PATHWAYS TO VIOLENCE
DYNAMICS FOR THE CONTINUATION OF LARGE-SCALE CONFLICT*

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ABSTRACT

This article explains why large-scale civil conflicts last a long time. We focus on the thirty-two year Northern Ireland conflict (1969-2001) and argue that one can account for conflict continuation by identifying the motives that produce next killing acts. The salient motives are group-specific opportunities for achieving interactional configurations, such as dominance and revenge, which are pieced together from prior killings in groups' pasts. Identifying such motives probes the neglected questions of how and the degree to which killing produces subsequent killing in a complex series of causal chains, or pathways. These pathways make it so that there is not just one way a next killing can happen, but multiple ways. In all conflicts, violence continues so long as there are pathways to violence and ends when these pathways come to an end. This study is distinguished from existing studies of large-scale conflict that look to macro-exogenous forces and organizational level resources. Our findings are generalizable to other similar conflicts in other contexts.

There was an old lady who swallowed a fly, I don't know why she swallowed a fly...

INTRODUCTION

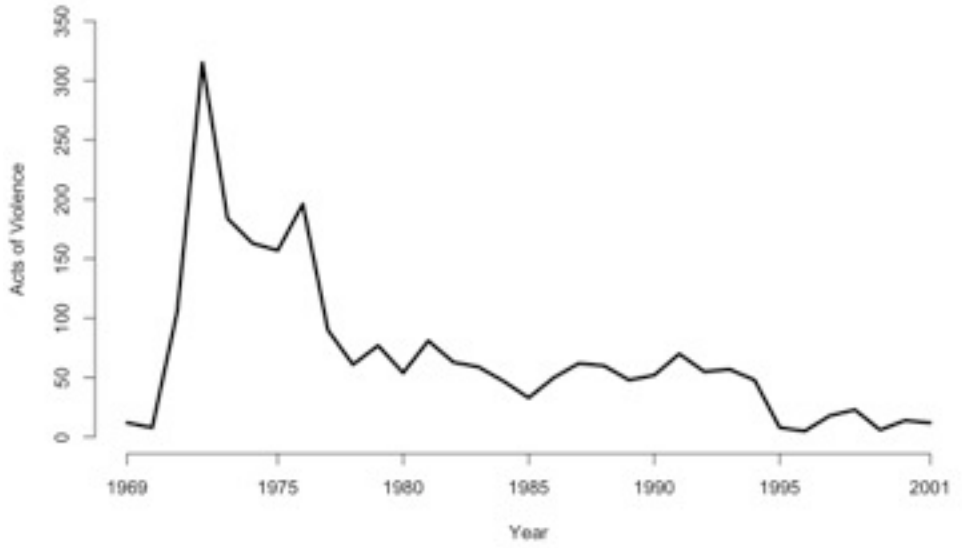
Three IRA men walked into a Belfast bar one night (it was March 10, 1971) and started drinking with a few other guys who turned out to be off duty British soldiers. The IRA men convinced the soldiers to continue their drinking on a nearby hillside and when they got them drunk enough, they shot them in their heads, execution style. The bodies were found the next day with their pants pulled down to their ankles, piled on top of one another. The execution was the 30th killing of what came to be known as the Northern Ireland "Troubles".

Why this killing, at that moment? We could try to answer that question by looking back in time to find some motive -- perhaps revenge. For example, on the fifth day of heavy rioting between Catholics and Protestants in North Belfast, a British Army sniper shot James Saunders, a known IRA man, on Old Bank Road. Saunders, still alive after but bleeding to death from his wounds, died mainly because some British soldiers delayed the arriving ambulance. This murder is potentially linked to the first killing by revenge. If this were the case, the IRA took the opportunity of drinking with soldiers to exact revenge -- or in language we will also use, to reciprocate a prior killing. But then why did the British let Saunders bleed to death?

Six months before the IRA killed the British soldiers on the hillside -- and five months before the British soldiers killed James Saunders during the riot -- two officers of the Royal Ulster Constabulary, Samuel Donaldson and Robert Miller, were called to investigate an abandoned Ford Cortina in Armagh. The car had been reported stolen several days prior but, according to witnesses, had no visible signs of vandalism or tampering. The constables findings the doors locked proceeded to pry them open, detonating a hidden explosive. As the car burst into flames, the explosion sent their bodies flying, leading to fatal injuries. The IRA claimed responsibility for this killing. Perhaps James Saunders' death was revenge by the British army for the killing of their friends in the Royal Ulster Constabulary.

The search in the past for the motive for a subsequent event could lead to an infinite regress and seems at first to be sociologically inaccessible. But -- to use the example of killings -- in periods of large-scale civil conflict, killings result from killings that produce further killing in a long and complex series of causal chains. The argument of this article is that understanding how killings yield subsequent killings is neither a trivial problem nor one that existing strategies for making sense of conflict consider. By focusing on the chains of killing that bind violence over time in conflicts we develop a theory for conflict continuity and for conflict failure, or peace.

The empirical context we consider is the conflict in Northern Ireland. Figure 1 reports the shape of this conflict. The troubles started in 1969 and continued until 200. The *y*-axis reports the 2294 killing events (leading to over 3500 deaths) that composed the conflict. In the early years, there were killings every other day, after 1977 killing occurred about once a week. For thirty-two years, day after day, week after week, month after month, killings continued -- despite the efforts of peace activists and diplomats.



This fact -- the length of the conflict -- is not unusual. Civil conflicts *in general* last a long time. A conservative estimate of the median duration of large-scale civil conflicts since 1945 is six years (Fearon and Laitin 2003). One could find that conflicts last considerably longer with more sensitive measurements. The conflict that started in Northern Ireland in 1969 lasted for thirty-two years. Lebanon erupted in conflict in 1975, which then lasted for fifteen years. Conflict in Sierra Leone began in 1991 and ended in 2002. In Sri Lanka, civil war started in 1983 and only ended in 2009 when the military defeated the Tamil Tigers. The Guatemalan conflict endured for thirty-six years, from 1960 to 1996. These conflicts appear in heterogenous contexts. In some, deep-seated religious cleavages dominate. In others, ethnic, class, or territorial cleavages appear more salient. In some instances, conflict follows state collapse. In some cases conflicts are seen to be started by exogenous events. Other cases appear to have no rhyme or reason. The characteristic that they all seem to share is that they last a long time.

How can one explain how the Northern Ireland conflict, and other large-scale periods of civil conflict like it, begin, endure for long periods of time, and then eventually fail? How can one explain how killings at one point in time -- perpetrated by one or another group -- produce subsequent killing? The goal of this article is to answer these questions. Our presupposition is that to understand the continuation of violence requires an understanding of the *mechanisms* that induce individuals and groups to kill. In this article, we investigate whether and to what degree the continuation of violence results from killing perpetuating itself, and so our focus is on the mechanisms by which killings produce subsequent killings. Continuation, as the central problem to be explained, is a question that, if answered, implies answers to other questions that are rarely asked, and that if asked, are usually thought to be unanswerable, including: why conflicts do not end at other points in time, e.g. 1978 or 1983 for the Northern Ireland case; why groups kill who they kill; why groups kill when they kill; and why violence eventually fails and peace reigns. Our argument, broadly construed, is that to answer why conflict continues lies in understanding the mechanisms that connect killing events.

In this article we provide an account for *particular* killings (i.e. why groups kill *when* they kill and why groups kill *who* they kill when they kill) and the *continuation* of killings (the central problem) simultaneously. While groups could kill for many reasons, in the Northern Ireland case (and we suspect elsewhere, although this is an empirical question), groups kill in order to achieve dominance and/or revenge. In contrast to much conventional thinking about the topic, we show that dominance is a more relevant motive for groups -- though revenge is also important.

In this context, revenge can only be served if another group has killed one of your group. If they have not, you may kill them, but it would not be for revenge. Thus revenge, as a motive, requires the opportunity to extract revenge. The same is true for dominance. One can only kill in order to achieve dominance over other groups if one has the opportunity (structurally) to do so. Not all opportunities are taken, and not all groups take the opportunities that they have. Here, we identify all the opportunities that groups have at any moment in time and identify which ones they took. This allows us to identify what motives they pursue. Obviously, a group that has many opportunities to extract revenge but never does is not motivated by revenge. Here we discover that opportunities for further killing overlap and interweave throughout the duration of conflict. For this reason, these opportunities can be considered pathways to violence which makes it so that a *next* killing can happen not just in one way -- on one course of action -- but in multiple ways.

Violence ends when there is no reason to kill. In the language used in this paper, this is also the conclusion we reach: violence ends when there are no more pathways to violence. Demonstrating this -- as versus asserting it -- is more difficult; it is also more rewarding, for the demonstration allows us to untangle what it is that makes conflicts last so long, and therefore provides a way of thinking about how to make them shorter. Our empirical evidence comes from an unusually rich data set on the violence in Northern Ireland, and consists of every killer-victim pair for the thirty-two year duration of violence.

ROADMAP

The rest of this article proceeds as follows. First, we briefly review the literature concerned with the social-structural sources of large-scale violence, and distinguish our study from these previous studies. Second, we identify the building-blocks of our account, which include finding the motives for killings in configurations of interaction. Third, we outline our empirical case and discuss our data. Fourth, implementing a strategy of analysis developed elsewhere (and outlined briefly in the Appendix), we ascertain the entire set of opportunities for all groups prior to every moment of killing. This strategy allows us to discern the relationship between every next killing with the opportunities that exist prior to those killings. If revenge is not possible to exact, for example, revenge cannot be the motive for the next killing. We distinguish which opportunities groups take regularly, and so identify the mechanisms for further killing. In the Northern ireland context, it turns out that different groups pursue different opportunities. We then analyze the simultaneous temporal distributions of the opportunities to kill which allows us to explain the continuation of killing. We then provide some concluding remarks.

PRIOR LITERATURE

When social scientists think about making sense of large-scale civil conflicts they tend to look to exogenous forces or events as explanation. In broad sweep, two theoretical approaches about the social-structural sources of violent conflict have emerged from the view that violence onset can be accounted for directly. In the first, violence is seen as an expression of exogenous macro-level factors. Civil violence is seen as motivated by class, sectarian and/or ethnic ties (in feelings of injustice or deprivation, religiosity or ethnic identity) that arise when a conjunction of macro-level factors (state breakdown, social change, economic collapse, etc.) rupture extant and underlying cleavages and open abstract "political opportunities" for violence (Chirot and Ragin 1975; Jenkins and Perrow 1977; Davies 1962; Snyder and Tilly 1972; Spilerman 1970; Skocpol 1979; Goldstone 1991; Collier, Hoeffler, and Soderbom 2004; Fearon 2004; Tilly 1978; McAdam 1999). For sociologists who adhere to this vision, violence starts and continues until there is political reconciliation, the dismantling of existing political arrangements, or the annihilation or assimilation of one or more groups. In short, violence continues until openings in "political opportunity" are closed. Under this theory, onset events are caused by the same structural dynamics that cause subsequent violence.

For a second broad group of mobilization scholars the major shortcoming of such macro theories is that they do not take account of the organizational capacity of groups to engage in violence. Violence is seen as a form of politically motivated communicative action, but here realized by the securing and mobilizing

of the resources (weapons, recruits, ideas, etc.) necessary to carry out violence (McCarthy and Zald 1977; Gould 1991; Marwell and Oliver 1993; Granovetter 1978; Snow, Zurcher, Ekland-Snow 1980; McAdam 1986; Oliver 1984; Snow et al. 1986; Klandermans and Oegema 1987). In this view, violence begins when groups acquire the resources for violence, and continues so long as supply channels remain intact. With either the opportunity or organizational approach, a period of violence is treated not as a series of acts, but as a conglomerate event over a large swathe of time.

Both perspectives imply a social phenomenology of violence that stretches credulity. Only in the rare situation that the killings that compose a conflict are all equivalent -- that is, can all be explained by the same source -- can one explain an entire period of violence by focusing exclusively on the exogenous forces that are thought to produce violence onsets. If this limiting condition were true, killings would not carry by themselves any meaningful relationship with respect to other past killings. Instead, killings would be an epiphenomenal byproduct of structural forces that occur at a much earlier point in time, of structural forces whose specific expression, in this or that event, would be of little importance. To see how how this view stretches credulity, it helps to think of a logical implication: any random permutation of the killing acts that compose a conflict would provide both a meaningful description of the conflict and one that is the same as the actual ordering of killings.

In this article, we share with other studies the broad goal of understanding the social-structural sources of civil violence. But this study departs from the existing literature in some fundamental ways. Rather than focus on conflict onset, on how civil conflicts differ in comparative perspective, the first point of departure is to focus instead on the one fact that large-scale civil conflicts share: that they involve one killing after another, on and on and on, day after day, week after week, for years. The central problem to be explained is therefore not onset, but continuation. Continuation is, by definition, of killings -- and so this study differs in a second way as well: analytically, it focusses on killing *acts* and their temporal ordering rather than on *rates* of killing that assume random ordering. The third difference between this article and the existing literature on violence is that we will seek an explanation of continuation in terms of the linkages that exist between the killings that compose the conflict.

NEW DIRECTIONS

One way to break out of this bind is by referring to known motives for killing during conflict, such as revenge and dominance. To the degree that these motives operate, they interrelate acts of violence in a way that killings are no longer explained by the same source. Instead, killings are explained by other killings as violence continually unfolds. To pursue this line of thinking requires, however, to think beyond the conventional literature on violence, and to reach out in particular to social network analysis, a growing body of work not generally within the purview of violence research. The relevance of social network analysis is revealed when we think of a more realistic phenomenology of killings for many conflicts, namely that they are interaction events that tie perpetrators of violence (senders) with victims (receivers), where both perpetrators and victims are organizational groups, such as the IRA and British Army. The implicit claim in standard approaches for understanding interaction (here killing) is that its meaning arises in reference to a past in which it becomes embedded giving rise to a temporal (and meaningfully historical) relationship between actions and events (White 1992; Hillman 2008; Bearman, Moody and Stovel 2004; Granovetter 1984; Kossinets and Watts 2009; Chase 1980; Gould 2002). In this article, we take steps to bridge between violence research and social network analysis, but as we shall show, the bridge requires some further methodological innovation to appropriately address the central problems.

Our approach begins with the assumption that when groups kill, they are pursuing some interactional motive and that one can capture this motive as a configuration of interaction which arise from groups' pasts. We focus on three types of configurations as being potentially important, dominance, direct revenge and categorical (generalized) revenge.

The theory of action that underlies the motive for dominance originates from propositions about cognitive balance (Heider 1946; Holland and Leinhardt 1976) and social differentiation (Gould 2002). Transitivity is the basic configuration for dominance (Gould 2003; Chase 1980). As illustrated in figure 2, such a transitivity configuration, from the perspective a focal actor A, appears as: A→B, B→C, A→C. (By focal actor, we mean the actor (or in our case group) whose structural perspective we wish to capture.

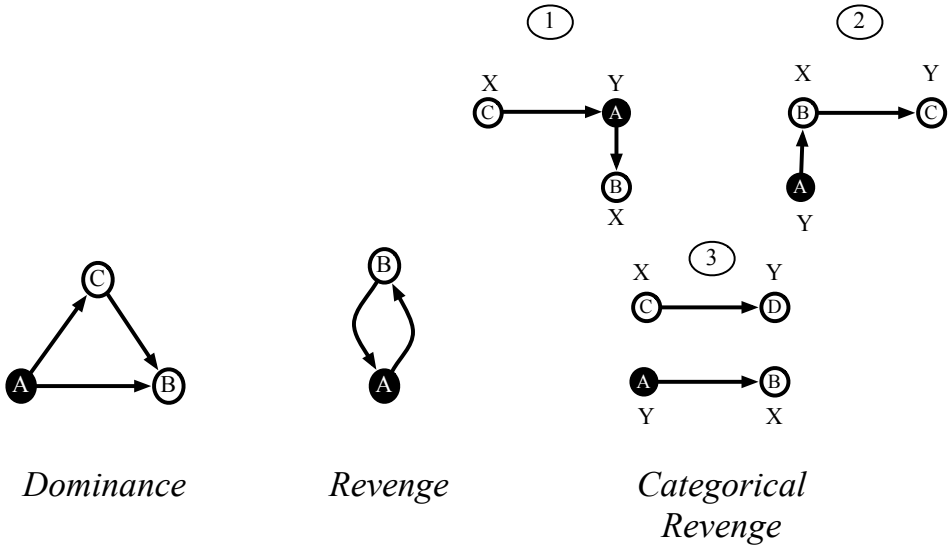


Fig. 2-- Three types of configurations to which killings can be oriented. Focal actor is in the dark filled node.

In visualization, we adopt the convention of identifying the focal actor with a black node.) While killing, of course, is not a "positive" sort of tie from which transitivities are usually thought to be generated, transitivities produced from killing ties produce dominance hierarchies. It is dominance because it is a linear hierarchy: there is one group at the top (the focal group who kills, here this is A), there is one group in the middle (here this is C), and there is one group at the bottom (here this is B). Dominance is an actor's high status location within a hierarchical structure of social prestige, a basis of deference that is both actively achieved (Leifer 1988; Ridgeway 1982) and tacitly conferred by the actions of others (Wrong 1968; Turner and Shosid 1976; Ridgeway 1987). For our purposes, in short, dominance is the perception of a transitive configuration of killing ties from the perspective of a focal actor.

In simple terms, one group may kill another because they want to get back at them (direct revenge), dominant them or some other group, or because they are friends of a group they want to get back at (categorical or generalized revenge). Direct revenge is commonly thought to be a central motive for killing (Kalyvas 2006; Elster 1990). The direct revenge configuration from a focal actor A's perspective, as shown in figure 2, appears as: B→A, A→B. A more generalized form of revenge might occur outside of direct exchange. The friends of ones' enemies are enemies, and so revenge could be extracted one one group by killing their friends, members of another. When conflicts assume a categorical shape -- Catholic versus Protestant, Bosnian versus Serb, etc -- the exercise of generalized revenge would mean that groups frame revenge not at the group level but at the categorical level to which they pledge allegiance. Categorical revenge exists as one of three configurations, illustrated in figure 2.

Let us consider *x* and *y* as two categorical identities -- for example, Protestant and Catholic, or Loyalist and Republican. One configuration of categorical revenge, from the perspective of focal actor A, is C*x*→A*y*, A*y*→B*x*. Here, a focal actor, A, who is of category *y* receives violence from an actor, C, who is of category *x* thereby attacking a third actor, B, who is also of category *x* instead of directly attacking B.

A second configuration of categorical revenge, from the perspective of a focal actor, is B*x*→C*y*, A*y*→B*x*. Here, an actor, B, who is of category *x* attacks actor C who is of category *y*, which then prompts actor A who is of category *y* to attack actor B. A third configuration of categorical revenge is more diffuse: C*x*→D*y*, A*y*→B*x*. Here, if actor C who is of category *y* receives violence from actor D who is of category *x*, the focal actor A who is of category *y* attack actor B who is of category *x*. This configuration involves four actors.

These three types of configurations -- dominance, revenge, and categorical revenge -- provide possible motives for killing. Answering the question of which motive predominates is a crucial question for understanding dynamics of violence. This is an empirical question which we seek to answer in this article. But, as we shall see, *how* can one can mediate between these possible motives does not come automatically. We turn now to this question.

Achievement of opportunities

Outside the field of violence, there is widespread agreement that the world is filled with meaningful action. So too, however, is there widespread (if implicit) agreement that no type of action, including killing, is an intrinsic carrier of meaning -- that is, that one cannot tell from an act of killing itself whether it is motivated by dominance, or revenge, or by categorical grievances. One needs further information, some basis on which to make such interpretational claims, which for action arises from the achievement of an outcome for which one has an opportunity. Thus, one source of meaning emerges out of the fact that purposive action does not occur in isolation. Rather, the pursuit of valued outcomes is necessarily tied to available opportunities (Coleman 1986; Feld 1983; Hedström 2005; White 1970). An absence of opportunity precludes achievement, and so precludes purposiveness. The second source of meaning is the action's orientation toward the achievement of some outcome of value. For our purposes, achievement of opportunities is of configurations of interaction. Thus, a focal killing makes "revenge" if it achieves a revenge configuration, and "dominance" if it achieves a dominance configuration.

To demonstrate this simple idea, we take, from figure 2, A→B as our focal killing, with A as our focal actor. Figure 3 demonstrates the opportunities that can provide the A→B killing with three different interpretations based on A's achievement of a configuration. A→B can be considered a dominance killing because it *places* the killer (here A) at the top of a transitive hierarchy. Structurally, such hierarchies can be linear or near linear "pecking orders" whereby one actor occupies a higher social position than others, here the positions being produced from concatenated past killings. The killing, A→B, might also be interpreted as a revenge killing because it follows from a reciprocity opportunity and achieves a reciprocity configuration, or a categorical revenge killing for the same reason. Thus, in general, to achieve a configuration -- and so to pursue their motives -- groups must act when they have an opportunity to achieve that configuration.

This identifies a necessary step for ascertaining motivation but reveals a further problem for interpretation: namely, any one group that kills can, by killing, achieve multiple configurations at the same time. This occurs when groups kill when they have multiple prior opportunities, each of which is a potentiality for action. If A, for example, has a dominance, revenge and categorical revenge opportunity with B at the same time, by killing B they achieve each configuration at the same time. The problem, from an analytical standpoint, is that when new killings achieve multiple configurations at the same time, the killing conceals *which* motive actually produces the new violence, here A→B.

To illustrate how fecund the problem is we consider empirical data. Figure 4 is a slice of eight killings from the Northern Ireland conflict. This series of killings took place during a period in 1971. Each circle represents a group. The top row are the perpetrators of killing, who kill the bottom row, who are the victims. We take one focal killing, IRA→BA (though the principle applies to all killings) and one focal group, the IRA (though the principle applies to all group). The IRA→BA killing is the killing of the three soldiers on the hill on June 11, 1971. In figure 4 it is identified as moment (8).

From the IRA point of view we can ask: What is the world of opportunities that they are killing in? Which opportunity were they acting on, and so to which configuration were they oriented? Let us try to capture what opportunities they saw, and in this way try to make sense of why they might have killed the British soldiers at this moment.

In figure 5, we capture the configurations that the IRA achieves by killing the British soldiers on the hill on this date. One prior opportunity that they see is for dominance, the source of which is from moments (1) and (3), the UVF→BA killing concatenated with the IRA→UVF killing. The IRA→BA killing could be a dominance killing because it *places* the killer at the top of a transitive hierarchy. It is dominance because it produces a linear hierarchy: there is one group at the top (here, the IRA), there is one group in the middle (here, the Ulster Volunteer Force), and there is one group at the bottom (here, the British Army). But complicating matters is that at the same moment the IRA also sees opportunities for revenge and categorical revenge and by targeting the British Army they achieve that configurations as well. The source of the revenge opportunity is from moment (2), when BA→IRA. It so happens that they also achieve a categorical revenge opportunity, the source of which is from moment (4), when RUC*security*→OIRA*republican*. Thus, a single killing can achieve multiple configurations at the same time, the opportunities for which not being generated over a uniform temporal horizon, which works to conceal the motive for that killing.

It follows that one cannot answer the question of which opportunity the IRA takes for this moment -- or any group for any moment -- by simply looking at an outcome (here, the IRA killing the British soldiers) and assembling some story that leads to that outcome. This strategy results in multiple plausible stories without any guidance as to how to mediate them. If a killing act can align in multiple ways at the same moment, and so lead to multiple interpretations as to its motive, this naturally leads to the question: can one actually identify motives for killing with respect to dominance and revenge? If so, how? We believe the answer to the first question is affirmative, which of course depends upon the second, which requires some elaboration. While the fact that any one killing can achieve multiple configurations at the same time presents an analytical problem for ascertaining motives it also reveals a previously elusive empirical reality: at every moment there are multiple action potentials, only some of which get fulfilled, leaving others *un*fulfilled. We can exploit this fact of unfulfilled action potential -- more concretely, missed interactional opportunities -- in order to identify motives.

It is straightforward to demonstrate that there is unfulfilled action potential at every moment. We have shown in figure 5 three ways that the IRA→BA killing at moment (8) aligns with available opportunities. In figure 6, we show that while the IRA achieves a dominance, revenge and categorical revenge configuration when they act at this moment, they miss other opportunities that they could have achieved had they killed some members of other groups. Let me consider two such opportunities. One dominance opportunity, pieced together from event (3) and (6), could have been achieved had the IRA killed some members of the Official IRA (OIRA). A second dominance opportunity, pieced together from event (3) and (5), could have been achieved had the IRA killed some Protestant civilians (PC).[1] By not interacting with members of the OIRA or PC at moment (8), the IRA misses each of these opportunities (among others not identified in the figure).

Of course, had the IRA not killed at (8) at all, they would have missed the dominance, revenge and categorical revenge opportunities that they *did* achieve with killing. This, in fact, is what happens to the other groups who did not kill at (8) (e.g. OIRA, UVF, BA, etc.), suggesting that groups have opportunities even over the moments in which they do not kill. For the IRA, the exact same moment in time is composed of multiple opportunities -- and they take advantage of only some of those. While we have shown this for the IRA prior to event (8) it is possible to do this for all other groups as well, and not only

[1] We treat Protestant civilians (PC) and Catholic civilians (CC) as separate nodes in our analysis. Since the civilian nodes cannot act, they cannot have any opportunity themselves for further killing. At the same time, however, we assume that they contribute to the opportunities for others' killing.

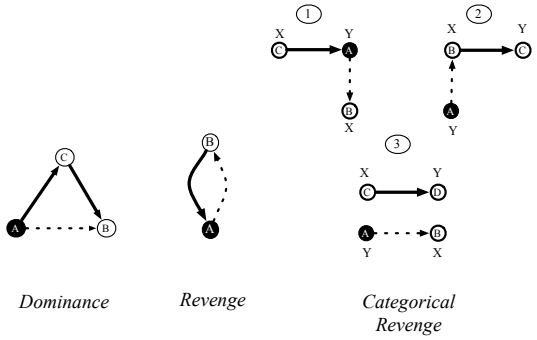


Fig. 3-- Opportunities provide meaning to focal killings. (solid edges) that allow groups to achieve the types of configurations to which killings can be oriented (dotted edges). Focal actor is in the dark filled node, A→B being the focal killing.

for *that* moment, but over *all* moments. Thus, groups have some amount of opportunity over every moment of killing, some amount of action potential. The fact that some opportunities do not get realized into killing at any moment does not make them any less real to the actors observing them. Opportunities are the experience of actors with respect to killings in their past. As we show below, the fact that there are multiple opportunities over the same moment in time explains in part why conflict continues over the duration that it does, which is the central question. But before we jump ahead, it bears noting that the first analytical task, to ascertain motives for groups, requires ascertaining all of the opportunities for all of the groups at every moment, and seeing which opportunities are regularly taken and which are regularly missed.

From the perspective of a group, they can take an opportunity only *with* killing, and so confront three possibilities at any moment: (1) they can kill and achieve an opportunity, (2) they can kill but miss an opportunity, and (3) they can not kill and miss an opportunity. There are thus two ways to miss an opportunity: by not killing at a moment when they have an opportunity, and by targeting a group with whom they do not have an opportunity. The opportunities that groups regularly take are motives for killing. By knowing *both* the opportunities that lead to interaction *and* the opportunities that are missed, one can construct the *probability* that an opportunity leads to killing measured over all moments of interaction. That is, ex ante it is unclear which type of opportunity is a motive; motives are ascertained statistically ex post, over all moments of conflict, with many points of observation. Recourse to unfulfilled action potential then becomes a way to ascertain group-level motives for killing in conflict, which then provides a lever with which to disentangle which configuration groups are oriented to achieve when they achieve multiple configurations at the same time. In this way, one can speak of the likely operative motive for any killing. To anticipate a central finding, the IRA→BA killing described at the beginning of this article (and moment (8) of figures 3-5) is more likely to be motivated by dominance than revenge.

To formalize how one can ascertain all of the opportunities for all of the actors prior to every moment of interaction requires identifying the relevant past from which network objects arise. We need a strategy of analysis to identify the entire set of opportunities observed by every group prior to every killing -- both the opportunities that just happen to get taken as well as the opportunities that get missed. We identify opportunities *in sequences of violence and observation*, a strategy of analysis developed elsewhere (Balian, 2010). This strategy leads to a central finding that groups pursue different types of configurations, with dominance being more important than revenge. Conflict continues because there are multiple opportunities that groups pursue over most moments of conflict. Thus, these mechanisms are *pathways* that lead to new killings, creating multiple ways in which a next killing can happen, not just one

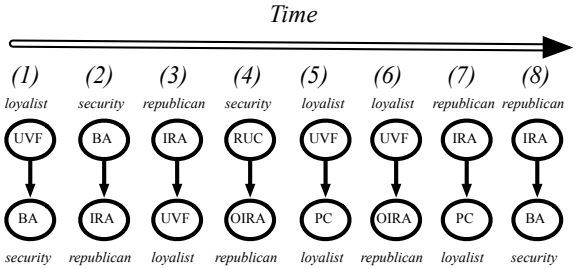


Fig. 4-- A slice of eight killings from the Northern Ireland conflict.

way. Conflict fails and so brings about peace when there are no more opportunities (to achieve configurations) to kill.

CASE AND DATA

Our argument and framework is generalizable within some limits (see comments on scope in discussion below), but evidence for this article comes from a single empirical case: Northern Ireland. The empirical challenge for any conflict is to identify all the violent acts that compose it *as the conflict unfolds*. The "troubles" have been assiduously documented, enabling one to assemble a record of the acts of violence from the beginning to the end of the conflict. In doing so, we rely on Sutton's (2001 [1994]) and McKittrick et al's (2001) database of killing deaths which includes the date and exact location, the group(s) responsible, and the group and/or religious affiliation of decedents. We consider these databases to be a complete inventory of the killings attributable to the thirty-two year conflict.

A central consideration is the importance of the ordering of observation more than the chronological ordering of the violent acts -- as the information embedded in acts, i.e. regarding perpetrators and victims, is what allows acts to get soaked into preceding opportunities to factor into the next round of fighting. Such information does not necessarily come to light in the same order as acts transpire. In Northern Ireland it does, so we consider the chronological order of killings as the order in which killings become observed.

We have so far assumed a straightforward definition for an act of violence which now requires some more formal comment. The actors in our analysis are the main agents of violence: the concrete militarized groups, such as the British Army (BA), the Irish Republican Army (IRA), and the Ulster Volunteer Force (UVF), among others. But the moments in which their actions take place rather than the groups themselves are the basic units of analysis. Violent actions are interactions from which can be derived details on murdered *individuals*. We define an interaction as a unique and directed killer-victim tie on a particular day at a particular location – thus from tie, date, and location parameters. Were one to aggregate over one or another parameter the resolution of events would be reduced beyond what is necessary for analytical tractability. We use the finer resolution meaning of violent interaction. As an illustration of the basic idea, consider the murder of Robert Jameson, an Ulster Defense Regiment (UDR) man, on 17 January 1974 in Trillick by (a) member(s) of the IRA as a tie between the IRA and the UDR,

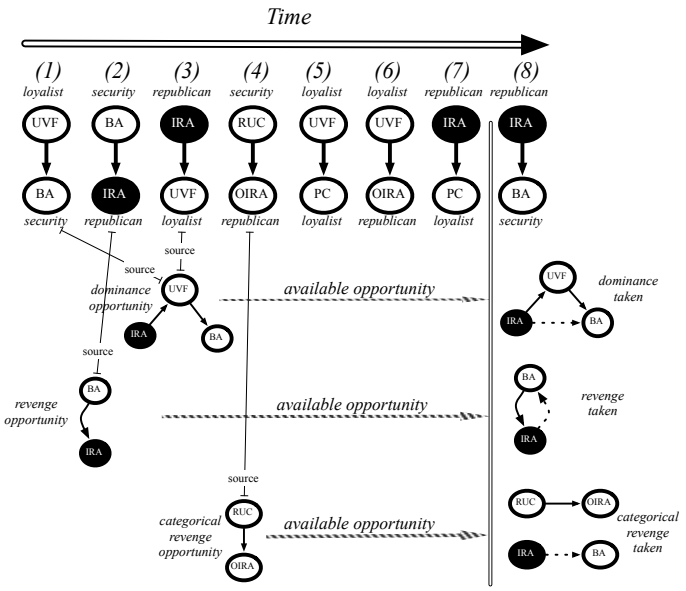


Fig. 5-- Opportunities (solid edges) emerging out of killings. Focal group is the Irish Republican Army (IRA), in solid node. IRA→BA is the focal killing.

or IRA→UDR. Here, an event is the killing of a single affiliated individual on a given day at a particular place. [2]

We apply the tie, date, and location parameters discussed above (to transform deaths of individuals to killing acts), which leaves 2294 killing interaction events. These are both our units of analysis and the basis for all further analyses. From these acts, one can count twenty-four groups as active, to some degree, throughout the Northern Irish conflict. Eighteen of these groups are perpetrators of violence, and twenty are victims -- thus not all perpetrating groups are receivers and not all receivers are perpetrators. All analysis to come is undertaken at the level of the killing act, and thus interpreted at the level of the *perpetrating* group. To avoid burdening the reader with interpreting the action of the less active groups, we aggregate the less active groups into "Other" groups, doing so by their political identities. Our analysis is based on ten groups, with three of those groups being "Other Loyalist", "Other Republican", and "Other security".

[2] An issue in coding is related to problems encountered by groups in their observations. A basic claim is that, by and large, the acts of violence in Northern Ireland were observable to the population of acting groups. But social life is not so clean. There is a complication to this claim which needs to be reflected in our coding of the perpetrators of the acts of violence. The first is that some acts of violence are intentionally mis-signed by groups under alias covers. From our estimation, there are thirteen such alias names that groups have used to conceal their true identity. The "Catholic Reaction Force" and the "People's Liberation Army" were in fact the Irish National Liberation Army (INLA), for example. This creates a dilemma for the analyst. If there is no local knowledge regarding the true identity of perpetrating groups, then such aliases must be treated as bona fide and distinct. If, however, there is a reasonable amount of local knowledge regarding the real identity of the perpetrator who uses an alias, it would be distorting to treat such groups as bona fide and distinct. We attribute mis-signed killings to the *actual* named groups that are more commonly known. Thus, we attribute the violence perpetrated by the "Protestant Action Group" and the "Red Hand Commando" to the UVF, for example. This will leave unanswered a residual question: do groups behave differently when they sign killings with an alias? It may be similar to an author who writes serious books under one name and Westerns under another. This is an important question regarding the use of identities for action but we bracket it for the present project so as not to confound the analysis.

Groups and identities

Figure 7 displays the distribution of perpetrators and victims of violent acts throughout the period of conflict. It is immediately noticeable that there is a great deal of heterogeneity in perpetration and victimization between groups. Seven of the groups account for 97% of the overall violence, and three of those nine (the IRA, the UVF and the British Army) account for 72%. The fact that there is heterogeneity in perpetration becomes a problem to be explained. One such possible explanation is, as indicated above, the differences in groups‘ organizational capacities to mobilize the necessary resources for killing. As also indicated above, this explanation makes sense only under the condition that the killings that compose the conflict are equivalent and are unrelated to their more particular event-histories. Instead, we will account for this heterogeneity within our framework by directing attention to the opportunities that groups pursue.

Before we move to this question, we consider the degree to which *identity* can be a mechanism for killing in Northern Ireland. As we suggested above, civil violence is often seen as motivated by class, sectarian and/or ethnic ties. We consider whether this is true for the Northern Ireland conflict by displaying in table 1 the identity-based pattern of the killing. We aggregate groups into their identity-affiliation, and condition the perpetration of killing by the identity of the group who receives it. For example, all of the killings perpetrated and received by the IRA are aggregated into the the Republican category, as are the INLA’s and the Official IRA’s; in the same way, all of the killings perpetrated and received by the UVF are aggregated into the Loyalist category, as are the UDA’s and all other Loyalist groups. As one would expect from an identity-based explanation, killings structure across identities. These findings suggest that from a probabilistic standpoint, in Northern Ireland, Security and Loyalist forces target Republican groups, and Republican groups target Security and Loyalist forces. Only about one-sixth of the Republican killings and one-fifth of the Loyalist killings do not fit neatly into this explanation.

The central problems with identity as a mechanism are logical, and two-fold. First, for identity to explain the beginning and end of a period of conflict -- and so its duration -- would require that identities be salient in the earlier period and less so towards its end. Evidence, however, speaks to the exact opposite result (Kalyvas 2005). Conflicts tend to begin on schedules that are indifferent to the salience of identities and only with ongoing killing do identities become increasingly salient. So identity could not explain the end of violence. Second, for identity to explain particular acts of violence would require that identities be salient at particular moments rather than others. But identities are fairly constant over short periods time and so one could not account for the timing of killings with respect to such identities. Thus, the degree of parsimony achieved by an identity-based explanation for violence does not meet most logical requirements for an explanatory theory, requirements of variability both over long *durées* to explain the onset and cessation of killing, and over shorter *durées* to explain the particular acts of killing that compose the conflict as a whole.[3] The fact that identity alone does not make logical sense as a mechanism for violence does not negate the fact that it might matter as a categorical revenge opportunity. We turn now to the distribution of opportunities for the Northern Ireland conflict.

OPPORTUNITIES IN NORTHERN IRELAND, TAKEN AND MISSED

Figure A.2 in the Appendix displays the sequences that are extracted using the strategy of analysis outlined in the Appendix. It is natural to want to view these sequences longitudinally, but the experience of actors is cross-sectional: opportunities for particular outcomes are available to actors in the cross-sections, across the multiple sequences in which they are embedded. At every moment, every actor will have *some* amount of opportunity *prior* to every next interaction. There will, in other words, be a temporal distribution of opportunity for every actor. *Within this distribution are both the opportunities taken and missed by the action and inaction of actors at subsequent moments.* A mechanism of

[3] Overlooked is the logical possibility that the structure as observed in table 1 can be obtained also by thinking of identity not as a *creator* of killing ties, but as an *inhibitor* of them. It is

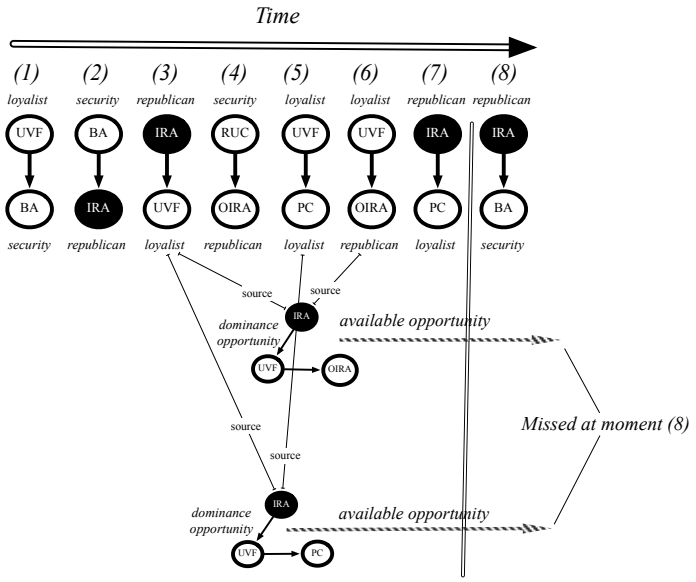


Fig. 6-- Missed opportunities. Two focal actors, the British Army and the Ulster Volunteer Force, observe different opportunities for killing over the exact same moments in time. There is no focal killing because these opportunities just happen not to lead to any killing by the focal group.

interaction is the opportunities that are more likely taken, and so increase the probability for an actor to act. Opportunities at any moment are group-specific, and so too will be the mechanisms for killing. Some groups might pursue one type of configuration while others another type and so not all opportunities are necessarily mechanisms for interaction. Thus, a mechanism appears in the relationship between opportunities and subsequent killings.

At the cross-sections of these overlapping sequences are the temporal distributions of the different types of opportunity. These distributions are shown in figure 8 where the solid line represents dominance opportunities; the dotted line revenge opportunities; and the dot-dashed line categorical revenge opportunities. The *y*-axes across the different types of opportunities and for each group are all the same, which reveals the heterogeneity of opportunity between groups -- on average, at cross-sections, and in the shape of the distribution over the duration of conflict as a whole. Thus, from figure 8, we have several things to note. First, groups differ in their average amounts of opportunity over the duration of conflict. One can see that the IRA, for example, has more opportunities of any given type than does the UDA, and on average, the UDA has more opportunities than does the INLA. It is perhaps important that a group's average amount of opportunity has no relationship with their level of perpetration. Consider, for example, that the UVF and IRA have considerably similar amounts of opportunity but the IRA kills more than four times as much as the UVF. Rather, the number of opportunities of any type available to a group is a function of the group's embedded position within sequences of past acts of violence. This heterogeneity of opportunity should matter only to the degree that groups regularly take one type of opportunity over another. Thus, the fact that the IRA has a high number of dominance opportunities matters for understanding killing only if the IRA regularly pursues dominance, in which case they would regularly have reasons to kill.

Second, figure 8 reveals some obvious correlation between the temporal distributions of opportunity for any group. For the IRA, the shape of the distributions for dominance, revenge and categorical revenge are quite similar, rising and falling around the same moments, but at varying rates. This is true not just for the IRA, but for the other groups as well. This suggests that the same killing acts observable to groups' in their pasts produce multiple types of opportunities, not just one type of opportunity. Third, some groups have opportunities only at particular moments in time with a high amount of temporal variability. A

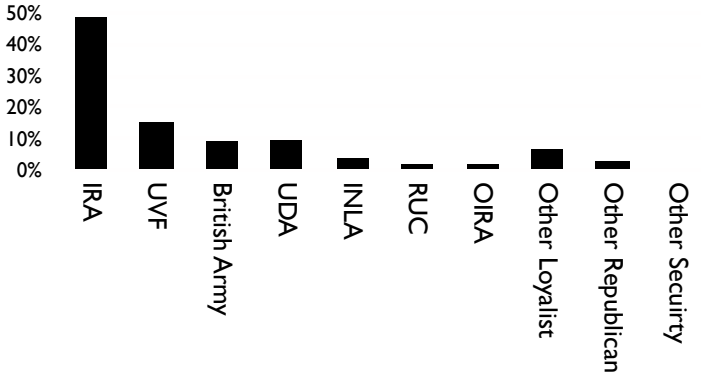


Fig. 7-- Distribution of perpetrators.

positive relationship between a type of opportunity and subsequent killing would suggest that given two moments in time with different amounts of opportunity, the group is more likely to kill at the moment with the higher amount of the opportunity. Finally, the most obvious result revealed from figure 8 is at the cross-sections, where multiple groups have some opportunity, the same group has multiple opportunities of any given type, and the same group has multiple types of opportunity. This matters, as we will suggest below, to the degree that groups take particular opportunities. This results provides the conditions under which there can be *multiple* ways in which a *next* killing can happen, not just one way.

As already outlined above, to take an opportunity, groups must kill *when* they have an opportunity to achieve a configuration outcome, and they must target a group with whom they can achieve that outcome when they kill; otherwise they miss the opportunity. The framework implies two equations for one to discern mechanisms for killing from opportunities. The first provides candidate mechanisms, and the second, if consistent with the first, provide confirmation about the mechanisms.

The timing of killing and orientation to opportunities

The first speaks to the question of why actors kill *when* they kill rather than other points in time. Actors act at many moments over the duration of a period of conflict, but not all moments. A basic but useful tautology is that, for every group, every moment of conflict is one in which they perpetrate killing or do not perpetrate killing. If they do not, then some other group does. Identifying *when* groups kill provides some information regarding their propensity for violence, and allows one to test for how the opportunities that precede each of these acts can play a role in explanation. More formally, for every group:

$$y_{gm}\begin{cases}1 \text{ if group } g \text{ perpetrates killing at moment } m\\ 0 \text{ otherwise}\end{cases}$$

where g is one of the named groups identified above (e.g. the IRA, the British Army, the UVF) and m is one of the moments of conflict, t = 1, 2, 3, ... 2294.[4] One can think of the number of opportunities of a given type that a group has at any moment as an independent variable. A group's killing at a particular moment should, to some degree, be related to the opportunities available to them prior to

[4] In themselves, these acts of violence might be explainable with respect to more particular and exogenous event-histories. But, as already stated, if every act has a distinct story then the continuation of violence would be highly contingent at any moment.

Table 1. Categorical structure of the killing over the duration of conflict. The sending of killing is conditioned on the receiving of killing. Frequencies are in parentheses.

		Receive killing		
		Security	*Republican/ Catholic*	*Loyalist/ Protestant*
Send killing	*Security*	0.02 (6)	0.85 (227)	0.13 (33)
	Republican/ Catholic	0.58 (754)	0.16 (209)	0.26 (344)
	Loyalist/ Protestant	0.02 (14)	0.78 (562)	0.20 (145)

that moment. This is specified for every group with types of opportunities as covariates. In particular, a bivariate model is specified for every group as:

$$y_{gm} = \alpha_g + \beta_g O_{gm}$$

where α is the group-level intercept of acting at any moment, β is the slope-parameter, and O is the number of a type of opportunity available to the group prior to particular moments.

In figure 9, we provide a first glimpse (for every group and each type of opportunity) of killing at any moment conditioned on prior available opportunities, by displaying their bivariate relationship. We smooth the relationship with lowess, or locally weighted, regression for each group. The solid line represents dominance opportunities; the dotted line revenge opportunities; and the dot-dashed line categorical revenge opportunities. Inspection of figure 9 suggests that opportunities for dominance seems to increase the probability for killing at any moment for the IRA, UVF, UDA and Other Loyalist. Opportunities for revenge seems to increase the probability for killing for the IRA, British Army, UDA, INLA, and Other Republican. Opportunities for categorical revenge seems to increase the probability for killing for the British Army, the INLA, and the RUC. But groups observe multiple opportunities at the same time, and multiple types of opportunity -- even over the moments in which they do not kill. One requires multivariate analysis in order to mediate between the types of opportunities that groups take with the timing of their killing, which will allow one to discern the partial relationship between opportunity and killing. The multivariate model is a logistic equation, as follows:

$$y_{gt} = \alpha_g + \beta_1 * DOM_{gt} + \beta_2 * REV_{gt} + \beta_3 * CATREV_{gt}$$

where α is the group-level intercept, *DOM* is the number of dominance (or transitive) opportunities that group *g* has at moment *m*, *REV* is the number of revenge (or reciprocity) opportunities

that group *g* has at moment *m*, and *CATREV* is the number of categorical revenge opportunities that group *g* has at moment *m.* The model is specified separately for each group.[5]

We need some inference around these relationships to discern which opportunities systematically induce killing. If groups regularly take a particular type of opportunity, then groups should be more likely to act to kill when they have more opportunities of a particular type than expected by chance alone. Whereas with independently sampled actors one can make inference around these parameters analytically, here, the units of analysis are *actions*, and their *inter*dependence is the central problem to be explained. This question definitionally violates a basic regression assumption -- the independence of observations -- so conventional tests of significance are inappropriate and a distribution around the observed logistic parameter cannot be derived analytically. Instead, we use a permutation test to derive an exact distribution of the logistic parameter across the three opportunity types. Killings are *temporally* ordered, and so their permutation would preserve *how much* groups kill but would randomly shuffle *when* they kill -- an appropriate strategy considering that at issue is the timing of killing. The multivariate logistic parameter is calculated with each randomized permutation of the moments in which groups kill. We preserve the observed temporal distributions of opportunity, and so the number of opportunities that groups actually observe prior to every moment of killing.[6]

We direct attention to figure 10 which reports the results from this procedure. The rows are the groups. The columns are the three types of opportunity. Each row is a separate equation for each group. Each cell is the distribution of the logistic parameter produced from 1000 random permutations of the moments in which groups kill. The symbols imposed on the distributions show the observed parameter located on the distribution obtained from repeated random permutations. The diamonds are greater (or less) than two standard deviations above (below) the mean. The circles have a central tendency and so are not significant. We pay attention to the parameters that are greater than expected by chance alone.

By answering when groups are more likely to kill, i.e. following which opportunities, the results in figure 10 provide candidate mechanisms to answer how killings produce subsequent killings There are five things to note. First, there are more groups who kill when they have dominance opportunities than groups who have opportunities for revenge. This alone goes counter to our basic understanding of how violence begets violence. Second, two groups, the IRA and the British Army, regularly kill when they have revenge opportunities. In no conflict do security forces ever claim to pursue revenge, but actions speak louder than words -- as one can see here. Third, only the timing of killing by the IRA is related to *two* types of opportunity. Fourth, only the Irish National Liberation Army regularly engages in killing when they have categorical revenge opportunities. Identity then is not as crucial to frame killings as we often believe. Fifth, all of the heterogenous groups that we have collapsed into "other" categories are not doing anything. Which is exactly what we would expect them to be doing (or not doing) since they do not kill that much anyway. They act irregularly and unsystematically because, under our theory, they do not know

[5] At first glance, multinomial logistic regression seems like the more appropriate modeling strategy than specifying a separate equation for each group. But it is inappropriate because the baseline category would be uninterpretable by construction. To see this, take any focal group, *g*, and identify the moments in which they kill. Code these moments as 1 and all other moments as 0. Take another group, *g'*, and identify the moments in which they kill. Code these moments as 1 and all other moments as 0. Do this for all *g* groups save one, the baseline group. In other contexts, the baseline would be the 0 value. But here, 0 means *any group besides the focal group*, and so is not exclusive to one group. This occurs as a byproduct of opportunities being group-specific, flowing over *both* the moments in which any group perpetrates *and* does not perpetrate killing.

[6] An alternative strategy for this test could be to randomly permute killings, recapture opportunities from the randomly permuted killings (which would be different than the observed opportunities), and only then test the parameter distributions. If we were to do this, both sides of the equation would be random rather than simply the right-hand side, which would provide an unfair test of the parameters. In any case, the question here is not whether the observed opportunity distributions can be obtained randomly, but whether the timing of killings is related to the levels of particular types of opportunity. Thus, preserving the observed opportunity distribution and permuting the moments of killing is the appropriate strategy.

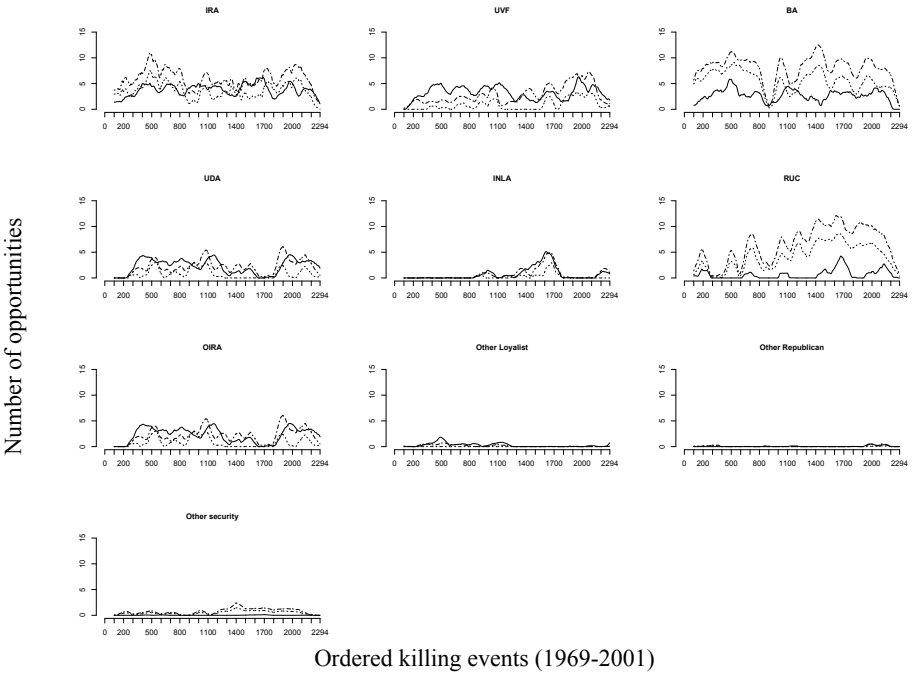


Fig. 8-- Temporal distribution of opportunity. Solid line are for dominance opportunities; dotted line are for revenge opportunities; and dot-dashed line are for categorical revenge opportunities.

which opportunities to take.[7] Some further evidence that the opportunities available to groups influence the timing of their violence is that the intercept for all groups (save one) is less than expected by chance. If a group has no opportunities of any type, the likelihood that they will kill at any moment is less than expected by chance.[8]

In short, figure 10 shows from which types of opportunity killing is most likely to follow, and so which opportunity for a group is a likely mechanism for killing. There are eight candidate mechanisms. In addition these results indicate which opportunities are definitively *not* mechanisms. The IRA does not, for example, kill when they have categorical revenge opportunities, and the British Army does not kill when they have dominance opportunities. Properly timing killing is a precondition for taking an opportunity, but targeting the right other groups -- groups with whom they have opportunities to achieve outcomes -- is also required. We now turn to this question.

The targeting of killing and taking of opportunities

Whereas the first equation implied by our framework speaks to the problem of why groups kill when they kill (and so provides candidate mechanisms), the second equation speaks to the question of why groups kill *who* they kill when they kill (and so should provide confirmation about these candidate mechanisms). This question of targeting can be answered by trying to understand more directly how regularly groups take an opportunity and so achieve a particular outcome. The taking of an opportunity involves achieving

[7] We are discounting the "Other Loyalist" because in results not reported here "Unknown Loyalist" drives this finding, which does not make substantive sense.

[8] Analysis not reported here shows that these profiles are stable over time.

a configuration for which one has an opportunity. With killing, groups sometimes achieve but sometimes do not achieve a particular configuration outcome, which depends on their choice of target. More formally, for every configuration:

$$y_{cm}\begin{cases}1 \text{ if the group who kills at moment } m \text{ achieves configuration } c \\ \text{(for which they have an opportunity)} \\ 0 \text{ otherwise}\end{cases}$$

If groups kill at a particular moment to achieve some outcome, they should target other groups with whom they have the opportunity -- and so achieve that outcome with a high degree of probability. In table 2, we report the proportion that groups achieve the various configuration outcomes when they have at least one opportunity to do so. There is heterogeneity between groups. The IRA, for example, achieves a dominance configuration 31% of the time when they have at least one opportunity to do so, compared with 19% for the UVF and 39% for the British Army. While the British Army is the most likely from these three groups to achieve dominance, we have established above that they do not, with any sort of regularity, kill *when* they have dominance opportunities. Thus, dominance cannot be a mechanism for killing for the British Army, and the more relevant comparison is between the IRA and the UVF.

Our goal, in general, is to figure out which opportunities, if any, are mechanisms for killing. This requires us to make statistical inference around parameter estimates and to pay particular attention to the eight candidate mechanisms, as identified from the results in figure 10. The probability of taking an opportunity with proper targeting should be greater than expected by chance. One can make inference around these proportions with a "random choice" model, whereby observed targeting choices are compared to randomly selected targets at any moment. Thus, to make inference about the achievement of configurations, we preserve *when* groups kill but randomize *who* they kill at any moment.

In figure 11, we report these results for the eight candidate mechanisms. Each of the eight box-plots are composed the killer at every moment of killing. **Describe the box-plots.**

The results suggest that of the eight candidate mechanisms, only five of the opportunities are taken with any regularity, and so are mechanisms for the continuation of violence: the IRA is greater than expected by chance to take dominance and revenge opportunities; the British Army takes revenge opportunities; and the RUC and Official IRA take dominance opportunities. Strangely, while the UVF is more likely than expected by chance to kill at moments when they have dominance opportunities, they are no more likely than chance to take those opportunities when they kill. The same is true for the UDA with respect to revenge opportunities and the INLA with respect to categorical revenge opportunities.

These two figures suggest that in Northern Ireland there are only five mechanisms for killing. By pursuing two types of opportunity, the IRA almost always has a reason to kill, which accounts for their dramatically higher rate of killing as shown earlier in figure 7. These results demonstrate mechanisms for killing in large-scale conflict that have never before been seen. Now that we know which of these opportunities are mechanisms, we can look at their overlaps in time in order to understand the *continuation* of killing more directly. Our expectation is that we should not see any moment that has no opportunity for new killing -- except for when conflict becomes fragile. More strongly, we expect to see *multiple* mechanisms at every moment which would enable conflict to continue from multiple ways for a next killing to happen. In this way, mechanisms are pathways to violence. We turn to this question.

Fecundity of moment, the continuation of killing

In figure 8 above, we showed that the exact same moment in time is composed of multiple opportunities. This multiplicity is reflected in the fact that multiple groups have some opportunity at the same moment, any one group has multiple opportunities of a given type, and any one group has multiple types of opportunities. Then, in figures 10 and 11, we showed that groups take advantage of some of these opportunities with some degree of regularity. The opportunities that groups take are the mechanisms for killing. Now that we have identified which opportunities are mechanisms, we are in a position to answer why conflict continues over the duration that it does. It is possible to combine these findings to visualize the simultaneous mechanisms for violence in time.

There are five opportunities that are mechanisms for violence. In figure 12, we report their simultaneous temporal distribution in three-dimensions. The *x*-axis is over the duration of conflict, the *y*-axis is the number of opportunities for the given type, and the *z*-axis identifies the five types of opportunity that are mechanisms. As figure 12 reports, historical moments are variably fecund in time. Mechanisms are pathways to violence, which follows from the fact that there are multiple opportunities that groups take *that flow over the same moment in time*. This is not without a fundamental theoretical implication: it implies that most historical moments are not so fragile as to be contingent on one course of action; historical moments can be composed of multiple ways in which a *next* killing can happen. It is for this reason, we suggest, that conflict continues. This fecundity of temporal moments requires taking into account a formal distinction between on the one hand, the groups that kill at any moment from, on the other hand, the groups that could have killed at that same moment, referring to the degree to which a next killing can take place independent of killing by any one group.

When a moment is more fecund, in general its continuation is less problematic than when it is more barren, when continuation is at greater risk of failure. Moments that are barren of pathways to new killing can also continue, but their continuation is more indefinite at an underlying structural level and more contingent on random actions. As shown in figure 12, the conflict in Northern Ireland -- and by an informal inference to other similar conflicts -- continues during moments where there are multiple pathways to violence, the pathways facilitating its continuation. In fecund moments, the inaction of one actor can be met by killing by another. In contrast, violence begins and ends when there are less pathways, which makes the continuation of violence more contingent and fragile.[9] Violence ends, in other words, when there are no more pathways to violence, when there are no more opportunities and when groups no longer have any reason to kill.

Discussion

Periods of civil violence tend to last a long time. Pervading most studies of long-lasting conflicts is a presumption of interest and motive as given from exogenous social cleavages, such as identity and class. This presumption makes it so that such things as political change, social and economic inequality, and crises of legitimacy are thought to be the "real" forces of history, where killings are presumed to be a form of protest. But if one thinks of motive as arising out of cleavages one is left with an unsettling puzzle: cleavages for the most part are time invariant. A theory that presumes motive as exogenous does not meet basic standards of what a theory of violence would require, which is temporal variability. Many conflicts tend to continue and end despite the fact that cleavages have remain unchanged -- or even more pernicious, become wider. This is a real problem for theorizing why killing occurs since the particular killings that compose a conflict are thought to be mere by-products of larger histories. The irony, in general, is that small-scale histories of killing (where more particular and interactional motives for violence operate) are missing from historical explanations of large-scale violence.

In this article, we focus more directly on acts and events to identify the endogenous mechanisms of killing, a dimension of violence that many scholars acknowledge but none have attempted to understand.

[9] An implication is that other temporal distributions of opportunity would lead to different durations of violence in chronological time.

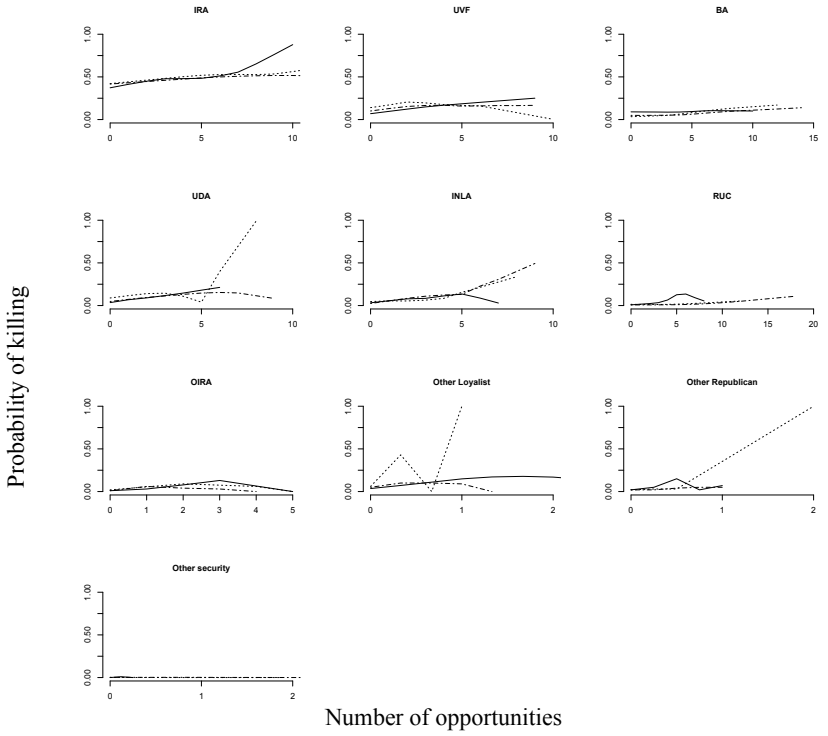


Fig. 9-- Bivariate relationship between prior opportunity and the probability of acting at any moment. Solid line are for dominance opportunities; dotted line are for revenge opportunities; and dot-dashed line are for categorical revenge opportunities.

We have identified the sources of continuation -- which operate at a previously elusive and lower level of social reality -- by answering how killings become related in unfolding but smaller-scale histories. Our analysis implements a recently developed strategy to capture interactional mechanisms in moments (Balian manuscript), a strategy that has wider appeal beyond violence. We argue that killing continues because of extant mechanisms for killing, mechanisms that arise from opportunities taken by groups to achieve configurational outcomes, such as dominance and revenge (but not what have called categorical revenge). Our explanation of particular killings and the continuation of killing occurs simultaneously with reference to these mechanisms. It might be an understatement to say that our study differs from existing approaches for explaining periods of civil violence.

Most sociologists describe a case so that their observations provide some insight on a wider array of cases not under immediate investigation. But claiming generality and showing it are two very different things. The difficulty of collecting fine-grained data on the killings that compose other conflicts prevents us from actually showing that across a wide array of cases and at different historical times one will see the same general patterns that we describe in this article. And so we have only looked at a single case, Northern Ireland (1969-2001). Of course, single-case or small-*N* studies are usually criticized by an influential group of scholars for not being generalizable (Kiser and Hechter 1998; etc).

Generalizability to other cases is not completely lost, however, and we can make some steps toward it. The scope of our argument is obviously limited by the current framework that discovers operative mechanisms for interaction where a variety of militarized groups can observe the killings of others. But these kinds of civil conflicts -- such as in Northern Ireland, and gang violence in Chicago, Los Angeles, and Rio de Janeiro -- imply two dimensions of variation, and so we can situate them in the context of

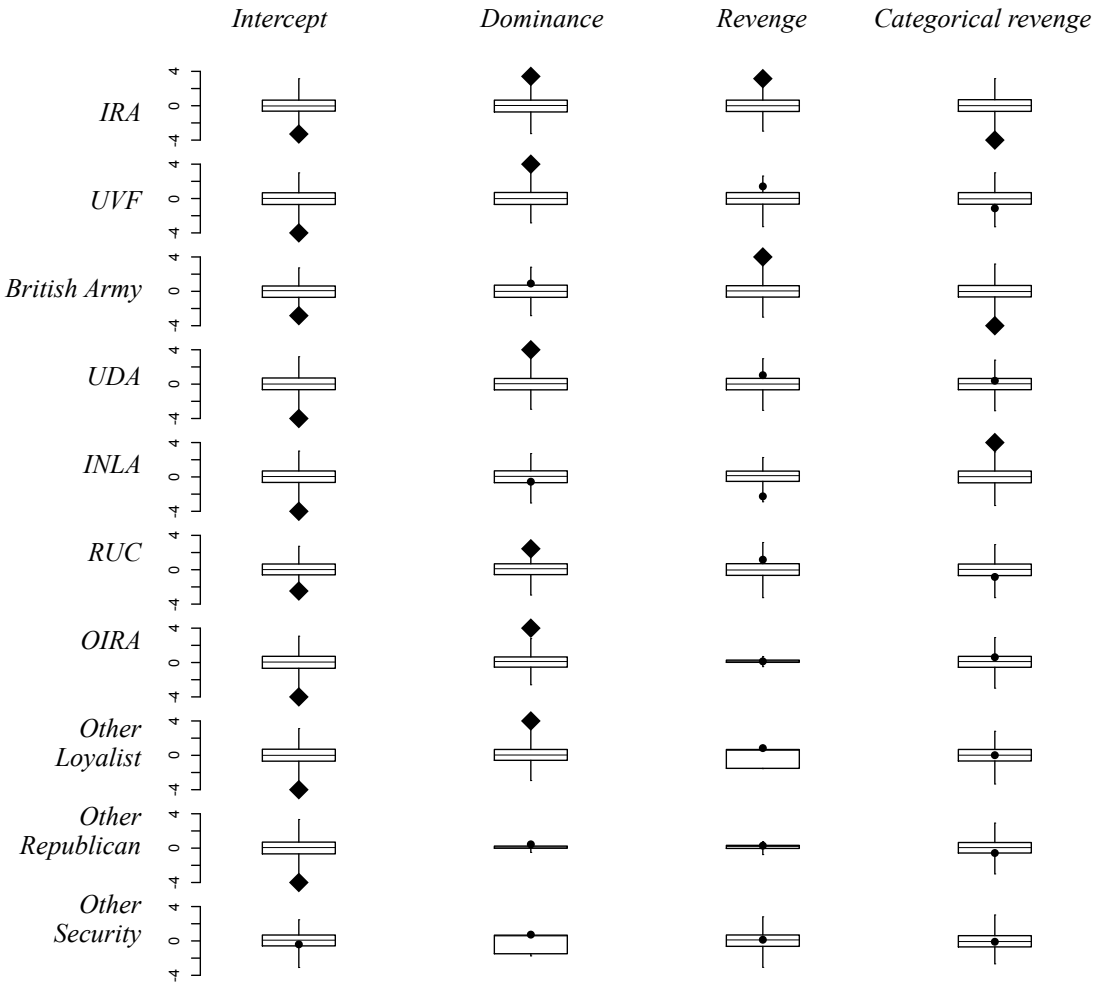


Fig. 10-- Timing results from permutation test. Box-plots are the standardized distribution of the logistic parameter from 1000 random permutations of the perpetrators of killing. Symbols imposed on the box-plots are the observed parameters. Diamonds are greater or less than 2 standard deviations above (below) the mean. Circles have a central tendency and so are not significant.

other conflicts for which our framework likely has less explanatory power. We can distinguish -- along two dimensions -- periods of civil violence. First, conflicts vary in the numbers of relevant actors that engage in or are engaged by violence. While individuals carry out the killing, the relevant actors tend to be formally organized groups or other loosely coordinated collectivities. Because conflicts are often thought to be expressions of identity and interest along extant social cleavages, there is a tendency to think of conflict as between only two groups: state versus non-state actors. But such conflicts are more rare than commonly believed and most civil conflicts have many more than two actors. In general, when the population of such groups is large (small), one can consider the period to be more (less) multisided.

The second dimension on which periods of violence vary is the degree to which the particular killings that compose the conflict are intentional interactions between tangible groups. It is commonplace to make sense of violence by alluding to its linguistic or communicative dimension – to claim, for example, that violence is a "response" to previous violence, or that violent groups only speak and understand the "language" of violence. But the fact that violence can be a form of communicative action obscures an

equally relevant fact that it is only a feature for conflicts where the perpetrators of killing are regularly observed. That is, violence *becomes* interactive primarily when the perpetrator of killings become known: acquiring a signature, killings transform into messages between groups in an interacting population, where groups communicate their underlying motives. Thus, an important implication is that we consider a killing to be interactional regardless of observational intent, but only in terms of its overall observability. One can think of the ratio of signed to unsigned killings throughout an entire duration as relevant: the more (less) it is, the more (less) can the violent conflict be considered interactive.[10]

In figure 13 we cross-classify these two dimensions, and along this classification the conflict in Northern Ireland falls neatly into the top-right quadrant. This makes it so that our findings are relevant to other similar cases of violence, such as the conflict in Somalia (1991-), Balkans (1996-1999), Lebanon (1975-1990), Guatemala (1960-1996), Sierra Leone (1991-2002), and Angola (1974-2002), among others.[11] One can populate the three other cells for other types of conflicts. One type of conflict are those where killings are highly interactive but there are few relevant actors. **Such conflicts include the Hatfield/McCoy feud (1878-1891), or the Pleasant Valley war (1882-1892). Name conflicts.** The exact distribution of civil conflicts along these dimensions requires a careful reading of their respective histories -- which is beyond the scope of our efforts in this article. The relevance of our findings is less straightforward for conflicts that fall at a point outside of the top-right quadrant of figure 13.

While questions of scope are important, achieving generalizability often comes at a cost. The current state-of-the-art on civil violence employs cross-national large-*N* and temporal data on conflicts to understand conflict onset -- and so is generalizable in the strict sense -- but these more recent studies do not resolve the problems of temporality and explanation of killing that we have identified. We are more strongly wedded to another principle, identified by Max Weber, that explanations be adequate on the level of meaning -- that is, to correspond to the experience of relevant actors (though not necessarily their articulation of that experience). We have achieved this through our strategy of analysis that captures the contemporaneous opportunities observed by groups prior to every next killing in Northern Ireland. For one to undertake the kind of analysis in this article for other periods of civil violence requires fine-grained data on ordered killing events; rates of killing will not suffice. Thus, the trade-off between generalizability and phenomenological adequacy is not necessarily zero-sum, but is largely conditioned on the availability

[10] The question of scope is relevant not only to other cases and kinds of conflict, but also to other types of social and interactional phenomena, such as romance. On the surface, there seems to be no direct link between violence as a form of communicative action, and other more benign types of interaction, such as a kiss. The former is usually thought of as horrific, brutal, and a measure of last resort, whereas the latter as a normal and romantic gesture signifying a mutual bond. The former is negative, the latter positive – and as seeming opposites, it is difficult to see how they could have anything in common. It is thus not surprising that researchers in the field of violence operate as though there is no such link. But conflictual and more mundane forms of interaction share fundamental similarities (Simmel 1955), and other social settings like periods of civil violence can also be distinguished by the degree to which they are multisided and interactive.

[11] In this top-quadrant, a further distinction can be made between, on the one hand, conflicts where the chronological order of killings is also the order in which killings are observed from, on the other hand, conflicts where the ordering of observation is not the same as the order in which killings take place. For the latter type of conflict, which are also within our scope, one would have to be more careful to distinguish how opportunities are pieced together from violence in actors' pasts. In particular, every killing would be doubly-indexed, first, in terms of the moment in which it occurs, and second, in terms of the moment in which it becomes observed.

Table 2. The proportion that groups take opportunities, and achieve configurations, when they kill at moments when they have at least one opportunity to do so.

		Type of configuration achieved		
		Dominance	*Revenge*	*Categorical revenge*
Group	*IRA*	0.31	0.27	0.86
	UVF	0.19	0.07	0.78
	British Army	0.39	0.33	0.88
	UDA	0.07	0.03	0.80
	INLA	0.28	0.24	0.78
	RUC	0.71	0.35	0.81
	OIRA	0.32	0.4	0.70
	Other Loyalist	0.08	0.14	0.78
	Other Republican	0	0.4	0.67
	Other Security	0	0.25	0.75

of fine-grained data on civil conflicts. [12]

Current conflicts raging in various parts of the world -- including American involvement in Iraq and Afghanistan -- provides an unsettling reminder that civil violence continues over long durations. Durations of violence are marked by killings that compose it, but for most observers the end of violence can be identified with certainty only when a reasonable amount of time passes *without* any killings – that is, with prolonged peace. We think this is a problem of perception. Periods of violence are chronically punctuated by moments of peace -- with days or weeks passing without any killing -- and so looking at conflict from any perspective other than from the groups engaged in it one always seems to be at its end. Unless one knows something that groups responsible for killings know, it is impossible to know whether one is observing the end of a conflict or some moment in its middle. One often hears, for example, about past "fears of violence" being renewed in the wake of new violence, as if a new killing is restarting a conflict that had already ended. Such "fear", of course, refers to the anticipated fallout that violence often begets further violence. But one cannot know the probability that this is the case without having access to groups' experiences and motivations at that moment -- and so the overall fecundity of that moment. If one has such access, one can distinguish between the end of violence from the last acts of violence without having to wait for a prolonged peace -- even if the last of the violence has not yet come to pass, which obviously has more than academic significance.

[12] While there is technical difficulty in generalizing from single cases, our study differs from most single-case studies in an important way: ours focusses on mechanisms and so bridges the conventional qualitative/quantitative distinction that has been a distraction in many debates about historical sociology. Thus, generality *between* periods of violence should not be confused with the generality of explanation of killings *within* the Northern Ireland case. Because our focus is on mechanisms, while our account is idiographic with respect to cases of civil conflict, it is in fact nomothetic with respect to the killings that compose our particular case. Our reference to the single case of violence is at the same time both a technical weakness but also a strength.

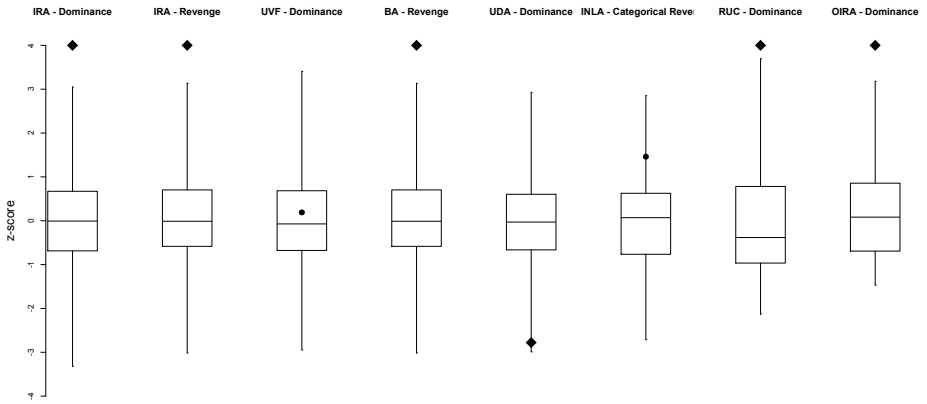


Fig. 11-- Achievement of configuration outcomes for the opportunities that induce non-random timing of killing.

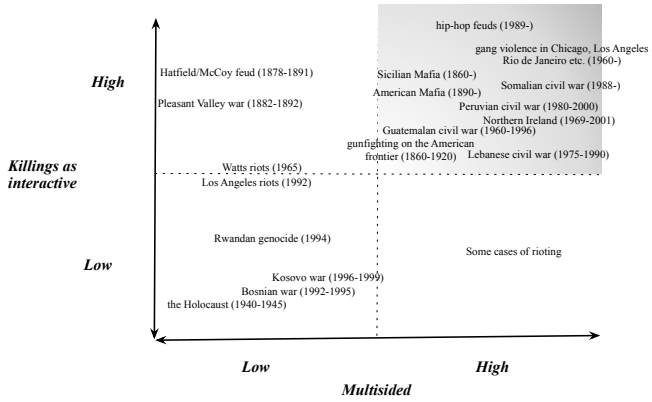


Fig. 13-- Two dimensions of conflict and our scope conditions.

DISCUSSION

In this article, we have accounted for the endogenous mechanisms of large-scale violence. Killings become concatenated together in sequences of other killing and confront groups in their contemporaneous moments. These arise as opportunities to achieve configurational outcomes for groups In doing so, we have addressed a neglected part of violence.

+Scope conditions
+Exogenous can be built into this framework, but this framework cannot be built into the standard exogenous framework
+As it is for any analysis about conflict, the analysis should answer questions about strategies to intervene to end conflict. The answer is exceedingly simple: remove groups, especially state actors, since they are the ones who can be most readily amenable to political influence. Removal of groups removes opportunities

CONCLUSION

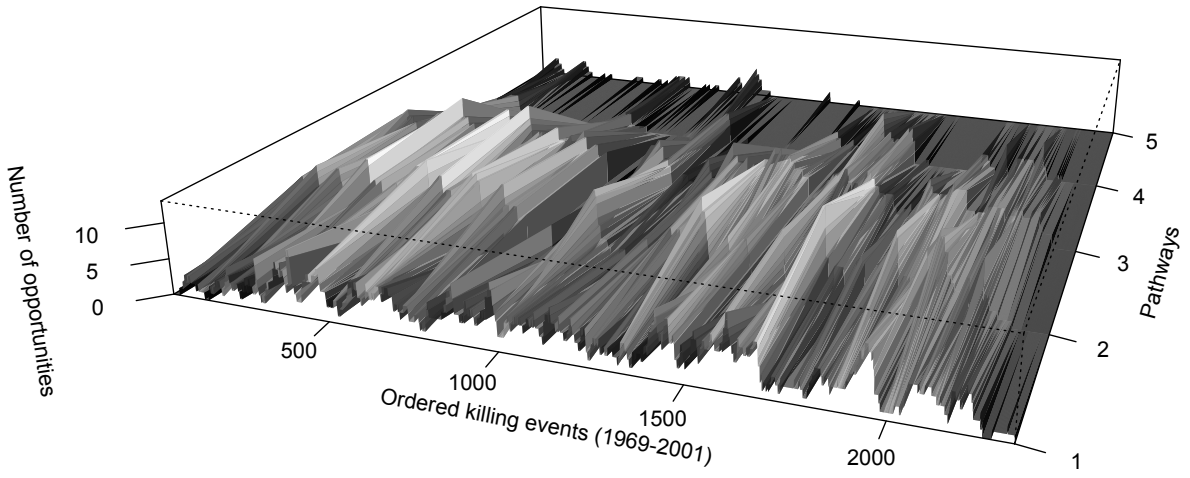


Fig. 12-- Simultaneous temporal distribution of pathways over the duration of killing in Northern Ireland.

+ Summary