Creating and diffusing civil unrest:
Case study, Northern Ireland 1969-2001

Martin Timothy Rafferty
London South Bank University
London
SE1 0AA

rafferm@lsbu.ac.uk

Abstract: This paper explores the causes, progression and ongoing dissipation of civil unrest in a developed western nation; the United Kingdom. Specifically this paper focuses on the period 1969-2001 and geographically focuses on Northern Ireland. The social, economic and internally generated, self-perpetuating then self dissipating, causes and expressions of violence are examined. The analysis focuses on the demand for change as a primary driver of the conflict in Northern Ireland. The demand for change arises because of perceived differences in status within various groups; sectarian groupings being prevalent in this analysis. It is postulated that the catalyst for the change from a demand for change to violent action in support of change is the observation of similar struggles in other parts of the world. A cyclical dimension of levels of violence, 4.14 years, in the conflict is identified. The paper concludes that the model produced; is generalisable due to its focus on behavioural issues, that the model is a model of communal learning and that current global financial turmoil may result in increased violence due to unemployment and a misinterpretation of this as discriminatory behaviour.

Keywords: Northern Ireland, Conflict, War, Cyclical

Introduction

There has been an uneasy relationship between Britain and Ireland for almost all of their combined history. This relationship has frequently been expressed in violence. A recent manifestation, in historical terms, of this uneasy relationship was the creation of the state of Northern Ireland in 1920/1921. From 1969 to the present the state of Northern Ireland has become a focus for the tensions in the relationship.

In general terms there have been various conflicts within the states that make up Ireland and Greater Britain[1] throughout their history. With specific regard to Northern Ireland it is the current focus of a conflict that could be seen as initially being between England and Ireland, then a conflict focussing on the creation of Northern Ireland as a separate state and more recently a conflict within Northern Ireland. The focus of this neighbourly conflict being gradually narrowed further and further with intervention by external parties at all stages of the relationship.

In terms of the period under consideration, 1969-2001, this conflict has resulted in some 3,331 deaths (PSNI, 2010a) and 45,570 injuries (PSNI, 2010b) representing 0.0021446% and 0.0289946% of the average population of Northern Ireland at the time the deaths and injuries occurred (NISRA, 2010). The population of Northern Ireland in 2001, the terminal year under consideration, is given as 1.689m persons (NISRA, 2010). To put these numbers in perspective this would equate to 643,369 and 128,674 deaths and 8,698,391 and 1,739,678 injuries in the respective populations of the USA (300m) and UK (60m). A substantial number of the population of Northern Ireland have been on the direct receiving end of violent attacks during the period under consideration. The population of Ireland as whole, Northern Ireland and the Irish Republic together, is lower now than it was in 1841 by about 20%. This population reduction is attributed partly to the conflict, partly to natural disaster and partly to poor economic prospects.[2] The population of both states within the island of Ireland has been increasing in the past 100 years.

Within Northern Ireland the population is divided into two broad religious groupings Roman Catholic and Protestant (various denominations) 42% and 52% of the adult, 16+, population respectively (NISRA, 2009, p. 44) in 2001 with the remainder being of indeterminate religious status. This religious divide provides social cohesion within the factions that make up the population and many other aspects of the population are based around it. For example, Roman Catholics in full time employment earned about 7% less per hour than Protestants in 2007 (NISRA, 2009, p. 60) and Roman Catholics were 40% more likely to be unemployed than Protestants in 2007 (NISRA, 2009, p. 54). Paradoxically, Roman Catholics had a higher level of education than Protestants with 31% having higher level qualifications (18+ or post high school) as opposed to 26% of protestants (NISRA, 2009, p. 61). This educational ratio is inverted in career profiles, at least as reflected in the proportions in managerial positions, for the two

[1] Great Britain being England, Scotland and Wales and Ireland being the Irish republic and Northern Ireland.; the United Kingdom is comprised of England, Scotland, Wales and Northern Ireland.

[2] All of the statistics for population, deaths and injuries for Northern Ireland need to be treated with caution as it was at various times seen as a social and political act of treachery to comply with census gatherers and deaths and injuries amongst sections of the population would be hidden for security and propaganda purposes.

religious groupings (NISRA, 2009, p. 59). MeLaugh writing in (Dunn, 1995, p.131-148) provides a more in depth analysis.

As a proposed reference mode for this simulation the figures for deaths, injuries and population take the shape shown in figure 1 below.

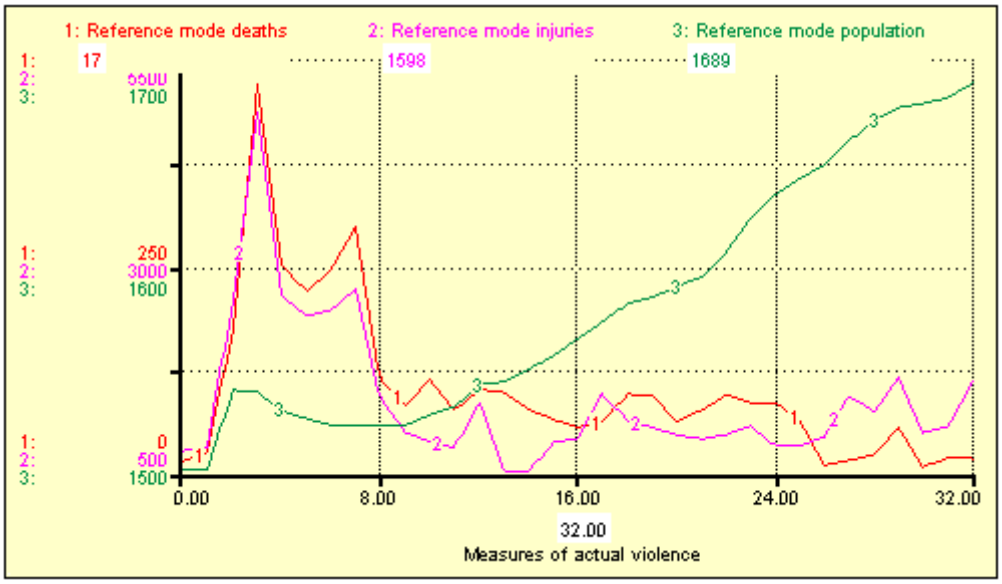

Figure 1: Reference mode statistics for Northern Ireland 1969-2001 (sources in text)

Figure 1 bears out the assertion that this conflict, as with many others, takes place in fits and starts but nonetheless has a recognisable underlying pattern. The terminal values for the simulation are given at the top of the figure. For a partial chronology of some significant events in the period see Darby (1976, p. xi - xix) and also (CAIN, 2010) for further information on all aspects of the conflict.

The remainder of this paper first focuses on a review of the literature on civil unrest in general, then specifically as it relates to system dynamics moving on to the description of the design, construction and testing of a conflict model for Northern Ireland. A review of the creation of a simulation model is provided and a discussion of the results of the model is provided that results in a set of conclusions on this specific implementation and its generalisability.

Background on modelling conflict

Dunn (1995, p. 4) identifies the "persistence and virulence" of "long-standing fears, separations and hostilities" as a potential precursor to internal violent conflict. These long-standing fears are maintained, sustained and given voice in some internal communal structure; religion, political affiliation, race, ethnicity, culture or some combination of these. As we have seen in the introduction there is the possibility that the Roman Catholic community in Northern Ireland would be subject to long standing feelings of discrimination, under representation and suppression in line with Dunn's assertions. On the Protestant side another set of long standing feelings of fear that the mass of the Catholic population would eventually swamp their culture would seem to be reasonable and appropriate. Cultural identity, aside from religion, is maintained within Northern Ireland by separate educational institutions, based on religion,

separate political alignments, as a generalisation the Catholic community aligns itself culturally with Ireland and the Protestant community aligns itself culturally with the UK. Evidence suggests that the Catholic community do not necessarily want a political union with the Irish Republic (Darby, 1976, p. 189), and the cultural identifiers cascade right through the communities to different sporting traditions within the communities.

Examining these institutional maintainers of conflict, religion, politics and culture in general; there is an apparent vested interest in say religious groups maintaining fears of the *'other'* community. By creating and maintaining an external threat, the other community, they ensure the loyalty of their own supporters. There is comfort to be had by banding together to face a common foe; whether that foe is a real threat or not. However cynical it may seem, there is power to be gained for religious groups by maintaining a high level of fear, politicians with hard line messages will have safe electorates if they unite their supporters in fear of the other community. It is observably true that religious groupings and politicians have profited greatly by fuelling the politics of isolationism and fear; both at an individual and structural level. The politics and religious affiliations of the population are fuelled by fear and determined by the psychology of individual and group behaviour in the face of an external threat. Murphy, (2008, p. 56) makes a similar point "when the group is directly threatened and members of the group decide to defend their identity and community, there is evidence to suggest that rioting behaviour has a beneficial social effect as it is used for individual and group catharsis". By reducing the cohesion of the individual populations and in particular the perception of the other community as a threat it is asserted that there is at least the possibility of reducing the long-standing fears that each community has about the other. To achieve this reduction in tension the role of religion as a discriminating factor and the role of politicians as divisive self-serving promoters of difference can and has been, up to a point, addressed. Murphy (2008) also addresses the negative, as well as the positive, effects of strong group cohesion which she terms social capital. Wright (2006, p. 183) provides further similar insight, presenting "a more holistic or whole systems conflict approach which is both dynamic and puzzling, since in many paradoxical respects, it indicates co-operation between the various participants to carry on the conflict at a systemic level".

Economic differences are long standing in Ireland, Darby (1976, p. 162-163) citing De Beaumont (1839), emphasises the economic polarity of the community. This polarity, at lower levels than De Beaumont describes, has continued in Northern Ireland and is present at the time of writing. The statistics on economic returns and employment cited in the introduction to this paper bear witness to this difference. Economic equality or at least the promise that any citizen can attain any economic status that their talents allow is a further lever that takes the focus away from the maintainers of division to the maintenance of personal ambition and achievement.

Honaker (2010) presents a critical review of previous research into the effect of unemployment on levels of violence and presents his own analysis showing that "unemployment becomes a significant causal mechanism for the intensity of conflict" (p. 17). Unemployment, particularly in the longer term, is not here regarded as a primary cause of violence, it enables violence, by making people available. It becomes a secondary cause for violence by instilling the unemployed with a sense of grievance when unemployment rates are disproportionate across the communities.

Disproportionate unemployment rates feed into Dunn's (1995, p. 4) identification of long-standing grievances as an objectified and explicit example of discrimination.

Darby (1976, p. 162-197) reviews a number of 'theories about the conflict" current at the time of his writing. Primary categories within this review are themed along economic, ethno-racial, caste and the psychological divisions that are used to promote discrimination and consequent demand for change amongst the discriminated against.

From within the system dynamics community Wils et al. (1998) describe a model of conflict based on a theory of lateral pressure citing (Chouchri and North, 1975) as the primary source. As interpreted by Wils et al. the theory of lateral pressure is an expansionist view of conflict where lateral pressure is built up between two or more groups leading to the possibility of armed conflict. The main variables the theory focuses on are population, resources and technology which are in some cases modified by available military force and leverage expressed through trade and other means. Although this is an expansionist theory which may give the impression that it is only suitable for cross-border conflicts it can also be used to model domestic conflict (Wils et al, 1998, p. 133) where one section or group within a community seeks to expand at the cost of some other discrete group within the community. This latter interpretation allows some possibility that the technique could be modified for use in the Northern Ireland or other similar scenarios. However, implementing a general theory, of lateral pressure, in a specific case is likely to result in a compromise; either of the original theory or of the individual facts of the specific case study. At a more general level, this criticism resolves to a bias against the use of the deductive philosophy in preference to the inductive philosophy with regard to the social sciences. This criticism is particularly apt when detailed information is available on the specific case study under consideration; as is true when considering Northern Ireland.

Creation of a simulation

It is recognised that conflict is often expressed as a discrete process. Moving in fits and starts, see figure 1 above, with the general direction being determined by specific events; the Battle of Britain 1940, the battle of Waterloo 1815, attacks on the USA on 9th September 2001 and so forth. Further examples of these discrete events at a lower, more human, level are available via pictures of a man standing in front of a Chinese tank during civil unrest, burned and naked children fleeing American air attacks on their village during the Vietnam War and the toppling of a statue of the then leader of Iraq, Saddam Hussein, during western intervention in that country. These examples illustrate two particular facets of conflict; the military and the emotional. For the particular conflict under review here the latter is seen as more important because it is very much a conflict on a human scale; each side being classed as terrorist by the other with many of the weapons being homemade and significant fixed military victories or defeats being a rarity. So why use a continuous simulation technique such as system dynamics to model a process that is perceived to be fundamentally discrete in nature? Regardless of the actual physical conflict being carried out there is a continuous undercurrent of emotional or psychological motivation driving the violence and in turn damping it. The simulation presented below is therefore a focus on the underlying drivers rather than their explicit military expression. Though

physical violence is the natural consequence of the underlying psychology and is used as a yardstick to measure the correlation between emotion and action.

The time period chosen for the simulation encompasses the main body of the conflict in Northern Ireland. Prior to the simulation period there was a time of relative peace that had existed for several decades. Following the simulation period violent activity has again subsided. At no point either before or after the simulation period has Northern Ireland been entirely free from intra-community violence.

In determining the initial states for the system variables it is recognised that these initial states are determined in a different fashion to the subsequent states of the system. As noted above there was a period of relative calm in Northern Ireland leading up to the onset of violence. The onset of violence was mirrored in both the United States and in various locations across Europe. Racial equality was an issue as were anti-war demonstrations and these were widely publicised. This increase in information on what could be generically termed equality issues may have acted as a catalyst for the already long-standing grievances held by, particularly the Catholic, population of Northern Ireland. There is likely to have been a significant momentum for change within Northern Ireland fuelled by the parallel struggles in the United States and Europe. It would have been apparent that the unbalanced state that existed need not be tolerated and that similar states of imbalance were not being tolerated in other parts of the world.

The conflict analysis presented in the simulation model focuses on the Catholic side of the community. The reason being that it is the Catholic, also variously termed the Nationalist and Republican, community that were demanding changes to the status quo that had existed. Once the conflict had begun it takes on a life of its own and all sides are equally involved with most of the other participants demanding a return to the status quo. As a modelling philosophy the simulation is kept as simple as is required to capture the main determinants of the system behaviour.

From the analysis previously presented three primary feedback structures have been identified. The political loop contains the religious dimensions, the political representation dimension and the civil rights dimension. The physical loop is built around the suffering that is created when the demand for change becomes physically tangible; as violence. The suffering produced is divided into that suffered by individuals and by the community then aggregated to produce an overall perception of the effects of violence. The third, economic, loop is built around economic inequality as expressed by employment and income. Linking each of the three loops are the demand for change which forms the core of the model together with the effect of political entrepreneurism. The latter can have a reinforcing or damping effect; politicians can seek to maintain or address the demands for change. The three loops are represented graphically in figures 2, 3 and 4 below together with their common links; through demand for change and political entrepreneurship.

The central and only stock in the model, demand for change, is designed to display a positive demand for change, to model pressure for change from the Catholic community. The stock may become negative, a negative value indicates that there is no demand for change and could be, but is not in this paper, used to model the demand to maintain the status quo; generalised as the Protestant and British points of

view. The initial value of the stock is set, by default, at a level that reflects the pent-up demand for change that had occurred in the Catholic population in the decades preceding the simulation period. The initial value of the stock can be manipulated via the user interface. Subsequent values of the demand for change depend on the loops that feed into it, as per figures 2, 3 and 4, and its own previous values; the behaviour of the demand for change will not therefore display a random walk.

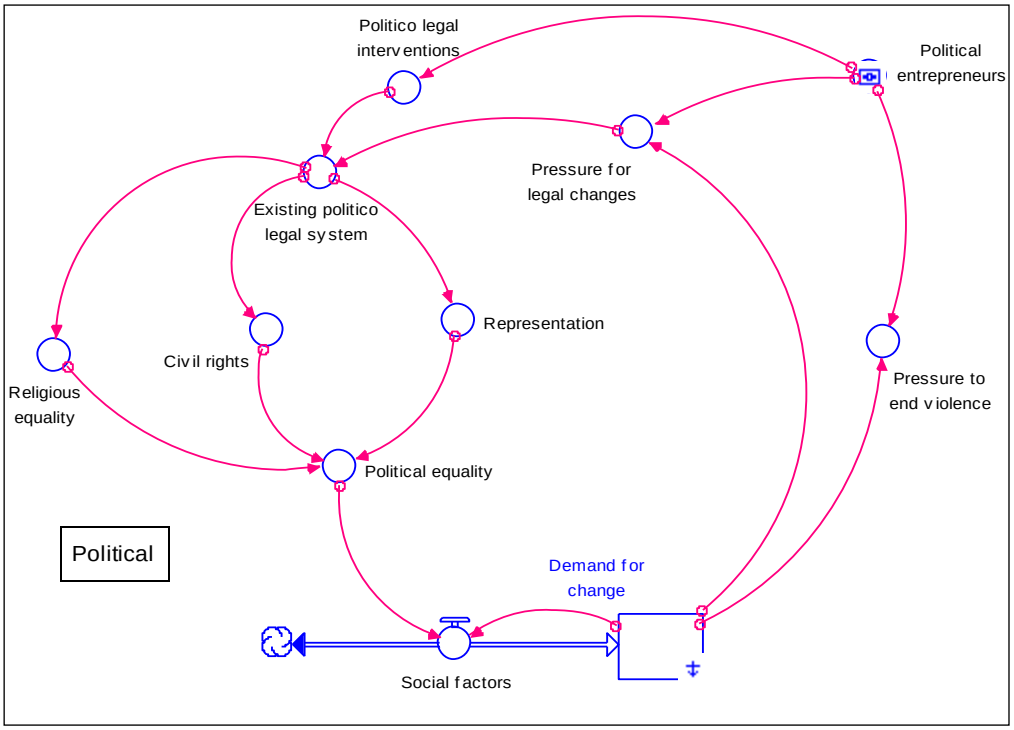

Figure 2: The political loop

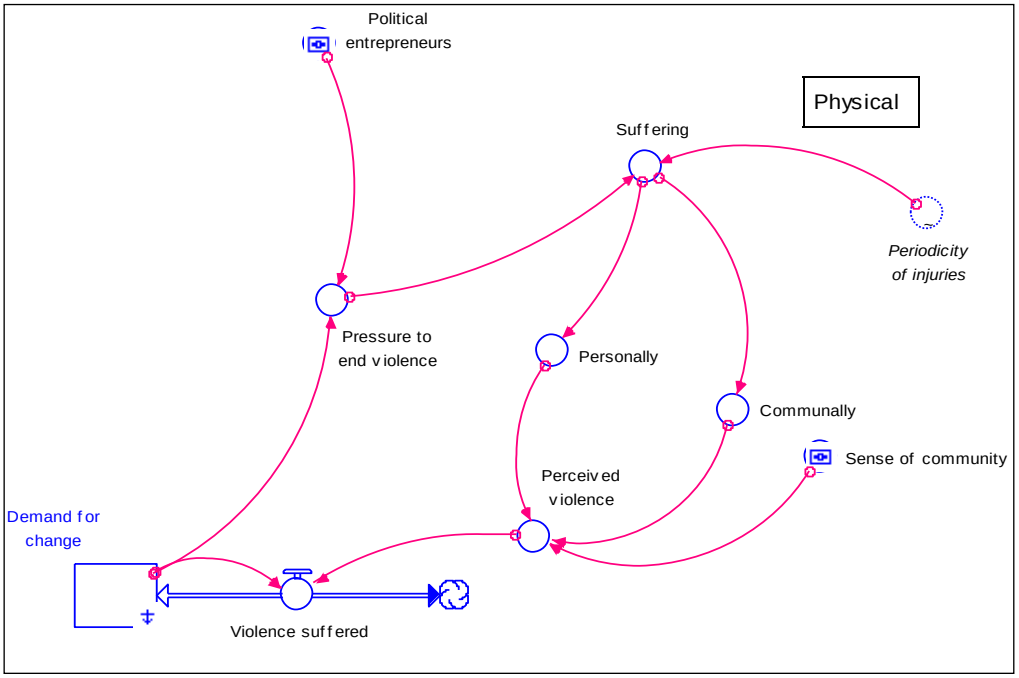

Figure 3: The physical loop

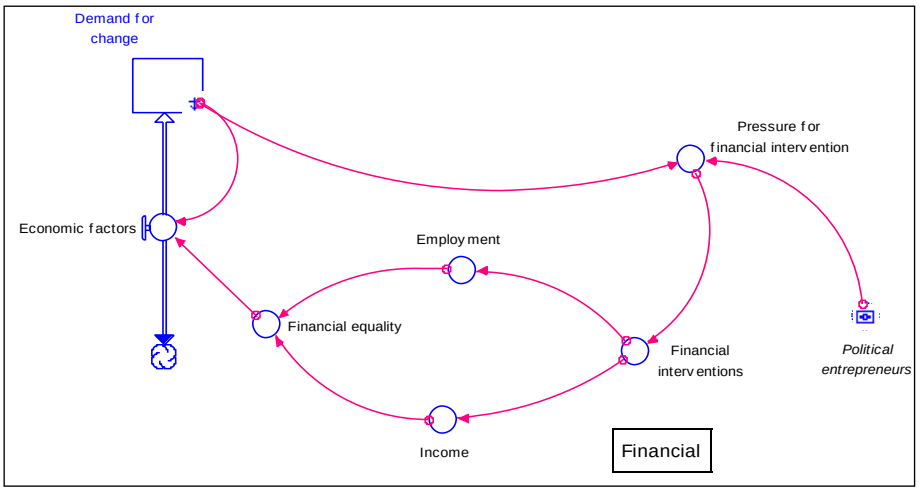

Figure 4: The financial loop

The dimensions of the simulation are all abstract and largely intangible. This is a simulation of the psycho-emotional factors that feed into a conflict and the dimensionality of the simulation reflects this. This conflict, like most any other, arose in the minds of people, was maintained there and will only come to a stop when either people agree to halt violent action or everyone of at least one community is dead or gone.

Looking back to figure 1 there is a visible periodicity or oscillation in the data for both injuries and deaths which are fairly well correlated. This correlation is evident in a moving average data series as illustrated in figures 5a and 5b. It is also evident that violence, as expressed in deaths and injuries, is generally declining during the latter part of the simulation period. A moving average weighted by population (not shown) displays a greater decline in violence per capita.

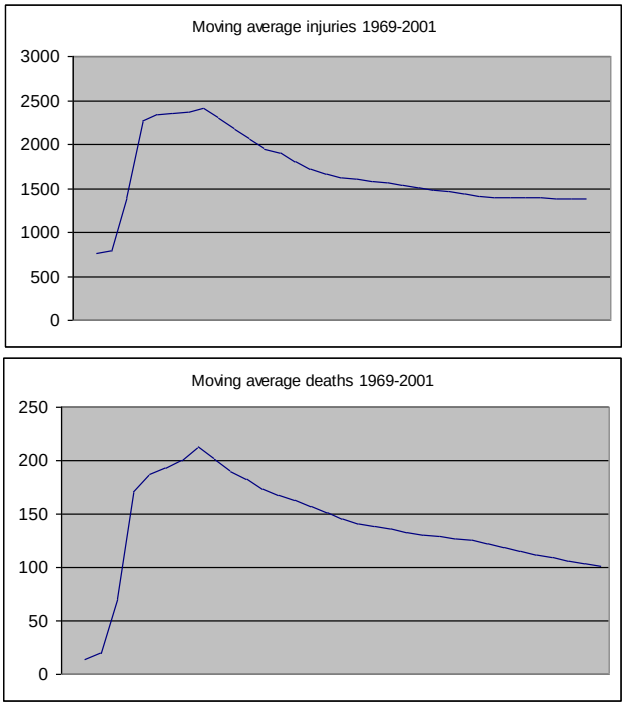

Figure 5a and b: Moving averages of injury and death statistics

Using the approximate frequency of peaks within the injury statistics, which provide a greater sample size and continuity than fatality numbers, the periodicity equates to approximately 4.14 years and is described in table 1 below.

									N	Ave
Year of peak occurrence	3	7	12	17	23	27	29	32	8	
Height of peak/average[3]	3.5	2	1	1	0.8	1.0	1.2	1.2	8	
Years since last peak		4	5	5	6	4	2	3	7	4.14

Table 1: Periodicity in injury data, years

Using table 1 as a guide assists in the calculation of the time it takes for the community to come to terms, forget, the effects of the previous outburst of violence and renew demands for change as expressed by violent action. Alternatively, it may be that the apparent periodicity is due to the need to rearm, plan a campaign or recuperate after a bout of violent action or some combination of these four factors; forgetting, rearming, planning and recuperating. Basic statistical analyses of the type expressed in figures 5a, 5b and table 1 help to define the shape of the functions that are used in the simulation as well as assisting in describing and refining a reference mode. For example, combining the periodicity data from the final row of table 1 and the moving average technique expressed in figure 5 it would be possible to derive a more appropriate moving average window of 4[4] years.

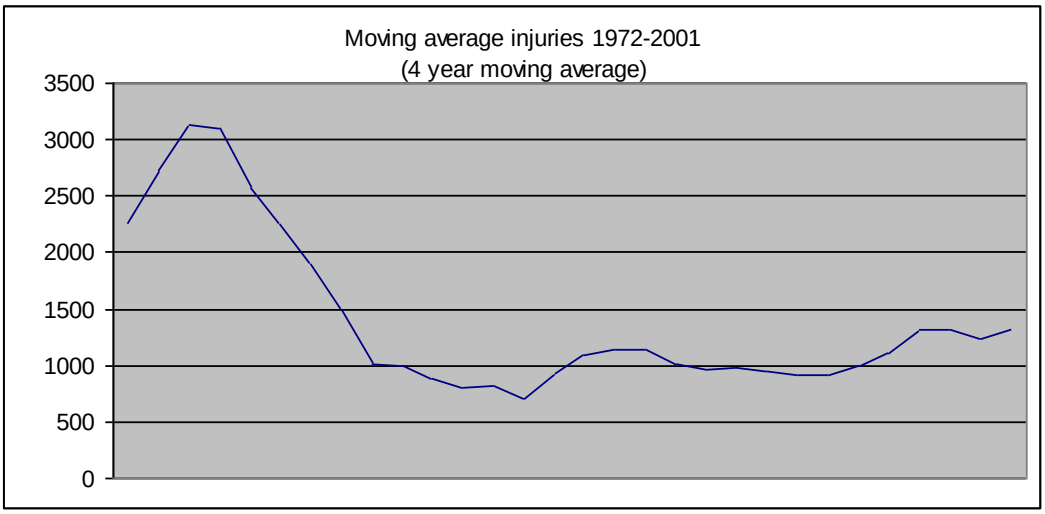

Figure 6: Moving average injuries, 4 year moving average

This is illustrated in figure 6 and can be used to define a final shape for the periodicity function. Figure 6 also reveals a rising trend in injuries in the latter part of the data series which was not immediately apparent in figures 1 or 5 though it is clearly expressed in the height of peak/average row in table 1. This suggested periodicity of the forgetfulness of the population, 4.14 years, of the suffering caused by violence is inserted as a modifier into the variable 'suffering' in figure 3.

[3] This is the height of the peak value compared to the average number of injuries across all years.
[4] Four years is the nearest value to the periodicity of 4.14 years expressed in table 1 given that the base data is in whole years.

Running the model with default values, without the periodicity derivative, results in the reference mode behaviour shown in figure 7. This produces a good fit but and is generally acceptable as a picture of underlying demand for change. Particular spikes can be explained, to some degree, by specific external causes such as the introduction of internment, indefinite imprisonment, without trial on 9th August 1971 which corresponds to the spike in violence/injuries in year 3 of the simulation (as per table 1). Internment was primarily directed at the Catholic population and could be interpreted as a hardening of attitudes and actions in favour of the status quo and consequent increases in the demand for change against an even more repressive and explicitly one sided policy.

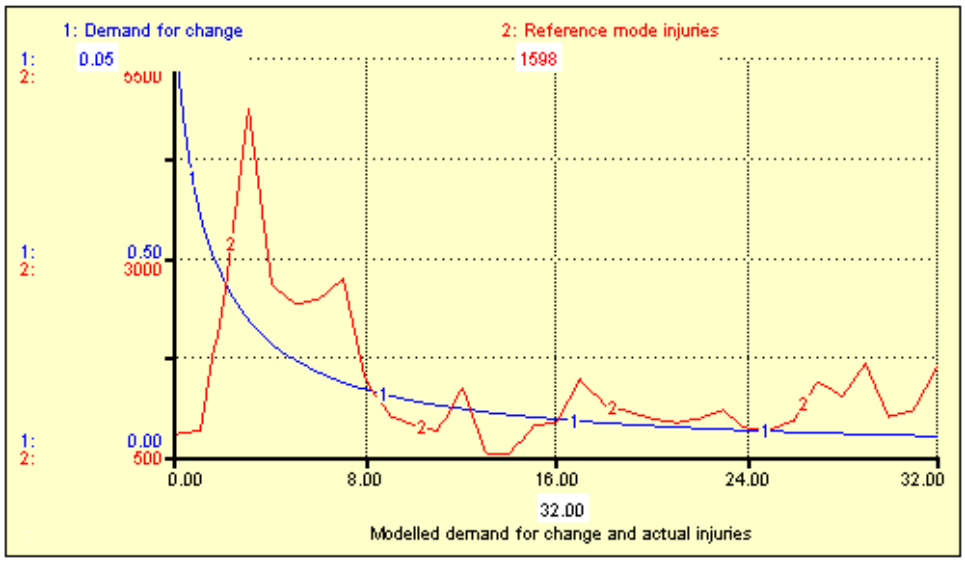

Figure 7: Basic reference mode behaviour with actual reference mode injuries

Running the model with default values and the periodicity derivative defined above results in the reference mode behaviour shown in figure 8; which produces a closer fit between demand for change and actual injuries. Whether or not this is truly reflective of demand for change is open to debate as demand for change and the physical expression of that demand are two different things.

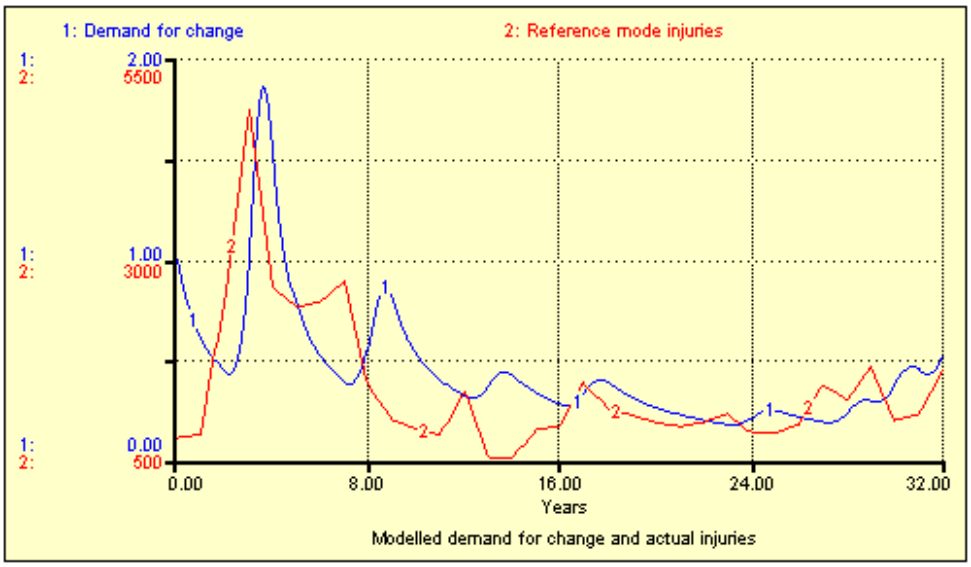

Figure 8: Adjusted reference mode behaviour with actual reference mode injuries

In the latest figures which are available for injuries as a result of the conflict in Northern Ireland (PSNI, 2010b) these show a generally noisy decline up to the current date. If the periodicity observed in table 1 were to remain constant then an upsurge in violence and consequent injuries would have been expected in 2005 and again in 2009; this is indeed the case. Both 2005 and 2009, to date as the 2010 figures are not yet available, show spikes in the number of injuries recorded. Using the previous analysis as a predictor, the next spike in violence and injuries would therefore be expected in 2013-14 and after that in 2017-18. The validity of this forecast remains to be seen.

Review of the simulation

This analysis simulates the conflict from one side; the Catholic side, there will be a similarly complex and interlinked structure to be produced from the Protestant side of the divide. The model presented here is best seen is a preliminary interpretation and is subject to review. This further analysis is identified as an area for further work.

This model is, as is the case with all system dynamics models, an interpretative solution and there are other valid analyses of the situation that could be produced. In particular a semi-cooperative game theoretic model has been considered based on initial work by von Neumann and Morgenstern (1944) with updates to take account of population dynamics as per Hofbauer and Sigmund (2002) and the psychological-behavioural aspects identified by Camerer (2003). An interpretation based on the hawk-dove game[5] is under consideration. Nonetheless, the focus of the current analysis being on quantified emotional aspects of the conflict takes it away from those other conflict analyses that focus on military/legal interpretations of conflict and lends a degree of originality.

Whilst the availability of information on other conflicts became more widely available to the participants in this conflict and is regarded as a catalyst for the onset of violence; the physical manifestation of the demand for change, this is not explicitly modelled. The community within Northern Ireland is geographically small and internal communication about the effectiveness of the demand for change and its consequences is interpreted as being self sustaining once the conflict had become established; with some reference to other conflict situations. Were the analysis to be extended backward in time it would be more appropriate to include ‘awareness of other conflicts’ as a motivator and conversion factor from an unmet and passive demand for change to an explicit and violent demand for change. Fitting the reinforcing influence of other conflicts to the simulation would have discretely increased the initial levels of demand for change and would produce a model of demand for change that more closely mirrored the shape of the statistical distribution for injuries. This was regarded as over-fitting and was not therefore included.

There is no agreed or accepted algebra for measuring or modelling abstract and intangible variables, such as demand for change, and any such model is likely to be somewhat idiosyncratic; the model presented here is no exception. See Nuthmann

[5] The Hawk/Dove game involves individuals who may act aggressively (Hawks) or passively (Doves) and is described in, amongst other places (Gintis, 2000, p. 157). This is a choice, passivity or aggression, which is available to the parties in this conflict.

(1996) for an introduction to the topic and Borooah (2000, p. 3-6) for an example of the creation of an abstract derivative variable, deprivation, from tangible elementary data.

Conclusions

Although this model is based on a single case study it is concluded that the model could be generalised to most conflict scenarios. It is tempting to look at the military aspects of conflict, because they are spectacular, well documented and easily identifiable, rather than as here on the psychological aspects of conflict that are the drivers for the physical manifestation, as violence, of a demand for change. To generalise the model, the sectarian divisions apparent in Northern Ireland can be substituted with race, nationality, tribe, caste, culture or other appropriate cultural/community identifier.

It would also be possible to interpret this analysis as a model of learning where the minority community is educating the majority that it is disaffected with the perceived inequality that exists and is willing to turn that disaffection into physical action. In turn the majority community is learning that it is not acceptable, or worth the cost, to pursue policies of inequality. This conflict is not a zero/sum game; it is possible to have a win/win solution.

Though not directly modelled there is a risk that due to the prevailing negative economic climate that is currently in the ascendancy it would be tempting for many of the participants in this conflict to return to physical violence. Such an assertion is based on the availability of people to invest in conflict, due to unemployment, and their disaffection with their economic situation; attributing this to underlying inequality rather than the global financial situation. There is also the possibility that the Protestant community would return to more isolationist tactics in response to straightened economic times. Borooah (2000) provides some support for this latter conclusion. This entire interpretation rests somewhat on the inappropriate application of heuristic rules and adaptive behaviours as per Kahneman (2002).

References

Borooah V, 2000, Targeting social need: Why are deprivation levels in Northern Ireland higher for Catholics than for Protestants? Munich personal RePEc archive (MPRA), downloaded from http://mpra.ub.uni-muenchen.de/19415/ on 13th March 2010

Camerer C F, 2003, Behavioural Game Theory, Princeton University press

Conflict Archive on the Internet (CAIN), 2010, Conflict and Politics in Northern Ireland (1968 to the Present), downloaded from http://cain.ulst.ac.uk/ on 10th March 2010

Darby J, 1976, Conflict in Northern Ireland: The development of a polarised community, Gill and MacMillan ltd

Dunn S (ed.), 1995, Facets of the conflict in Northern Ireland, St. Martins press Inc.

Gintis H, 2000, Game Theory Evolving, A problem-centered introduction to modelling strategic interaction, Princeton University Press

HofbauerJ and Sigmund K, 2002, Evolutionary games and population dynamics, Cambridge University press

Honaker J, 2010, Unemployment and Violence in Northern Ireland: a missing data model for ecological inference, QuaSSI, Penn state university, downloaded from http://qssi.psu.edu/files/ni.pdf on 10th March 2010

Kahneman D, 2002, Maps of bounded rationality: A Perspective on Intuitive Judgement and choice, Nobel Prize lecture, downloaded from http://nobelprize.org/economics/laureates/2002/kahnemann-lecture.pdf 16th March 2006

Murphy H, 2008, 'The Troubles' geographies of mental health in Northern Ireland and re-conceptualizing social capital, Critical public health, Vol. 18 No. 1 p. 51-64

Northern Ireland Statistics and Research Agency (NISRA), 2009, 2007 Labour force survey religion report, Office of the first minister and deputy first minister for Northern Ireland

Northern Ireland Statistics and Research Agency (NISRA), 2010, Northern Ireland annual abstract of statistics 2009, downloaded from http://www.nisra.gov.uk/archive/uploads/publications/abstract_online/Northern Ireland Abstract of Statistics Online Home.html 7th March 2010

Nuthmann C, 1994, Using human judgement in system dynamics in system dynamics models of social systems, System Dynamics Review, Vol. 10, No. 1, p. 1-27

Police Service of Northern Ireland (PSNI), 2010a, Deaths due to the Security Situation in Northern Ireland 1968 – 31 Jan 2010, downloaded from http://www.psni.police.uk/deaths_cy.pdf 7th March 2010

Police Service of Northern Ireland (PSNI), 2010b, Persons Injured as a Result of the Security Situation in Northern Ireland 1968 – 31 Jan 2010, downloaded from http://www.psni.police.uk/persons_injured_cy.pdf 7th March 2010

Von Neumann J and Morgenstern O, 1944, Theory of games and economic behaviour, Princeton University press

Wils A, Kamiya M and Chouchri N, 1998, Threats to sustainability: simulating conflict within and between nations, System Dynamics Review, Vol. 14, No. 2-3, p. 129-162

Wright S, 2006, A systems approach to analyzing sub-state conflicts, Kybernetes, Vol. 36 No. 1/2 p. 182-194