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## Comparison of Eurovision Song Contest Simulation with Actual Results Reveals Shifting Patterns of Collusive Voting Alliances.

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### Abstract

The voting patterns in the Eurovision Song Contest have attracted attention from various researchers, spawning a small cross-disciplinary field of what might be called 'eurovisiopsephology' incorporating insights from politics, sociology and computer science. Although the outcome of the contest is decided using a simple electoral system, its single parameter – the number of countries casting a vote – varies from year to year. Analytical identification of statistically significant trends in voting patterns over a period of several years is therefore mathematically complex. Simulation provides a method for reconstructing the contest's history using Monte Carlo methods. Comparison of simulated histories with the actual history of the contest allows the identification of statistically significant changes in patterns of voting behaviour, without requiring a full mathematical solution. In particular, the period since the mid-90s has seen the emergence of large geographical voting blocs from previously small voting partnerships, which initially appeared in the early 90s. On at least two occasions, the outcome of the contest has been crucially affected by voting blocs. The structure of these blocs implies that a handful of centrally placed countries have a higher probability of being future winners.

### Keywords:

Simulation, Perl, Eurovision Song Contest, Voting Blocs, Collusive Voting

### Introduction

#### 1.1

The questions: "Why simulate?" and "When to simulate?", are central concerns of the simulation community. One potential answer to the above is: one should simulate in cases where an analytical solution to the problem is either too difficult or too cumbersome. For example, if an event is governed by simple probabilities, and all the parameters can be reliably estimated, a statistical distribution can be deduced for the likely outcome of a series of such events. Even where the parameters are not all known but their individual effects on the outcome are small, a standard distribution may apply, such as the normal distribution. In such cases, simulation is not the appropriate method. However, in a case where the effects of the parameters on the outcome are large, and the parameters, although they may be known, are highly variable from event to event, it is not possible to fit a single statistical distribution over a series of events. In such a case, simulation is the most convenient way to approach the situation.

#### 1.2

Such a case is the Eurovision Song Contest (henceforth referred to simply as "the contest"), an annual competition between member states of the European Broadcasting Union (EBU). Its rules are very simple, but the prior probabilities for voting distributions vary according to the number of countries competing. Since this has varied considerably, it is practically (if not theoretically, to a heroic mathematician) impossible to identify statistically significant events in the contest by analytical means alone.

#### 1.3

This paper presents a non-analytical approach to this problem, reconstructing each year's contest using exact parameters for each year since 1975 (with the exception of years 2004 and 2005, for which a minor approximation must be made) and Monte Carlo values for variables based on those parameters. The entire history of the contest can thus be simulated, and thresholds for statistical significance estimated empirically. Observed results from the real contests can then be compared to the simulation.

#### 1.4

The particular phenomenon of interest is that of collusive voting patterns. Since the late 1980s, it has been noticed by media observers that some pairs of countries routinely give high scores to each other. In the last five years, this has apparently become more widespread so that voting partnerships are turning into voting blocs. The first question considered is whether or not such phenomena are statistically significant, or can be explained by chance. The second

question is whether or not statistically significant voting partnerships, where found, will have any future effect on the outcome of the contest.

1.5

Since 1975, the voting system has worked as follows. Each country awards its favourite song 12 points, the second favourite 10 points, the third 8 points, and then a further 7 songs in descending order from 7 to 1 points. As Fenn et al. (2005) express it more formally: "each voting country A allocates a set of points  $\{1,2,3,4,5,6,7,8,10,12\}$  to the ten other countries  $\{B,C,D,E,F,G,H,I,J,K\}$  which are a subset of the entire set  $S$  of competing countries". The points were awarded by national juries until the mid-90s, after which telephone voting increasingly became the norm, effectively turning the entire interested population of each country into that country's jury. Before 2004, only those countries participating in that year's contest were allowed to vote in that contest. However, since the introduction of the two-stage contest in 2004, all countries participating in the semi-final and final have been able to vote, regardless of whether or not they qualified for the final.

1.6

This variability, over the years 1975 to 2003, in the numbers of participants, i.e. the size of  $S$  (Fenn et al. 2005), from 18 to 26, means that the probability of receiving any given number of points varies from year to year. For instance in 1975 Norway received "nul points" (in Eurovision parlance, this is always spoken using the French pronunciation) from the United Kingdom. As  $S=19$  in 1975, the prior probability of the UK awarding zero to any other country was  $8/18$  or 0.444. Also in 1975, the UK awarded 12 points to the Netherlands, that year's winners. The prior probability of a maximum 12, given  $S=19$ , is  $1/18$  or 0.056. By contrast, in 1993, the United Kingdom again awarded zero to Norway. However in that year, there were 25 entrants, and the prior probabilities of a zero score were  $14/24$ , or 0.583. Norway might thus justifiably feel less aggrieved at the British assessment of its song in 1993 than in 1975, since the most likely outcome in 1993 was zero points. Likewise the United Kingdom awarded the maximum 12 points to Ireland in 1993, at a prior probability of  $1/24$ , or 0.042. Variability in the size of  $S$  from year to year, requires the prior probabilities to be recalculated for each year of the contest. One might think that this ought to stabilise in future years now that the number of voting countries has been extended to include all members of the EBU. However, there is no guarantee that even this will be a constant number for the foreseeable future, as more countries are seeking to join the EBU (such as Algeria, Tunisia and Libya), some current EBU members (such as Italy, Luxemburg and Slovakia) have lost interest in competing in the contest, and some are barred due to ongoing political disputes which may be suddenly resolved (such as the Lebanon). Therefore, in order to track potential instances of collusive voting, a simulation is the most appropriate method. Before describing the simulation approach, a brief review will be given of previous studies.

1.7

The pioneering study of the contest was carried out by Yair (1995) who used multidimensional social network analysis of the voting over the period 1975–1992, representing the period between the end of the Oil Crisis and the signing of the Treaty of Maastricht. 1992 was also the last year before the beginning of the expansion of the contest into Eastern Europe. This choice of dates reflects Yair's interest in the political balance within European institutions, such as the European Union. Cyprus, Iceland and Morocco were omitted from the analysis on the grounds that they had not participated frequently enough over the period in question. Yair found 5 cliques of reciprocating nations. This was the first published evidence of collusive voting behaviour in the contest. However, the analysis did not include any quantification of statistical significance. It was therefore not possible to say which of the associations discovered by the multidimensional social network analysis software were significant and which could be explained by chance. However it was possible to rank the cliques in order of strength of association. Based on a further multidimensional spatial analysis, Yair was able to cluster the cliques into three bloc areas: Western, Mediterranean and Northern. A similar analysis of voting patterns, using self-organizing maps (SOMs), was later carried out by Samsonova et al. (2005). In their most basic form, SOMs do not allow statistical significance of the obtained clusters to be assessed.

1.8

The high success rate of Western bloc countries during the period 1975–1992 was explained by the fact that, whereas each bloc tended to allocate its major votes to its own members, the surplus votes of each bloc were mostly allocated to Western bloc members. This produced, in the words of Yair and Maman (1996), a "hegemony" of the Western bloc nations within the contest. Yair and Maman interpret this tendency as a reflection of the commercial dominance of Western Europe in the production of pop music, a distaste between the Mediterranean and Northern blocs for each other's musical style, and simply by the fact that the Western bloc was larger and therefore had fewer surplus votes to allocate to other blocs.

1.9

Ginsburgh and Noury (2004) and Ginsburgh (2005) pursued this notion by analysing data from 1975 to 2003, using a regression equation to compare voting behaviour in any given year with the behaviour over the two previous years. The regression equation also contains variables derived from matrices of linguistic and cultural distances between countries. The linguistic distances are derived using the lexicostatistical method, and the cultural distances are derived by assessing the tendencies of each national culture to social inequality, individualism, masculinity and tolerance. They found that collusive voting (they use the American term "logrolling" following Stratmann 1992 and Crombez 2000) exists but that once the correction for linguistic and cultural distance is applied, it disappears. This appears to confirm that bloc voting is occurring along pre-existing cultural/linguistic lines, rather than being an *ad hoc* process of alliance formation. They also draw attention to the émigré vote, in particular the large vote for Turkey from countries where there is a sizeable Turkish minority, such as Germany, Netherlands, Belgium, France and Austria.

1.10

Fenn et al. (2005) used a dynamical network analysis to analyse data from the years 1992–2003, comparing it with a randomised data set. They identified voting cliques occurring over this period, which are in many respects rather different to those observed by Yair (1995) and Yair and Maman (1996) for the previous period 1975–1992 (only overlapping by one year). This indicates that collusive voting may not be a static phenomenon, and suggests that the cultural hypothesis advanced by Ginsburgh and Noury (2004) and Ginsburgh (2005) may not be entirely adequate,

unless cultural tastes have also changed over time.

### 1.11

The period 1975–2002 was analysed by Gatherer (2004) in search of statistically significant collusive voting patterns. Two large blocs were identified as clusters of interlinked bilateral collusive voting partnerships, significant at the 5% level. These were designated "the Viking Empire", comprising Scandinavian and Baltic countries and Ireland — the areas dominated by the Vikings in the early middle ages, and "the Warsaw Pact", comprising Russia, Romania and the former Yugoslavia. The Warsaw Pact interconnects with "the Maltese Cross", a far more ad hoc alliance centred on Malta. Additionally there are two smaller blocs. These patterns identified by Gatherer (2004) share some similarities and some differences with those identified by Yair (1995), Yair and Maman (1996) and Fenn et al. (2005) which is only to be expected given the different year ranges analysed, and the different techniques used to analyse them. Gatherer (2004) was the first study to explicitly state which collusive patterns were significant at the 5% level, and that paper also has a rather different basic assumption to the others. Whereas Fenn et al. (2005), Ginsburgh and Noury (2004), Ginsburgh (2005), Yair (1995) and Yair and Maman (1996) begin with the assumption that the voting patterns reflect some underlying relationships at the economic, cultural or political level and seek to elucidate what those relationships might be, Gatherer (2004) begins with the premise that all voting should be considered random until proved otherwise. If voting is really on the artistic merit of the song, then over a long period of time any country's vote should approximate to a random distribution among the other countries, as songs will vary in quality from year to year and country to country. It is this assumption of a random background which governs the simulation, and which makes calculation of statistical significance so important.

### 1.12

The present paper investigates the possibility suggested by comparison of the papers of Yair (1995), Yair and Maman (1996), Gatherer (2004) and Fenn et al. (2005) that collusive voting patterns are not static but evolve over time. This has not been previously examined. It also represents a methodological improvement on the original method of Gatherer (2004) which simply simulated a notional contest, involving all countries, a large number of times, using this for the calculation of significance thresholds. It therefore did not take account of the subtleties of variation in the number of participating countries per year. Here, a more exact simulation of the history of the contest is used, with no assumptions about distributions and with empirical calculation of significance thresholds. This gives more accurate assessments of statistical significance of unusual voting patterns. This paper is therefore the first rigorous analysis of changes in collusive voting patterns over the history of the contest.

### 1.13

For the sake of completeness, it should be mentioned that there are two further academic papers on the contest, by Bruine de Bruin (2005) and Haan et al. (2005). These however, concern other aspects such as the influence of performance order on scores and the difference between televoting and jury voting, and will not be further discussed.



## Method

### 2.1

Scores for all contests between 1975 and 2005 inclusive, were downloaded from <http://www.kolumbus.fi/jarpen/>, with permission. The points awarded from each country to each other country were tabulated for each year. For the years 2004 and 2005, an average value was obtained from the points awarded in the semi-final and the points awarded in the final. The rationale for this is that semi-finals and finals in any one year cannot be interpreted as independent contests, since the voting patterns between the two are highly correlated. An alternative means of removing this correlation would simply be to discard the semi-final results and only score the final. However, as several countries have never progressed beyond the semi-final stages, this would constitute a loss of information. Averaging semi-final and final for 2004 and 2005 appears to be the best compromise. The table of results thus constructed is available in the Supplementary Information.

### 2.2

Collusive voting patterns were identified in the following way.

1. Determine the range of years over which the threshold is to be calculated.
2. Determine the threshold desired (5% was used in all cases here).
3. For each year within the range, determine which countries were participating and which countries voted for them (these two arrays are the same until the rule change in 2004 which permitted all EBU members to vote)
4. Based on the number of participating countries calculate the probabilities for each score for each year within the chosen year range.
5. Perform a simulation for each year within the range.
6. For each pair of countries, determine the actual and simulated average scores over the chosen year range, from one country to the other and vice versa.
7. Add these averages to an array for that country pair, and repeat the simulation for the chosen number of iterations, each time adding the pairwise average to the appropriate array.
8. The 1% significance threshold is the first percentile of the array, and the 5% significance threshold is the fifth percentile of the array.
9. These thresholds are compared with the actual average points awarded from one country to another over the range.
10. When one country's vote for another country exceeds the threshold, and the reciprocal also exceeds the threshold, a collusive voting pattern has been identified.

### 2.3

In more formal pseudocode, this can be expressed as follows:

```
INPUT: START_YEAR, END_YEAR, SIGNIFICANCE, TABULATION (of actual scores)
```

```

For each pair of countries (DONOR to RECIPIENT)
{
  From TABULATION, select actual results DONOR to RECIPIENT between START_YEAR and END_YEAR
  Calculate actual average vote from DONOR to RECIPIENT between START_YEAR and END_YEAR
  Initialise array AVERAGE_SIMULATION
  For 100000 iterations
  {
    Initialise array ONE_SIMULATION
    For each year from START_YEAR to END_YEAR
    {
      Determine NUM, number of countries voting that year
      Derive simulated position by RAND * (NUM-1), rounded up to nearest integer
      According to simulated position, award simulated vote
      Add simulated vote to array ONE_SIMULATION
    }
    Determine average simulated vote as average of array ONE_SIMULATION
    Add simulated vote to array AVERAGE_SIMULATION
  }
  Sort AVERAGE_SIMULATION and determine the vote at the top 5th percentile
  If actual average vote is greater than the 5th percentile of AVERAGE_SIMULATION
  Then DONOR votes significantly for RECIPIENT at the 5% level
}

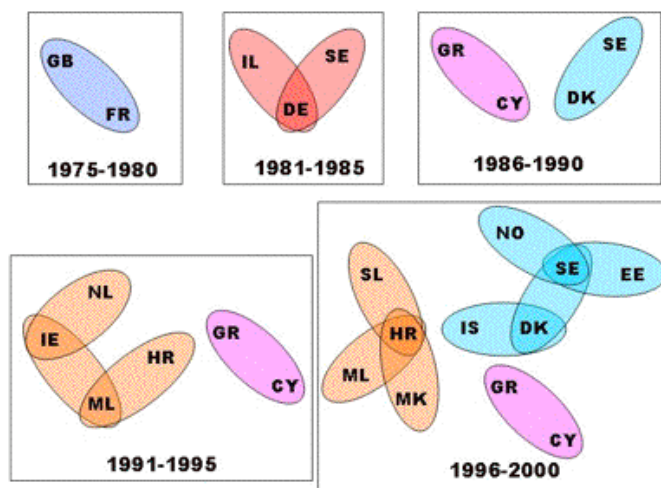
```

If the same is true for RECIPIENT to DONOR, then there is collusive voting at the 5% significance level.

## Results

### 3.1

Figure 1 shows a series of Venn diagrams representing the collusive voting patterns significant at the 5% level, for a series of 5-year windows beginning in 1981, as well as a 6-year window from 1975–1980. Where two countries can be shown to have significant collusive voting, they are paired in a coloured ellipse.



**Figure 1.** Venn diagrams of collusive voting partnerships, significant at the 5% level, for a 6-year window between 1975 and 1980, followed by a further four consecutive 5-year windows to 2000. GB: United Kingdom, FR: France, IL: Israel, DE: West Germany, SE: Sweden, GR: Greece, CY: Cyprus, DK: Denmark, NL: Netherlands, IE: Ireland, ML: Malta, HR: Croatia, SL: Slovenia, MK: Macedonia, IS: Iceland, NO: Norway, EE: Estonia. Blocs are colour coded. The "Viking Empire" (light blue) begins with the DK–SE partnership in 1986–1990, fades in 1991–1995 and then grows rapidly to a 5-member coalition in 1996–2000. The "Balkan Bloc" (brown) originates in 1991–1995 as a more ad hoc grouping containing a ML–HR partnership. In 1996–2000, HR adds fellow former Yugoslav republics SL and MK to draw the centre of gravity of the bloc into the area of the former Yugoslavia. The GR–CY partnership (purple) is a fixture from 1986–1990 onwards.

### 3.2

In the period 1975 to 1980, the only collusive partnership was between the United Kingdom and France. This was a fairly weak partnership, with the United Kingdom awarding an average of 6.8 points to France over the 6 year period. The 5% significance level for this is 6. The reciprocal vote from FR is an average of 6.3. Table 1 shows these results. France won the contest in 1977 and the United Kingdom in 1976. In this and all subsequent tables, the variance in the threshold is calculated from 10 runs of 10000 iterations each. In all cases, it is seen that the variance is small relative to the difference between the threshold and the actual averages. It also reveals that 10000 iterations would have been sufficient for the accurate detection of thresholds, so the 100000 iterations used in the main simulation was overkill.

**Table 1:** Collusive voting between the United Kingdom (GB) and France (FR) over the period 1975–1980. FR lost some enthusiasm in 1978 and 1979, but overall the average is just over the 5% significance level

1975	1976	1977	1978	1979	1980	average	5% random threshold	threshold variance
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<b>FR to GB</b>	12	7	12	2	0	5	6.33	6	0.02
<b>GB to FR</b>	8	8	6	8	6	5	6.83	6	0.005

### 3.3

In the next 5-year period, 1981–1985, this partnership disappeared, and was replaced with the first small bloc structure, an axis linking West Germany with Israel and Sweden. This was a slightly stronger collusion than that previously seen between the United Kingdom and France, and included consecutive maximum 12 points from West Germany to Sweden in 1983 and 1984 (see Table 2). West Germany won the contest in 1982, when it exchanged maximum 12 points with Israel (who came 2nd). Sweden won in 1984.

**Table 2:** Collusive voting of West Germany (DE) with both Sweden (SE) and Israel (IL) from 1981 to 1985. N/A: not applicable (not both present in contest)

	1981	1982	1983	1984	1985	average	5% random threshold	threshold variance
<b>DE to SE</b>	10	2	12	12	8	8.8	6.2	0.03
<b>SE to DE</b>	12	8	8	0	8	7.2	6.2	0.02
<b>DE to IL</b>	0	12	10	N/A	7	7.25	6.5	0.03
<b>IL to DE</b>	8	12	0	N/A	7	6.75	6.5	0.04

### 3.4

1986–1990 saw the emergence of two new partnerships which were to last until the present day (with a short interruption in one case). These were between Cyprus and Greece, and between Denmark and Sweden. Of these, the Cyprus–Greece partnership was the strongest with average scores of 8 or more on both sides. By contrast, the Sweden–Denmark partnership was much weaker, with the vote from Sweden to Denmark only just rising above the 5% significance level (Table 3). Neither of these partnerships benefited any of the parties to any great extent, although Denmark did come 3rd in 1988 and 1989, and Sweden 4th in 1989.

**Table 3:** Collusive voting between Cyprus (CY) and Greece (GR) and between Sweden (SE) and Denmark (DK) between 1986 and 1990. N/A: not applicable (not both present in contest)

	1986	1987	1988	1989	1990	average	5% random threshold	threshold variance
<b>CY to GR</b>	N/A	12	N/A	12	6	10	6.67	0.05
<b>GR to CY</b>	N/A	12	N/A	7	6	8.33	6.67	0.04
<b>SE to DK</b>	4	8	3	12	3	6	5.8	0.03
<b>DK to SE</b>	6	7	8	12	0	6.6	5.8	0.03

### 3.5

The Sweden–Denmark partnership faded briefly between 1991 and 1995, whereas the Cyprus–Greece partnership strengthened. It was joined by the first loose 4-member federation, comprising Ireland (IE), Malta (ML), Croatia (HR) and the Netherlands (NL), arranged in 3 partnerships: IE–ML, ML–HR and IE–NL (Table 4). These were the years of Irish domination in the contest, with consecutive wins from 1992–1994, so the heavy votes from the Netherlands and Malta to Ireland could be explained by the fact that Ireland was receiving heavy votes from all over Europe at that time.

**Table 4:** Collusive voting for the period 1991 to 1995, as shown in Figure 1. The partnership between Greece (GR) and Cyprus (CY) became particularly strong at this time. N/A: not applicable (not both present in contest), HR: Croatia, ML: Malta, IE: Ireland, NL: Netherlands

	1991	1992	1993	1994	1995	average	5% random threshold	threshold variance
<b>CY to GR</b>	10	12	12	12	12	11.6	5.6	0.02
<b>GR to CY</b>	12	10	10	12	8	10.4	5.6	0.01
<b>HR to ML</b>	N/A	N/A	4	7	12	7.67	6.33	0.04
<b>ML to HR</b>	N/A	N/A	0	10	12	7.33	6.33	0.07
<b>IE to ML</b>	12	10	2	10	4	7.6	5.4	0.01
<b>ML to IE</b>	4	12	12	5	0	6.6	5.4	0.01
<b>IE to NL</b>	N/A	8	12	0	N/A	6.67	6.33	0.06
<b>NL to IE</b>	N/A	10	10	12	N/A	10.67	6.33	0.10

### 3.6

1996–2000 saw the transformation of this loose federation into the beginning of a "Balkan Bloc" centred on Croatia, in the process losing Ireland and the Netherlands and incorporating the former Yugoslav republics of Macedonia and

Slovenia. This period saw the persistence of the Cyprus–Greece partnership, and also the emergence of a new "Viking Empire" — a bloc based on a resurgence of the old Sweden–Denmark partnership from the late 1980s but now including Norway, Iceland and Estonia. The Cyprus–Greece partnership had by now reached almost guaranteed mutual maximum marks. The Iceland–Denmark partnership also scored mutual maxima on two consecutive years, 1999 and 2000. Sweden's victory in 1999 included two maximum 12 scores from Norway and Estonia and 10 points from Iceland and Denmark (Table 5). Sweden's total score of 163 thus included 44 points from other members of the "Viking Empire". 2nd place went to another member of the same bloc, Iceland, with 146 points, which also received a total of 44 points from other bloc members. 3rd placed Germany with 140 points received only a total of 22 points from the members of the "Viking Empire". The differential between the 22 points awarded by the bloc to Germany and the 44 jointly awarded to Sweden would almost account for the 23 point margin of victory (Table 6). Thus 1999 is the first year in which it can be statistically significantly demonstrated that bloc voting came close to changing the result.

**Table 5:** Collusive voting for the period 1996 to 2000, as shown in Figure 1. Country abbreviations as in Figure 1

	1996	1997	1998	1999	2000	average	5% random threshold	threshold variance
CY to GR	10	12	12	N/A	N/A	11.33	6.33	0.03
GR to CY	12	12	12	N/A	N/A	12	6.33	0.02
DK to IS	N/A	0	N/A	12	12	8	6.33	0.01
IS to DK	N/A	6	N/A	12	12	10	6.33	0.06
DK to SE	N/A	6	N/A	10	10	8.67	6.33	0.05
SE to DK	N/A	7	N/A	8	12	9	6.33	0.04
EE to SE	10	0	12	12	5	7.8	5.4	0.03
SE to EE	12	1	4	10	6	6.6	5.4	0.03
NO to SE	6	8	10	12	5	8.2	5.4	0.04
SE to NO	10	0	12	5	7	6.8	5.4	0.02
HR to MK	N/A	N/A	6	N/A	10	8	7	0.07
MK to HR	N/A	N/A	12	N/A	10	11	7	0.06
HR to ML	12	8	7	6	8	8.2	5.4	0.02
ML to HR	7	8	10	5	0	6	5.4	0.03
HR to SL	6	3	3	12	N/A	6	5.75	0.04
SL to HR	3	0	12	12	N/A	6.75	5.75	0.04

**Table 6:** The Viking Empire vote in the 1999 contest, won by Sweden (SE). Bloc total: total votes from Viking Empire, other total: total votes from all other countries, total: overall total in contest. Without the Viking Empire vote, Sweden's victory would have been far narrower, and Iceland (IS) would have finished further down the rankings. DK: Denmark, EE: Estonia, NO: Norway, N/A: not applicable — country cannot vote for itself.

	points for SE	points for IS	points for DE
IS	10	N/A	5
DK	10	12	5
SE	N/A	12	2
EE	12	10	7
NO	12	10	3
<b>bloc total</b>	44	44	22
<b>other total</b>	119	102	118
<b>total</b>	163	146	140

### 3.7

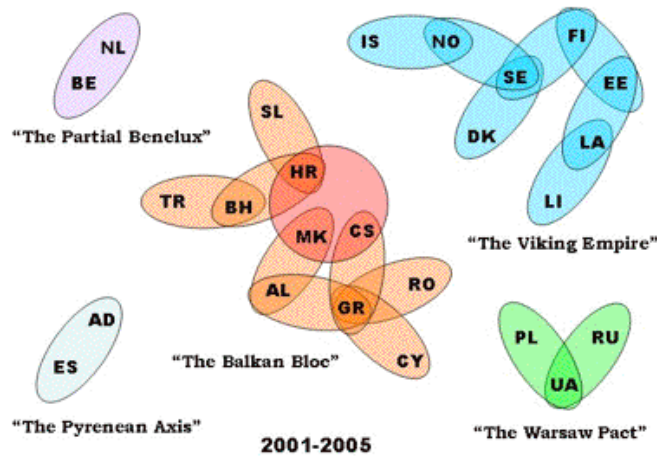
The second Viking Empire victory in the 1996–2000 epoch, that of Denmark in 2000 by a margin of 40 points over Russia, was assisted by 42 points from fellow bloc members. However, the Viking Empire also awarded a total of 37 points to Russia, and Estonia broke ranks with the Empire to award more points to Russia (10 points) than it did to Denmark (8 points). In that case, bloc voting did not substantially influence the outcome.

### 3.8

Since 2001, the number of statistically significant partnerships has mushroomed (Figure 2). The "Viking Empire" has expanded eastwards and southwards to include Finland, Latvia and Lithuania. The "Balkan Bloc" has grown substantially in the last two years, in the process incorporating the long-standing Greece–Cyprus partnership, and new partnerships have appeared in the east — a "Warsaw Pact" of Russia, Poland and the Ukraine — and in the west, with partnerships emerging between Spain and Andorra, and between the Netherlands and Belgium. At the heart of the "Balkan Bloc" is a 3-way partnership between Serbia, Croatia and Macedonia. Greece now links to the former Yugoslav core of the "Balkan Bloc" via its position as the hub of 4 partnerships, with Romania, Serbia, Albania and Cyprus. What is also noticeable about the "Balkan Bloc" is how its expansion has been mostly in the last two or three years. The windows for the



calculation of statistical significance are five years long, but significance at the 5% level can be achieved within two years if the mutual voting is extreme enough, as indeed it has been for the members of this bloc (Table 7). All but one of the contests in the period 2001–2005 has been won by a member of either the "Balkan Bloc" or the "Viking Empire", the exception being the 2004 contest won by the Ukraine (UA).



**Figure 2.** Venn diagrams of collusive voting partnerships, significant at the 5% level, for a 5-year window between 2001 and 2005. NL: Netherlands, BE: Belgium, ES: Spain, AD: Andorra, TR: Turkey, BH: Bosnia–Herzegovina, HR: Croatia, SL: Slovenia, MK: Macedonia, AL: Albania, CS: Serbia and Montenegro, GR: Greece, CY: Cyprus, RO: Romania, PL: Poland, UA: Ukraine, RU: Russian Federation, LI: Lithuania, LA: Latvia, EE: Estonia, FI: Finland, SE: Sweden, DK: Denmark, NO: Norway, IS: Iceland. Notice the core of the Balkan Bloc is a 3-way alliance of the former Yugoslav republics of CS, HR and MK (pink)

**Table 7:** Collusive voting for the period 2001 to 2005, as shown in Figure 2. For 2004 and 2005, the scores are the averages of the points given in the semi-final and final. The ranking is by surprisal, ie. the natural logarithm of the average vote over the 5% threshold. Country abbreviations is in Figure 2. N/A: not applicable (not both countries present in contest)

	2001	2002	2003	2004	2005	average	5% random threshold	threshold variance
AD to ES	N/A	N/A	N/A	12	12	12	6	0.00
AL to GR	N/A	N/A	N/A	12	12	12	6	0.00
MK to AL	N/A	N/A	N/A	12	12	12	6	0.00
HR to CS	N/A	N/A	N/A	12	12	12	6	0.00
CY to GR	N/A	12	12	12	12	12	5	0.04
GR to CY	N/A	12	12	12	12	12	5	0.01
PL to UA	N/A	N/A	10	12	12	11.33	5.33	0.05
ES to AD	N/A	N/A	N/A	12	10	11	6	0.00
CS to GR	N/A	N/A	N/A	8.5	12	10.25	6	0.00
CS to MK	N/A	N/A	N/A	12	8.5	10.25	6	0.00
MK to CS	N/A	N/A	N/A	10	10	10	6	0.00
DK to SE	10	10	N/A	12	7	9.75	5.25	0.03
BE to NL	N/A	N/A	8	9	12	9.67	5.33	0.05
LA to EE	12	12	0	12	12	9.6	5	0.02
GR to AL	N/A	N/A	N/A	9	10	9.5	6	0.00
LI to LA	8	12	N/A	6	12	9.5	5.25	0.06
FI to EE	N/A	10	N/A	12	6	9.33	5.67	0.01
SE to FI	N/A	10	N/A	8	10	9.33	5.67	0.02
AL to MK	N/A	N/A	N/A	7	11	9	6	0.00
HR to BH	10	7	8	10	10	9	5	0.01
UA to RU	N/A	N/A	12	10	4	8.67	5.33	0.04
SL to HR	5	12	8	6	12	8.6	4.8	0.02
FI to SE	N/A	7	N/A	12	6	8.33	5.67	0.02
CS to HR	N/A	N/A	N/A	5	11	8	6	0.00
EE to LA	8	12	5	5	10	8	4.8	0.01
GR to CS	N/A	N/A	N/A	9	6	7.5	6	0.00
RO to GR	N/A	6	2	12	10	7.5	5	0.02
BH to HR	7	2	6	10	12	7.4	5	0.03

RU to UA	N/A	N/A	8	12	2	7.33	5.33	0.02
NL to BE	N/A	N/A	10	5	6	7	5.33	0.03
UA to PL	N/A	N/A	8	5	8	7	5.33	0.03
MK to HR	N/A	5	N/A	5.5	10	6.83	5.67	0.03
LA to LI	5	6	N/A	8	8	6.75	5.25	0.03
EE to FI	N/A	5	N/A	7	8	6.67	5.67	0.02
SE to DK	10	0	N/A	5	11	6.5	5.25	0.02
NO to IS	1	N/A	12	5	8	6.5	5.25	0.03
HR to SL	8	8	3	3	10	6.4	4.8	0.04
HR to MK	N/A	4	N/A	5	10	6.33	5.67	0.08
TR to BH	0	0	12	8.5	10	6.1	5	0.01
IS to NO	0	N/A	12	0	12	6	5.25	0.04
SE to NO	0	N/A	12	3	8	5.75	5.25	0.03
NO to SE	2	N/A	7	12	1	5.5	5	0.04
BH to TR	0	0	12	7	8	5.4	5	0.02
GR to RO	N/A	8	4	0	8.5	5.125	5	0.05

### 3.9

The expansion of collusive voting partnerships into regional blocs, has become a crucial issue in three of the five contests during this period. Estonia's 2001 victory was by a very wide margin, but Latvia's 12 point victory over Malta in 2002 was aided by 42 votes from the Viking Empire, but who also gave 35 votes to Malta (Table 8). Thus as with Sweden's victory in 1999, bloc voting came close to influencing the outcome. Just as Estonia broke ranks with the Empire in 2000, so did Denmark award more points to Malta (12 points) than it did to Latvia (7 points).

**Table 8:** The Viking Empire vote in the 2002 contest, won by Latvia (LA). DK: Denmark, SE: Sweden, EE: Estonia, FI: Finland, LI: Lithuania, N/A: not applicable (country cannot vote for itself), Bloc total: total votes from Viking Empire, other total: total votes from all other countries, total: overall total in contest. Without the Viking Empire vote, Latvia's victory would have been far narrower. Notice Denmark's (DK) failure to vote with the bloc

	points for LA	points for ML
LA	N/A	7
DK	7	12
SE	5	4
EE	12	7
FI	6	2
LI	12	3
<b>bloc total</b>	42	35
<b>other total</b>	134	129
<b>total</b>	176	164

### 3.10

Turkey's 2003 victory by 2 points over Belgium was aided by 57 Balkan Bloc votes whereas they only gave 39 to Belgium (Table 9). 2003 is the first contest where bloc voting was strong enough to actually produce a victory for a bloc member.

**Table 9:** The Balkan Bloc vote in the 2003 contest, won by Turkey (TR). N/A: not applicable (country cannot vote for itself), BH: Bosnia and Herzegovina, HR: Croatia, SL: Slovenia, GR: Greece, CY: Cyprus, RO: Romania, bloc total: total votes from Balkan Bloc, other total: total votes from all other countries, total: overall total in contest. Without the Balkan Bloc vote, Belgium (BE) would have won. Notice Greece's (GR) ambivalent vote

	points for TR	points for BE
TR	N/A	7
BH	12	10
HR	10	0
SL	10	3
GR	7	8
CY	8	3
RO	10	8
<b>bloc total</b>	57	39
<b>other total</b>	110	126
<b>total</b>	167	165



### 3.11

Greece's 2005 victory took 78 bloc votes, with only 33 going to 2nd place Malta. although Greece won by 38 points, the 45 point difference was crucial. As with Turkey's victory in 2003, Greece won in 2005 because of the Balkan bloc (Table 10).

**Table 10:** The Balkan Bloc vote in the 2005 contest, won by Greece (GR). N/A: not applicable (country cannot vote for itself), BH: Bosnia and Herzegovina, HR: Croatia, SL: Slovenia, GR: Greece, CY: Cyprus, RO: Romania, AL: Albania, MK: Macedonia, CS: Serbia and Montenegro, bloc total: total votes from Balkan Bloc, other total: total votes from all other countries, total: overall total in contest. Without the Balkan Bloc vote, Malta (ML) would have won

	points for GR	points for ML
TR	12	8
BH	6	0
HR	5	4
SL	2	1
GR	N/A	8
CY	12	6
RO	10	2
AL	12	4
MK	7	0
CS	12	0
<b>bloc total</b>	<b>78</b>	<b>33</b>
<b>other total</b>	<b>152</b>	<b>159</b>
<b>total</b>	<b>230</b>	<b>192</b>

## Discussion

### 4.1

This paper demonstrates that collusive voting partnerships in the Eurovision Song Contest have grown into large blocs capable of influencing the outcome of the contest. This process began in the mid-90s, and has accelerated since the turn of the millennium. In 2003 and 2005, the Balkan Bloc vote was sufficient to swing the contest to a Balkan Bloc member, which would not otherwise have been the winner. In 1999 and 2002 the bloc vote of the Viking Empire contributed substantially to the victory of Viking Empire bloc members but, unlike in 2003 and 2005, was not the crucial factor. The blocs referred to here are conglomerates of collusive partnerships and therefore different in structure to those identified by Yair ([1995](#)), Yair and Maman ([1996](#)) and Fenn et al. ([2005](#)). This should be borne in mind when comparisons are made between different studies.

### 4.2

It might legitimately be objected that the simulation presented here is not truly "social", insofar as there is no underlying behavioural model. Such a model would presumably incorporate parameters governing composition of voting panels in the pre-televoting era, the mechanics of telephone voting in the present era, the relationship between the musical and extra-musical characteristics of each song and their correspondence with known regional preferences in pop music style, the changing political relationships between competing nations and their effect on popular sentiment, and so on. Construction of such a simulation would not be impossible, but would in practice be tremendously demanding, both because of the large numbers of new parameters which would require estimation, and the technical difficulty of achieving accurate values for them. The use of an artificial baseline hypothesis of random voting is, however, not merely a default adopted in the face of methodological difficulty. If the only criterion for voting was musical excellence, and each country was equally endowed with talented songwriters, and the voters of each country were not severely differentiated with respect to their judgement of quality, then over a sufficiently long period of time the results of the contest would approximate to random. Given that this has not been the case, it implies that one or more of the above assumptions may be invalid. The issue of strong regional preferences in style has been discussed extensively in the papers by Yair and collaborators, but if this were the case there would (as discussed more fully below) have been a greater and more consistent deviation from randomness earlier in the history of the contest. This leaves only the possibility that countries vary in musical talent, or that something other than musical excellence is a factor in voting. The first of these is difficult to judge and must be left as a possible confounding factor. However, given that there have been some examples of collusive voting so strong as to be visible to even a casual observer without the benefit of a statistical analysis, it would appear that variation in voting patterns independent of musical excellence is a genuine phenomenon, and that comparison with random background is an appropriate method of detecting it.

### 4.3

A common objection to any academic analysis of the Eurovision Song Contest is that it is an irrelevancy, an out-dated farrago of dubious taste born in an era of naïve enthusiasm for European unity, and taking little account of the best current products of the pop music industry. This view is quite common among mainstream intellectuals and has led to periodic calls for the contest to be scrapped altogether, or alternatively to be reformed to incorporate either music that reflects national folk traditions (which has been unilaterally attempted on occasions by both Norway and Spain among

others) or to include "serious" pop music (a U2-rovision, as one television commentator jokingly suggested). This view is itself now becoming something of an anachronism, as the potential of the contest for post-modern irony and its appeal to the homosexual community (e.g. [Lemish 2004](#) and [Tan 2005](#)) have provided it with a certain alternative vogue that was absent 15 or 20 years ago. It is also clear that many of the countries of what has been termed "the new Europe" see the contest as a means of advertising their new independence and European identity to the outside world. The contest now operates successfully on two levels, appealing equally to western post-modernists who revel in the very tastelessness and contempt for "serious" pop music that appalled the previous intellectual generation, and also to emerging states rediscovering the pan-European spirit of the contest's founders. The contest is now an important cultural phenomenon meriting academic study.

#### 4.4

Previous studies of the Eurovision Song Contest have analysed results from contests over single large time spans, eg. Yair ([1995](#)) and Yair and Maman ([1996](#)) from 1975–1992, Gatherer ([2004](#)) from 1975–2002, Fenn et al. (2005) from 1992–2003, Ginsburgh and Noury ([2004](#)) and Ginsburgh ([2005](#)) from 1975–2003. This paper is the first to fully analyse the contest in successive windows of five years (although see also Fenn et al. ([2005](#)), Fig. 6 of that paper). All previous studies have found evidence of non-randomness and suggestive internal structure in the voting patterns, but have not detected the fact that such non-randomness has shown a progressive increase since the mid-90s. This implies that the various reasons given for non-randomness, such as shared cultural tastes, can only be partly correct.

#### 4.5

It is necessary to be quite clear on one point. No allegation of governmental or other national authority interference in voting is made in this paper, nor indeed has been made in any of the other papers on the subject by various authors. During the era of jury voting, when each country's votes were decided by a group of a dozen or so of its citizens, it might have been, in principle, possible for some pressure to have been exerted on individuals. However, in the modern era, telephone voting has increased "jury" sizes to the hundreds of thousands in some countries ([Haan et al. 2005](#)). The telephone vote is verified by an EBU adjudicator, thus making any central attempt to influence the result highly unlikely. One might therefore expect collusion to have been greater in the jury era, and to have disappeared as large numbers of individual members of the public were permitted to vote by telephone. However, precisely the opposite is the case. Collusion during the jury era was limited to a few transient partnerships, of which only the Greece-Cyprus and Croatia-Malta partnerships lasted longer than one five-year window of analysis. It is therefore clear that collusion is a mass psychological phenomenon. Previous authors have made some suggestions as to what the nature of this phenomenon might be.

#### 4.6

For instance, Yair has suggested that there are distinct regional variations of taste in the kind of light popular music showcased in the contest. Geographical clustering of voting patterns is therefore to be expected, and such clustering would manifest itself as collusion. However, even if this assessment of geographical variation in taste is true, which it may well be, there is no reason to believe that songs from recent years should be more appealing to certain geographical/cultural constituencies. In other words, if there are peculiar "Balkan" or "Viking" tastes in pop music, which account for the existence of those blocs, we would probably have seen the emergence of such blocs much earlier in the history of the contest. In order to fully discount this theory, it might be necessary to analyse songs of the two main blocs over the history of the contest, in order to assess the degree to which they are typical of regional pop music tastes. Nevertheless, it seems unlikely that the rapid explosion in collusion seen since 1995 can be accounted for simply as a reflection of solidifying regional variations in pop music style.

#### 4.7

A second possibility is that the contest gives the people of Europe a chance to express their opinions on the political behaviour of their neighbours. For instance, the United Kingdom's 2003 "nul points" debacle has been attributed to "post-Iraq backlash" (by Terry Wogan of the BBC). Yair ([1995](#)) also saw traces of several historical affiliations in his analysis of the data between 1975 and 1992, such as historical links between the Low Countries and the Jewish Diaspora of mediaeval times, manifesting itself in mutual support between the Netherlands and Israel, and between France and Israel owing to events in the early decades of Israeli statehood (although it should be added here that neither of these relationships passed the 5% significance level by the algorithm used here — data not shown). It is very easy also to point to obvious ancient historical affinities between Greece and Cyprus, or between Croatia and the other seceded republics of the former Yugoslavia, as appeared in the early Balkan Bloc of 1996–2000 (Fig 1). Likewise, in the 2001–2005 period, the collusion between Turkey and Bosnia-Herzegovina may originate in the political link formed during the years of the Bosnian civil war. However, it is less easy to account for the presence of Serbia as a central figure in the current Balkan Bloc, given that opposition to Serbian hegemony within the former Yugoslavia was the main unifying principle among the other ex-Yugoslav republics. It may well be that a spirit of reconciliation is genuinely alive in the former Yugoslavia, and that the contest gives its inhabitants a chance to express such a thing. However, one then wonders exactly why countries such as Romania, Albania, Greece and Cyprus are being drawn in, especially since Greece remains uncomfortable with the notion of an independent Macedonia on its northern border, and relations between Greece and Turkey, although much improved, can occasionally become tense, for instance over the issue of the referendum on Cypriot unity and Cyprus's membership of the European Union.

#### 4.8

A third possibility is that collusive voting has increased because voters have realised that it increases their own country's chance of winning the contest. According to this view, one must not read too many very deep meanings into voting behaviour. The long-standing Greek-Cypriot partnership, which probably did originate as an expression of political solidarity (although it took some time to get off the ground, see Gatherer 2004), was copied by voters in other countries simply as a means of obtaining votes in return. It is genuine collusion, and has as its objective, victory or an improved rating in the contest. Ginsburgh uses the American expression "logrolling", which is roughly the equivalent of "mutual back-scratching" in a political contest, to describe such behaviour. Fenn et al. ([2005](#)) and Doosje and Haslam ([2005](#)) have shown that countries are more likely to award high votes to those who have previously voted highly for them, and

Doosje and Haslam (2005) have shown that this tendency is greater in those countries with poorer economies and higher cultural tendencies to collectivism. This might help explain the growth of the Balkan Bloc, but not the Viking Empire.

4.9

Collusion is thus simply a meme (Dawkins 1976), a horizontally spreading cultural behaviour that has progressively colonised the contest. The numbers of countries involved in collusion has jumped from a maximum of 4 during any 5-year period prior to 1990, to 6 in the early 90s, to 11 in the late 90s, and in the last 5-year epoch has reached 25. Considering that there are only 39 currently active members of the EBU participating in the contest, the level of infection has reached 64%. The true figure may be even higher, since it has not yet been possible to establish statistical significance of voting behaviour for the countries entering for the first time in the 2005 contest (since a single data point cannot establish any trend). Thus Moldova's first attempt at voting resulted in high scores for Russia, Romania, Ukraine, Bulgaria and Latvia, suggesting that Moldova may become a member of the "Warsaw Pact", currently consisting only of Russia, Ukraine and Poland, or that it may become the link, via its immediate neighbour Romania, which draws the Warsaw Pact into the Balkan Bloc. Alternatively, if the link with Latvia proves the most durable, Moldova may become a southern outpost of the Viking Empire (the Vikings reached the Black Sea by rowing down Russia's great rivers, emerging in the region of what is now Moldova). Moldova received high scores in return from Lithuania, Russia, Romania and the Ukraine, suggesting that recruitment to the Warsaw Pact is a slightly more likely outcome. New entrant Bulgaria is showing a more definite tendency toward the Balkan Bloc, voting strongly in 2005 for Greece, Belarus, Cyprus, Macedonia and Romania, receiving votes in return from Cyprus and Macedonia. The third new entrant of 2005, Belarus, voted strongly for Russia, Moldova, Israel, Serbia and the Ukraine, receiving high votes in return from Bulgaria, Greece and Russia. Many of the new countries thus seem to be entering with immediate view to joining one of the existing blocs. The 2006 contest may include the Czech Republic, Armenia and Georgia. The latter two will almost certainly establish a Caucasian partnership, with the Warsaw Pact the most likely long-term gravitational centre.

4.10

One might ask why such blocs have not yet spread to the west. Doosje and Haslam (2005) suggest that such behaviour is less typical of people in wealthier, more individualistic cultures. On the other hand, Yair and collaborators provided some demonstration of how voting patterns in the period 1975 to 1992 resulted in Western hegemony over the contest. It is possible that Western complacency concerning their likelihood of winning has meant that the collusion meme has not found a fertile ground in those countries. However, Andorra's first two years in the contest saw the immediate establishment of the "Pyrenean Axis" with Spain and mutual voting between the Netherlands and Belgium has crossed the boundary of statistical significance in the last 5 years.

4.11

Not all significant voting tendencies are manifested as partnerships. Some are distinctly more one-sided, and these were first highlighted by Ginsburgh and Noury (2004) and Ginsburgh (2005). At the 5% significance level, there are currently such relationships between nine countries and Turkey (Table 11). Turkey only significantly reciprocates one of these, with Bosnia-Herzegovina. Three others are from other Balkan Bloc members, but five of the top 6 (as assessed by surprisal, see Table 11 legend) are from countries with significant Turkish minorities, usually dating back to the *gastarbeiter* phenomenon of the post-war years.

**Table 11:** Countries awarding points to Turkey, significant at the 5% level, for the period 2001–2005, . FR: France, NL: Netherlands, BE: Belgium, DE: Germany, RO: Romania, AT: Austria, AL: Albania, BH: Bosnia-Herzegovina, MK: Macedonia. The ranking is by surprisal, ie. the natural logarithm of the average vote over the 5% threshold

from	years	average	5% random threshold
FR	5	9.6	5
NL	4	9.75	5.25
BE	4	8.5	5
DE	5	7.8	5
RO	4	7.5	5
AT	4	6.75	5
AL	2	8	6
BH	5	5.4	5
MK	3	6	5.67

Similar phenomena are found for other countries, including Greece and most of the former Yugoslav republics (data not shown). The latter may reflect the presence of refugee communities from the former Yugoslavia in various western European countries.

4.12

If blocs continue to expand, what effect will it have on future results? The Balkan Bloc, with currently 10 members, has been able to use its vote to capture the 2003 and 2005 contests, as shown above (Tables 9 and 10). If this bloc expands to 12 or 13 members with the possible imminent addition of Moldova, Belarus or Bulgaria, it may signal a period of Balkan hegemony over the contest, paralleling the Western hegemony of the 1975–1992 era (Yair and Maman 1996). However, since countries can only vote in the contest for 10 other countries (12, 10, 8 and 7 to 1 points), a bloc of greater than 10 members might suffer from a lack of cohesion. Collusive relationships sufficient to cross the 5% significance level can only be maintained with a small handful of other countries, and a perceived lack of reciprocation may result in countries defecting from blocs, as the "logrolling" identified by Fenn et al. (2005) and Crombez (2000)

would inevitably break down. As an illustration of how instability can manifest itself, compare the bloc structure of the Viking Empire in 1995–2000 with that during 2001–2005. Sweden remains the central figure, but its statistically significant relationship with Estonia has now been replaced by one with Finland. Iceland's main partner within the bloc is no longer Denmark but now Norway.

#### 4.13

It is also possible that the EBU may attempt to engineer some way to reduce collusive voting. A return to juries is unlikely, as televoting has strong economic incentives. Regionally-based heats may be instituted, forcing neighbouring countries to compete among themselves for a place in the final. Such locally focussed competition may generate enough animosity to discourage regional voting for a local winner in the final. On the other hand it may not. Another alternative is to use broader voting prohibitions. Currently countries are forbidden to vote for their own songs. It may be possible to prohibit countries also from voting for those other countries in which they can be shown to be involved in statistically significant collusive voting partnerships. This may, however, smack of victimisation of the winners by resentful losers, or even Western European chauvinism, and would probably lead to boycotts. On the other hand, many western countries appear to be on the brink of pulling out of the contest permanently, as Italy and Luxemburg already have. As things currently stand, Balkan and Viking countries are likely to dominate the contest for the next few years at least. 1998 was the last year that a non-bloc country (Israel) won the contest. The strong émigré vote for Turkey, Greece and the former Yugoslav republics will further strengthen those countries, even if the Balkan Bloc becomes overloaded with too many members. Even so, collusive voting is currently insufficient to constitute an absolute guarantee of winning for any single country. Professional gamblers are unlikely to make very much money from betting on the outcome, unless a spread bet over a range of countries is used.

#### 4.14

What implications does this have, if any, for pan-European political institutions? The answer to this depends on whether or not one takes the view that the contest is some kind of grand metaphor for European politics, as for instance *The Economist* ([Unattributed 2005](#)) and some of the academic authors have tentatively suggested. If one believes this, then the outlook for an expanded European Union is one grim inter-regional struggle. However, if one simply sees the contest as an expression of post-modern kitsch contempt for the established pop music industry (see [Tan 2005](#) for a discussion of an Asian parallel), then no such concern is warranted. This paper shows that regionalism in the contest is a memetic epidemic, and not likely to reflect very profound fault lines in the current state of Europe.



### Supplementary information

- [the table of results](#)
- the [Perl script](#) for calculating significant collusion



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