

A New Agenda ... Values, World Society, Modelling

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A New Agenda seeks to explore all aspects of society using all the academic disciplines paying special attention to values ... with special interest in modelling ... not disinterested in practice ... and aspiring to high academic standards.

Commentary, March 2016

No. 27

Ireland 1801-1916-2016:

the independence continuum, political configurations, correlated party trajectories, and principle component analysis

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Overview

Ireland's politics in the period 1801 to 2016 has exhibited the rise and fall of political configurations located on an independence continuum; correlated party trajectories are identified using principle component analysis, and exhibit long-term patterns, volatile transitions and short-term fluctuations.

Easter 1916, the recent election and the New IRA have prompted this investigation of Ireland's electoral history, 1801 to 2016. The election in February 2016 partially reversed the dramatic swings of the 2011 election and also saw the rise of Sinn Fein – and presented a problem in coalition formation. In the nineteenth century the electoral dominance of the two British parties, Tories and Whigs, gave way to the dominance of the Home Rule party; the First World War, the postponement of Home Rule and the Easter Rising in 1916 and its suppression were the prelude to Sinn Fein's

dominance in the 1918 election – with a Unionist presence in the North. The 1922 election in the South split pro-Treaty Sinn Fein and anti-Treaty Sinn Fein. By 1937, this split had transformed into two parties, Fine Gael (FG) and Fianna Fáil (FF) which have continued to dominate Ireland's elections ever since.

The focus here is on a statistical analysis of governments and election results in the period 1919-2016. The start of the period exhibited transition volatility in terms of the identity of the major parties. Single-party majority governments with consecutive wins at the start have given way to coalition minority governments often with a single term of office. The average over the period has given FF 44% of the seats, FG 33%, Labour 11% and Independents 5%.

The trajectories of parties' shares of seats are correlated and a principal component analysis finds five components: (C1) 'FF versus Indep, SF and Other', 38% of the variation; (C2) 'FG and Labour versus the rest', 28%; (C3) 'Labour versus FG and Independent', 15%; (C4) 'Independent and Labour versus Sinn Fein', 10%; and (C5) 'Sinn Fein versus Other', 9%. Parties and elections are located in C1-C2 space. Rotating the axes gives U1-U2 space with short-term fluctuations in the U1 direction and long-term change in the U2 direction.

The size of the electorate correlates with the number of parties contesting the election; the number of parties correlates negatively with the turnout; the number of parties correlates negatively with the percentage vote for the largest party (and negatively with the seat share for the dominant party FF); and the percentage vote for the largest party is negatively associated with the presence of a coalition. Also party percentages are related to turnout. The size of the electorate has doubled in the second half of the period – with roughly corresponding changes in the other variables.

1 Easter Rising, 1916 ... New IRA, 2016 ... five points on the independence continuum

... Cathal Brugha 'suffered 25 bullet wounds when his unit charged the British army in Easter week, 1916. He later became an IRA assassin and was chosen to join a hit squad to murder the British cabinet in 1918 during Ireland's war of independence ... [he] was elected as a Sinn Fein MP in 1918 and in 1922 voted against the Anglo-Irish Treaty that led to the partition of Ireland. On 5 July, 1922, during the Irish Civil War, he was shot in O'Connell Street in Dublin and died two days later, aged 47.'

Note: Due to the absence of [Éamon de Valera](#) and [Arthur Griffith](#), Brugha presided over the first meeting of Dáil Éireann on 21 January 1919. (Wikipedia, 2016, cath).

'As 21st-century Irish republican dissidents mark the centenary of the Easter Rising against British rule with murder attempts across Northern Ireland, the grandson of one of the revolt's most militant fighters has told hardliners they cannot use it to justify violence.'

Cathal Brugha's grandson says:

‘Although the British empire had been 700 years in Ireland, it was one continuous attack on the Irish people. In that context, the 1916 rebellion was more about standing up for ourselves and calling a halt to the attacks than about starting a fight.

About 485 people died in the 1916 rebellion, small by any standard, considering the benefits that were to come, in that it led to our managing our own affairs, which anyone will agree turned out to be better than was likely to be the case by the civil servants in Whitehall.’

Republican Sinn Fein says:

‘The objectives of 1916 have not been attained, [...] the revolutionary ideals set out are unfinished business. Ireland is still under an armed and political occupation from the British government.’

Sean O’Callaghan, provisional IRA southern commander in the 1980s secretly working for Irish security forces, points out:

‘in 1916 most Irish nationalists supported the non-violent Nationalist party that wanted only home rule rather than full independence from the British empire.’

(McDonald, 2016)

Today’s paper reports that in Northern Ireland a prison officer, who had been wounded in a bomb attack by the New IRA on 4th March, had died from a suspected heart attack. (Rogan, 2016). See also Moriarty (2016).

These various remarks indicate five distinct points on an independence continuum:

New IRA
today’s Sinn Fein
Anti-Treaty Sinn Fein (ancestor of today’s Fianna Fáil)
Pro-Treaty Sinn Fein (ancestor of today’s Fine Gael)
Home Rule nationalists

. NIRA SF ATSF PTSF HR

2 Ireland’s general election, 2016 ... possible coalitions ... latest proposal

A general election was held in Ireland on 26 February 2016. The top three parties – Fine Gael (FG), Fianna Fáil (FF) and Sinn Fein (SF) - can all trace their origins back to the Sinn Fein of 1916 ...

The 2011 election had seen a collapse in support for Fine Gael and an increase in support for Fianna Fáil. In 2016 the Fianna Fáil vote fell back and Fine Gael recovered some ground and Sinn Fein made marked gains. No party enjoyed a majority. The numbers of seats won by each party were: FG 50, FF 44, SF 23, Independent and Other (IO) 23, Labour (Lab) 7, AAA-PBP 6, Social Democrat 3, and

Green 2. A majority coalition requires 79 seats. The following majority coalitions are possible. (The Irish Times, 2016, coa).

two party coalitions: FG+FF

three party coalitions: FG+SF+(IO or Lab or AAA-PBP);

FG+IO+(Lab or AAA-PBP); FF+SF+IO

four-party coalitions: FF+Lab+AAA-PBP+(IO or SF);

FF+Lab+AAA-PBP+(IO or SF)

‘First Dáil meeting was predictable – but what happens next?’

Fianna Fáil will feel pressure to do a deal with Fine Gael and avoid another general election

It can’t be an anti-climax if nobody expected matters to reach a conclusion.

The events in [Leinster](#) House yesterday played out more or less exactly as everyone said they would. The Dáil met. It failed to elect a new Taoiseach. It adjourned.

Now comes the hard bit.

Yesterday brought to an end the first phase of the post-election period. That phase was given over to the process of comprehending the extent to which Ireland’s political landscape has changed, and the clarification of what this means for government formation.

And in that clarity we can see that [Ireland](#) is either poised for an unprecedented agreement between the two old enemies of Irish politics, or there will be another general election.

The days when the two big civil war parties were all that mattered in Irish politics are gone forever. Yet despite the fracturing of party politics and the proliferation of new groups and Independents, the game of government formation is again dominated by the big two. Not as big as they were, to be sure, but still at the decisive centre of things.

So what will they do? What are the prospects for a government in the coming weeks? In other words, what the hell happens now?

There are four possibilities. The first two will be pursued with public vigour and apparent seriousness in the coming weeks: they are minority administrations led by either [Fianna Fáil](#) or [Fine Gael](#).

Both the Taoiseach [Enda Kenny](#) and the [Fianna Fáil](#) leader [Micheál Martin](#) have indicated in recent days that they will try to put together such administrations.

But the numbers are stacked against them; after the election of [Seán Ó Feargháil](#) as [Ceann Comhairle](#), [Micheal Martin](#) has 43 TDs to call on; [Enda Kenny](#) has 50.

That’s a long, long way from the 79 needed to make a bare Dáil majority.’

(Leahy, 2016)

This political uncertainty prompted an article in [The Irish Times](#) discussing [Peter Emerson](#)’s proposals for resolving post-election conflicts over government formation. (Humphreys, 2016; Emerson, 2016a, 2016b). See also [O’Toole](#) (2016).

The latest news (19th March) from [Fiach Kelly](#) (2016) in [The Irish Times](#) is:

‘Fine Gael to offer Independents five-year deal for government. Enda Kenny’s proposal includes major initiatives on housing and health issues.’

3 A brief history of Ireland ... political configurations 1801-1918

The following dates sketch a timeline of the history of Ireland: the prehistoric Mesolithic, Neolithic, Copper and Bronze and Iron Ages; and the external influences of and invasions by the Romans, Christianity, the Vikings, the Normans, the English and the British.

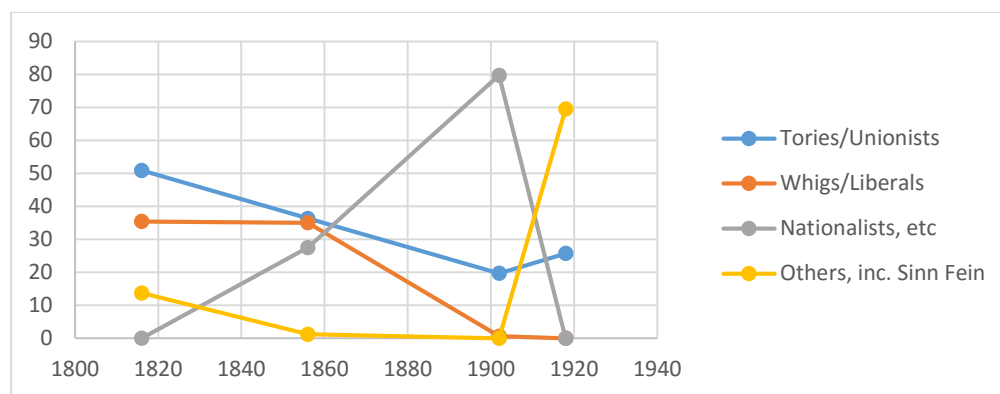
8000 BC Mesolithic
4000 BC Neolithic
2500 BC Copper and Bronze
500 BC Iron Age
55 BCE Hiberno-Roman relations
431 First bishop to Irish Christians
795 First Viking raid
1169-1171 Norman invasion of Ireland
1177-1542 Lordship of Ireland
1297 Parliament of Ireland
1541 Kingdom of Ireland
1801 The United Kingdom of Great Britain and Northern Ireland
1923 Ireland – Republic of Ireland
The United Kingdom of Great Britain and Northern Ireland

‘Ireland was part of the United Kingdom of Great Britain and Ireland from 1801 to 1922. For almost all of this period, the island was governed by the UK Parliament in London through its Dublin Castle administration in Ireland. Ireland faced considerable economic difficulties in the 19th century, including the Great Famine of the 1840s. The late 19th and early 20th centuries saw a vigorous campaign for Irish Home Rule. While legislation enabling Irish Home Rule was eventually passed, militant and armed opposition from Irish unionists, particularly in Ulster, opposed it. Proclamation was shelved for the duration following the outbreak of the Great War. By 1918, however, moderate Irish nationalism had been eclipsed by militant republican separatism.

In 1919, war broke out between republican separatists and British Government forces. In 1920, the British Government partitioned Ireland into two semi-autonomous regions: Northern Ireland and Southern Ireland, intended to be co-ordinated by a Council of Ireland. Upon Royal Assent, the Parliament of Northern Ireland came into being in 1921. However, the institutions of Southern Ireland never became functional. On 11 July 1921, a ceasefire was agreed between the separatists and the British Government. Subsequent negotiations between Sinn Féin, the major Irish party, and the UK government led to the signing of the Anglo-Irish Treaty which resulted in five-sixths of Ireland seceding from the United Kingdom. Under the terms of The Treaty, the whole island of Ireland was granted Dominion status as the Irish Free State. An opt-out provision for the Northern Ireland region resulted in its decision to remain part of the UK, while the remainder became the Irish Free State.’ (Wikipedia, 2016, hi)

The period 1801 to 1918 saw the succession of three political configurations. In the nineteenth century the electoral dominance of the two British parties, Tories and Whigs, gave way to the dominance of the Home Rule party. The First World War, the postponement of Home Rule and the Easter Rising in 1916 and its suppression were the prelude to Sinn Fein's dominance in the 1918 election – with a Unionist presence in the North. See Figure 1.

Figure 1 Irish parliamentary representation, 1801 to 1918, the succession of three political configurations: 1801-1831, 1832-1880, 1885-1910, and 1918



Source: Coakley, John and Michael Gallagher Eds. (2010) Table 1.1 Irish parliamentary representation, 1801 to 1918, page 11

The collapse of the Whigs/Liberals in the period is worth commenting on:

‘Among the consequences of the [Third Reform Act](#) (1884–85) was the giving of the vote to the Catholic peasants in Ireland, and the consequent creation of an [Irish Parliamentary Party](#) led by [Charles Stewart Parnell](#). In the [1885 general election](#) this party won the balance of power in the House of Commons, and demanded [Irish Home Rule](#) as the price of support for a continued Gladstone ministry. Gladstone personally supported Home Rule, but a strong [Liberal Unionist](#) faction led by [Joseph Chamberlain](#), along with the last of the Whigs, Hartington, opposed it. The Irish Home Rule bill gave all owners of Irish land a chance to sell to the state at a price equal to 20 years' purchase of the rents and allowing tenants to purchase the land. Irish nationalist reaction was mixed, Unionist opinion was hostile, and the election addresses during the 1886 election revealed English radicals to be against the bill also. Among the Liberal rank and file, several Gladstonian candidates disowned the bill, reflecting fears at the constituency level that the interests of the working people were being sacrificed to finance a rescue operation for the landed elite.^[8]

The result was a catastrophic split in the Liberal Party, and heavy defeat in the [1886 election](#) at the hands of [Lord Salisbury](#). There was a final weak Gladstone ministry in 1892, but it also was dependent on Irish support and failed to get Irish Home Rule through the House of Lords.

Gladstone finally retired in 1894, and his ineffectual successor, [Lord Rosebery](#), led the party to another heavy defeat in the [1895 general election](#).’

Wikipedia (2016, lib)

This analysis indicates two extra points on the independence continuum:

Tories/Conservatives and Unionists
Whigs/Liberals

NIRA SF ATSF PTSF HR WL TCU

4 Irish cabinets, 1919-2016 ... the increasing prevalence of coalitions

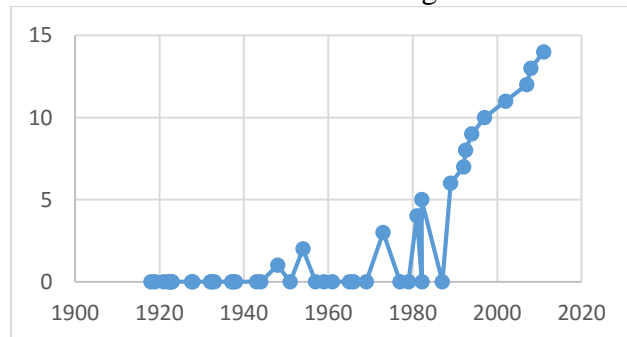
The Irish legislature comprises the presidency, the elected lower house (the Dáil) and the upper house. There have been 32 Dáils in the period 1919-2016.

There have been 44 Irish cabinets between 1919 and 2016: the Ministry of the 1919-1922 Irish Republic (4); the Provisional Government of 1922 (2); the Executive Council of the 1922-1937 Irish Free State (8); and the subsequent 1937-2016 governments of the Republic of Ireland (30).

Of these, 32 have been formed following an election and 12 have been formed between elections. Coalitions have been involved in 14 cabinets, including all 9 cabinets since 1989. Figure 2 shows the contrast between the prevalence of single-party government up till the 1970s and the prevalence of coalition government since then. (Wikipedia, 2016, icab)

Figure 2 The cumulative number of coalition governments, 1919-2016

cumulative number of coalition governments



The parties leading the cabinets were as follows. The first three cabinets were Sinn Fein (S) in 1918-1921 and this was followed by Pro-Treaty Sinn Fein (P) in 1922; then Cumann na nGaedheal (C) in 1923-1932; then Fianna Fáil (FF) in 1932 -1944 and then Fine Gael (FG) in 1948. Thereafter cabinets have been led by either FF or FG.

FF (A) has had 25 cabinets; FG (B) has had 7 cabinets; C has had 4 and Pro-Treaty Sinn Fein has had 4; and Sinn Fein has had 3. FG cabinets have always involved a coalition with other parties (always with Labour, twice with a third coalition partner). All FF governments since 1989 have involved a coalition (five times with Progressive Democrats and twice with the Greens). The sequence of cabinets can be specified as follows, with lower case denoting between-election cabinets and '*' indicating coalition cabinets.

SsS pPpp CCCc AAAaAAA B* A B* AaAAaA B* Aa B* A B* AA*a*A*
 b* A*A*A*a* B* X

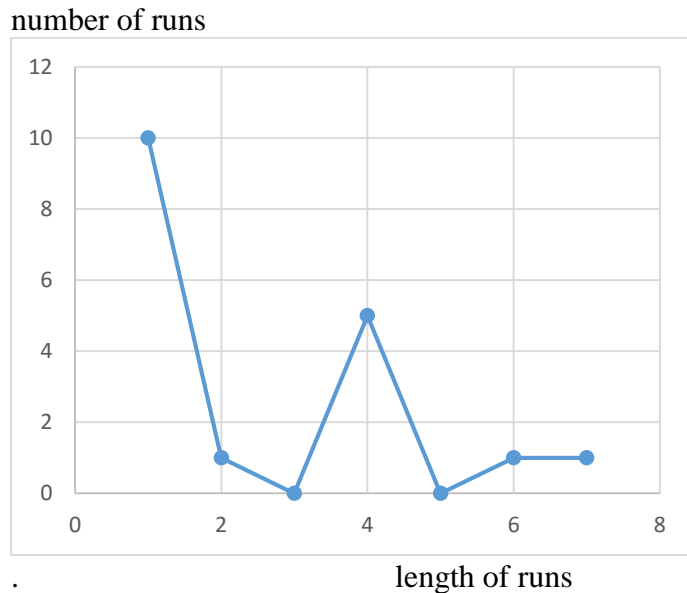
Sometimes a party has a run of a number of consecutive cabinets. The sequence of lengths of runs in the above sequence is given below and the distribution of lengths of runs is given in Figure 3.

same-party government runs: 4 4 4 7 1 1 1 6 1 2 1 1 1 4 1 4 1 1

Of the fourteen coalition governments, ten have involved just two parties, two have involved three parties and just one has involved five parties.

numbers in coalitions: 5 3 2 2 2 2 2 3 2 2 3 2 2

Figure 3 The frequency of runs of consecutive same-party cabinets



5 Ireland elections, 1922-2016

5.1 The parties' shares of the seats

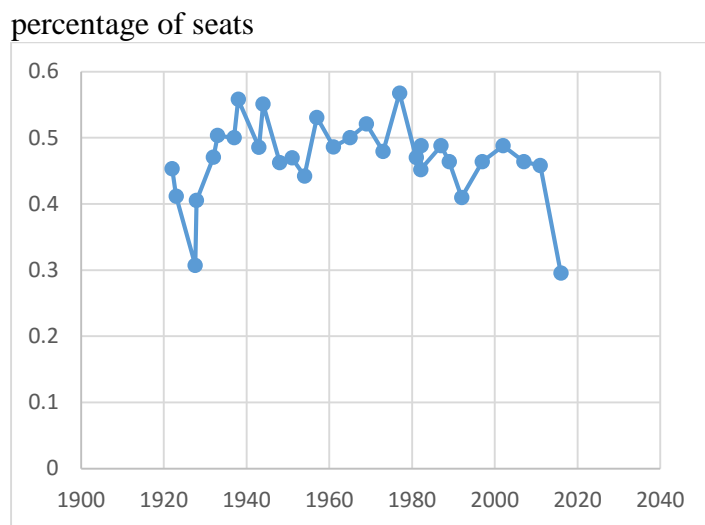
Throughout the period the main governing party has been the party which has had most seats in the lower house. So we now focus on the election results with particular attention to the percentage of seats gained by each party.

We focus on the period starting in 1922 since this saw the start of the split between pro- and anti-Treaty Sinn Fein. The UK general election of 1918 had seen Sinn Fein win 73 of the 101 seats in Ireland and the 1921 election had seen 124 unopposed Sinn Fein seats in Southern Ireland. Thus, a unitary Sinn Fein, the third of the three political configurations of the 1801-1918 period discussed above, gave way in 1922 to

the fourth political configuration, a competition between two parties which were soon to become transformed as Fianna Fáil and Fine Gael.

The largest party has had 50% or more of the seats on just eight occasions, the last such occasion being in 1977. Only twice has the largest party had less than 40%, in June 1927 and now in 2016. So usually the largest party has between 40% and 50% of the seats. When this happens, a coalition government usually forms. However on some occasions a single party has formed a minority government (the four governments of the 1920s; 1932, 47%; 1943, 49%; 1961, 49%; February 1982, 47%; 1987, 49%). See Figure 4. Note that, leaving aside the 1920s, there is possibly a slight downward trend?

Figure 4 The percentage of seats won by the largest party



In what follows ‘Fianna Fáil’ and ‘Fine Gael’ will refer also to the predecessors of these two parties. The Anti-Treaty Sinn Fein group in 1922 became the Republican Party in the 1923 election which in turn transformed into Fianna Fáil in the June 1927 election, the leader throughout the period being Eamon de Valera. The Pro-Treaty Sinn Fein group in 1922, led by Michael Collins, became the Cumann na nGaedheal in the 1923 election which in turn became Fine Gael in the June 1937 election, the leader throughout the period being W. T. Cosgrave. ‘Sinn Fein’ refers to the party that stood in the 1923 and subsequent elections, not to the Sinn Fein in the 1922 election. ‘Independents’ are treated as a group and referred to as a ‘party’.

Fianna Fáil has been the dominant party throughout the period with Fine Gael almost always in second place, defeating Fianna Fáil on only six occasions: the four elections at the start of the period, 1922-1927; and the two recent elections 2011 and 2016. Fianna Fáil experienced a dramatic collapse in 2011 with just a slight recovery in 2016. Fine Gael experienced its best ever result in 2011 but fell back to its average level in 2016.

FF governments with 50%+ seats	8
FF single-party governments with less than 50% seats	5
FF coalition governments with FF less than 50% seats	6

FG coalition governments with FG less than 50% seats	7
CG single party governments with less than 50% seats	4

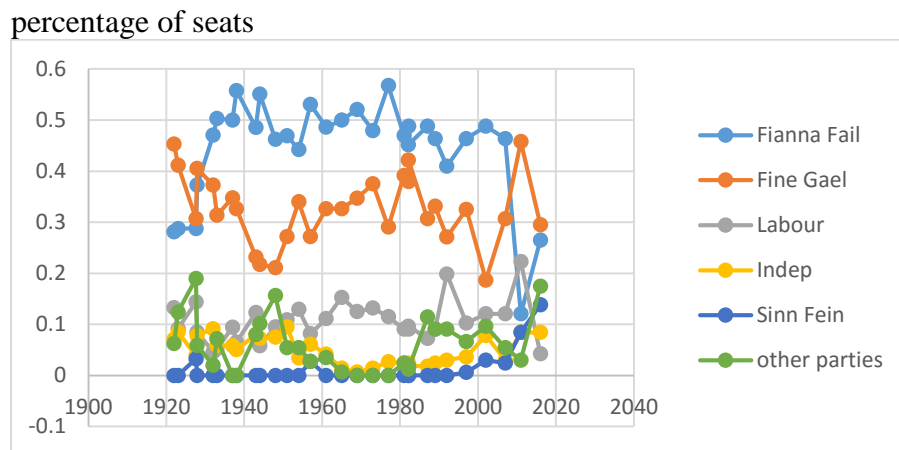
Almost always in third place has been the Irish Labour Party. In the period 1960 to 1980 the three parties, FF, FG and Labour, secured almost all the seats.

Almost always in fourth place has been the Independents (not an actual party).

Sinn Fein (what was left after de Valera formed FF) gained a few seats in the election of June 1927 and then none till 1957 and subsequently only occasionally but since the 1990s has increased its seats reaching third place in 2016 and overtaking Labour.

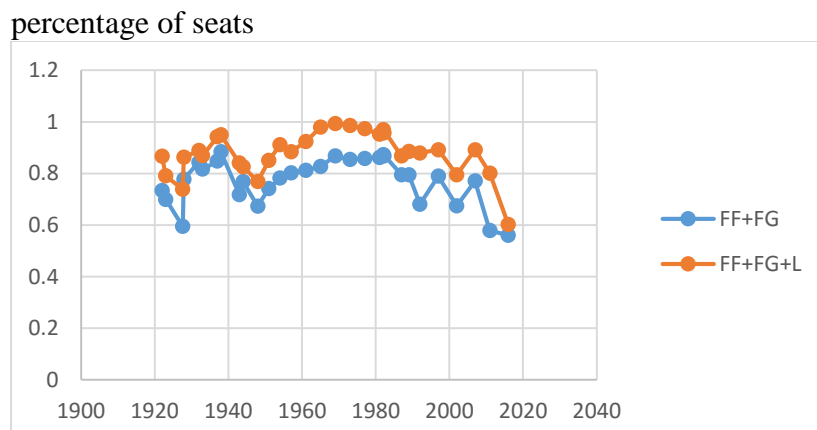
The combined total for Other parties was zero in the 1960s and 1970s but was greater at the start and at the end of the period. See Figure 5.

Figure 5 Percentage of seats gained by different parties, 1922-2016



Reinforcing the remarks about the dominance of FF, FG and Labour, Figure 6 shows the combined total of seats gained by the three parties - almost 100% in the middle of the period and less at the start and at the end. A similar pattern is shown for the combined FF and FG figures.

Figure 6 Percentage of seats gained by party groupings, 1922-2016



5.2 Correlated party trajectories and principle component analysis

Figures 4 to 6 of the previous section have displayed the trajectories for the parties' shares of the seats. Some trajectories look quite similar while others look quite different. It is this relationship between trajectories which is studied in the present section.

Table 1 presents the basic statistics for the percentage of seats for the parties and sets of parties: the mean percentage, minimum, maximum and range, and standard deviation.

Table 1 Percentage seats for parties and sets of parties: basic statistics

.	mean	min	max	range	sd
FF	44	12	57	45	10
FG	33	19	46	27	7
Labour	11	4	22	18	4
Indep	5	1	10	9	3
Other	6	0	19	19	5
SF	1	0	14	14	3
FF+FG	77	56	88	32	9
FF+FG+Labour	88	60	99	39	9
FF+FG+Labour+Indep	93	69	100	31	7

Table 2 presents the correlations for the percentage seats for parties and sets of parties. Given that FF has been the dominant party it is perhaps not surprising that it has substantial negative correlations with all the other parties: in other words, gains by FF correspond to losses by the other parties and vice versa. There are moderate positive correlations between Independent, SF and Other; and these three have zero or negative correlations with FF, FG and Labour: in other words, gains by Independent, SF and Other correspond to losses by FF, FG and Labour and vice versa.

Table 2 Correlations between percentage seats for parties and sets of parties

.	FF	FG	Lab	Indep	SF	Other	FF+FG	FF,FG,L	FF,FG,L,I
FF	1	-0.49	-0.41	-0.38	-0.61	-0.42	0.75	0.60	0.58
FG		1	0.16	-0.14	-0.01	-0.40	0.21	0.30	0.30
Lab			1	-0.20	0.06	-0.11	-0.34	0.11	0.06
Indep				1	0.33	0.35	-0.53	-0.66	-0.40
SF					1	0.38	-0.69	-0.69	-0.71
Other						1	-0.77	-0.87	-0.92
FF+FG							1	0.90	0.88
FF+FG+Labour								1	0.95
FF+FG+Labour+Indep									1

The second last column presents the correlations for the combined percentage of FF, FG and Labour; and these correlations order the parties on a continuum: FF, FG, Labour, Independent, SF and Other. This observation is borne out by the following analysis.

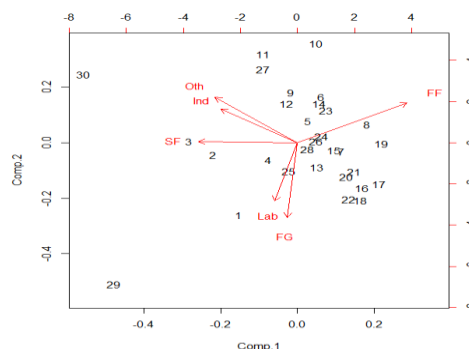
A principle component analysis was carried out on the parties' shares of seats. The most important component (C1) was 'FF versus Indep, SF and Other' which accounted for 38% of the variation. The next most important component (C2) was 'FG and Labour versus the rest' accounting for 28% of the variation. The third component (C3) was 'Labour versus FG and Independent' accounting for 15% of the variation. The fourth component (C4) was 'Independent and Labour versus Sinn Fein' accounting for 10% of the variation. The fifth component (C5) was 'Sinn Fein versus Other' accounting for 9% of the variation. (Because the six percentages add to 100%, there is no sixth factor.) Table 3 gives the loading of each party on each component, loadings greater than 0.4 in size are indicated in bold.

Table 3 Loadings of each party variable on the principle components

	C1	C2	C3	C4	C5
FF	0.59	0.34	0	0	0.23
FG	0	-0.64	0.53	0.15	-0.26
Labour	-0.12	-0.50	-0.69	-0.42	0
Indep	-0.41	0.29	0.41	-0.73	0.12
SF	-0.53	0	0	0.46	0.68
Other	-0.44	0.39	-0.28	0.23	-0.62
% of variance	38	28	15	10	9

We now focus on the two most important components which together account for 66% of the total variance. From Table 3 above, FF loads 0.59 on the first component and 0.34 on the second component, and this can be represented as a point in two dimensional space - or an arrow to the point from the origin. See the arrows in Figure 7. FF points to the right; FG and Labour both point downwards; Independents and Other both point left; and SF also points left.

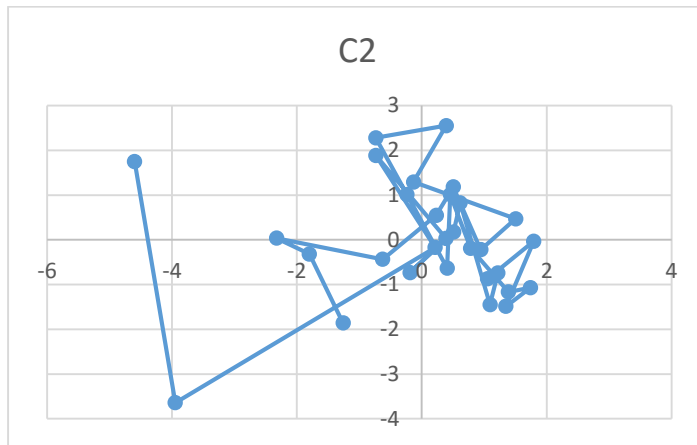
Figure 7 Parties and elections plotted in the two-dimensional space, formed by the two principle components, C1 and C2



Also plotted in Figure 7 above are points representing the different elections, each point represents the score of an election on the two components. Excluding points 1-4, 10, 25, 29 and 30, the points seem to lie near a line that slopes down from 'North-West' to 'South-East'.

Figure 8 below reproduces Figure 7 but adds the line segments representing the trajectory through the points over time. Together the line segments look like the capital letter 'T', tilted. Many of the line segments seem to run 'North-West' to 'South-East' while some run at right angles to that, 'South-West to North-East'.

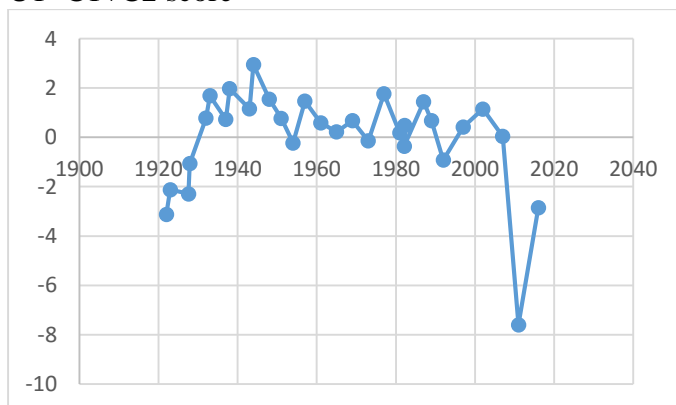
Figure 8 The trajectory of elections plotted in the two-dimensional space, formed by the two principle components, C1 and C2



In order to study the trajectory in the SW-NE direction we define a new component $U1=C1+C2$. This can be thought of as FF versus FG, Labour and SF. The trajectory exhibits short-term fluctuations. See Figure 9.

Figure 9 U1 score: FF versus FG, Labour and SF ... short-term fluctuations

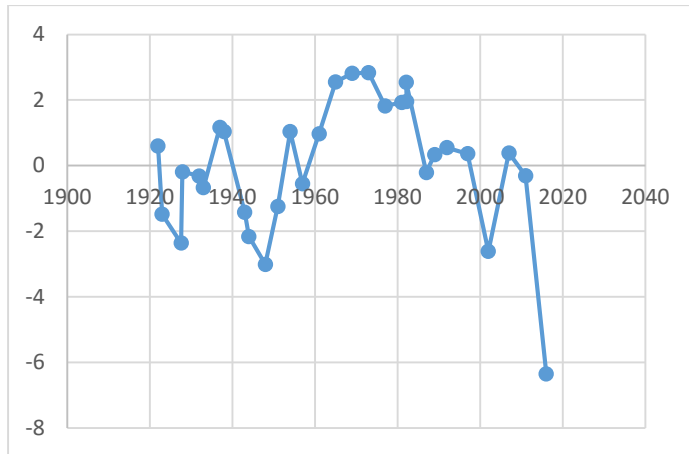
$U1=C1+C2$ score



In order to study the trajectory in the NW-SE direction we define a new component $U2=C1-C2$. This can be thought of as FG and Labour versus Independent and Other. The trajectory exhibits a long-term pattern, with FG and Labour dominant in the middle of the period, with fluctuations at the start of the period and decline later in the period. See Figure 10.

Figure 10 U2 score: FG and Labour versus Independent and Other ... long-term change

U2=C1-C2 score



The two components U1 and U2 are fairly well illustrated by the changes in party seats for 2002-2007 and 2007-2011. See Table 4.

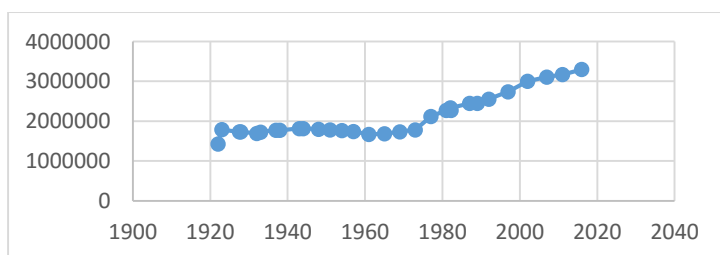
Table 4 Changes in the party share of vote: 2002 to 2007; and 2007 to 2011

	2002 to 2007: FG and Labour versus Independent and Other (U2)	
	2007 to 2011: FF versus FG, Labour and SF (U1)	
FF	-2	-34
FG	12	15
Labour	0	10
Indep	-5	5
SF	-1	6
Other	-4	-2

5.3 The size of the electorate and the number of seats

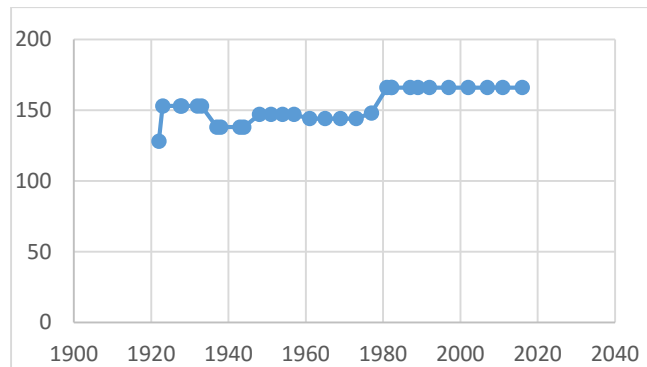
The size of the electorate was fairly constant around 1,750,000 in the period 1922-1975; and then increased steadily, doubling in the period 1975-2016. (Note that the straight line increase indicates a declining *rate* of increase, cf. simple interest and compound interest). See Figure 11.

Figure 11 The electorate, 1922-2016



The number of seats was 128 in 1922 and has fluctuated between 138 and 166, the latter being the case since 1981. See Figure 12.

Figure 12 The number of seats



5.4 Size of electorate, number of parties, turnout, size of largest party and coalitions

The size of the electorate correlates 0.76 with the number of parties contesting the election; the number of parties correlates with -0.50 with the turnout; the number of parties correlates -0.57 with the percentage vote for the largest party (and -0.52 with the seat share for the dominant party FF); and the percentage vote for the largest party is negatively associated with the presence of a coalition. Also party percentages are related to turnout. See Figures 13 to 15.

Figure 13 Relationships between the variables

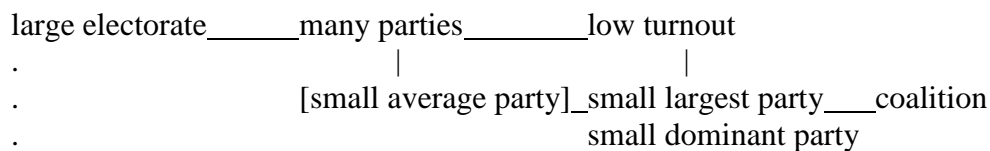


Figure 14 Percentage turnout is related to the number of parties

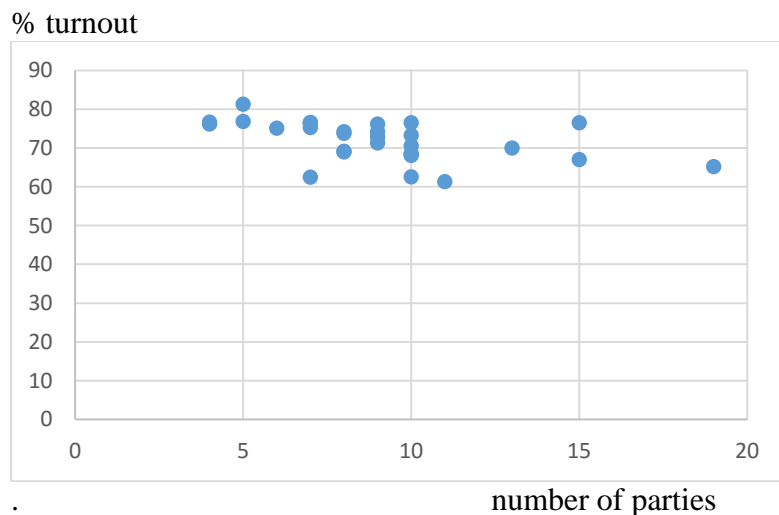
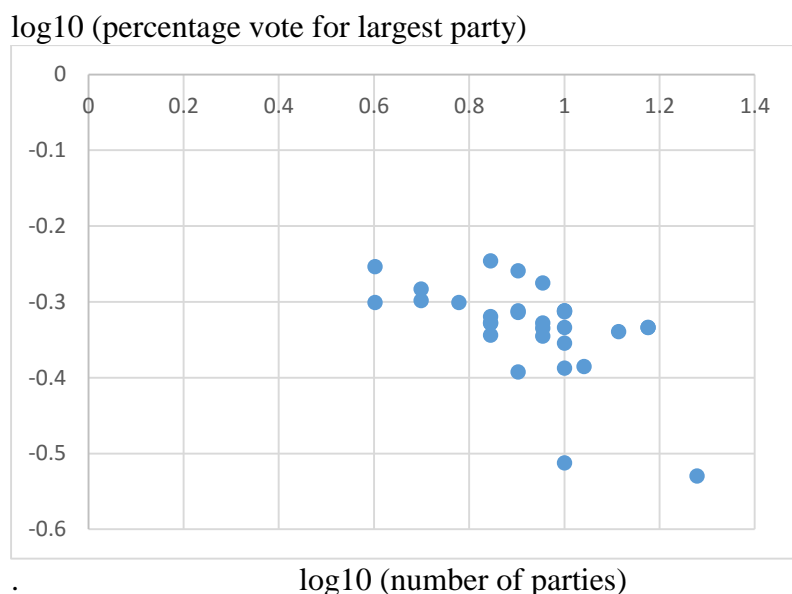


Figure 15 The percentage vote for the largest party is related to the number of parties



There is a necessary relation between the number N of parties and the size (proportion of votes P) of the average party.

. $P = 1/N$

. $\log P = -\log N$

Figure 15 indicates a relationship between N and the largest party vote L taking the approximate form, from which the relationship between L and P can be estimated.

. $\log L = -0.35 \log N$

. $\log L = 0.35 \log P$

. $L = P^{0.35}$

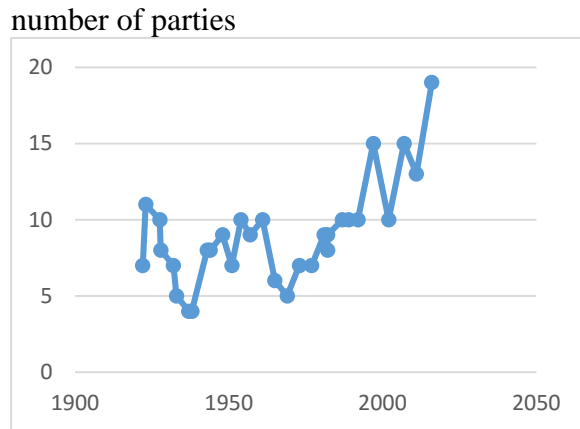
There is a necessary relation between turnout T and proportion of votes P . If there is differential turnout amongst the voters, then the turnout T depends on the proportion P of votes for a given party - positively on the vote for high turn-out parties and negatively on the vote for low turn-out parties. The following is a linear approximation with u and v the respective party turnout out rates. See the model in the following section.

$$T = v + P (v/u)(u-v) + e$$

The number of parties contesting the elections has ranged between 4 and 19 with a median of 9. The number of parties fluctuated between 4 and 11 in the period up to

1982 but in all the eight elections since then the number of parties has been in double figures above the median. See Figure 16.

Figure 16 The number of parties contesting the election, 1922-2016



The turnout T has correlations ranging from -0.53 to $+0.56$ with the party seat percentages, with Other and FF being at the two extremes. The theory in the appendix suggests that this is a reflection of differential turnout between the parties (assuming a correspondence between percentage votes and percentage seats), with FF having higher turnout and Other having lower turnout. The following equation explains 42% of the variance in turnout (the coefficients have significance $p=0, 0.02$ and 0.04 ; and the residual range is $[-9.2, 8.4]$).

$$T = 64.9 + 20.6 \text{ FF} - 33.0 \text{ Other}$$

5.5 Turnout and percentage vote for a party – a model

If there is differential turnout amongst the voters, then the turnout T depends on the proportion P of votes for a given party - positively on the vote for high turn-out parties and negatively on the vote for low turn-out parties. The following is a linear approximation with u and v the respective party turnout out rates, with e as the error. The coefficient for P is positive or negative depending as the differential turnout $(u-v)$ is positive or negative.

$$T = v + P (v/u)(u-v) + e$$

A combination of the percentages might be expected to give a more accurate prediction if the errors cancel each other out.

Proof

Consider parties A and B associated with turnout rates u and v respectively. Suppose the level of support *in the electorate* for A is a and for B is $b=(1-a)$. Then the voting for A and B is au and $bv=(1-a)v$, respectively. The overall turnout is:

$$T = au + bv$$

The proportion of votes for A is

$$P = au / (au + bv)$$

$$TP = au$$

$$a = TP / u$$

$$T = a(u - v) + v$$

$$T(1 - P(u - v) / u) = v$$

$$T = v / (1 - P(u - v) / u)$$

So a linear approximation gives, with e as an error

$$T = v(1 + P(u - v) / u) + e$$

$$T = v + P(v / u)(u - v) + e$$

6 Dynamic ideas of the 1960s and 1970s ... Asa Briggs (1921-2016) interdisciplinarity ... Chris Zeeman (1925-2016) system, catastrophe theory, game theory ... Michael Nicholson (1933-2001) and CRS (1963-)

The deaths this month of Asa Briggs and Chris Zeeman took me back to the intellectual excitements of the 1960s and 1970s. Interdisciplinary study was a key idea inspiring both Sussex University and the Open University:

‘[Asa Briggs] describes *in Special Relationships* the first year of the University of Sussex, within which he served as Vice-Chancellor from 1967 until 1976, and the first year of the Open University when the students were admitted in 1971. His vision of Sussex was “to redraw the map of learning” with interdisciplinary schools of study.’ (Bealing 2012)

The concept of a system was a fundamental notion underpinning a wide variety of disciplines. For many, a system was conceptualised in terms of mathematics. Chris Zeeman worked on dynamical systems and had a special interest in catastrophe theory. In 1978, Zeeman gave the televised series of [Christmas Lectures at the Royal Institution](#). One of the lectures was entitled ‘games and evolution’. In it he talks about a dynamic game between hawks and doves.

‘[Zeeman] remained at Warwick until 1988, but from 1966 to 1967 he was a visiting professor at the University of California at Berkeley, after which his research turned to dynamical systems, inspired by many of the world leaders in this field, including [Stephen Smale](#) and [René Thom](#), who both spent time at Warwick, Zeeman subsequently spent a sabbatical with Thom at the Institut des Hautes Études Scientifiques in Paris, where he became interested in [catastrophe theory](#). On his return to Warwick, he taught an undergraduate course in Catastrophe Theory which became immensely popular with students; his lectures generally were "standing room only". In 1973 he gave an M.Sc. course at Warwick giving a complete detailed proof of Thom's classification of elementary catastrophes, mainly following an unpublished manuscript, "Right-equivalence" written by [John Mather](#) at Warwick in 1969. [David Trotman](#) wrote up his notes of the course as an M.Sc. thesis. These were then

distributed in thousands of copies throughout the world and published both in the proceedings of a 1975 Seattle conference on catastrophe theory and its applications,^[6] and in a 1977 collection of papers on catastrophe theory by Zeeman.^[7] In 1974 Zeeman gave an [invited address at the International Congress of Mathematicians](#) in Vancouver, about applications of catastrophe theory.'

In all of this there is a connection with the Conflict Research Society (CRS). Founded in 1963, two key ideas in the Rules of the Society are interdisciplinarity and system. I would need to check my files but I think that Asa Briggs may have been on the CRS Council at one time. A key figure in the CRS was Michael Nicholson, leading the Society's interest in game theory, and organising a workshop on catastrophe theory at the ECPR meeting in Lancaster in 1981. I attended this and participants included Iain Stewart from Warwick and Bob Holt.

7 Conflict Research Society conference, Trinity College Dublin, 7-9 September 2016

Conference website: <http://conflictresearchsociety.org/ourevents/dublin-2016/>

submit a paper: <http://conflictresearchsociety.org/submit-a-paper/>

submit a panel: <http://conflictresearchsociety.org/submit-a-panel/>

We would like to kindly invite you to the annual conference of the Conflict Research Society (CRS), which will be hosted by the International Peace Studies programme at the Irish School of Ecumenics, Trinity College Dublin on the 7-9 September 2016.

The conference seeks to generate debate and ongoing relationships between scholars and practitioners interested in key issues surrounding the dynamics of violent political conflict, dialogue, diplomacy and peacebuilding. We hope that this year's CRS conference will have a strong policy/practitioner voice in terms of the range of participants, papers and invited keynote contributions. It is also intended that the conference will continue its tradition of being multi-disciplinary and being open to the full range of quantitative and qualitative methodological approaches to the subject.

We are now inviting paper and panel submissions in the following sections:

1. Peace, Conflict and Commemoration
2. Scientific Study of Conflict and Cooperation
3. Peace and Conflict Studies
4. Connecting research and practice.

As you know, the annual conference provides an opportunity for those involved in peace and conflict studies to present cutting-edge research and to interact with those involved in conflict resolution, peacemaking and peacebuilding activities in the field. Each year the conference attracts around 100 academics and practitioners from the UK, Europe and further afield.

The conference will feature a keynote speech from Stathis Kalyvas (Yale), and the winner of the Conflict Research Society book prize.

In recent years the book prize winners have included Steven Pinker for *The Better Angels of Our Nature*, Kathleen Cunningham for *Inside the Politics of Self-Determination*, Joshua Goldstein for *Winning the War on War: The Decline of Armed Conflict Worldwide*, and Kevin Avruch for *Context and Pretext in Conflict Resolution*. There will be a panel on the Irish peace process, and we plan a round table of ambassadors on the theme of commemoration. We will be emailing you more details on the keynote events shortly, but for now we would like you to make a note of the date in your diaries and submit your proposals.

Individual and panel proposals should be submitted online by May 31 2015. Panel Proposals should include a title, abstract (less than 200 words) and a list of four papers. Individual paper proposals should likewise include a title and abstract. To submit please visit [our website](#).

Please note that there will be an Academic-Practitioner Dialogue on Peace in the 21st Century: 5-6 September 2016, University of Bradford. It honours the Centenary of Adam Curle's birth. Concessions will be available for participants attending both conferences.

Looking forward to seeing you in September for another great conference!

Best regards,
Programme Chairs 2016

8 Invitation: panel on Values, World Society and Modelling

I shall be proposing a panel at the CRS conference on Values, Modelling and World Society. Please let me know if you are interested in being a member of my panel: gordonjburt@gmail.com

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