Seen to be done

A statistical investigation of peremptory challenge

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1 Introduction

The Gerald Stanley murder trial was noteworthy for all of the wrong reasons. The first reason was the crime itself. The rural region around Biggar, Saskatchewan[13] is not known for crime, indeed, the crime statistics collected by Statistics Canada suggest it is one of the safest in the province[16]. Any murder at all would be worthy of attention and subject to plenty of drama. But beyond the damage this trial has done to the community, this trial is noteworthy because it led to a significant re-examination of the legal jurisprudence surrounding the jury selection process culminating in the proposition of Bill C-75 by the Canadian government in March of 2018[1], less than two months after the trial's verdict[14].

Bill C-75, in part, aims to ameliorate one of the critical points of contention about the Gerald Stanley case: the use of peremptory challenges in jury selection. The outsized impact of the case was due, in large part, to it's racial aspect. Gerald Stanley, a white man, was accused of second degree murder in the killing of Colten Boushie, a First Nations man. Given Canada's troubled history with First Nations groups, this alone would have been enough to make the trial a flash point for race issues, but that was not the worst aspect of the trial. Rather, it was the alleged use of peremptory challenges to strike five potential jurors who "appeared" to be First Nations, resulting in an all-white jury, that proved to be the most controversial and influential facet of the entire affair[8] [11].

With Bill C-75 currently moving through the Canadian parliamentary system, having completed its second reading in June 2018[2], a close re-examination of the practice of peremptory challenge is warranted. A great deal of ink has already been spilled on both sides of the debate [9] [19] [15], but startlingly little of this discussion has been based on any hard evidence on the impact of peremptory challenge in jury selection. This paper aims to provide analysis and evidence to illuminate the topic further by analyzing three separate peremptory challenge data sets collected in the United States [18] [7] [4]. While this data cannot tell us if challenges were racially motivated in the Stanley trial, stepping back from this fraught legal episode to take a wider view of the practice of peremptory challenge provides a more sober place to start the discussion of its place in modern jury trials.

This paper will proceed in five parts. Section 2 provides a brief history of the practice of peremptory challenges in jury trials, in particular explaining their original motivation and past implementations in 2.1 and how they have developed in the United States, the United Kingdom, and Canada in 2.2. Section 3 proceeds to discuss the three data sets obtained, with 3.1 – 3.3 discussing the sources and collection methods before the cleaning and preprocessing are explained in 3.4. Section 4 then provides the details and results of the different analyses performed on the different data sets, before these results are compared to previous works in Section 5. Finally, the results and findings are summarized in 6, and recommendations based on the observations obtained here are provided.

1.1 List of Terms

In order to facilitate clarity despite brevity, a list of terms used in this paper is presented here.

Prosecution/State The legal representation which argues for conviction

Defence The legal reperesentation which argues against conviction

Court Reference to the judge, prosecution, and defence

Venire The population sample from which a jury is selected

Jury The final group of (usually) twelve chosen venire members which judge the guilt or innocence of the accused/defendant

Accused/Defendant The individual on trial for a crime

Voir dire From old French "to speak the truth", this is the questioning process used by the court to assess the suitability of a venire member to sit on the jury

Struck In the context of a venire member being rejected from the jury, struck indicates removal by peremptory challenge or challenge with cause

Litigants The accusor and the accused

2 Background

2.1 History of Peremptory Challenge

For brevity, the history presented here is rather limited. Indeed, many details have been omitted from the summary of the history here. Roughly, the presentation of the history of jury trials here follows the comprehensive and exhaustively referenced description provided by Hoffman in 1997 [10], with additional context and opinion on certain details provided by von Moschzisker's 1921 paper [17], Forsyth and Morgan's 1994 book [6], and Brown's 2000 paper [5]. Information about the history of the Canadian system was provided by Brown's paper [5] and a paper by Petersen in 1993 [12].

2.1.1 Pre-English History

Jury trials are truly ancient, indeed so ancient that they are prevalent not only in historical records, but occur in myth. Both Norse and Greek mythology feature groups of individuals assessing the guilt or collecting evidence about the actions of a peer [10].

Outside of the realm of myth, there is evidence of the use of juries in Ancient Egypt, Mycenae, Druid England, Greece, Rome, Viking Scandanavia, the Holy Roman Empire, and Saracen Jerusalem [10]. It should be noted that in none of these areas was the jury trial the primary form of conflict resolution practiced. Nonetheless, it is clear the jury trial has a broad and long history of use.

Something similar to the modern peremptory challenge does not appear until Rome, however. The Roman *Judices* were groups of senators selected to judge the guilt of the accused in a legal case. There is recorded evidence that of the 81 Senators would be selected to sit on one of these *Judices*, the litigants were permitted to remove fifteen of these Senators each. This egalitarian reduction of the jury size seems analogous to the modern peremptory challenge system in placing the power in the hands of the litigants and in requiring no justification by either litigant.

2.1.2 In English Law

Peremptory challenge does not reach is modern form, with a jury size that is held constant, until it was established in the English legal system. It should be noted that despite some previous debate on the topic, the most modern historical evidence suggests that the basis of the English practice was not related to the system used in the selection of *Judices* in Rome. The English system appears to be its own beast entirely.

The currently accepted theory is that the jury system was introduced to England during the Norman conquest of 1066. Following the official adoption of juries in the Assize of Clarendon in 1166, and the outlaw of trials by ordeal (the most common method of trial at that time) in 1215, peremptory challenges began to appear in England in the late thirteenth century. The challenges were officially recognized in 1305 when Parliament outlawed their use by the Crown, only to replace them with an analogous system of so-called "standing-aside"[1].

It should be noted here that although the challenges issued between the Assize of Clarendon and this 1305 act are called "peremptory," they may not serve the same purpose as the modern challenges. Indeed, as Hoffman argues [10], the challenges at this point in history may have been challenges with cause. The lack of a need to discuss the justification for such a causal challenge can be attributed to two factors: the function of these early courts in

[1] For a detailed explanation of this system see [10]

small communities where the court would be familiar with the venire members, and the justification of prosecution challenges under the paradigm of royal infallibility.

While the first of these, where both sides simply "know" why an individual is being challenged seems tenuous at best, the second justification for the Crown's use of challenges seems quite reasonable. If the king cannot be wrong in his judgement and he has some reason to feel that a venire member cannot serve on the jury, then it would be highly disrespectful to ask him to justify his action. The Crown prosecutors, as representatives of the king, would be similarly shielded from criticism. The growth of peremptory challenges from the Crown to the defence was then simply an act done out of a desire to limit the power of the monarch and improve the chances of any individual facing royal inquiry.

While the logic of the expansion of these challenges is lost to time, their legal limits are not. From a maximum of 35 challenges allowed at their peak, the allowed number of challenges has only decreased over the centuries. This culminated in the Cyprus spy case in the late 1970s, which led to a "sustained campaign in Parliament and in the press alleging that defence counsel were systematically abusing it."[10] Ultimately this campaign was settled by the Criminal Justice Act of 1988, in which the Parliament of the United Kingdom abolished the practice. It did not, however, abolish the use of "standing-aside" by the Crown, although the practice has been heavily curtailed with strict guidelines to its use [3].

2.1.3 In American Law

2.1.4 In Canadian Law

2.2 Modern Practice

2.2.1 In American Law

2.2.2 In Canadian Law

2.2.3 The Gerald Stanley Trial

Whatever justification for the modern and historical practice of peremptory challenges a proponent espouses, it should be clear from the fallout of the Gerald Stanley trial that peremptory challenges have failed in this case. Rather than guaranteeing the creation of a mutually acceptable jury, their use inspired an atagonistic response to the verdict of the case. In the eyes of many, justice was not done, and peremptory challenges are the specific reason cited.

While

Every time a prospective juror is peremptorily challenged we are telling that prospective juror that the foundation of this system is not evidence, but rather rumor, innuendo, and prejudice. - Morris B. Hoffman [10]

3 Data

3.1 Jury Sunshine Project

3.2 North Carolina Data

3.3 Philadelphia Data

3.4 Data Cleaning

Jury Sunshine Data

The data collected in North Carolina proved invaluable to this project [18].

Problem: some columns of the data contained only NA values Solution: `lapply` to remove these uninformative columns

Problem: relational database provided did not have all data in one joined table Solution: creation of `CleaningMerge` function: a wrapper for `merge` which provides information about the mismatches which may be present in the two merged tables

Problem: inconsistently coded levels, e.g. inconsistent case or "?" instead of "U" for unknowns Solution: forcing levels to be uppercase and the replacement of obvious mis-specified levels

Problem: some columns seem to have swapped values, e.g. the gender column should be one of "M", "F", or "U" and the political affiliation column should be one of "D", "R", "I", or "U", but some individuals have the gender

recorded as "R" and political affiliation as "M" Solution: the creation of the `IdentifySwap` function, which has two arguments: a data set and the acceptable or correct levels for the variables in the data set. It then identifies rows which have candidate swaps and presents them for review

4 Analysis

With this data cleaned and processed, questions can now be posed and addressed through analysis. A few obvious questions come to mind, considering the previous work done on this subject. The first is whether the results found by previous analyses which did not use statistics are statistically significant. Additionally, we may wonder whether the most common arguments posed in favour of peremptory challenge are satisfied in this data.

4.1 Arguments for Peremptory Challenges

The primary argument stated in favour of the continued use of peremptory challenges is that of the 'levelling' of the bias of the jury. Cite Canadian news articles here The argument, essentially states that peremptory challenges are necesary to remove those jurors which are somehow abnormally biased but which are not eligible for removal by cause, or have not been removed by cause out of error.

While the argument of recourse for an incorrect judgement of a challenge with cause is certainly valid, it seems unnecessary in light of the appeals process which already exists. Regardless, a precise comment on the validity of this statement cannot be easily made. The second assertion, however, permits a precise and straightforward mathematical analysis.

In the Jury Sunshine data, for example, the proportion of venire members rejected by peremptory challenge is roughly 0.43. In what sense can such a large proportion of the venire be judged as extreme?

A secondary argument is that of the creation of a jury which is mutually acceptable by giving both sides the privilege of removing any jurors they do not want assessing their case. The multiple American supreme court cases which address peremptory challenges and the outcome of the Gerald Stanley murder trial demonstrate quite clearly that this noble goal is not executed in practice. Rather, the privilege is a point of weakness that allows the politicization cases by doing the precise opposite of what it purports to achieve. It creates juries which are unacceptable to one party and society at large.

4.2 Modelling

In order to create a single model to test the statistical significance of the differences observed for strike rates by race, defendant race, and party doing the striking, a saturated poisson regression model was fit to the data. Letting i denote the level of the venire member race, j the defendant race, and k the disposition, the numbers of observed venire members in each ijk combination, y_{ijk} were modelled as Poisson-distributed random variables with expectation λ_{ijk}. A saturated model was then fit to the data, that is a model described by the equation:

$$\log E[y_{ijk}] = \mathbf{x}_{ijk}\beta = \beta_o + \beta_R x_{i..} + \beta_D x_{.j.} + \beta_S x_{..k} + \beta_{R:D} x_{i..}x_{.j.} + \beta_{R:S} x_{i..}x_{..k} + \beta_{D:S} x_{.j.}x_{..k} + \beta_{R:D:S} x_{i..}x_{.j.}x_{..k}$$

Where $x_{i..}$ indicates the race level of the ijk cell, and $x_{.j.}, x_{..k}$ are defined analogously for the defendant race and disposition. The interaction terms then serve to answer questions about the racial pattern of strikes which is utilized by each party given the defendant race. Most interesting to this investigation is the third order interaction term. This term indicates a significant difference in racial strike patterns given the party striking and the defendant race. In other words, this term accounts for different patterns for the different parties which are not independant of the defendant race.

When this term is tested using a nested model without the third order interaction, the third order interaction is found to be significant. This suggests that not only do the patterns present in the different parties vary, but they vary differently for different defendant races. This dependence can be viewed using a novel graphic presented in Figure 1.

The conditional probability of a particular disposition given the racial combination of venire person and defendant is displayed on the y-axis, that is the count of individuals for a particular race, defendant race, and disposition combination divided by the number of individuals with the racial combination across all dispositions. The x-axis then displays the combinations, grouped by the venire member race to show the dominant pattern in the data.

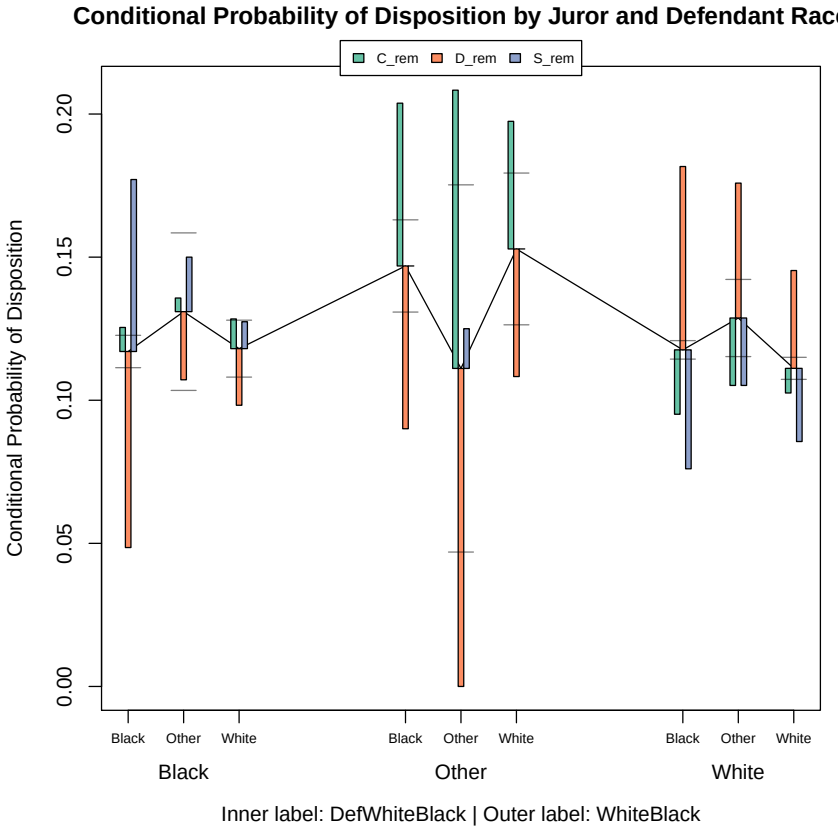

Figure 1: Parallel coordinate plot of racial strike tendencies

The black line running across the plot is the mean, or expected, rejection probability that all parties would have if they acted identically. That is, the relative level of this line provides the relative strike rate on aggregate for a particular racial combination. The bars extending from this line at each point go from this line to the corresponding value of the party represented by the bar. Finally, the horizontal lines provide approximate confidence intervals for each combination[2].

The dominant pattern to these strikes is a tendency of the defense to preferentially reject white venire members and keep black venire members, and of the prosecution to do the opposite. It was already noted in the literature[18], but the addition of defendant race allows us to make a stronger statement, as this pattern remains across defendant races. It also adds nuance, however, as the race of the defendant has a clear impact on the lengths of the bars for both the defense and prosecution. The prosecution seems to favour a jury which does not match the race of the defendant, while the defense seems to favour a jury which does.

While this second tendency seems to have no justification beyond race, the dominant tendency may have other justification than simply skin colour. As was noted by "Ideological Imbalance and Peremptory Challenge", black individuals are more consistently aligned with the democratic party, and as a consequence a lawyer which suspects this political bias will impact the trial outcome would preferentially strike or keep black jurors in order to keep as many left wing individuals as possible. In this data, this political imbalance is incredibly prevalent, as can be seen in Figure 2 Add the plot of this effect here, elaborate on this pattern more based on the plot.

Perhaps more interestingly, the prosecution and judge seem to match in their tendency from the mean at every combination. This suggests that both challenges with cause and the prosecution tend to have the same effect on the jury composition, though the magnitudes can differ greatly for these two strikes.

[2]Generated assuming a binomial distribution of struck (by any party) against kept, as when this data is modelled with a poisson distribution, the distribution of sub-processes given the overall count will be binomially distributed

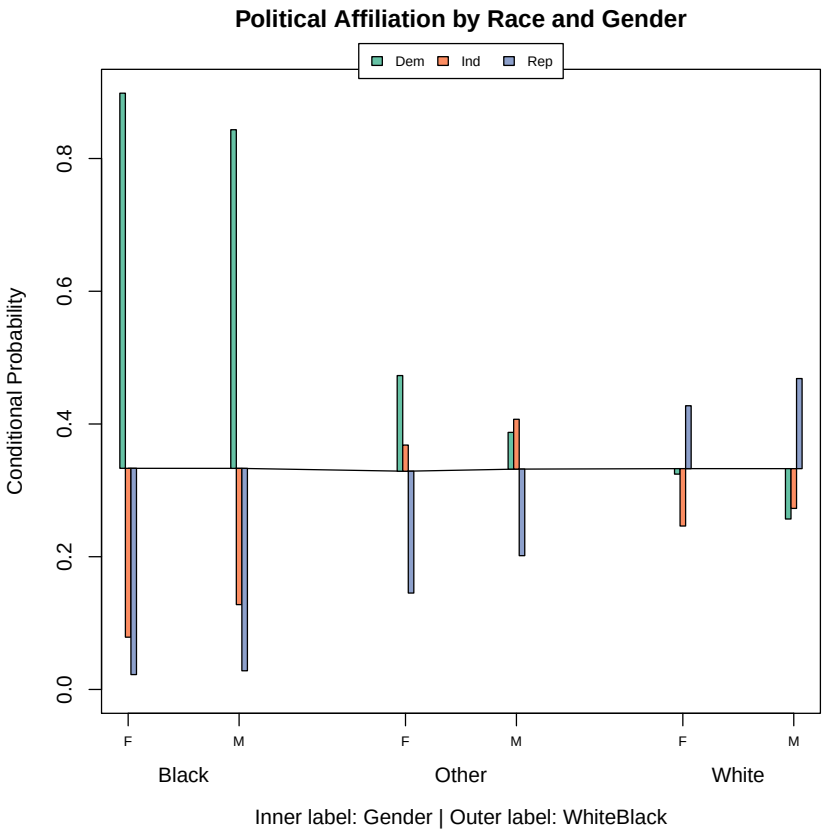

Figure 2: Conditional probabilities of political affiliation by race and gender

5 Comparison to Previous Work

6 Conclusions and Recommendations

7 Ideas

- look at the CSI from StatsCan, or an analogous US value, to assess the severity of a crime
- Kullback-Leibler divergence of accepted jury distribution to the venire distribution
- Look at guilty verdict tendencies based on jury race vs. defendant race

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