

# **What are policy punctuations? Large changes in the agenda of the UK Government, 1911-2008**

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## **Abstract**

This paper analyses large changes in the UK policy agenda since 1911 to understand the nature of policy punctuations and to what extent they differ from each other. It uses data from the UK Policy Agendas Project on the policy content of Speeches of the Throne and Acts of UK Parliament between 1911 and 2008 to identify punctuations of greater than 200 per cent. It uses descriptive statistics to determine whether punctuations cluster according to policy topic and time period. The paper discusses the measurement of policy punctuations, in particular differences in results that arise from per cent-per cent and the proportional count methods. The paper proceeds to explore ten large punctuations that constitute changes of greater than 500 per cent according to one method of measurement. It concludes that three kinds of policy punctuation can be identified: type a: large system-wide changes associated with external shocks, such as war, industrial disputes or a change of government after a long period of opposition; type b: important endogenous changes, aimed at a wider-ranging reform of a policy sector; and type c: procedural changes comprised of different elements. There is only one large policy punctuation that cascades from one institutional venue to another. The paper concludes that closer attention should be given to the definition, measurement and identification of punctuations when using aggregate data series. It proposes further application and testing of the typology.

Punctuated equilibria are increasingly recognized as a defining feature of the policy agenda. Instead of small steps as theorized in the incrementalist model of decision-making (Lindblom 1959; Wildavsky 1964; 1975), policy change often occurs in a discontinuous pattern, with large sudden shifts that break from previous periods of stability. The work of Baumgartner and Jones (1993; Jones and Baumgartner 2005a; 2005b; Jones et al. 1998; 2003) has shown the importance of such punctuations to understanding public policy. This extensive programme of research uses a range of graphical methods, statistical tests and simulations to analyse aggregate distributions of policy changes. As a result, there is now a line of academic work that shows the punctuated pattern of policy change across a range of political jurisdictions and institutions (e.g. Baumgartner et al 2006; 2009; Breunig 2006; Breunig and Koski 2006; Jennings and John 2009; John and Jennings 2010; John and Margetts 2003; Jones and Baumgartner 2005a; 2005b, Jones et al 1998; 2009; True et al 1999; Walgrave and Nuytemans 2009).

One limit of the aggregate method is that it under-emphasizes the specific characteristics of individual policy punctuations, which are analyzed as part of the distribution as a whole rather than in context. A more detailed consideration of the punctuations themselves offers a way of analyzing the nature of transition points and the underlying factors associated with large changes in policy (Baumgartner and Jones 1993; 2009; Pralle 2003; Resodihardjo 2009; Walgrave and Varone 2008).

Detailed attention can be given to identifying the extent and transformative nature of these policy changes as well as distinguishing between different types of policy punctuation. Do we expect every punctuation to have lasting effects or do some kinds of punctuation to lead to large changes in the agenda and others not?

Moreover, more detailed analysis can offer an additional check on validity of

quantitative analyses (Jones and Baumgartner 2005: 93-106). Inferences drawn from aggregate distributions of policy change can be treated with greater confidence if more is known more about the nature of individual punctuations.

In this paper, our goal is to identify different types of punctuations, which may range from the generation-defining events to short-run escalations of attention. We also consider the impact of different measures of punctuations, and the influence that different methods have upon the cases that are selected. To this end, we use the case of the UK, identifying punctuations in the policy content of Speeches from the Throne and Acts of the UK Parliament between 1911 and 2008. These punctuations are then analysed and compared with the context of the historical record.

The paper is structured as follows. First, it considers the theoretical definition of policy punctuations, drawing on literatures on punctuated equilibrium and agenda setting. This generates a set of criteria for identification of punctuations, both in aggregate distributions of policy change and within the context of a particular domain or issue. Second, the paper describes the data and methods, in particular the method chosen for identification of punctuations in the policy content of the Speech from the Throne and Acts of the UK Parliament. Third, the paper describes the policy punctuations, categorises them, indicating the policy sector and whether they are generated by a different method of measurement. Fourth, it takes a subset of larger changes and describes them in more detail with a view to creating a typology. In conclusion, the paper reflects on the measurement of punctuations for understanding policy-making, reflects upon the lessons that can be drawn from this approach and suggests future directions for the study of policy punctuations.

## **What are Policy Punctuations?**

The basic intuition behind the idea of policy punctuations is that the political agenda is stable for extended periods of time, but is subject to occasional changes that are large in magnitude (Baumgartner and Jones 1991; 1993; 2009). This means that – from time to time – policy deviates from its long-established equilibrium, as issues shift from incremental decision-making processes within institutional subsystems to the realm of macro-politics (True et al. 2007). Such changes in the prioritization of issues or problems lead to change in policy outputs and outcomes. As True et al. note, ‘political processes are generally characterized by stability and incrementalism, but occasionally ... produce large-scale departures from the past.’ (1999: 97). This idea of alternation of long periods of stability and intense bursts of upheaval is observed across several fields in the natural, technological, organizational and social sciences (see Gersick 1991). The debate over the co-existence of stability and change is pronounced in the field of public policy because of the longstanding dominance of incrementalist models of decision-making. While the classic accounts of incrementalism (e.g. Davis et al 1966; Wildavsky 1975) acknowledge the occurrence of large policy changes, these tend to adopt the view of Lindblom (1959) in the prevalence of change through small steps. The incremental model is consistent with a great deal of work in political science that emphasizes the relative stability of policy-making (e.g. Richardson and Jordan 1979; Rose and Davies 1993) and the gridlock of legislative policy-making (e.g. Binder 2003). Stressing the occurrence of large policy changes – policy punctuations – became a counter to the conventional wisdom, even though there were already studies of particular large policy initiatives (e.g. Schulman 1980).

One implication of the idea of policy punctuations is that long periods of stability in decision-making can contribute to the intensity of policy change. For long periods, institutional and cognitive friction can restrict policy change (Jones et al. 2003; Jones and Baumgartner 2005, Baumgartner et al. 2009), such as in existence of policy monopolies with an interest in the status quo or in the finite amount of attention that policy-makers have to assign to issues. Because of this, policy can be subject to extended periods of stability and at other times, when the pressure for change exceeds a certain threshold, can result in disproportionate changes. This is manifested in processes of positive feedback and cascades. When change occurs, such as in response to an external event, there can be large shifts in the attention of policy-makers to certain issues. These contribute to policy punctuations as decision-makers respond to pressure for change.

Such shifts can be observed intuitively by graphing a long data series over time and eyeballing it for large changes in the level of attention. Early studies of punctuated equilibrium in public policy, and of the associated positive feedback processes, presented quantitative data combined with qualitative analysis of the interaction of policy images (i.e. issue definitions) and institutional subsystems (see Baumgartner and Jones 1991; 1993). These studies identified occasional large shifts in public policy through systematic quantitative measurement of variables such as legislative hearings and grants in aid. Punctuations were identified from visual inspection of data and explained through interpretation of policy histories. Even in this early work there is evidence of the distinctive properties of Congressional hearings data series, which is more volatile compared with budgetary data where change is smoother, even during periods of exponential growth. In this tradition, analyses have used time series intervention methods (Box and Tiao 1975) to identify

large shifts in policy-making (e.g. Jones et al 1998; John 2006). There has been some caution expressed about the use of time series methods, however. Baumgartner and Jones argue, 'The unpredictable surges and declines in agenda dynamics is the fundamental problem for time series modelling. In most cases, surges of issues on the agenda are preceded by slow softening-up periods, but in others it is more sudden. Now a complex intervention model, either using regression or different ARIMA techniques could be developed, but such models would be different for each case, not a single theoretically based solution.' (1993; Appendix B, 270).

The measurement of policy punctuations entered a new phase with agendas-based models of budgeting (e.g. Jones et al. 1998; 2003; John and Margetts 2003; Jones and Baumgartner 2005a; 2005b; Breunig 2006; Baumgartner et al. 2009), using tests of the aggregate distribution of policy change to make inferences regarding institutional and cognitive friction. These stochastic process methods examine the overall distribution of policy-making attention and, as a consequence, are concerned with the general pattern of stability and change. The disproportionate information-processing model (Jones and Baumgartner 2005a; 2005b) suggests there should be fewer moderate changes and more extreme changes than would occur if the overall distribution were normal given its mean and standard deviation. Jones and Baumgartner argue that this pattern of change should fit a leptokurtotic distribution, which has properties that differ from a normal distribution. Such a distribution indicates a high incidence of incremental change in the slender central peak, relative absence of moderate changes in its narrow shoulders and disproportionate occurrence of large changes in the fat tails.

The measurement of punctuated equilibrium in budgeting (Jones et al. 1998; Jones and Baumgartner 2005a; 2005b; Baumgartner et al. 2009) has thus tended to

focus on kurtosis - the fourth moment around the mean (where variance and skew are the second and third moments). This is a measure of the peakedness of a given distribution, in other words how much of the distribution falls close to the mean. Such inferences are also validated in later studies (Jones et al. 2003; Jones and Baumgartner 2005a) with reference to the shape of log-log and semi-log plots, which are calculated with the logged values of the frequencies of change. The log-log plot will fit a straight line for a Paretian distribution (otherwise known as a 'power law') while the semi-log plot will fit a straight line for an exponential distribution. The slope of the line provides a further indicator of the degree of punctuation, becoming flatter as data series becomes more punctuated (i.e. when there are more extreme values in the tails of the distribution). This provides a theoretical premise for the identification of policy punctuations as those changes observed in the tail of the distribution. This defines punctuations as representing those changes over two times the standard deviation from the mean.

There are a number of approaches to identifying punctuations. One common method of measurement, the proportional percentage change method, is to identify large changes from proportional change from a percentage share of the total agenda (Baumgartner et al. 2009, 610). This suggests that policy punctuations are relative to their past values and to the overall agenda. The attention of policy-makers is finite (Jones and Baumgartner 2005a; 2005b) so measurement of policy punctuations must control for the share of the total agenda that a given issues receives. An alternative to this, the proportional count method, is to consider change in attention given to a particular issue relative to its previous values alone. This considers the frequency of attention rather than the share of the total agenda. Our analyses use both methods in testing for punctuations in the Speech from the Throne and Acts of UK Parliament.

There are further measurement issues to resolve, such as to whether to include or drop changes from zero to zero attention where empirical redundancy of some topic codes might lead to type I errors with regard to policy punctuations (see John and Jennings 2010). In the literature, the impact of choices over measurement has tended to be downplayed. For example, in their comparative analysis of punctuated equilibrium, Baumgartner et al. note that ‘...In general, our results are robust with respect to a wide range of details in specification and calculation, though the details are subject to change.’ (2009, p. 610). In contrast, the method of measurement does make a difference for analyses and closer attention to the impact of these methods can enhance the identification of policy punctuations. To date percent changes in attention have been the norm. This is defensible in that researchers are interested in the extent to which decision-makers adjust policy when attention is finite and the agenda is crowded with multiple competing issues. In that sense we can treat all leaps in the agenda as similar responses. However, we also expect variations in the kind of agendas. There are institutional differences and also, potentially, comparative differences between political systems. So some legislative systems require renewal of expiring laws – which stimulates attention – whereas some do not. Some are just down to size – either through institutional capacity, norms or conventions, such as the UK tends to pass a lot fewer laws than most legislatures

The other big difference is between speeches and laws, and budgets. In budgets we expect punctuations to be sustained in time because of the ongoing commitment that changes in policy involve, though not all tests examine the follow-on effect of punctuations. Then there are even larger changes across the whole budget, what they call macro-punctuations (2005: 95), where they look at the

median change across budget heads, which is tested out with intervention analysis (True et al 1998).

In speeches and laws, the punctuations described here, we do not expect punctuations to be sustained because once a law is proposed and passed we do not necessarily expect that item or items to be on the agenda in the following years. It is more likely that we expect cascades from one venue to another because of the way in which attention in one stage of the policy-making process prompts attention in another. So we expect the punctuations in speeches to be picked up in laws, then we expect the laws to result (not necessarily) in punctuations in budgets. So we expect two sorts of punctuations in speeches, one a burst of attention, the other a burst picked up by a punctuation in laws.

Overall, this discussion suggests that there are two main types of punctuation – the first is large leaps in the policy agenda, the other is large leaps in policy that are sustained in time. This has implications for data analysis, but does not generate an expectation of a proportion there are between the two. We do know that sudden leaps in attention will not be trivial, as a large literature on symbolic responses tells us that governments feel a need to respond to public concerns without necessarily doing anything (e.g. Edelman 1980) or where what they do might not be picked up with a law or budget changes, at least in the form of a punctuation.

## **Methods**

Our data is from the UK Policy Agendas Project ([www.policyagendas.org.uk](http://www.policyagendas.org.uk)), taking the policy content of the annual Speech from the Throne and Acts of the UK Parliament as the population for which we identify the punctuations. The data covers the period from 1911 to 2007, spanning nearly a hundred parliamentary

sessions and covering 19 major topic codes that encompass all the issues the UK Parliament deals with.

The first task is to extract the key policy changes from the data series. The previous section discussed the impact of methods on the selection of punctuations. To avoid our selection being dependent on one method we extract the punctuations from the two main methods. Method one takes the proportional percentage change, which is  $Y = [ (X_t / Z_t) - (X_{t-1} / Z_{t-1}) ] / (X_t / Z_t)$ . This is equal to the proportional change in the percentage of policy units (speech mentions, Acts) within the total agenda space ( $Z$ ). For example, when the overall agenda space remains stable at 20 Acts an increase from 1 (5%) to 4 (20%) Acts is equal to a proportional percentage increase of 300%. The second is the proportional count change. This is equal to the proportional change in the number of policy units (speech mentions, Acts) in a given year  $t$  relative to the number in the previous year  $t-1$ . For example an increase from 1 to 4 Acts is equal to a (proportional) increase of 300%.  $Y = (X_t - X_{t-1}) / X_{t-1} \times 100$ . To avoid bias we seek to devise a method of selecting punctuations that are captured by both methods.

### **Describing the punctuations**

For the first trawl of the punctuations we identify those in the Queen's speeches that exceed two standard deviations by the proportional percentage and proportional count methods. This yields 79 punctuations out of 1862 observations, 4.2 per cent of the total, so they are relatively rare occurrences overall (see Table A1 for a complete list). There is overlap of the two methods of calculating punctuations of 42 (53.9 per cent), but that leaves the rest determined either by the per cent or the count change methods.

This might mean we have two different measures of large policy changes, creating a measurement problem. This is not the case, and they show different processes at work with respect to the total agenda. Obviously if there are no punctuations in either any increase in attention has not been sufficiently large overall or relative to the total agenda to be viewed as a punctuation. If there is a percent punctuation, that is the punctuation just shows up in the percent, but not the count measure, then the overall number of mentions in that issue area has not greatly increased, but the percentage share of the agenda that that topic receives has. In other words, the size of the agenda has contracted, but the amount of attention to that issue area has not or has even grown. If a punctuation shows up in the count, but not in the percent measure then the overall number of mentions to that issue area has increased greatly, but the percent of the total agenda that issue area receives has not. This will happen when the overall size of the agenda increases, and/or when the jump in the agenda is on the low end, an increase from one to four mentions may be a punctuation in the count measure, but not in the percent measure. It indicates that the attention the topic received has increased both overall and relative to the total agenda. In other words there are more mentions in the issue area and more mentions relative to the total agenda as well.

It is worthwhile looking at the distributions of the punctuations according to the two measures. We probably expect punctuations to cluster not in the main topics, which have higher level of attention, but in issues that are off the agenda, what maybe called issue intrusion. Figure 1 shows the number of punctuations by topic area. Here we see few punctuations in topic 1 the economy, there is a single punctuation according to the proportional count method, and in international affairs

(topic 19). The largest number of punctuations is in topic 14, Community Development Land and Planning Issues, topic 8 Energy, slightly less at education topic 6, and Labour and Employment (topic 5). Although the number of punctuations is different according to method, they do cluster in the same topics.

Next we turn to laws, which are reported in the same way as speeches in Table A2. Here we find 114 punctuations greater than two standard deviations, either or both according to the count and per cent method. There is a greater variation in the methods as only 36 appear in both tables. However, we highlight this is mostly if not entirely explained by overall agenda contraction or expansion, something that is far more common with Acts than Speeches. However, if you lower the bar slightly and exclude those under 150 per cent change in the other category (highlighted in yellow in the table), it comes to 41 cases out of 63. We can again see how these punctuations relate to the topics as show in Figure 3 and how the total number changes over the decade in Figure 4.

### **The analysis of large policy changes**

To indentify punctuations for a more detailed analysis, we select speech punctuations greater than 500 per cent. Table 2 lists these cases, again selecting under both methods. Both methods yield punctuations greater than 500 per cent in four cases. In two cases the per cent change in the other category is in excess of 400 per cent.

We create a similar table for laws in Table 3. Here there is much less crossover in the methods with only two punctuations over 500 per cent in both methods. To generate our final table of punctuations, we need examples that are

over 500 per cent for one method and in excess of 300 per cent for the other method so we do not exclude punctuations that are below our high bar of 500 per cent, but we do not include punctuations that are too low on one method. The result in Table 4 is a total of ten punctuations, six in speeches and four in laws, with two linked punctuations, the defence punctuation in the speech of 1913 and in laws in 1914. The following analysis is a first cut of the data, a summary of which is provided in Table 5.

The first punctuation is in defence in the year prior to the First World War. This should not be surprising that the world was moving toward conflict at that time and preparations began in earnest at that time. The only surprise is that we find the build up is not more gradual given there had been military competition between England and Germany since the race to build for dreadnoughts since 1905, though this had stabilised by 1910 (Lambelet 1975). The reason for the punctuation may be to do with the Liberal government's social welfare programme, such as National Insurance, that had taken up the attention of policy-makers since 1911, and from which there was a large shift in attention once world conflict became inevitable.

The second punctuation is in 1914 with laws, and is clearly about the measures need to fight a world war and a lot of these laws are about emergency powers and relate to the war effort. The third punctuation is over energy in the 1926 speech, which was partly in response to the general strike of that year, and the speech included reference to an inquiry into the mining industry.

The fourth punctuation is over education in 1935, which is about the Education Act of the following year. The speech proposed raising the school leaving age, introducing technical education and a range of other school measures.

The fifth punctuation was just after the Second World War on government operations, which appears to be a series of tidying up measures, which may reflect the extent to which military matters and defence had gone off the agenda. Overall, we do not think this is the same kind of break in attention as other punctuations, reflecting the decline of attention to defence and some attention to institutional reform after the Second World War.

The sixth, the 1956 laws punctuation, is about a range of defence measures, especially regarding the navy and national service, which reflect a change in defence policy toward a greater reliance on nuclear weapons and the winding down of a large number of international obligations (Morgan 2001: 159).

The seventh punctuation is about employment matters under the 1966-70 Labour Government and may have reflected an increased interest in employment matters in the build up to the *In Place of Strife* white paper, which pre-occupied the government. But it may also be a collection of tidying up measures associated with compensation and pensions.

The eighth punctuation is about welfare reforms announced in 1998, reflecting New Labour's interest in social welfare policy in its first term of government, which were an important part of its programme of reform of welfare and labour market, a change of direction in policy.

The ninth punctuation concerns the constitutional reforms of the incoming Labour government, a package of measures on local government, London government and devolution, and may legitimately be thought of as a major change in interest on the topic, which had built up over a long period of time, and represents the constitutional experiment of New Labour, again a major change in

direction after the absence of constitutional reform under the previous Conservative governments, 1979-97.

The tenth punctuation is in 2003, and reflects the rise in two different kinds of matters, one about minority rights, such as civil partnerships, and the other about immigration and ID cards. While both about the same topic, there appear to be two different streams within the leap in attention, connected by a common focus on human rights and citizenship.

From this preliminary review of the main punctuations, it is important to know about the extent to which the changes described reflected the large upswings in attention as predicted by the punctuated equilibrium model. What can be said is that the changes are different from each other. Only one large escalation of attention leads to a cascade of attention from one series to another, and that is the rise in attention to defence prior to and in the first year of the First World War. Of course, lower level cascades are likely, which we will probe in a later version of this paper.

The second finding is that some policy changes are obviously large changes associated with external events or a change of government. We include here the changes at the start of the First World War (two punctuations), the response to the general strike, the constitutional reforms and welfare reforms of the first Labour government 1997 elected after a long period of opposition. This takes five out of the ten punctuations in our data. The second set is endogenous changes, but still profound changes in public policy: the education reforms of 1936/7 and the military reforms of 1956/7. The 2003 punctuation appears to be the conjunction of two separate sets of issues, which are leaps in attention but double up in this case. The final two appear to be collections of statutes not associated with paradigm shifting

events, more measures or legislation designed to tidy up the law, and combine to form what we call procedural punctuations. So most of these large changes in government attention resemble the large policy changes described in the literature.

Of course, there are many large policy changes that are not captured by our data. Examples would be the start of the Second World War and defence, the formation of the welfare state from 1944 and the move to a more radical right administration in 1979, whereas there are three punctuations under new Labour. We have written before (John and Jennings 2010) that the full historical record may be different from the policy agenda series because they measure different things, in particular the shift in attention and spread of topics, rather than focus on one defining act of parliament. A lot also depends on the base from a year before – thus if a paradigm-shifting act of parliament was preceded by the same amount of less important legislation later on then it would not appear as a punctuation in the data. Thus it may have been the case that the move to both defence from the 1930s was more gradual than in 1914, and the build up to the welfare state was gradual and where governments were still dominated by international relations and defence issues for many years afterwards even though there were the landmark pieces of legislation in 1944 and 1946. As we argued (John and Jennings 2010), the Thatcher governments tended to concentrate on the same policy topics as governments before they came into office, and they introduced their measures gradually. The arrival of New Labour in 1997 was part of a large swing against economic policy and international issues, which had been occurring since the mid 1990s, hence the importance of social policy and institutional reforms once they got into office, which were different to the previous administrations' topic preferences.

## Conclusions

This paper aim is to understand the nature of large policy changes, reflected in agendas datasets as large percentage or proportional changes. We wanted to find out what these changes are and whether they correspond with what the literature says about them, and in particular whether these changes are different from each other.

Pertinent to the issue of comparison is the problem of measuring the punctuations. We need to be sure we have a robust and reliable method of identifying them. Our finding is that identification is sensitive to method, particularly if one adopts a particular cut off point, such as punctuations greater than 200 per cent or 500 per cent. In practice the problem is not as big as it might be as it is likely that a punctuation under the per cent per cent method is going to yield a large change under the count method even if both fail to exceed a common percentage bar. Nonetheless, it is possible to change the selection of punctuations by imposing what might be considered arbitrary assumptions. Researchers should take care.

The identification of large punctuations shows different kinds of events, dividing into three: large defining events generated from an exogenous shock, such as war, internal conflict like industrial action or a change in government; other punctuations occur where there is a sustained interest in a topic, a build up of attention such as defence or education reform, probably outside international affairs and the economy; and other punctuations comprised of different elements rather than one large burst of attention, what we term procedural punctuations. There is only one event that cascades from one venue to another, which is the start of the First World War. Partly for this reason, it may be the case the examples of large

policy changes that mark out one period from another may be more rare than the policy agendas literature allows for. That is not to say the punctuations are unimportant, but they vary from each other in non-trivial ways. Future researchers could explore the typology we propose here to gain a better understanding of the ways in which political systems produces different kinds of large policy changes.

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**Table 1. The UK Policy Agendas Project Major Topic Codes**

1. Macroeconomics
2. Civil Rights, Minority Issues, Immigration and Civil Liberties
3. Health
4. Agriculture
5. Labour and Employment
6. Education and Culture
7. Environment
8. Energy
10. Transportation
12. Law, Crime, and Family Issues
13. Social Welfare
14. Community Development, Planning and Housing Issues
15. Banking, Finance, and Domestic Commerce
16. Defence
17. Space, Science, Technology and Communications
18. Foreign Trade
19. International Affairs and Foreign Aid
20. Government Operations
21. Public Lands, Water Management, Colonial and Territorial Issues

See [www.policyagendas.org.uk](http://www.policyagendas.org.uk) for the full codebook with sub-topic categories and topic descriptions.

**Table 2: Speech Punctuations Greater Than 500 per cent**

<b>Year</b>	<b>Topic</b>	<b>Prop % Δ</b>	<b>Prop Count Δ</b>
1913	Defence	513.33%	700.00%
1919	Government Operations	279.31%	900.00%
1926	Energy	757.14%	500.00%
1935	Education and Culture	417.65%	700.00%
1946	Government Operations	574.60%	400.00%
1998	Social Welfare	560.48%	600.00%
2003	Civil Rights, Minority Issues, Immigration and Civil Liberties	512.50%	500.00%

**Table 3: Acts Punctuations Greater Than 500 per cent**

<b>Year</b>	<b>Topic</b>	<b>Prop % Δ</b>	<b>Prop Count Δ</b>
1914	Defence	578.19%	2450.00%
1956	Defence	503.17%	400.00%
1967	Social Welfare	568.42%	300.00%
1968	Labour and Employment	623.81%	500.00%
1979	Transportation	152.00%	800.00%
1979	Community Development, Planning and Housing	124.00%	700.00%
1979	Government Operations	208.00%	1000.00%
1997	Government Operations	613.71%	650.00%

**Table 4: Major Punctuations in British Politics, Speeches and Acts**

<b>Year</b>	<b>Topic</b>	<b>Prop % Δ</b>	<b>Prop Count Δ</b>
<b>Speeches</b>			
1913	Defence	513.33%	700.00%
1926	Energy	757.14%	500.00%
1935	Education and Culture	417.65%	700.00%
1946	Government Operations	574.60%	400.00%
1998	Social Welfare	560.48%	600.00%
2003	Civil Rights, Minority Issues, Immigration and Civil Liberties	512.50%	500.00%
<b>Laws</b>			
1914	Defence	578.19%	2450.00%
1956	Defence	503.17%	400.00%
1968	Labour and Employment	623.81%	500.00%
1997	Government Operations	613.71%	650.00%

**Table 5: Summary of Major Punctuations in British Politics, Speeches and Acts**

Year	Topic	Summary	Policy Change Type
1913	Defence (speech)	Preparations for war, reference to world conflicts	External shock
1914	Defence (laws)	Powers of Board of Trade, war pensions, emergency powers, money for the war, other war measures	External shock
1926	Energy (speech)	Unemployment, inquiry into coal industry, bill into electricity supply	External shock (General Strike)
1935	Education and Culture (speech)	Raising of school leaving age, technical schools, other measures	Endogenous (lead up to 1936 Education Act)
1946	Government Operations (speech)	National Fire Service, Estimates	Procedural
1956	Defence (laws)	Naval and Marine Reserves Pay Act, 1957 Army (Conditions of Enlistment) Act, 1957	Endogenous (move from conventional to nuclear defence)
1968	Labour and Employment	National Insurance &c. Act 1969 Pensions (Increase) Act 1969 c. 7 Redundancy Rebates Act 1969 c. 8	Procedural: tidying up legislation, but link to large industrial relations changes of Labour that came in 1969
1997	Government Operations (laws)	Local government powers, Attorney General, devolution, London government, ministerial salaries, civil service,	External shock (change of government)
1998	Social Welfare (speech)	Welfare reforms: disability, benefits	External shock (change of government)
2003	Civil Rights, Minority Issues, Immigration and Civil Liberties (speech)	Civil partnerships, disabilities and immigration, ID cards	Procedural (two streams)

**Table A1: Speech Punctuations**

Year	Topic	Prop % $\Delta$	Prop Count $\Delta$	Year	Topic	Prop % $\Delta$	Prop Count $\Delta$
1913	16	513.33% ‡	700.00% ‡	1956	20	213.82% ‡	125.00%
1919	1	32.76%	250.00% ‡	1957	13	341.86% ‡	400.00% ‡
1919	3	51.72%	300.00% ‡	1958	6	262.11% ‡	300.00% ‡
1919	4	51.72%	300.00% ‡	1958	14	262.11% ‡	300.00% ‡
1919	5	51.72%	300.00% ‡	1959	10	487.63% ‡	500.00% ‡
1919	13	89.66%	400.00% ‡	1959	15	389.69% ‡	400.00% ‡
1919	14	89.66%	400.00% ‡	1961	3	380.00% ‡	300.00% ‡
1919	20	279.31% ‡	900.00% ‡	1963	10	213.04% ‡	200.00%
1920	6	257.53% ‡	200.00%	1963	14	213.04% ‡	200.00%
1920	8	376.71% ‡	300.00% ‡	1964	2	342.31% ‡	400.00% ‡
1920	15	257.53% ‡	200.00%	1964	3	342.31% ‡	400.00% ‡
1922	16	300.00% ‡	300.00% ‡	1966	13	215.63% ‡	200.00%
1923	14	444.64% ‡	400.00% ‡	1969	8	251.14% ‡	200.00%
1923	15	226.79% ‡	200.00%	1970	7	255.56% ‡	300.00% ‡
1924	14	146.67%	233.33% ‡	1970	14	211.11% ‡	250.00% ‡
1924	16	202.70%	300.00% ‡	1972	13	229.90% ‡	300.00% ‡
1924	21	227.93% ‡	333.33% ‡	1974	8	258.10% ‡	300.00% ‡
1926	8	757.14% ‡	500.00% ‡	1976	7	215.38% ‡	200.00%
1929	14	328.57% ‡	300.00% ‡	1977	17	251.00% ‡	200.00%
1929	21	542.86% ‡	500.00% ‡	1978	2	182.26%	250.00% ‡
1932	4	366.67% ‡	500.00% ‡	1980	8	429.70% ‡	400.00% ‡
1932	5	211.11% ‡	300.00% ‡	1980	10	217.82% ‡	200.00%
1934	10	363.64% ‡	300.00% ‡	1982	17	253.49% ‡	300.00% ‡
1935	3	158.82%	300.00% ‡	1987	6	212.98% ‡	250.00% ‡
1935	6	417.65% ‡	700.00% ‡	1991	2	217.24% ‡	200.00%
1936	5	212.64% ‡	300.00% ‡	1991	8	322.99% ‡	300.00% ‡
1936	12	290.80% ‡	400.00% ‡	1994	3	230.77% ‡	200.00%
1937	14	245.24% ‡	150.00%	1994	5	230.77% ‡	200.00%
1939	10	421.43% ‡	100.00%	1995	6	463.86% ‡	500.00% ‡
1940	19	187.18%	300.00% ‡	1996	7	215.19% ‡	200.00%
1942	6	148.28%	300.00% ‡	1997	20	305.13% ‡	500.00% ‡
1946	20	574.60% ‡	400.00% ‡	1998	13	560.48% ‡	600.00% ‡
1947	13	240.54% ‡	300.00% ‡	1998	15	277.42% ‡	300.00% ‡
1948	15	305.48% ‡	300.00% ‡	2000	3	273.33% ‡	133.33%
1951	5	202.44%	300.00% ‡	2000	14	220.00% ‡	100.00%
1952	8	261.76% ‡	200.00%	2003	2	512.50% ‡	500.00% ‡
1954	6	198.88%	250.00% ‡	2003	5	308.33% ‡	300.00% ‡
1954	10	198.88%	250.00% ‡	2007	5	325.00% ‡	300.00% ‡
1955	15	319.81% ‡	400.00% ‡	2008	16	233.33% ‡	200.00%

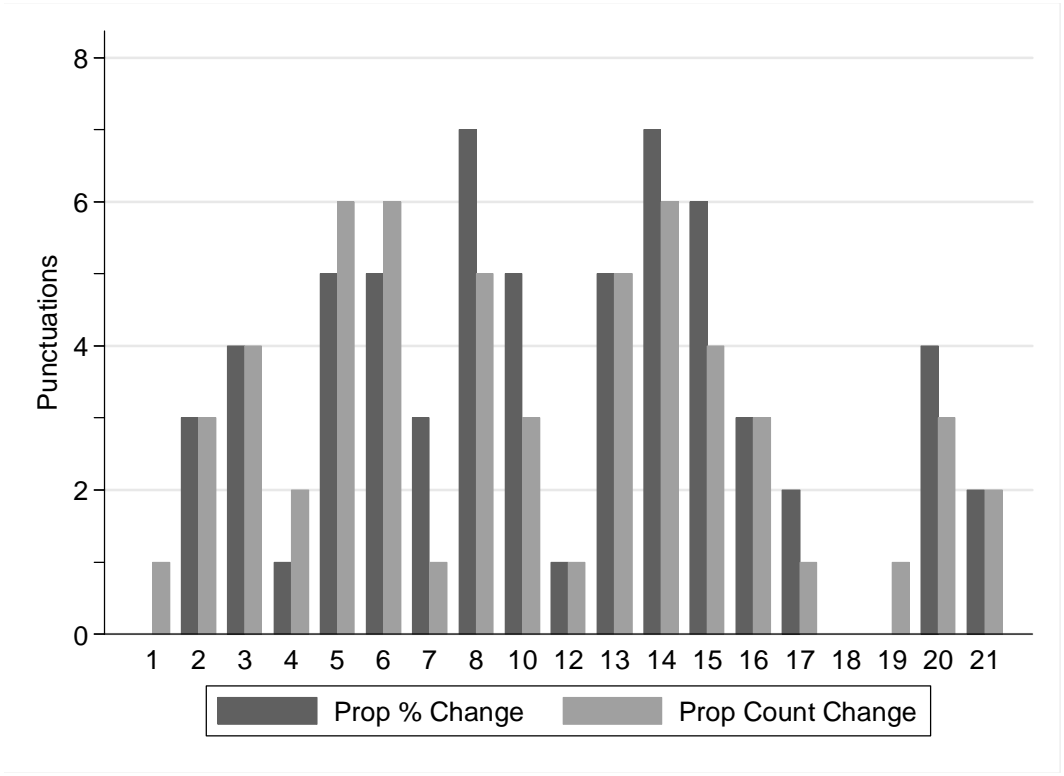
‡ Indicates a punctuation of greater than two standard deviations

**Table A2: Acts Punctuations**

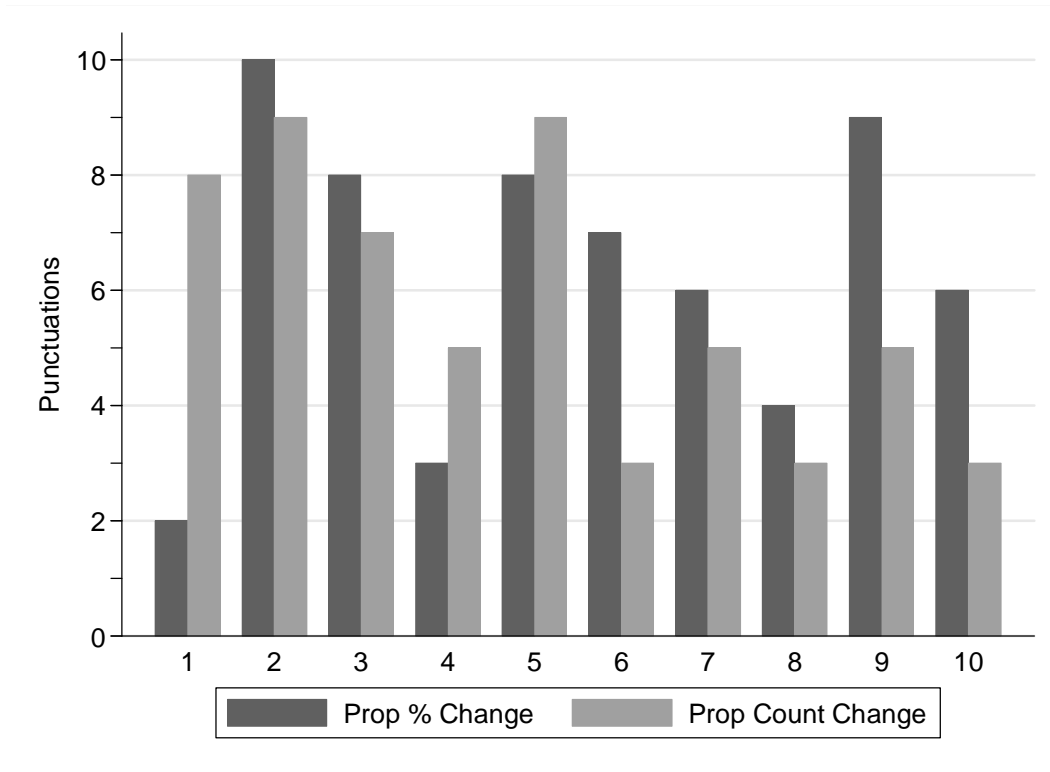
Year	Topic	Prop % $\Delta$	Prop Count $\Delta$	Year	Topic	Prop % $\Delta$	Prop Count $\Delta$
1913	3	140.00%	500.00% ‡	1965	5	315.00% ‡	0.00%
1914	4	6.38%	300.00% ‡	1965	7	315.00% ‡	0.00%
1914	8	6.38%	300.00% ‡	1966	4	57.48%	900.00% ‡
1914	13	32.98%	400.00% ‡	1966	10	41.73%	800.00% ‡
1914	14	59.57%	500.00% ‡	1966	12	104.72%	1200.00% ‡
1914	16	578.19% ‡	2450.00% ‡	1966	15	-29.13%	350.00% ‡
1914	20	2.58%	285.71% ‡	1966	16	-21.26%	400.00% ‡
1916	17	382.05% ‡	100.00%	1966	17	-37.01%	300.00% ‡
1916	18	261.54% ‡	50.00%	1966	19	-5.51%	500.00% ‡
1917	3	325.45% ‡	200.00%	1966	21	-16.01%	433.33% ‡
1917	4	325.45% ‡	200.00%	1967	13	568.42% ‡	300.00% ‡
1918	2	201.37%	300.00% ‡	1968	5	623.81% ‡	500.00% ‡
1921	7	267.16% ‡	200.00%	1968	20	221.69% ‡	166.67%
1923	14	257.14% ‡	150.00%	1969	13	375.47% ‡	300.00% ‡
1924	13	309.76% ‡	300.00% ‡	1970	3	140.91%	300.00% ‡
1924	17	309.76% ‡	300.00% ‡	1970	5	140.91%	300.00% ‡
1924	19	207.32% ‡	200.00%	1970	6	261.36% ‡	500.00% ‡
1924	21	95.24%	333.33% ‡	1970	19	140.91%	300.00% ‡
1927	17	339.53% ‡	200.00%	1971	17	456.96% ‡	400.00% ‡
1928	6	460.87% ‡	500.00% ‡	1973	2	446.15% ‡	300.00% ‡
1931	18	300.00% ‡	300.00% ‡	1974	3	147.62%	300.00% ‡
1934	6	212.50% ‡	150.00%	1974	13	147.62%	300.00% ‡
1935	3	464.71% ‡	500.00% ‡	1974	19	209.52% ‡	400.00% ‡
1937	14	235.62% ‡	250.00%	1979	10	152.00%	800.00% ‡
1938	6	141.32%	300.00% ‡	1979	14	124.00%	700.00% ‡
1938	7	141.32%	300.00% ‡	1979	15	54.00%	450.00% ‡
1938	16	132.70%	285.71% ‡	1979	19	40.00%	400.00% ‡
1938	18	261.98%	500.00%	1979	21	208.00% ‡	1000.00% ‡
1938	21	141.32%	300.00%	1982	4	217.31% ‡	200.00%
1939	5	278.13% ‡	75.00%	1983	17	177.33%	300.00% ‡
1941	15	400.00% ‡	300.00% ‡	1985	5	244.78% ‡	200.00%
1942	5	308.16% ‡	400.00% ‡	1987	10	241.94% ‡	300.00% ‡
1945	4	168.29%	400.00% ‡	1988	7	304.35% ‡	200.00%
1945	15	114.63%	300.00% ‡	1989	17	206.67% ‡	200.00%
1945	19	114.63%	300.00% ‡	1990	16	230.88% ‡	400.00% ‡
1950	7	195.45%	400.00% ‡	1991	13	491.30% ‡	300.00% ‡
1950	18	136.36%	300.00% ‡	1991	15	417.39% ‡	250.00%
1951	15	239.71% ‡	250.00%	1992	7	243.28% ‡	400.00% ‡
1952	6	226.92% ‡	150.00%	1992	19	311.94% ‡	500.00% ‡
1952	21	226.92% ‡	150.00%	1993	16	226.83% ‡	100.00%
1953	5	184.93%	300.00% ‡	1994	21	203.70% ‡	300.00% ‡
1953	8	256.16% ‡	400.00% ‡	1995	6	440.00% ‡	500.00% ‡
1953	17	256.16% ‡	400.00% ‡	1995	16	350.00% ‡	400.00% ‡
1954	19	403.45% ‡	100.00%	1997	20	613.71% ‡	650.00% ‡
1954	21	277.59% ‡	50.00%	1998	21	254.29% ‡	100.00%
1955	3	52.63%	300.00% ‡	2000	1	300.00% ‡	100.00%
1955	12	90.79%	400.00% ‡	2000	5	300.00% ‡	100.00%
1955	15	52.63%	300.00% ‡	2001	21	87.23%	300.00% ‡
1955	20	116.23%	466.67% ‡	2002	7	308.70% ‡	300.00% ‡
1956	16	503.17% ‡	400.00% ‡	2002	8	206.52% ‡	200.00%
1958	5	393.15% ‡	400.00% ‡	2003	2	263.16% ‡	200.00%
1958	6	294.52% ‡	300.00% ‡	2003	13	263.16% ‡	200.00%
1961	6	340.68% ‡	300.00% ‡	2003	14	384.21% ‡	300.00% ‡
1961	13	230.51% ‡	200.00%	2004	19	442.86% ‡	200.00%
1963	2	209.28% ‡	400.00% ‡	2005	3	125.00%	500.00% ‡
1963	16	332.99% ‡	600.00% ‡	2005	5	87.50%	400.00% ‡
1963	18	147.42%	300.00% ‡				

‡ Indicates a punctuation of greater than two standard deviations

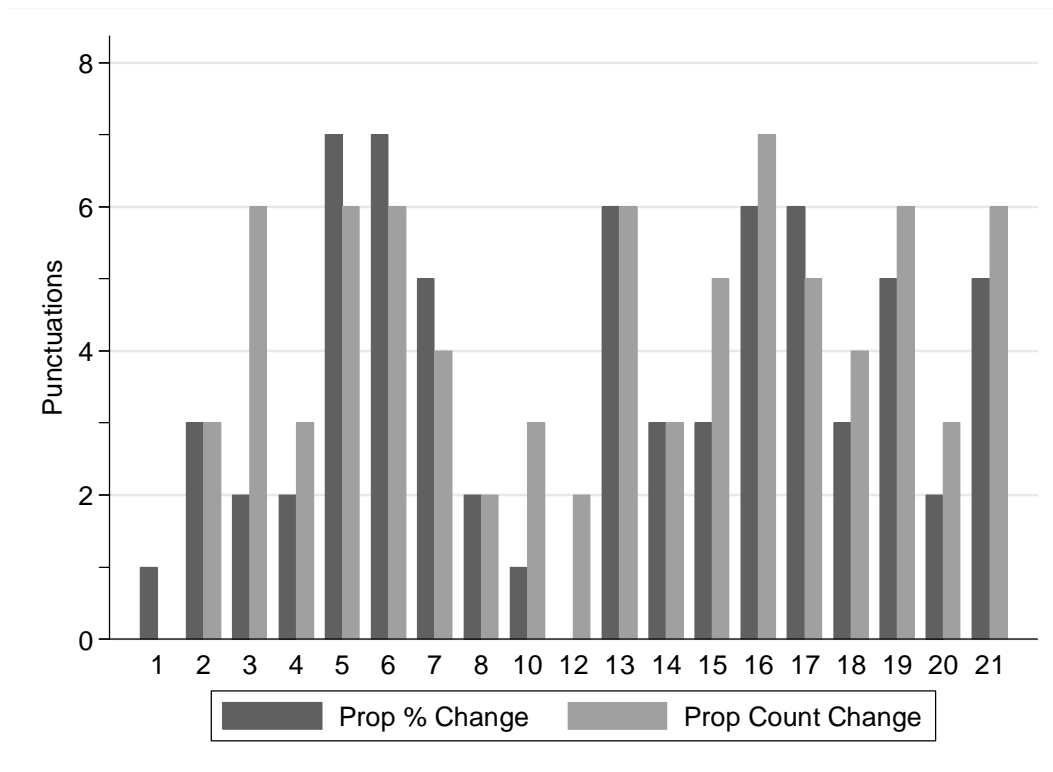
**Figure 1: Speech Punctuations per Topic by Measurement Type**



**Figure 2: Speech Punctuations per Decade by Measurement Type**



**Figure 3: Acts Punctuations per Topic by Measurement Type**



**Figure 4: Acts Punctuations per Decade by Measurement Type**

