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Rational choice and the political bases of changing Israeli counterinsurgency strategy[1]

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Abstract

Israeli counterinsurgency doctrine holds that the persistent use of credible threat and disproportionate military force results in repeated victories that eventually teach the enemy the futility of aggression. The doctrine thus endorses classical rational choice theory's claim that narrow cost-benefit calculations shape fixed action rationales. This paper assesses whether Israel's strategic practice reflects its counterinsurgency doctrine by exploring the historical record and the association between Israeli and Palestinian deaths due to low-intensity warfare. In contrast to the expectations of classical rational choice theory, the evidence suggests that institutional, cultural and historical forces routinely override simple cost-benefit calculations. Changing domestic and international circumstances periodically cause revisions in counterinsurgency strategy. Credible threat and disproportionate military force lack the predicted long-term effect.

Keywords: Low-intensity warfare; strategy; counterterrorism; Israel; Palestine; Middle East

Introduction

This article examines the impact on Israeli counterinsurgency policy of Israeli deaths caused by Palestinian insurgents. Specifically, we analyse how the frequency of Israeli killing of Palestinians responded to the level of Palestinian killing of Israelis between 1987 and 2007. Leading strategic thinkers on the Israeli side have generally argued that Israel's response to Palestinian violence should be, and has been, disproportionate. Nevertheless, using data spanning this recent 21-year period, we demonstrate considerable variation in Israeli reaction to Israeli deaths caused by Palestinians. We categorize responses into three types: 'normal', disproportionately severe and disproportionately mild.

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Placing these variations in political context allows us to draw up a short list of factors likely responsible for influencing change in Israeli reactions to Palestinian violence and the strategic thinking that underlies them.

Our findings have important theoretical implications. Most researchers argue that the Israeli state typically behaves rationally in a narrow sense: the severity of attacks on its citizens and the anticipated decline in anti-Israel attacks determine the level of violence wielded by the state. In making this argument, analysts endorse the view of classical rational choice theory, in which narrowly defined cost-benefit calculations govern social action. In contrast, our findings suggest the value of moving beyond the strictures of classical rational choice theory by emphasizing how historical, institutional and cultural factors shape rationales for social action.

Rational choice and the problem of preference

Theoretically, the core of our investigation is influenced by the claim that 'widespread and/or persistent human behaviour can be explained by a generalized calculus of utility-maximizing behaviour, without introducing the qualification 'tastes remaining the same' (Stigler and Becker 1977: 76). For classical rational choice theory, tastes (or 'preferences', to use the now more common term) are similar among people and remain stable over time. Therefore, the explanation of any particular behaviour requires only the discovery of the utility-maximizing principle(s) governing it, not the discovery of the origins of preferences, which one may safely assume to be fixed. Ignoring preferences maximizes explanatory parsimony. Thus, classical rational choice theorists model criminal, marital, political and other forms of behaviour in simple market terms. They assume that the market is the only type of institution, paying no attention to non-market preferences because they regard the latter as trivial to the point of irrelevance (Becker 1976).

In contrast, critics of classical rational choice theory – sociologists, political scientists and economists among them – have sought to establish, *inter alia*, that preferences actually vary widely by institutional context and therefore require explanation in their own right (Granovetter 1985; North 1990). From their point of view, norms governing behaviour are embedded in historically changing social structures, and behavioural explanations that ignore the social embeddedness of norms are therefore incomplete. Although the revisionist account has made inroads in the study of political behaviour (Kiser and Bauldry 2005), classical rational choice theory still dominates much of the field. This is particularly true with regard to explanations of Israeli state violence due to low-intensity warfare, to which we now turn.

The doctrine of cumulative deterrence

Almog (2004–5) summarized the dominant Israeli perspective on counterterrorism as follows. When insurgents care little whether they are killed – when the promise of martyrdom may even incentivize them – deterrence is nullified. Consequently, Israel has found it necessary to adopt the doctrine of 'cumulative deterrence', which involves the simultaneous use of threat (deterrence) *and* disproportionate military force (compellence), and results in repeated victories that eventually wear down the enemy. The strategy involves

> a multilayered, highly orchestrated effort to inflict the greatest damage possible on the terrorists and their weapon systems, infrastructure, support networks, financial flows, and other means of support . . . [O]ver time these victories produce increasingly moderate behaviour on the part of the adversary and a shift in his strategic, operational, and tactical goals until there is a near-absence of direct conflict . . . and perhaps even a peace agreement. (Almog 2004–5: 6, 9)

Almog argues that, in recent years, Israel's application of the doctrine of cumulative deterrence in its conflict with the Palestinians has been demonstrably successful. By mobilizing an extensive network of collaborators, deploying advanced surveillance technology and constructing physical barriers to assault, Israel has been able to initiate pinpoint incursions, assassinate militants, intercept raiding parties, and destroy insurgent infrastructure to such an extent that the frequency of 'successful' suicide missions has fallen steadily from a high point of 60 in 2002 to 0 in 2009.

The doctrine of cumulative deterrence is deeply indebted to classical rational choice theory. It offers a calculus of utility-maximizing behaviour (e.g., two tit-for-tat retaliations in response to insurgent violence) that promises to eliminate nearly all conflict. It does not entertain the notion that decision-makers may seek to maximize utility using alternative rationales based on different preferences. Moreover, it has come to dominate Israeli strategic thinking concerning low-intensity warfare. According to one review of Israel's national security doctrine, 'to deter low-intensity conflict, Israel has consistently promised to retaliate disproportionately against terrorist organizations' (Rodman 2003: 117). Such observations could be multiplied at will (e.g., Yaalon 2007: 8; Eiland, quoted in Bronner 2009).

Numerous researchers provide evidence consistent with the doctrine of cumulative deterrence. For example, Berrebi and Klor (2006) showed that, between 1990 and 2003, right-wing governments were more successful than left-wing government in lowering the number of terrorist attacks against Israel because the former took a more aggressive approach to counterterrorism. Frisch (2006) demonstrated that, precisely after a variety of highly aggressive and innovative defensive measures became operational in 2002,

Israeli deaths due to terrorism plummeted. Similarly, Morag (2005) showed that Israel's creative, flexible, technologically advanced, intelligence-based and disproportionate approach to the Palestinian insurgency substantially lowered the terrorist threat in recent years. As a result, Israeli society became more cohesive and better able to cope economically. Domestic and international support for Israel increased, and domestic and international support for the Palestinian leadership declined. Finally, Jaeger and Paserman (2006; 2008) found uni-directional causality from Palestinian to Israeli violence between 2000 and 2005. In general, Israel reacted to Palestinian violence firmly. The higher the level of Palestinian violence, the stronger the Israeli reaction.

Despite such evidence, some analysts contest whether cumulative deterrence works as advertised. For example, Brym and Araj (2006; 2008; also Araj 2008) found that Israeli killings of Palestinians often motivate revenge, radicalization and growing solidarity on the part of the Palestinians (cf. Löwenheim and Heimann 2008). Hafez and Hatfield (2006) found that state-directed assassinations do not lower the rate of Palestinian attacks on Israelis. Kaplan and colleagues (Kaplan et al. 2005; Kaplan, Mintz and Mishal 2006) analysed the association between Israeli state-directed assassinations of Palestinian militants and Palestinian suicide bombings. They found that Israel's pursuit of less aggressive tactics (preventive arrests) had a greater effect on the declining frequency of suicide attacks than did its pursuit of more aggressive tactics (state-directed assassinations). In fact, they showed that an increase in the number of suicide bombings followed state-directed assassinations. Similarly, Maoz (2007) examined the use of limited force against substate actors from 1949 to 2006. He discovered that, in the long term, aggressive actions by Israel consistently failed to lower the frequency and lethality of enemy attacks and had adverse military and diplomatic effects.

Importantly, broad historical views like that of Maoz remind us that just four decades ago the Palestinians formed a politically atomized and marginal group, many of whose members identified their territory as a province of Jordan or a protectorate of Egypt (Halabi 1982). Arguably, Israeli policy, including attempts to implement the doctrine of cumulative deterrence, has contributed to the crystallization of a strong Palestinian national consciousness and the widespread demand by Palestinians for a sovereign state. Indeed, a substantial minority of Palestinians is now even more demanding. Hamas, founded in 1987, seeks to replace Israel with an Islamic fundamentalist state, and the Palestinians gave the party a majority of seats in legislative elections held in 2006. Given Palestinian radicalization over the long *durée*, one is obliged to conclude that, even if some short-term trends lend support to the doctrine of cumulative deterrence, broad historical tendencies cast doubt on its validity.[2]

From cumulative deterrence to shifting decision regimes

To assess further the validity of the doctrine of cumulative deterrence, we
obtained monthly data on Israeli and Palestinian deaths due to state and
collective violence between 1987 and 2007 from B'Tselem, the Israeli Infor-
mation Center for Human Rights in the Occupied Territories (B'Tselem 2008).
These data are widely regarded as reliable (Jaeger and Paserman 2006: 46). In
addition, thanks to Charles Kurzman of the Department of Sociology at the
University of North Carolina, we know they have a high level of validity.
Kurzman systematically analysed Thomson Reuters news reports to create
time series for Palestinian and Israeli deaths due to low-intensity warfare
(Kurzman and Hasnain 2010). For the period under study, he found a corre-
lation of 0.85 between the B'Tselem and Thomson Reuters data sets on Israeli
deaths due to Palestinian actions and a correlation of 0.80 on Palestinian
deaths due to Israeli actions.

Figure I uses the monthly fatality data to help us identify broad trends for
the period under study. Three features of Figure I stand out, the first two of
which support the predictions of the doctrine of cumulative deterrence. First,
to display the association between Palestinian and Israeli deaths clearly, we
employ two scales – the number of Israeli deaths on the left vertical axis, and

Figure I: *Monthly trends for Israeli and Palestinian deaths, January 1987–December 2007*
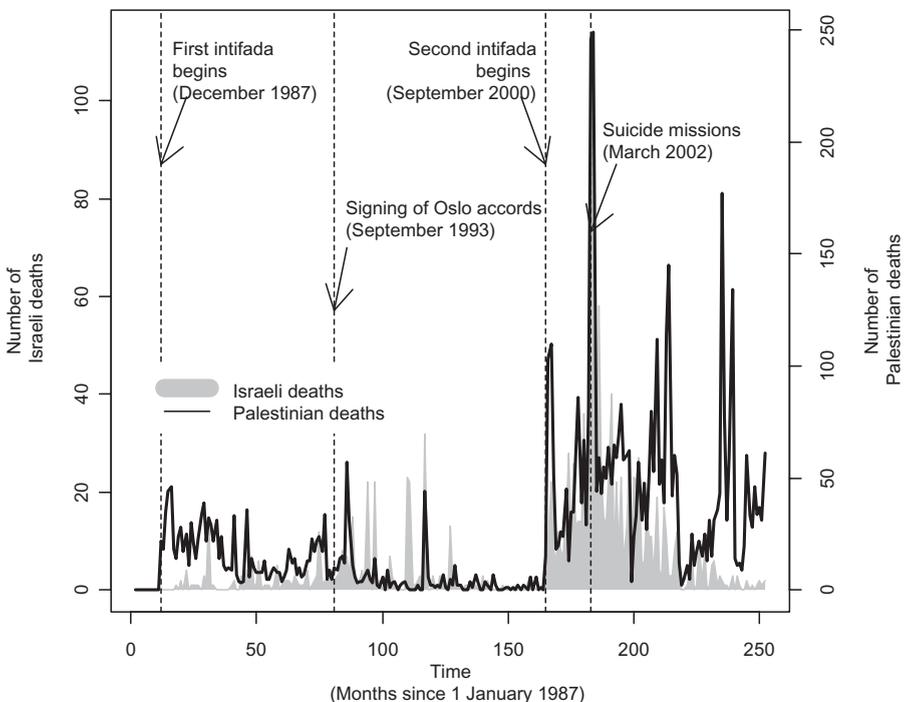
the number of Palestinian deaths on the right vertical axis – because the number of Palestinian deaths (signified by the solid black line) exceeded the number of Israeli deaths (signified by the shaded area) by a 4.3:1 ratio during the period under study. This ratio represents the 'normal' level of reciprocal violence between the antagonists. It puts a number on the doctrine of cumulative deterrence, which demands severe retaliation for the killing of Israelis by Palestinian militants.

Second, once we adjusted for the scale of deaths on both sides of the conflict, the trend lines for Palestinian and Israeli deaths tracked quite closely. In general, increases and decreases in Palestinian deaths in a given month were associated, respectively, with increases and decreases in Israeli deaths in the same month. The bivariate correlation (r) between the monthly number of Palestinian and Israeli deaths due to state and collective violence is 0.629. This result suggests that if retaliation for the killing of Israelis by Palestinian militants was usually severe, it was also apparently swift and measured. Again, this corroborates the doctrine of cumulative deterrence and its rational choice assumptions.

Third, however, we note the existence of periods in which the number of Palestinian deaths greatly exceeded the number of Israeli deaths. In such cases, the black line in Figure I lies far above the shaded area. We also note the existence of periods in which the number of Israeli deaths greatly exceeded the number of Palestinian deaths. In such cases, the shaded area lies far above the black line. Some of these extraordinary periods lasted as long as four or five years. The doctrine of cumulative deterrence ignores such variations in the pattern of mutual destruction. It leads us to expect severe, swift and measured demonstrations of Israeli intolerance for the killing of Israelis, not long periods of escalation and de-escalation. In short, the doctrine of cumulative deterrence fails to explain these anomalies.

Explaining the unexpected

We propose an alternative explanation of Israeli counterinsurgency strategy that takes into account both the regularities predicted by the doctrine of cumulative deterrence and the anomalous behaviour we have identified. It does so by abandoning the narrow rational-choice assumptions of the doctrine of cumulative deterrence and, instead, allowing for the crystallization of a variety of strategic rationalities under different political circumstances. Specifically, we maintain that Israeli decision makers periodically establish what Kuperman (2007) calls a new 'decision regime', a set of norms and conventions that guides their response to threat. A decision regime remains intact until changing domestic and international circumstances cause growing awareness of its non-viability. If the gap between expectations generated by an existing

decision regime and the political reality confronted by decision makers becomes intolerably large, the latter find it necessary to construct a new decision regime. Thus, modes of strategic thinking, including the doctrine of cumulative deterrence, may give the impression of obdurateness but are in fact malleable. Said differently, many types of strategic rationality are possible, each with its unique calculus of utility-maximizing behaviour based on distinctive preferences generated by singular circumstances.

Often, a sudden political shock confounds expectations and thereby promotes awareness of a decision regime's non-viability. Most analysts of the recent history of the Israeli-Palestinian conflict would agree that there have been four political shocks between 1987 and 2007 (e.g., Kurz 2009). We hypothesize that each of these shocks led to the crystallization of a new decision regime. The shocks, indicated by the broken vertical lines in Figure I, were as follows: (1) the eruption of the first *intifada* or uprising of the Palestinians against the Israeli state and its citizens in December 1987; (2) a realignment of domestic and international forces leading to the September 1993 signing of the Oslo accords, which laid out a roadmap to peace between Israelis and Palestinians; (3) the onset of the second *intifada*, which broke out in September 2000; and (4) the series of 16 horrific suicide bombings in March 2002 that killed 84 Israelis and wounded 512.

Rasler (2000) showed that political shocks preceded the de-escalation of hostilities between Israelis and Palestinians in the period 1979–1998 if (1) American pressure to de-escalate was high, (2) Israeli and Palestinian leaders favoured a peaceful resolution of the conflict and enjoyed high legitimacy within their publics, and (3) conciliatory behaviour on one side was matched by reciprocity on the other. We take Rasler's argument a step further by suggesting that a new decision regime leading to the *escalation* of hostilities is typically preceded by a political shock and the *absence* of the other three conditions she examined.

Four decision regimes

Period one: The first intifada *(December 1987 – August 1993)*

On 6 December 1987, a Palestinian stabbed an Israeli to death in Gaza. Two days later, an Israeli army vehicle hit a car, killing four Palestinian teenagers. Driven by deep political and economic inequalities and longstanding frustrations, rumours spread quickly among the Palestinians that the collision was retaliation for the stabbing. Within days, a spontaneous wave of demonstrations and riots engulfed the West Bank and Gaza. They continued for almost six years (Alimi 2007; Beitler 2004; Schiff 1990; Shalev 1991).

By all accounts, the outbreak of the first *intifada* shocked the Israeli authorities. For years, about 100,000 Palestinians – 9 per cent of Israel's paid

labour force – had been commuting daily and without serious incident to work in Israel proper (that is, inside the pre-1967 borders). The Palestinian standard of living had been rising steadily under the occupation. True, Palestinian militants had organized plane hijackings abroad and guerrilla attacks domestically for two decades. However, the Palestinian population as a whole remained more or less quiescent, partly because the dense network of patronage, informers, administrative deprivations and detention centres run by Shabak, Israel's internal security service, effectively controlled them (Ron 2003: 149). In fact, the Palestinian people had shown little inclination to rise *en masse* for fully half a century, ever since the Arab Revolt of 1936–39 against the British mandate and Jewish settlement. Israeli authorities were of course well aware that a dangerous conflict lay just beneath the surface of everyday life, but since Israel's founding most of them had defined it as an unresolved war between states (Israel vs. Egypt, Syria, Jordan, and so on), not an unresolved war between nations (Israeli vs. Palestinian). Thus, by suddenly mobilizing a large proportion of the Palestinian population to demonstrate, block roads and throw rocks and petrol bombs at Israeli targets, the first *intifada* did not just thwart expectations that the Palestinians would remain calm but overturned a central element of the Israeli worldview, requiring the construction of a new decision regime to deal with the uprising.

By the bloody standards of later years, the 1,265 deaths that resulted from the first *intifada* represented modest carnage. The number of fatalities was only 23 per cent that of the second *intifada*, and the monthly death toll (18.3) was only 29 per cent as high. Still, the ratio of Palestinian to Israeli deaths, 9.9:1, was higher than in any other period (see Table I). The denominator was low because the Palestinians initially decided not to bear firearms. Why was the numerator so high? That is, why did Israel seemingly respond to Israeli deaths with such disproportionately severe attacks on Palestinians?

The proximate reason Israeli troops killed relatively many Palestinians early on in the *intifada* is that the IDF lacked a strategy for riot control (Beitler 2004: 89). Trained and equipped for all-out war, soldiers at all levels were unclear on how to combat their new adversary, but given their preparation and the tools at hand, they often used lethal force as a means of crowd control. For example, Ron (2003: 151) interviewed a colonel who was ordered to stop stone throwers from disrupting traffic on the Jerusalem-Hebron highway in January 1988. When several dozen unarmed Palestinian protestors approached the road despite warnings, the colonel picked up a rifle and, in less than an hour, picked off 21 of them, killing four and leaving some of the others with grave spinal injuries.

It would strain credibility, however, to assert that lack of a strategy for riot control shaped the contours of the new Israeli decision regime for the six long years of the *intifada*. Rethinking, retraining and deploying new riot control equipment does not take that long. Rather, the political context allowed the nearly 10-to-1 ratio of Palestinian to Israeli deaths. The USA called for

Table I: *Palestinian and Israeli fatalities, 1987–2007*

Period	Total fatalities	Monthly rate	Ratio of Palestinian to Israeli fatalities	Trend
Between the start of the first *intifada* and the month before the signing of the Oslo accords campaign (December 1987–August 1993)	1,265	18.3	9.9:1	Downward
Between the signing of the Oslo accords and the beginning of the second *intifada* (September 1993–August 2000)	635	7.5	1.6:1	Downward
Between the beginning of the second *intifada* and the suicide bombings of March 2002 (September 2000–February 2002)	1,136	63.1	3.1:1	Upward
Between the suicide bombings of March 2002 and December 2007	4,338	62.0	4.8:1	Flat, with high peaks and deep troughs
Total	7,374	29.3	4.3:1	

restraint only tepidly. Within weeks of the outbreak of the *intifada*, Yasser Arafat took control of the uprising and egged it on, removing hope of a quick, negotiated de-escalation. These circumstances encouraged Israeli decision makers to escalate the conflict. Reaction to political shock unencumbered by outside pressure and conciliatory internal leadership brought about massive overkill. After a fashion, though, Israeli repression eventually worked as intended. The number of Israeli and Palestinian deaths declined as the *intifada* wore on. It continued to decline – until the next, more powerful outburst.

Period two: The Oslo lull (September 1993 – August 2000)

During the first *intifada*, the four stars identified by Rasler (2000) as preconditions for de-escalation began to align. First, a political shock caused by the mass mobilization of the Palestinian people eventually encouraged Israel to accept their representative, the PLO, as a negotiating partner. Second, in 1988, the PLO indicated that it was open to reciprocity when it declared its readiness to recognize the state of Israel within its pre-1967 borders in exchange for Israeli recognition of a Palestinian state in the occupied territories. Third, internal leadership conditions changed when Yitzhak Rabin and Yasser Arafat, both popular among their constituents, came around to seeing the benefits of a peaceful resolution of the conflict. Fourth, American President

Bill Clinton exerted unusually strong external pressure to that end. The collapse of the Soviet Union (which mitigated the threat to Israel from Syria and removed a major source of support for the PLO) and the successful US-led war against Iraq (which seemingly ended the threat on Israel's northern front and removed a second source of PLO support) magnified the effect of American pressure.

The radically new domestic and geopolitical situation engendered the construction of a new decision regime that required Israeli *under-reaction* to Palestinian violence. Still, the shift was far from automatic; the old decision regime was 'sticky'. Israel's political leadership was initially blind to the unique opportunity the country faced, and the military establishment had to expend much effort to get the politicians to see the light of day. It became clear only in the early 1990s that a fundamental transformation had been effected and a new decision regime for dealing with Palestinian violence was in the process of being formulated. Rabin and his cabinet now embraced the idea that Israel was engaged in a war between nations, that only a political solution could end the *intifada*, and that only by making peace with its immediate neighbours (the Palestinians, Jordan, Syria and Lebanon) could Israel prepare adequately for possible war with more remote enemies, notably Iran (Peri 2006: 33–7).

Two episodes demonstrate the depth of commitment to the new strategy on the part of Israel's leaders, especially those with ties to the military. First, after Benjamin Netanyahu became Prime Minister in 1996 and opposed a land-for-peace deal with the Palestinians, senior retired and reserve officers decided to enter the next election campaign in force to ensure that the left-leaning opposition (whose leader, Ehud Barak, was also a senior reserve officer) would regain power in the 1999 election (Peri 2006: 77–90). They succeeded in their aim.

Second, beginning in April 1993, Hamas and Palestinian Islamic Jihad sought to derail the peace process by initiating a series of 20 suicide bombings that stretched into 1997 (Kydd and Walter 2002). Israel responded to the 175 fatalities and 928 injuries caused by the bombings with remarkable restraint. For years, the ratio of Israeli to Palestinian deaths remained far lower than the 'normal' 4.3:1 – precisely the opposite of what the doctrine of cumulative deterrence would predict. The period witnessed 'just' 635 fatalities due to conflict between Palestinians and Israelis (7.5 fatalities per month). The ratio of Palestinian to Israeli deaths fell to 1.6:1, its lowest point in the four periods under study. Although Israel never stopped building settlements in the occupied territories during the Oslo lull, and the Palestinians imported arms and built up their security forces in violation of the terms of the accords, until July 2000 both sides continued to make reciprocal concessions regarding mutual recognition, cessation of hostilities, security arrangements, relinquishing territorial control and so on.

Period three: The onset of the second **intifada** *(September 2000 – February 2002)*

In July 2000, a new political shock overturned the existing decision regime. Yasser Arafat and Israeli Prime Minister Barak reckoned that their constituencies would not allow them to make additional reciprocal concessions, especially regarding the status of Jerusalem. At that point, peace talks collapsed, dashing seven years of rising expectations.

In September, prime ministerial hopeful Ariel Sharon took a provocative stroll on the esplanade of Jerusalem's al-Aqsa mosque, symbolically proclaiming Israel's sovereignty over Islam's third holiest site. All hell broke lose: Palestinian rioting became rampant. Israel's response was highly aggressive, even by the admission of its own officials. Security forces fired live ammunition into the rock-throwing crowd, killing seven people. The rioting spread quickly, and by the end of the year Israeli security forces had killed 319 Palestinians. In the same period, Israeli victims totalled 43, including 22 civilians (Druker and Shelah 2005: 28 ff.; Jamal 2005: 157; Ricolfi 2005: 94). Then, in January 2001, the first suicide bombing of the second *intifada* took place. More than 140 such attacks followed in the next seven years.

After the inauguration of George W. Bush in January 2001, and especially after the attacks on the World Trade Center and the Pentagon in September of that year, the USA gave Israel a free hand to do what it pleased in response to Palestinian violence. Israeli repression and the violence of the Palestinian response grew after Sharon, a hardliner, was elected Prime Minister in the second *intifada's* fifth month. No external force constrained him. Like the USA, Israel boycotted political contacts with Arafat from mid-2002 until his death in November 2004. As a result, the political shock of the collapse of the peace talks resulted in the rapid escalation of hostilities. The first 18 months of the second *intifada*, ending February 2002, witnessed nearly as many deaths (1,136) as the 69 months of the first *intifada* (1,265). The monthly fatality rate (63.1) was nearly 3.5 times higher. In the first *intifada*, Palestinian rioters initially refused to bear firearms, but in the second *intifada* they were eager to cause as many Israeli fatalities as possible. Consequently, while the ratio of Palestinian to Israeli deaths was 9.9:1 during the first *intifada*, it fell to less than half that (4.8:1) during the first 18 months of the second *intifada*. Still, nothing could prepare either side for the events of March-April 2002.

Period four: The suicide bombings of March 2002 and their aftermath *(March 2002 – December 2007)*

On 27 March 2002, 25-year-old Abdel-Basset Odeh, a member of Hamas and a resident of Tulkarem in the West Bank, walked into the main dining room of the Park Hotel in Netanya, where a Passover *seder* had been organized for

about 250 mostly elderly Jews, many of them Holocaust survivors. When Odeh detonated his explosive device, it killed 30 guests and wounded 140, 20 of them seriously, punctuating the most devastating month of the second *intifada* with an act that had deep symbolic meaning; little could have enraged Israelis more than the slaughter of dozens of elderly Holocaust survivors at a *seder* in the Israeli heartland.

Israel's reaction was unprecedented. Within 24 hours, the IDF launched Operation Defensive Shield, the biggest military action in the West Bank and Gaza since the 1967 war. By April, the IDF had reoccupied all of the West Bank and most of Gaza. Defence Minister Binyamin Ben-Eliezer clarified the aim of the new decision regime on 29 March: 'The security forces decided to initiate extensive operational activity aimed at conducting an all-out war against terrorism – a war whose aim is to crush all forms and all elements of the terrorist infrastructure' (Israel Ministry of Foreign Affairs 2002).

Following the decision to proceed from violent repression to all-out war, the Israelis went about their work systematically and according to their own timetable. Thus, after March 2002, the number of Palestinian deaths bore no relationship to the number of Israeli deaths. Repeatedly, Palestinian fatalities shot up when Israel made big incursions and fell in their aftermath. Meanwhile, the number of Israeli fatalities fell steadily. In less than five years, the conflict resulted in 4,338 deaths, 59 per cent of all fatalities registered between 1987 and 2007, and the ratio of Palestinian to Israeli deaths jumped 55 per cent over the corresponding ratio in the preceding period.

As our synopsis of 21 years of low-intensity warfare above suggests, Israeli decision makers did not apply the doctrine of cumulative deterrence consistently over time. They periodically reconstructed the decision regime for dealing with Palestinian violence, and each strategic innovation formed the basis for action only until further notice, as it were. Specifically, the Israelis formulated new decision regimes when political shocks rendered old strategies ineffective or at least less than optimal. In the one post-shock period characterized by external pressure, conciliatory leadership and reciprocal concessions, de-escalation took place even in the face of a wave of suicide bombings; the ratio of Israeli to Palestinian deaths plummeted to just 37 per cent of the mean for the 21 years covered by our analysis. In the post-shock periods characterized by a lack of external pressure, conciliatory leadership and reciprocal concessions, escalation took place. The ratio of Israeli to Palestinian deaths periodically soared to multiples of the mean for the 21 years covered by our analysis. The unexpected outbreak of the first *intifada*, the realignment of political forces in the late 1980s and early 1990s, the eruption of the second *intifada* and the unprecedented Palestinian violence of March 2002 all constituted political shocks that lead to the crystallization of new decision regimes, but only in the second period were Rasler's conditions leading to de-escalation in place.

A statistical model

We now move from socio-historical narrative to a statistical analysis of the response of the Israeli government, measured in the number of Palestinian deaths, to Israeli deaths at the hands of Palestinians. Our goal is to provide further evidence of the differing patterns in Israeli response to deaths, discussed above.

Our dependent variable is the number of Palestinian deaths, measured monthly. Given that the number of Palestinian deaths is a count variable, we first considered using Poisson regression. Preliminary analyses indicated significant overdispersion (that is, the observed variance of Palestinian deaths was significantly larger than the predicted variance). Consequently, we base our findings on a set of negative-binomial regression models. Aside from the addition of an extra coefficient to estimate the overdispersion parameter, results from negative binomial models are interpreted in the same way as results from Poisson regression models (Long 1997: 230–8; King 1998: 51).

Preliminary analysis also detected a stationary first-order autocorrelation process for monthly Palestinian deaths. That is, on average, the number of deaths in any particular month could be reasonably well predicted from the number of deaths in the previous month ($\rho = 0.37$, when no other predictors are included in the model). Rather than being simply a technical problem, this finding was of substantive interest, so we included the dependent variable lagged by one month (Palestinian deaths t_{-1}) as a predictor.[3] Significant autocorrelation persisted even after including the lagged dependent variable,[4] however, necessitating the use of robust standard errors. We use the HAC (heteroskedacticity and autocorrelation consistent) estimators discussed and implemented in the 'sandwich' package for R by Zeileis (2004).

We also needed to determine the appropriate lag structure for the impact of Israeli deaths on Palestinian deaths. Our review of the literature led us to conclude that Israel tended to respond fairly promptly to Palestinian killings of Israelis. The monthly data supported this conclusion, showing the correlation between Palestinian and Israeli deaths to be strongest when measured in the same month. As result, we used the number of Israeli deaths measured contemporaneously (Israeli deaths, t_0) to predict the number of Palestinian deaths t_0.

We preferred using contemporaneous measures on substantive grounds too. Specifically, given that we employ monthly data, using a lagged variable specification would imply that it took Israel a month to respond. In some circumstances such a delay may have been necessary. After all, it takes time to identify responsible parties, locate them, secure permission from higher authorities for aggressive action against them, plan a reprisal and secure optimal operational and political conditions for attack. However, we assume that most Israeli responses occurred within a one-month time frame on the grounds that

Israeli military and political decision-makers are well prepared to respond to Palestinian violence and recognize that long delays between Palestinian attack and Israeli response minimize the deterrent value of counterinsurgency. In any event, it is important to note that we arrived at substantively identical conclusions for contemporaneous and lagged variable specifications. Moreover, while we could not find daily data for the entire period that concerns us, we did obtain daily data for the 2000–05 period from Jaeger and Paserman (2008). Like Jaeger and Paserman, we found no significant differences between analyses based on monthly and daily data.

We now turn to how the models assess possible changes in the Israeli government's strategy to counter Palestinian uprisings. Of particular concern are (1) the magnitude of the retaliation that occurred immediately after a political shock, and (2) changes in retaliation strategy that occurred between political shocks. To capture possible changes in the number of deaths at the onset of a political shock, we include a simple dummy regressor (coded 1 for the month of the event and 0 for other months) for each shock. To assess *average difference* in the relationship between Israeli and Palestinian deaths between shocks (or *across periods*), we used restricted dummy regressors that specified changes to occur at specific points in time, called knots (Faraway 2005: 112–17). We placed the knots so that they divide time into the periods defined by the four political shocks we identified. The basis functions for each period took the following form:

$$B_{overall}(x) = \begin{cases} 1 & \text{if } b \leq x < c \\ 0 & \text{otherwise} \end{cases} \tag{1}$$

where x is the number of Israeli deaths, b is at the knot that defines the start of the period (that is, the political shock), and c is at the knot that ends the period (that is, the next political shock).

We were interested in the possibility of three different types of decay or increase in effect over time *within each period*: (1) a simple linear trend, (2) a curvilinear trend captured by a natural spline with two knots, and (3) an exponential decay or growth captured by a log transformation of Israeli deaths. We again used basis functions to separate the periods, but in this case, they functioned as regression splines (Andersen 2009). The general form of the within-period change basis functions took the following form:

$$B_{change}(x) = \begin{cases} c - x & \text{if } b \leq x < c \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

Preliminary models also controlled for the political affiliation of the Prime Minister in power. This variable was statistically insignificant, perhaps because it maps closely with the four periods we identify, and thus it was not included in the final models.

Results

We now turn to the negative binomial models in an attempt to model Palestinian deaths as a function of Israeli deaths, with the goal of uncovering differences in Israeli responses over time. Displayed in Table II are the AIC, BIC, and pseudo-R^2 for these models.[5] The models build incrementally from Model 1, which assumes that Israeli deaths had the same effect in all periods under study, through Models 5–7, which test for the various period differences in the effects of Israeli deaths. The smallest AIC and BIC values, and the largest pseudo-R^2, occur for Model 7, suggesting that it provides the best fit to the data. The model specifies the effect of Israeli deaths to have significant differences between periods *and* exponential change within periods.

Diagnostics involving the residuals from the models also suggest that Model 7 is the most suitable. For example, while the residuals from Model 1 (with Israeli deaths as the predictor) and Model 2 (with Israeli deaths and the lagged dependent variable as the predictors) indicate severe heteroskedasticity and poor predictions for some of the periods under study, no such problems occur for Model 7. The residuals resulting from Model 7 are randomly distributed with a mean of 0 and constant variance throughout all periods under study. See Appendix I for plots of the studentized residuals for Models, 1, 2, and 7 against time.

Table II: *Summary of measures of fit for negative binomial models predicting Palestinian deaths*

Model	Terms in model	AIC	BIC	Pseudo-R^2
1	– Israeli deaths (t_0)	2010	2021	0.152
2	– Israeli deaths (t_0) – Palestinian deaths (t_{-1})	1938	1952	0.348
3	– Israeli deaths (t_0) – Palestinian deaths (t_{-1}) – Immediate impact of four major events	1941	1970	0.359
4	– Israeli deaths (t_0) – Palestinian deaths (t_{-1}) – Immediate impact of four major events – Israeli deaths × Period	1812	1855	0.618
5	– Israeli deaths (t_0) – Palestinian deaths (t_{-1}) – Immediate impact of four major events – Israeli deaths × Period – Israeli deaths × Period × Time (linear trend)	1765	1822	0.694
6	– Israeli deaths (t_0) – Palestinian deaths (t_{-1}) – Immediate impact of four major events – Israeli deaths × Period – Israeli deaths × Period × Time (natural spline)	1760	1817	0.700
7	– Israeli deaths (t_0) – Palestinian deaths (t_{-1}) – Immediate impact of four major events – Israeli deaths × Period – Israeli deaths × Period × Time (exponential)	1752	1808	0.710

Table III displays the coefficients from our final model (Model 7). We divided Table III into panels according to the periods separated by the four political shocks. The first panel indicates the effect of Israeli deaths on Palestinian deaths from January 1987 to the month preceding the start of the first *intifada*. The coefficients indicating the overall period change for each of the following periods are relative to this effect. For each of the other four periods there is also a coefficient for the immediate change in effect and for the exponential change in effect throughout the period.

We start with some general patterns over time. First, the immediate (same-month) response of Israel to Palestinian killings of Israelis tended to be less severe than the response during the rest of the period, suggesting that responses were considered, not kneejerk reactions. Second, within periods, the Israeli response was exponentially less harsh with the passage of time during the first two periods, but changed little during the last two periods. In fact, although the effect is not statistically significant, the results suggest that the Israeli response became harsher as time went on during the final period.

Table III: *Coefficients (autocorrelation consistent standard errors in parentheses) for final negative binomial regression model predicting Palestinian deaths (Model 7)*

|	Estimate	exp(b)
Constant	−0.908 (1.25)	0.40
Israeli deaths (t_0)	0.040* (0.018)	1.04
Lagged dependent variable [Palestinian deaths (t_{-1})]	0.007*** (0.002)	1.01
Period 1: *Start of first* intifada → *signing of the Oslo accords*		
Immediate impact of the first *intifada*	−0.641* (0.287)	0.53
Overall period change in Israeli deaths (t_0) effect	4.640*** (1.260)	103
Exponential change in Israeli deaths (t_0) effect within period	−0.350*** (0.095)	0.70
Period 2: *Signing of the* Oslo accords → *start of second* intifada		
Immediate impact of the first suicide bombing campaign	−1.352 (0.741)	0.26
Overall period change in Israeli deaths (t_0) effect	4.449** (1.488)	85
Exponential change in Israeli deaths (t_0) effect within period	−0.729*** (0.210)	0.48
Period 3: *Start of second* intifada → *suicide missions of March 2002*		
Immediate impact of the *intifada*	−1.091 (0.741)	0.34
Overall period change in Israeli deaths (t_0) effect	4.668** (1.473)	106
Exponential change in Israeli deaths (t_0) effect within period	−0.408 (0.345)	0.66
Period 4: *Suicide missions of March 2002* → *December 2007*		
Immediate impact of suicide missions of March 2002	−1.882 (1.324)	0.15
Overall period change in Israeli deaths (t_0) effect	3.211* (1.623)	25
Exponential change in Israeli deaths (t_0) effect within period	0.243 (0.245)	1.27
Dispersion parameter	2.399*** (0.277)	
AIC	1752	
BIC	1808	
Pseudo-R^2	0.710	
N	251	

Notes:
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

The fact that Israel maintained its pressure during the final two periods provides tentative evidence of a strategic shift from repressive violence to all-out war.

We can gain further insight into Israeli strategies by comparing the predicted number of Palestinian deaths derived from Model 7 with the actual trend in the number of Palestinian deaths (see Figure II). We divided Figure II into four panels to clarify within-period trends. Note that both the horizontal and vertical axes differ by graph. To facilitate comparison of the four periods, a dotted horizontal line representing the mean number of monthly Palestinian deaths through the complete period under study is included in each graph. The predicted counts from the model are indicated by solid black lines. The observed counts are indicated by shaded grey areas. Where the black line is higher than the grey shaded area, Israel's response

Figure II: *Predicted counts from Model 7 (black lines) compared to the actual number of Palestinian deaths (grey shaded area) by period*
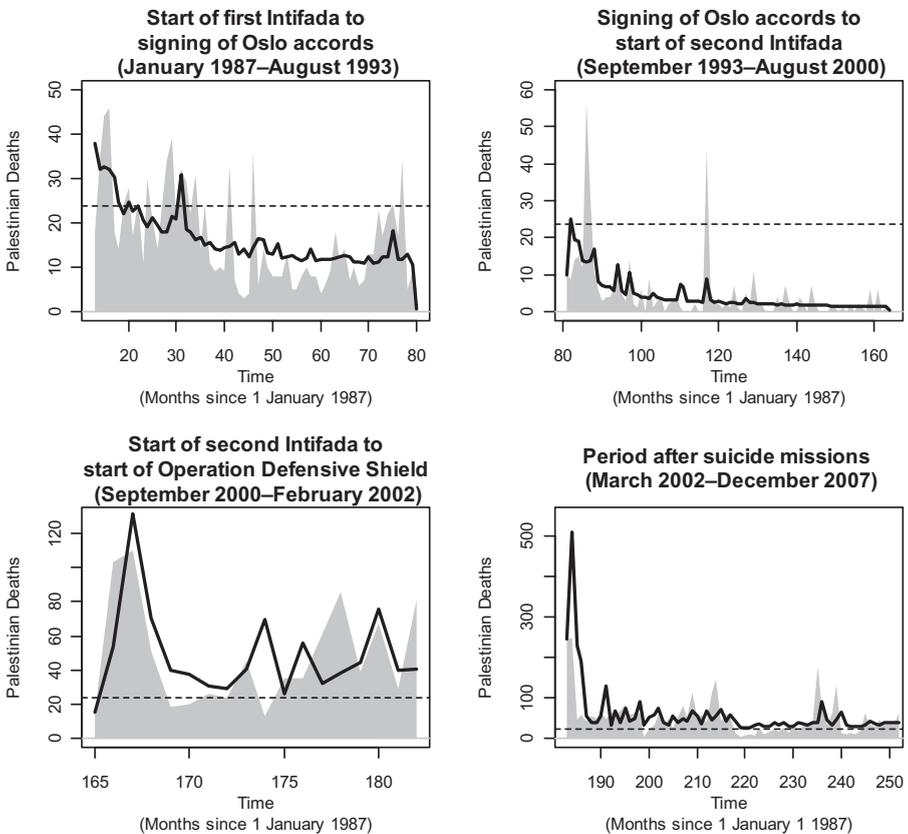
Note: Dotted horizontal lines show the mean number of monthly Palestinian deaths (23.8) for the whole period under study.

was less forceful than the model predicted. Where the gray shaded area is higher than the black line, Israel's response was more forceful than the model predicted. In general, the predicted values are very close to the actual values in all four periods.[6]
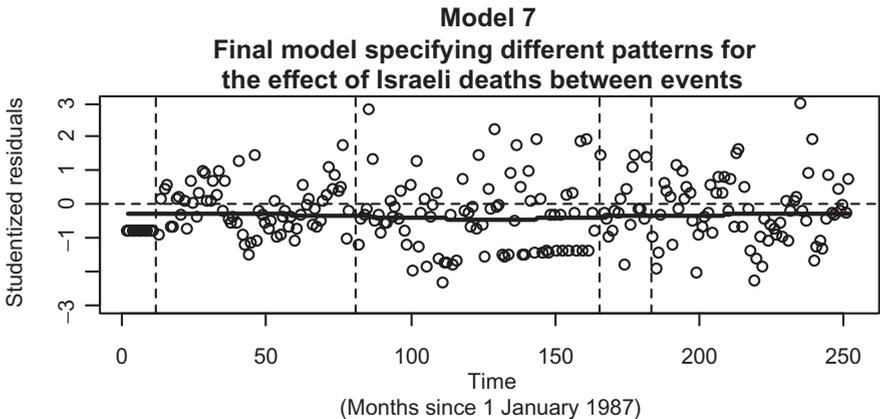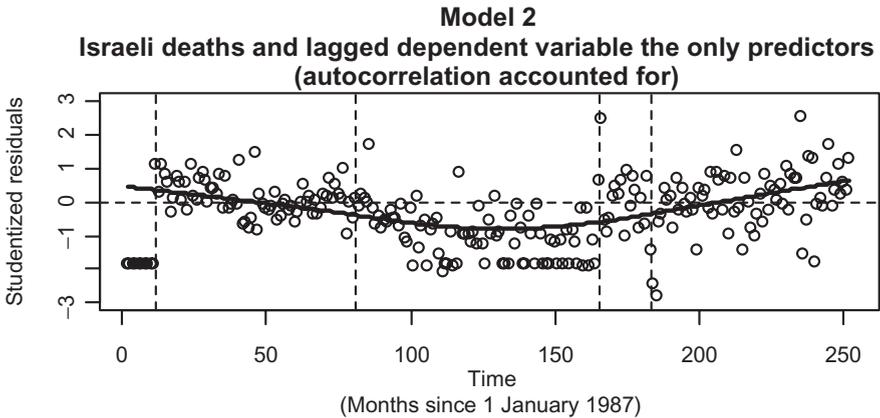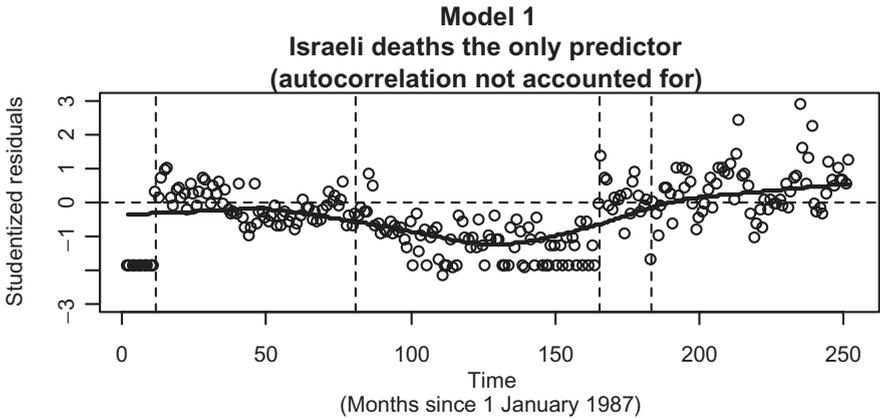

Conclusion

Most analysts characterize Israeli strategy *vis-à-vis* the Palestinian insurgency using some variant of the doctrine of cumulative deterrence, which, as we have seen, asserts that Israel consistently responds swiftly and disproportionately to the killing of Israelis by Palestinians in the expectation that such action will eventually deter Palestinians from aggression. In contrast, our analysis demonstrates that Israel's strategy for dealing with Palestinian violence has changed over time. In other words, Israel's leaders periodically create new decision regimes. Once crystallized, these decision regimes act as guides for action, creating a set of more or less firm assumptions about appropriate responses to Palestinian violence. They appear to remain in place until political shocks overturn them and demand the adoption of a new approach. 'Punctuated equilibria' well describes the succession of strategic outlooks that we observed.

The existence of malleable strategic logics is precisely the opposite of what classical rational choice theory predicts (cf. Brym and Hamlin 2009). The plain fact is that preferences do not remain constant for most people across time. Just as Israeli public opinion changes in response to the level of conflict (Fielding and Penny 2009), strategic thinking on the part of leading decision makers changes in response to the political factors we identified. This is an important finding that analysts may neglect at a time when the Israeli government has moved to the right, the prospects for peace seem more remote than they have in more than a decade and ideas about the presumed benefits of cumulative deterrence have taken firm hold.

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Appendix 1: *Studentized residuals from negative binomial regression models predicting Palestinian deaths overt time*

Model 1
Israeli deaths the only predictor
(autocorrelation not accounted for)

Model 2
Israeli deaths and lagged dependent variable the only predictors
(autocorrelation accounted for)

Model 7
Final model specifying different patterns for
the effect of Israeli deaths between events

Note: Broken vertical lines represent crises that separate the four periods of analysis. The solid curved line in each graph represents a lowess smooth of the residuals over time.

Notes

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2. Almog (2004–5) also argues that Israel's victories in its major wars between 1948 and 1973 resulted in peace treaties with Egypt (1979) and Jordan (1994) and a moderation of Syria's position, thus supporting the doctrine of cumulative deterrence. However, he ignores that Syria has so far rejected reconciliation on terms that Israel is willing to meet, while Iran has become a powerful and implacable opponent of Israel's existence. Arguably, the doctrine of cumulative deterrence has worked with respect to Egypt and Jordan but has had perverse effects on Syria, Iran and their surrogates, Hezbollah and Hamas.

3. Keele and Kelly (2006) discuss the appropriate use of lagged dependent variables as predictors, especially the conditions under which they are most effective in countering autocorrelation.

4. The first-order autocorrelation for the final model was $\rho = 0.169$, resulting in a Durbin-Watson test value of 1.65, with a p value = 0.002. We found no evidence of higher order autocorrelation.

5. The AIC (Akaike information criterion) is calculated from the likelihood of the model using the formula AIC = –2*log-likelihood + 2k, where k is the number of parameters in the fitted model. The BIC (Bayesian information criterion) adjusts the AIC to include a penalty for sample size, n. The BIC is calculated as –2*log-likelihood + k log(n). Pseudo-R^2 considers the likelihood from the relevant model (i.e., the full model) to the likelihood from the null model that contains only the intercept. We used the formula pseudo-R^2 = 1-[(–2*log-likelihood of the full model)/ (–2*log-likelihood of the null model)].

6. We also estimated separate models for each period and compared the coefficients of the separate models to those in Table III. The results led to no substantive change in the findings.

Bibliography

Alimi, Eitan Y. 2007 *Israeli Politics and the First Palestinian Intifada: Political Opportunities, Framing Processes and Contentious Politics*, London: Routledge.

Almog, Doron 2004–5 'Cumulative Deterrence and the War on Terrorism', *Parameters* 34(4): 4–19.

Andersen, Robert 2009 'Nonparametric Methods for Modelling Nonlinearity in Regression Analysis', *Annual Review of Sociology* 35: 67–85.

Araj, Bader 2008 'Harsh State Repression as a Cause of Suicide Bombing: The Case of the Palestinian-Israeli Conflict', *Studies in Conflict and Terrorism* 31(4): 284–303.

Becker, Gary S. 1976. *The Economic Approach to Human Behavior*, Chicago: University of Chicago Press.

Beitler, Ruth Margolies 2004 *The Path to Mass Rebellion: An Analysis of Two Intifadas*, Lanham MD: Lexington Books.

Berrebi, Claude and Klor, Esteban F. 2006 'On Terrorism and Electoral Outcomes: Theory and Evidence from the Israeli-Palestinian Conflict', *Journal of Conflict Resolution* 50(6): 899–25.

Bronner, Ethan 2009 'Parsing Gains of Gaza War', *New York Times* 19 January, www.nytimes.com (last accessed 11 May 2011).

Brym, Robert J. and Araj, Bader 2006 'Suicide Bombing as Strategy and Interaction: The Case of the Second *Intifada*', *Social Forces* 84(4): 1965–82.

Brym, Robert J. and Araj, Bader 2008 'Palestinian Suicide Bombing Revisited: A Critique of the Outbidding Thesis', *Political Science Quarterly* 123(3): 485–500.

Brym, Robert J. and Hamlin, Cynthia 2009 'Suicide Bombers: Beyond Cultural Dopes and Rational Fools' in Mohamed Cherkaoui and Peter Hamilton (eds) *Raymond Boudon: A Life in Sociology*, 4 vols., Oxford: Bardwell Press.

B'Tselem 2008 Special Tabulation of Monthly Palestinian and Israeli Deaths Due to Conflict, January 1987-December 2007, B'Tselem, The Israeli Information Center for Human Rights in the Occupied Territories.

Druker, Raviv and Shelah, Ofer 2005 *Boomerang: Kishalon ha-Manhigut ba-Intifada ha-Shniya* [Hebrew: *Boomerang: The Failure of Leadership in the Second* Intifada], Jerusalem: Keter.

Faraway, Julian 2005 *Linear Models with R*, New York: Chapman & Hall.

Fielding, David and Penny, Madeline 2009 'What Causes Changes in Opinion about the Israeli-Palestinian Peace Process?', *Journal of Peace Research* 46(1): 99–118.

Frisch, Hillel 2006 'Motivation or Capabilities? Israeli Counterterrorism against Palestinian Suicide Bombings and Violence', *The Journal of Strategic Studies* 29(5): 843–69.

Granovetter, Mark 1985 'Economic Action and Social Structure: The Problem of Embeddedness', *American Journal of Sociology* 91(3): 481–510.

Hafez, Mohammed M. and Hatfield, Joseph H. 2006 'Do Targeted Assassinations Work? A Multivariate Analysis of Israel's Controversial Tactic during the Al-Aqsa Uprising', *Studies in Conflict and Terrorism* 29(4): 359–82.

Halabi, Rafik 1982 *The West Bank Story*, New York: Harcourt, Brace, Jovanovich.

Israel Ministry of Foreign Affairs 2002 'Statements by Prime Minister Ariel Sharon and Defense Minister Binyamin Ben-Eliezer at press conference following Cabinet meeting', http://www.mfa.gov.il/MFA/Government/Speeches%20by%20Israeli%20leaders/2002/Statements%20by%20PM%20Sharon%20and%20DM%20Ben-Eliezer%20at%20pres (last accessed 11 May 2011).

Jaeger, David A. and Paserman, M. Daniele 2006 'Israel, the Palestinian Factions, and the Cycle of Violence', *American Economic Review* 96(2): 45–9.

Jaeger, David A. and Paserman, M. Daniele 2008 'The Cycle of Violence? An Empirical Analysis of Fatalities in the Palestinian-Israeli Conflict Source', *American Economic Review* 98(4): 1591–604.

Jamal, Amal 2005 *The Palestinian National Movement: Politics of Contention, 1967–2005*, Bloomington IN: Indiana University Press.

Kaplan, Edward H., Mintz, Alex, Mishal, Shaul and Samban, Claudio 2005 'What Happened to Suicide Bombings in Israel? Insights from a Terror Stock Model', *Studies in Conflict and Terrorism* 28(3): 225–35.

Kaplan, Edward H., Mintz, Alex and Mishal, Shaul 2006 'Tactical Prevention of Suicide Bombings in Israel', *Interfaces* 36(6): 553–61.

Keele, Luke and Kelly, Nathan J. 2006 'Dynamic Models for Dynamic Theories: The Ins and Outs of Lagged Dependent Variables', *Political Analysis* 14(2): 186–205.

King, Gary 1998 *Unifying Political Methodology. The Likelihood Theory of Statistical Inference*, Ann Arbor MI: University of Michigan Press.

Kiser, Edgar and Bauldry, Shawn 2005 'Rational-Choice Theories in Political Sociology' in Thomas Janoski, Robert Alford, Alexander Hicks, and Mildred A. Schwartz (eds) *The Handbook of Political Sociology*, Cambridge UK: Cambridge University Press.

Kuperman, Ranan D. 2007 *Cycles of Violence: The Evolution of the Israeli Decision Regime Governing the Use of Limited Military Force*, Lanham MD: Lexington Books.

Kurz, Anat N. 2009 *The Palestinian Uprisings: War with Israel, War at Home*, Tel Aviv: Institute for National Security Studies.

Kurzman, Charles and Hasnain, Aseem 2010 'The Limits of Prediction: Forecasting Israeli-Palestinian Interactions', presented at the meetings of the American Sociological Association, Atlanta.

Kydd, Andrew and Walter, Barbara F. 2002 'Sabotaging the Peace: The Politics of Extremist Violence', *International Organization* 56(2): 263–96

Long, J. Scott 1997 *Regression Models for Categorical and Limited Dependent Variables*, Thousand Oaks CA: Sage.

Löwenheim, Oded and Heimann, Gadi 2008 'Revenge in International Politics', *Security Studies* 17(4): 685–724.

Maoz, Zeev 2007 'Evaluating Israel's Strategy of Low-Intensity Warfare, 1949–2006', *Security Studies* 16(3): 319–49.

Morag, Nadav 2005 'Measuring Success in Coping with Terrorism: The Israeli Case', *Studies in Conflict and Terrorism* 28(4): 307–20.

North, Douglass 1990 *Institutions, Institutional Change and Economic Performance*, Cambridge, UK: Cambridge University Press.

Peri, Yoram 2006 *Generals in the Cabinet Room: How the Military Shapes Israeli Policy*, Washington DC: United States Institute of Peace.

Rasler, Karen 2000 'Shocks, Expectancy Revision, and De-escalation of Protracted Conflicts: The Israeli-Palestinian Case', *Journal of Peace Research* 37(6): 699–720.

Ricolfi, Luca 2005 'Palestinians, 1981–2003' in Diego Gambetta (ed.) *Making Sense of Suicide Missions*, Oxford: Oxford University Press.

Rodman, David 2003 'Israel's National Security Doctrine: An Appraisal of the Past and a Vision of the Future', *Israel Affairs* 9(4): 115–40.

Ron, James 2003 *Frontiers and Ghettos: State Violence in Serbia and Israel*, Berkeley: University of California Press.

Schiff, Zeev 1990 *Intifada: Israel's Third Front*, New York: Simon and Schuster.

Shalev, Aryeh 1991 *The Intifada: Causes and Effects*, Boulder CO: Westview.

Stigler, George J. and Becker, Gary S. 1977 'De Gustibus Non Est Disputandum', *American Economic Review* 67(2): 76–90.

Yaalon, Moshe 2007 'Lessons from the Palestinian War against Israel', *The Washington Institute*, http://turcopolier.typepad.com/files/policyfocus64.pdf (last accessed 11 May 2011).

Zeileis, Achim 2004 'Econometric Computing with HC and HAC Covariance Matrix Estimators', *Journal of Statistical Software* 11(10): 1–17.