us that this information was

acquired through membership of the attack group and that while coerced at first, participants went voluntarily once they learned of the material advantages:

> *How did they decide whom to attack?* When they attacked a home, somebody in the group would say so and so had cows and then people would plan to meet there. In the first few days people went by force. But later they went willingly because they saw they could get property like roofing tiles and mattresses. Once the group reported that so and so's house had been completed, the extremists and the politicians would tell them where to go next once. (Leopold again, Tare sector)

A refusal to participate also incurred costs. Interviews revealed three widely perceived sanctions for being a refusenik: (1) social stigma, evidenced in the accusation of *ibyitso* (collaborator); (2) monetary or in-kind material fines; or (3) physical harm:

> *What happened to those people did not go with the attack group*? They would fine them money and if they could not pay, then they would take their livestock. These people were called *ibyitso*. *Was anyone actually harmed for refusing?* No one was killed in my community. But I heard others were beaten up elsewhere. (Matthieu, Hutu participant, aged 52, Zivu sector)

The data, however, are conflicting on the consequences of nonparticipation. Almost two-thirds of survey respondents also indicate nothing happened to refuseniks in their communities (Table 6). The discrepancy may reflect the evolution in individual motivations to participate to which Leopold alluded. Individuals may initially have been coerced. Subsequently, however, many may have participated willingly once the material advantages became known, thereby obviating the need to enforce the participation of more residents.

Alternative Interpretations of the Data

The research design permits descriptive rather than causal inferences. It predicts well-connected individuals are more likely to participate, but it does not prove that their connections explain why they participated. Unobserved heterogeneity may account for the observed correlation between connectedness and participation. One alternative interpretation is that the findings are attributable to homophily, the well-established observation that "similarity breeds connection" or that "birds of a feather flock together" (McPherson, Smith-Lovin, and Cook 2001). Participants may share some unobserved characteristic that makes them prone to committing genocidal violence, and it is this similarity that makes them seek out connections to each other.

Homophily is one of the well-known challenges to demonstrating causality using observational network data in which the dependent and independent variables are measured simultaneously (Fowler et al. 2011). It raises the question of endogeneity. We cannot readily know whether it is the connection that is causing the similar

behavior or whether it is the similar behavior that is causing the connection. One method to control for homophily would be to observe changes in connections and changes in the behavior over time. Such an empirical strategy, however, is practically infeasible for rare and difficult-to-observe behaviors such as participation in genocidal violence.[3] Nonetheless, in the absence of conclusive longitudinal data, there remain five suggestive reasons for believing that participation in genocidal violence is attributable to the influence of social connections rather than to some unobserved characteristic that participants share.

First, I control for many of the characteristics that extant theory and evidence suggest may make individuals prone to such violence: age, marital status, education, wealth, employment status, and ideological commitment. The statistical significance of connections persists in the quantitative analysis. Second, the qualitative data are corroborative and strongly suggest the importance of connections. They suggest networks diffused information on the rationale for mobilization and the targets of violence, enabled the use of interpersonal influence to recruit individuals into attack groups, and regulated participation in the violence through incentives and sanctions. Third, if the findings were due to some unobserved similarity between participants, we would expect participants to have not only more connections to other participants than do nonparticipants but also *fewer* connections to nonparticipants. Homophily predicts participants would prefer connections to other participants because they possess similar characteristics. Yet the descriptive statistics show that perpetrators have more connections to both participants *and* nonparticipants. Moreover, these differences are statistically significant. Fourth, it is widely accepted that homophily does not account for all social connections between individuals and that some relationships are formed through simple availability (Fowler et al. 2011). The availability effect would be particularly acute in the context of rural Rwanda where individuals are tied to the land on which they subsist and where social and geographic mobility are consequently highly limited.

Finally, and particularly suggestive, I test for the relative importance of voluntary and involuntary connections and find involuntary connections to be a stronger predictor of participation. Homophily assumes individuals voluntarily seek out connections to each other because they share similar characteristics. To model the potential for homophily, I coded as voluntary connections any relationships that two individuals were freely able to enter and to end. In the context of rural Rwanda, these included friendship, marriage, membership of a political party, and membership of a voluntary organization. Conversely, I defined involuntary connections as relationships that either one or both individuals could not freely enter or end. In Rwanda, these most commonly included kinship blood ties and clientelist ties based on land, jobs, or other important economic benefits where clients may be unwillingly tied to their patron. In both the name generator and roster models, involuntary ties proved statistically and substantively stronger than voluntary ties in predicting participation. As many involuntary ties are also kinship ties, and the power of kinship ties has already been noted, this result is unsurprising. In

interpreting this finding, it should be noted I assume that preferences are socially learned rather than biologically determined. Family members are not born with a shared proclivity for violence but instead develop it over time through repeated and prolonged interaction with each other. It is the kinship connection then that leads to the similar proclivity.

Discussion and Conclusion

The evidence presented here reinforces the growing consensus that social networks and social ties, the sources of social capital, have a dark side (Gargiulo and Benassi 1999; Swain 2003). The better connected an individual is to his community generally and to other participants specifically, the more likely he is to be drawn into extreme antisocial group behavior such as genocidal collective violence. These connections may supply individuals with pernicious information, expose them to undesirable influences, and create nefarious incentives and sanctions. Family members and neighbors appear to play particularly prominent roles in this process. The perhaps counterintuitive implication is that social misanthropes may be less likely to engage in such antisocial activities than the socially gregarious, given the collective character of the violence. The interdependence created by strong social bonds structurally constrains the freedom to act independently.

The evidence also draws sociological theory and political science research a little closer together to reinforce the widening consensus that social structure is a key predictor of participation in various forms of violence. It suggests a relational approach should complement the attribute approach that presently predominates in extant research on participation. The atomistic quest for distinguishing demographic, socioeconomic, attitudinal, or psychological attributes that may indicate a dispositional susceptibility for such violence has largely proved elusive. It has led to the consensus in genocide research that perpetrators are simply "ordinary" men (Browder 2003). Yet I submit the inquiry should not be limited to the individual but should extend to the social context in which he is embedded. The evidence here supports the position in modern sociology, wherein structure and agency are complementary rather than competing forces in explanations of social action (Giddens 1984). Both pull (relational) and push (attributes) factors matter, and we should guard against excessive determinism of either approach. While individuals are distinct atoms, they are bound together in interdependent molecular structures. Who you know matters as well as who you are.

Network structures may also provide an important link between micro and macrolevels of analyses of human phenomena (Granovetter 1973). The growing focus on the microfoundations of violence has for example revealed a "macro-micro disjunction" (Kalyvas 2006). Macrovariables do not consistently predict important microvariations in violence within complex and aggregated events such as civil wars, ethnic conflicts, and genocides. In identity-based explanations of violence, for example, it is unclear how a macrovariable such as

ethnicity affects micro-level outcomes such as why certain individuals commit violence and others not and why particular individuals are targeted but others unharmed. The answer may lie in the complex set of social relations at the local level that mediate participation and victimization (Fujii 2009). More generally, local factors may matter for observed microvariations. The micropolitical, microeconomic, and microsocial forces that shape patterns of violence at the local level may themselves be shaped by the structure of local networks and ties through which they flow.

Lastly, the evidence also provides some insight into the microdynamics of Rwanda's genocide. As often observed, Rwanda had the highest population density of all African states, a remarkable 305 persons/km^2 in 1993. Rwanda's genocide, as previously noted, was also remarkable for the speed of the violence and the scale of popular participation. These facts have led to speculation that the violence was the product of some sort of neo-Malthusian resource crunch: too many people, too little land (André and Platteau 1998). This article suggests, however, that the extraordinary speed and scale of the violence may have sociological rather than ecological origins. In highly densely populated societies likely exist highly dense social networks. Highly dense networks often signify numerous connections exist between individuals and that frequent face-to-face interaction occurs, particularly in technologically simple societies where the means of communication and transportation are basic. It is these many ties and frequent contact that enmesh individuals, providing both opportunities for and constraints on actions. As already noted, high network density improves the efficiency of collective action more broadly (Gould 1993). Mass mobilization and rapid violent contagion, the remarkable features of Rwanda's genocide, may then have their roots in Rwanda's remarkable population density.

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Declaration of Conflicting Interests

Funding

Notes

1. The estimate is for 367,000 Hutu men to have committed category two crimes under Rwanda's 2004 genocide law. Broadly, category one crimes covered organizers and sexual offenders; category two covered violent crimes against the person; and category three covered property crimes. The estimate is calculated by extrapolating data on conviction rates personally collected at the local level from the pilot sample of gacaca communities. An unofficial tally, based on the presently unreleased official gacaca report, puts the final number of category two convictions at 361,590. See the ruling party's website: http://rpfinkotanyi.org/wp/?p=1958. Accessed January 16, 2013.

2. In April 1994, Rwanda comprised 11 prefectures, 145 communes, 1,545 sectors, and 9,000+ cells. A sector was home on average to about 800 households. In addition, in some places there was a fifth layer. The *nyumbakumi* were unpaid individuals representing a collective of ten households. Rwanda's 1991 Population Census reported a Tutsi population of 8.4 percent.

3. Other strategies to improve causal inferences from network data include fixed effect modeling, the use of instrumental variables, cross-lagged structural equation modeling, and quasi-experimental research designs (see Mouw, 2006).

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