Game Theory and Optimal Jury Selection

34th ASTC Conference, Nashville

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CTO JuryGo.com

"Jury selection is a highly tactical, yet always mysterious, exercise in which cases are often won or lost."

- Hittner & Nichols, Jury Selection in Federal Civil Litigation 1992

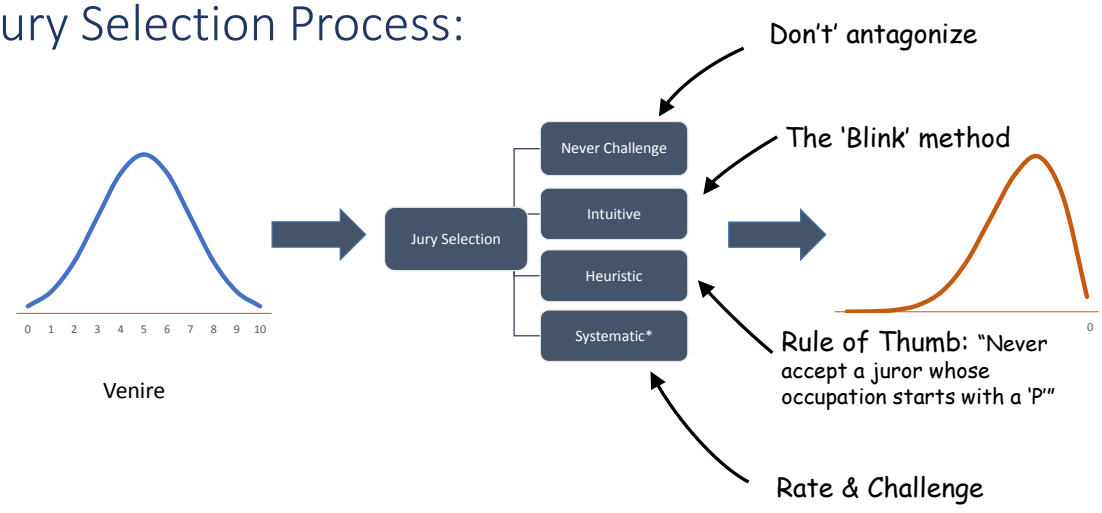
~~Whom do you challenge?~~ How do you challenge?

Jury Selection Process:

Venire

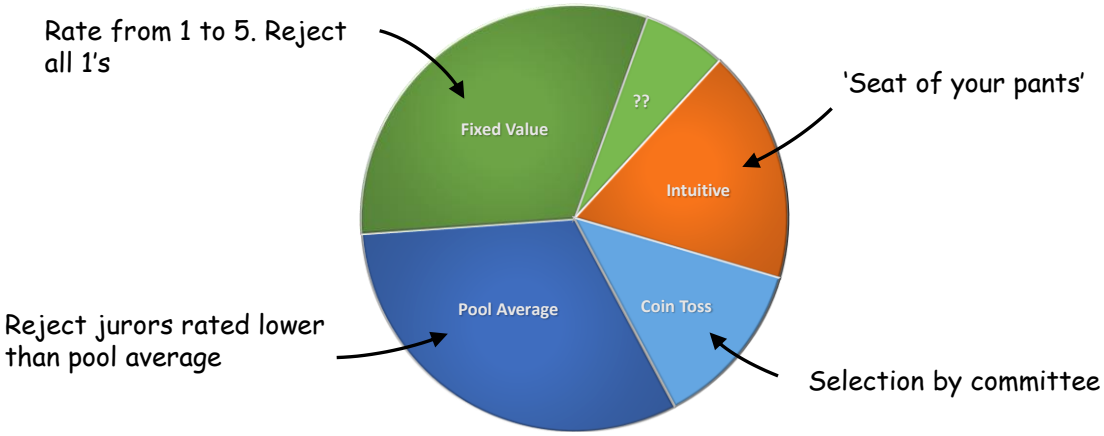
Jury

Jury Selection Process:



Venire

Systematic Selection – Examples*



*Non-scientific. Based on 'author's impressions'

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Q: Is there a 'best system' for systematic jury selection - an optimal strategy?

My Goal….convince you that:

- Yes, there is an optimal challenge strategy - Part 1
- It can make a big difference in the jury outcome - Part 2

Part 1

The Problems:

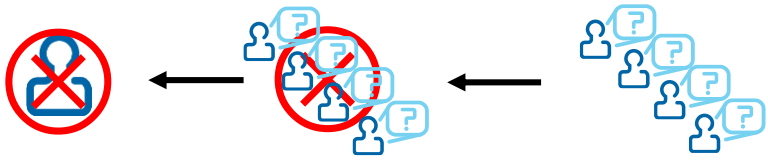
- Given a set of juror and jury pool ratings…..

- If you challenge a juror, will the replacement be any better?

Part 1

The Problems:

- If you do exercise a challenge…..



…….will the opposing party challenge the replacement, possibly leaving you worse off?

The Problems:

- How many challenges should you save for later in the process?
- You may know a lot about the juror in front of you, but little about replacements selected at random from the pool.
- How do the selection rules factor in? (Ordered replacements, unordered replacements, alternation of strikes, etc.)
- How do you account for juror-juror interactions?

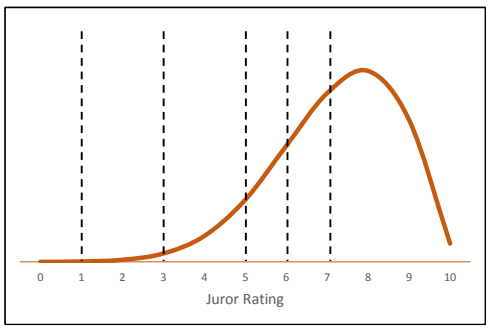
The 'Mathematical Solution':

Use Game Theory to calculate a Challenge Threshold:

Challenge Threshold:

The juror rating below which you would exercise a challenge.

Challenge Threshold:



Scenario 1 – Ordered Strike and Replace

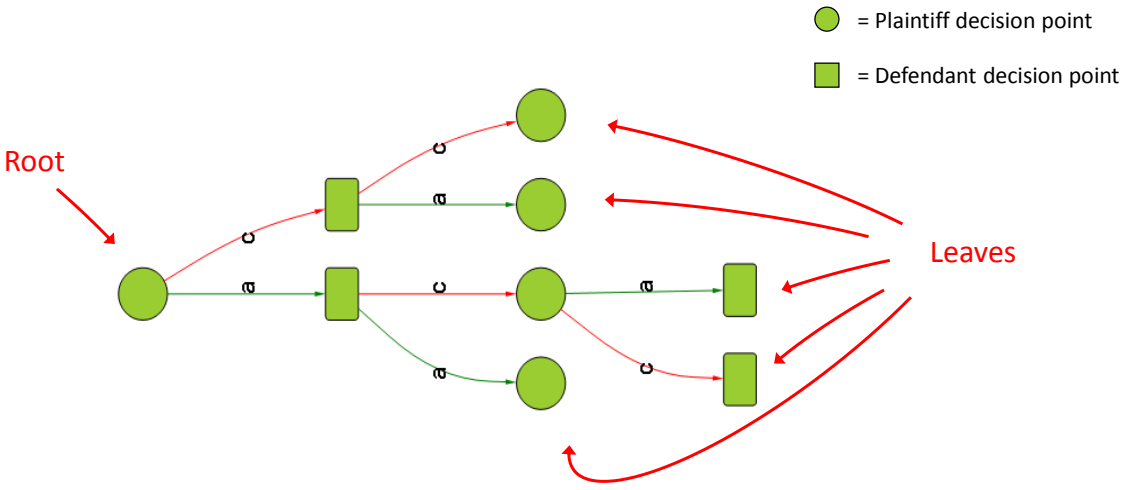
Jury Box

Jury Pool

Jurors:	1
Plaintiff perempts:	1
Defendant perempts:	1
Jury Pool Average:	5

What is the optimal "Challenge Threshold"?

Scenario 1 – Game Theory Analysis



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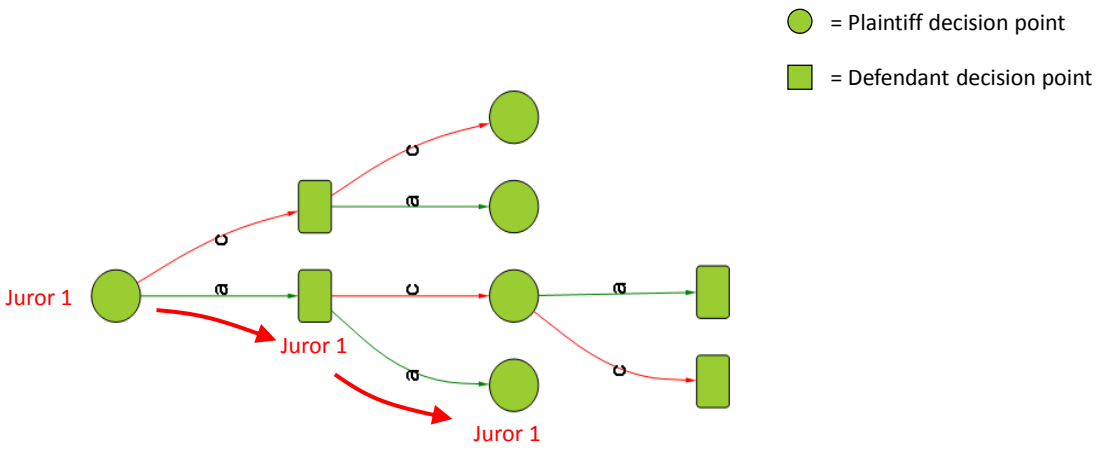

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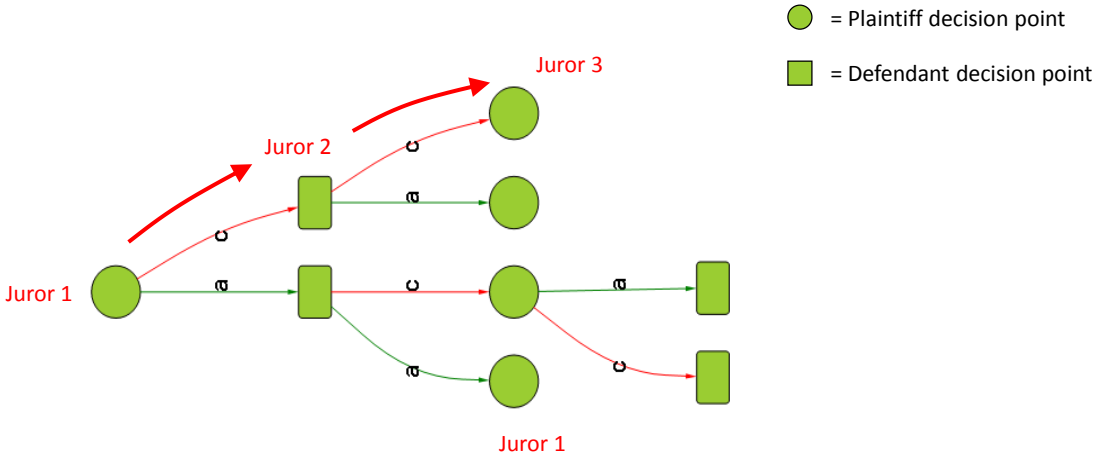

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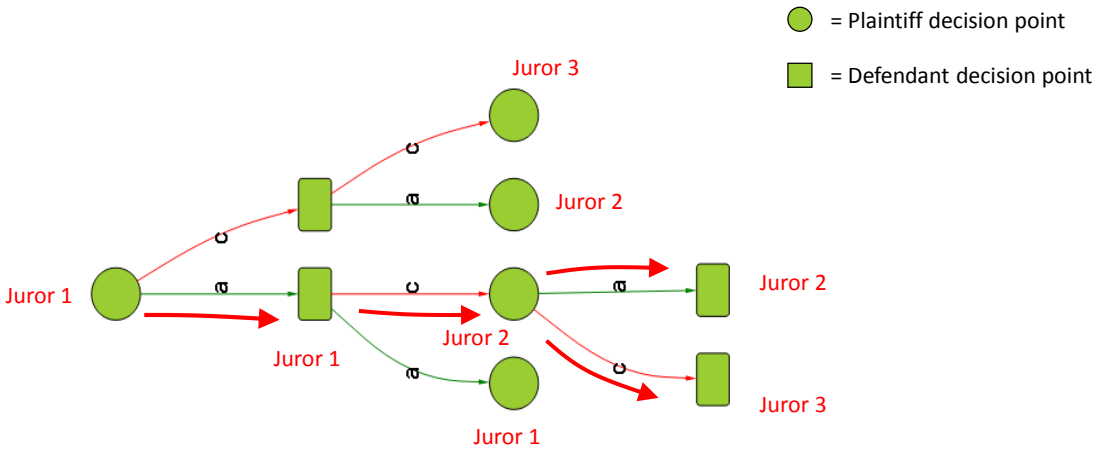

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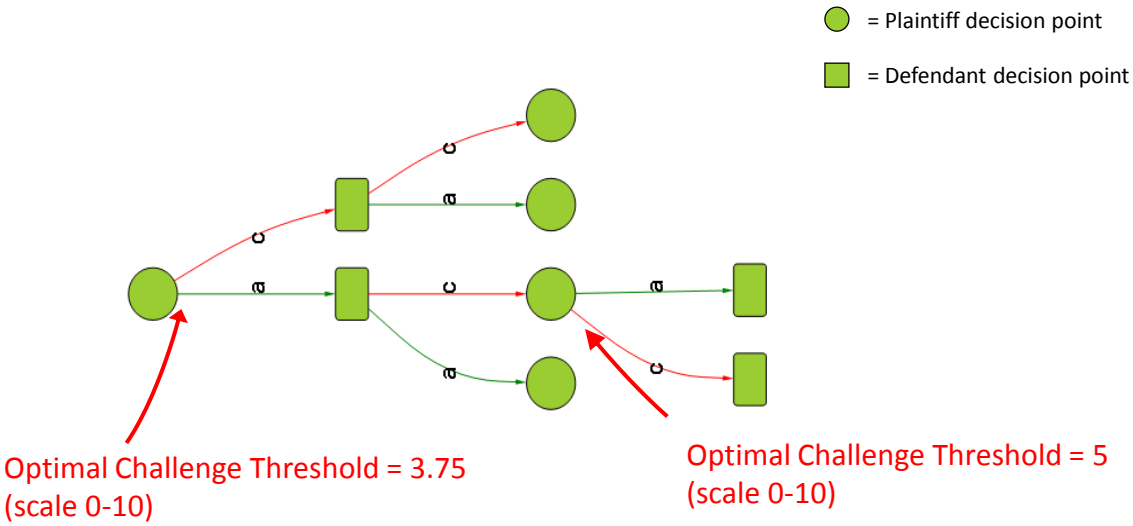
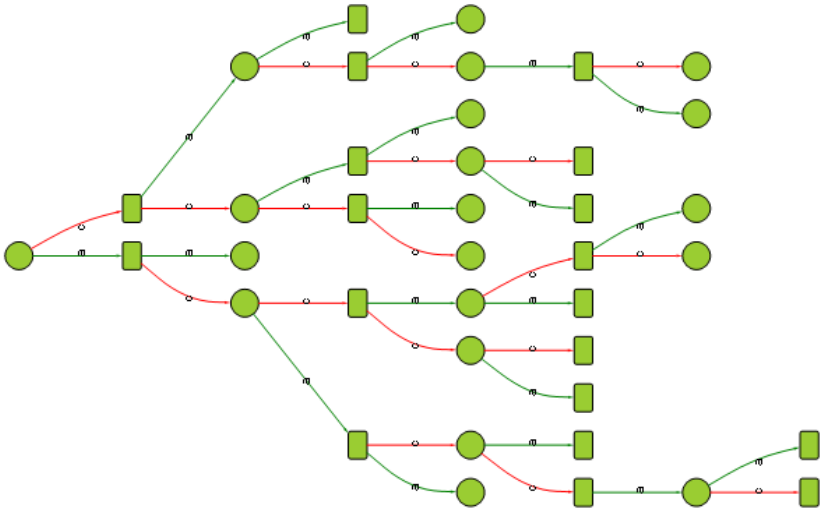
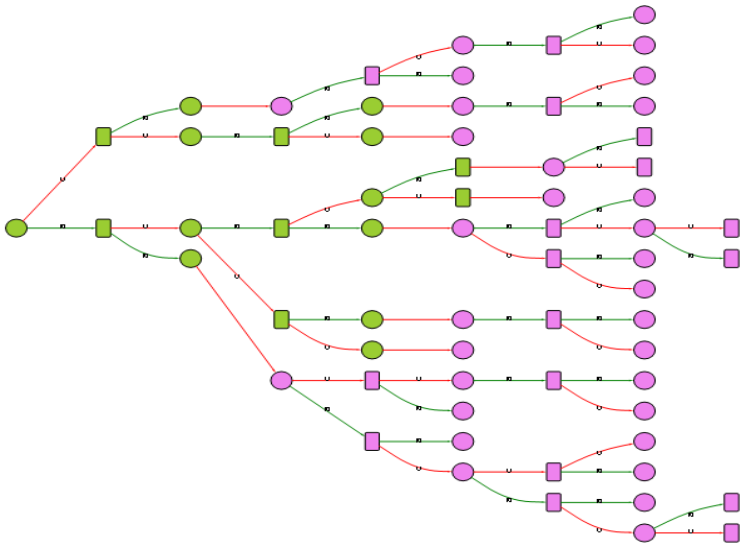


Scenario 2 – 1 seat, 2 challenges per side



Scenario 3 – 2 seats. Pros. has 1 challenge, Def. has 2 challenges

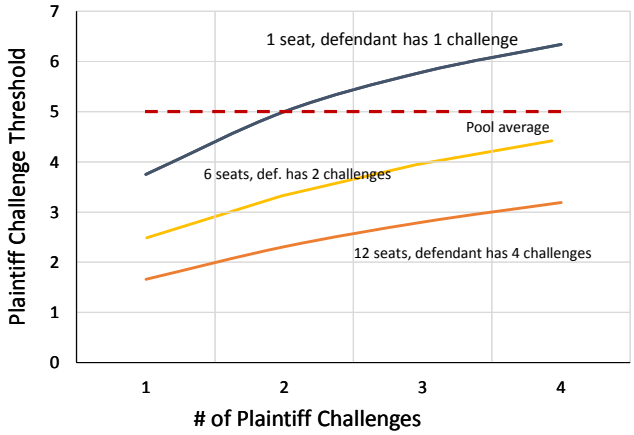


Game Tree Complexity

Jury Seats	Plaintiff Challenges	Defendant Challenges	Decision Points
1	1	1	4
2	1	1	10
1	2	2	18
4	2	2	378
6	3	3	16,588
8	4	4	806,650
12	4	4	8,293,348

- Computer is required for realistic situations

GT Challenge Thresholds:



Pool Average	5

A Concrete Example – Unordered Strike & Replace

Jury Seats	12
P Challenges	3
D Challenges	4
Pool Average	5

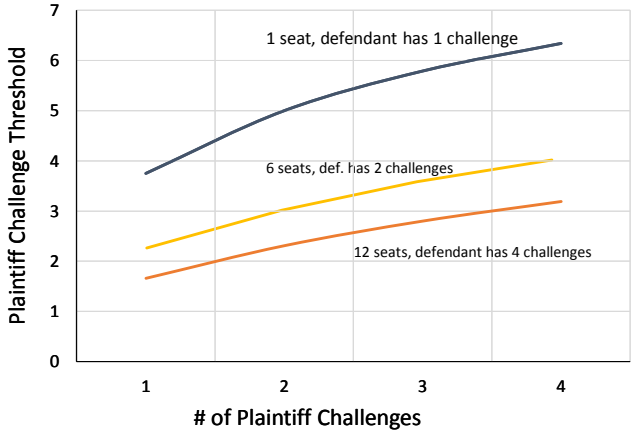
Seat 1 of 12

Juror # 123

Age:	32
Education:	4 years college
Profession:	Bank Teller
Personality type:	Outgoing
….	….
….	….

R = 3

GT Challenge Thresholds:



Pool Average	5

Summary - Part 1:

- A mathematically optimal selection solution exists
- GT Challenge Thresholds can vary depending on the situation and they can differ significantly from, e.g., pool average
- Calculating GT thresholds in real-world requires software algorithms and computing power

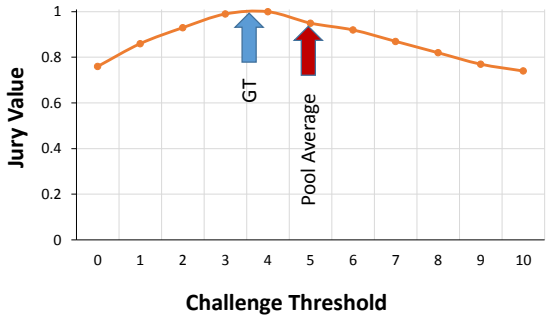
Part 2: How much difference does GT make?

You want to set your challenge thresholds to maximize your chances of seating a favorable jury

Game Theory tells you the optimal challenge thresholds (solve the game tree)

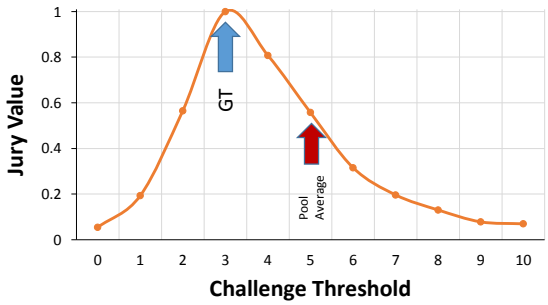
Q: How do Game Theory results compare with other possible strategies? (e.g. Pool Average)

Jury Value vs. Challenge Threshold



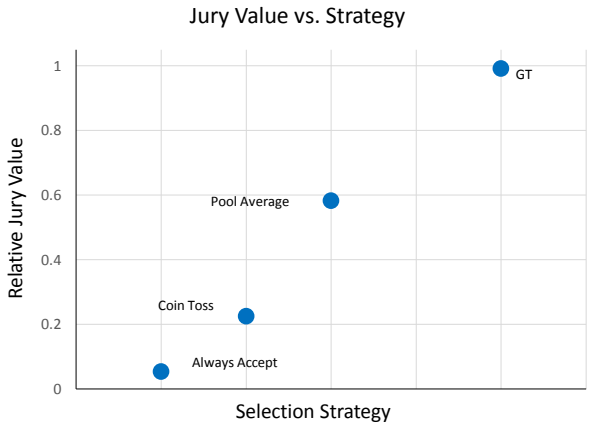
Strike and Replace
1 seat jury
1 challenge per side
Pool Average = 5

Jury Value vs. Challenge Threshold



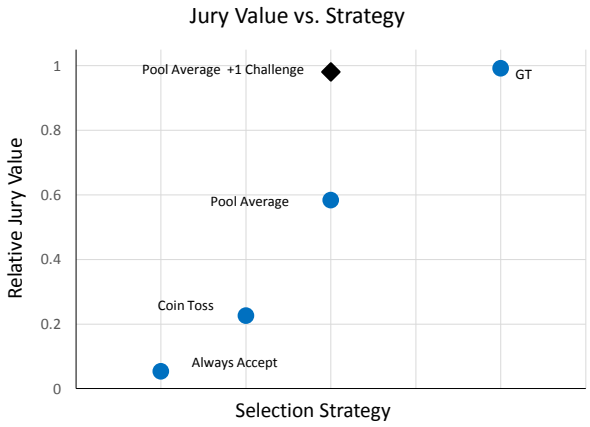
Strike and Replace
12 seat jury
4 challenges per side
Pool Average = 5

Strategy Comparison – Monte Carlo Simulation Analysis



Strike and Replace
12 seats
4:4 Challenges
Pool Average = 5
10,000 trials per data point

Strategy Comparison – Monte Carlo Simulation Analysis



Strike and Replace
12 seats
4:4 Challenges
Pool Average = 5
10,000 trials per data point

Summary - Part 2:

- GT Challenge Thresholds can make a significant difference in your chances of getting a favorable jury (= approx. + 25% more challenge)

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Thank you!

More info at: http://jurygo.com