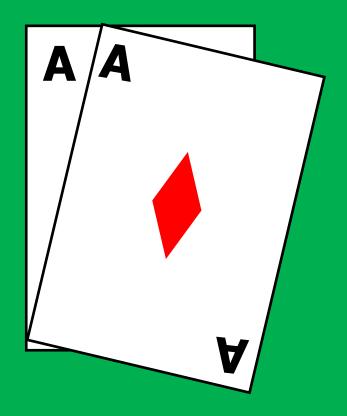
## LA S'CHINTEIA

Talossa's Magazine of Everything



Interview with Justice Viteu Marcianüs

Hostile Takeover of the Talossan Press Association

# **Bayesian Poker Analysis Part 2**

**Volume IX** 

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Talossa's Magazine of Everything

### lan Plätschisch, Editor in Chief

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#### **Contents**

Bayesian Poker Analysis – Part 2	
By Ian Plätschisch	2
Interview with Justice Viteu Marcianüs	
By Ian Plätschisch	4
2019 – 2020 Article of the Year	6
End Matter	

#### **Bayesian Poker Analysis - Part 2**

Ian Plätschisch

The goal of Texas Hold'em is to make the best hand of five cards using the two cards you are dealt face-down at the beginning of the hand (your "hole" cards; only you can see these) and the five community cards which are dealt face up as the hand progresses. There are four betting rounds:

- 1. After the hole cards are dealt
- 2. After the first three community cards are dealt (the "flop")
- 3. After the fourth community card is dealt (the "turn")
- 4. After the fifth community card is dealt (the "river")

The first player to bet in each round can decide to either "check" (bet nothing) or "raise" (bet some amount). Play then proceeds to the second player, who, if the first player raised, must either "fold" (turn in their cards and exit the hand), "call" (bet the same amount as the first player), or "re-raise" (bet more than the first player). Play continues around until all players have either folded or bet the amount of the highest raise/re-raise (or if all players check if no bets are made), at which point the next cards are dealt and the next betting round begins. Players who fold lose the money they have bet during the hand.

After the final betting round, any players who have not folded reveal their hole cards and the player with the best hand wins all of the money in the pot. From lowest to highest, the ranks of the hands are:

- 1. High Card
- 2. Pair
- 3. Two Pair
- 4. Three of a Kind
- 5. Straight (sequence of five cards in increasing value)
- 6. Flush (five cards of the same suit)
- 7. Full House (three of a kind + pair)
- 8. Four of a Kind
- 9. Straight Flush (straight in which all cards are of the same suit)
- 10. Royal Flush (straight flush from ten to ace)

If all but one player folds before the end of the final betting round, the remaining player collects the pot and does not have to reveal their cards.

A crucial component of poker is bluffing; placing a bet when your hand is not very good. Bluffers hope they can convince their opponents they have a strong hand, so the opponents fold rather than call the bluff and thus allow the bluffer to win the pot. On the other hand, if your opponent makes a bet, it is important to evaluate whether they are bluffing (in which case you should likely call to stay in and beat your opponent's weak hand) or not (in which case you

should fold in order to avoid losing more money to your opponent's strong hand). The following model can help determine the probability you would be best served calling rather than folding.

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In last month's volume, I finished Part 1 of this series (which, if you are not familiar with probability, you should read before reading this article) with the following statement of Bayes' Theorem:

$$P(A|B) = \frac{P(A)P(B|A)}{P(A)P(B|A) + P(A^{C})P(B|A^{C})}$$

It may appear this jumble of Ps, As, and Bs could not possibly relate to poker. However, keep in mind A and B simply represent events (a thing that could occur), P(A) is the probability of event A occurring,  $P(A^C)$  is the probability of A not occurring, and P(A|B) is the probability of A occurring given we know B occurs.

Suppose event A is that your opponent has a weaker hand than you, and event B is that your opponent makes a bet. Thus, P(A|B) is the probability you should call; that is, the probability your opponent has a weaker hand than you given we know they have made a bet (and thus, the probability that if you call, you will win the pot). To determine P(A|B) directly would be no easy feat, but with the above formula it becomes a function of four values which are easier to determine:

P(A); the probability your opponent has (or will have) a weaker hand than you. It is always possible to obtain an exact value for P(A), though such an exact calculation would often be tedious and impractical to perform while playing. We must settle for quick estimates, which become more reliable as more community cards are dealt because you have a better idea of which hole cards your opponent would need to make a stronger hand than you.

For example, suppose after the river that the five community cards are three aces, a seven, and a three, and your hole cards are a pair of kings. You therefore have a full house with three-of-a-kind aces and a pair of kings. The only hand that could beat this hand in this scenario is four-of-a-kind aces, which your opponent will have if one of their hole cards is the fourth ace. Seven of the 52 cards are already accounted for between the community cards and your hole cards, the probability, so your opponent's hole cards could be any of the remaining 45. The probability the fourth ace is one of the hole cards is thus  $\frac{2}{45} = 4.44\%$ , since there are 45 places the fourth ace could be and two of those are as one of your opponent's hole cards.

-  $P(A^C)$ ; the probability your opponent has (or will have) a stronger hand than you. This is equal to 1 - P(A): we ignore ties, which are possible but rare.

- P(B|A); the probability your opponent would bet given they have a weaker hand than you. This is essentially the probability your opponent would bluff (it is possible for an opponent to bet with a weaker hand than you without bluffing if they mistakenly believe they have a stronger hand than you, but we equate this with bluffing for simplicity). We must now make a subjective evaluation about the opponent, the process for which is far beyond the scope of this article, but at least now we know how to factor in the opponent's propensity for bluffing into our overall decision to call or fold.
- $P(B|A^C)$ ; the probability your opponent would bet given they have a stronger hand than you. This is generally fairly high; an opponent would only fold a stronger hand if they believed you had an even stronger hand.

Although we had to make a number of simplifying assumptions which reduce the overall usefulness of the model (and by the way, I make no guarantees about the ability of this model to help you win money), hopefully this is a good illustration of how seemingly arcane mathematics can provide insight into a practical problem.

#### Interview with Justice Viteu Marcianüs

Ian Plätschisch

Viteu Marcianüs became a Justice of the Uppermost Cort of the Kingdom of Talossa on February 29<sup>th</sup>, 2020 after his confirmation by the Ziu.

#### La S'chinteia (LS): What is your top priority?

*Viteu Marcianüs (VM):* Setting up clear and easy to understand rules and procedure for matters. I've already made overtures to my colleagues to begin work on this regard. Also, and this comes late to the game, getting the National Talossan Bar set up so we can admit new lawyers

#### LS: How do you envision this process for admitting new lawyers?

VM: I'm still working that out. Perhaps in the immediate future it will be to get the bar test from Dame Litz Cjantscheir and use that while we figure out a new program. My proposal for something more permanent may involve a set of guides on Talossan law, how to think and approach an issue like a lawyer, and some practice sheets. The person seeking admission would certify that they completed those guides on the honor system. A test would then be administered of some 20 multiple choice questions on Talossan law only and maybe two essays (the two essays being closed universe with all facts and law provided) that would ask the applicant to draft a brief that would be filed in Cort. Again, honor system. I am not a fan of forcing people to memorize law because, well, I look up law every day. Sometimes a statute I cite a lot I go back to reread because in this circumstance, another subsection of it I rarely use may be applicable. My thought on a test is whether the person can approach an issue critically and construct a legal argument.

LS: Senator Açafat del Val is currently attempting to impeach Senior Justice Ián Tamorán over allegations he "misappl[ied] the law willingly and knowingly" in the recent case Request for Relief re. legality of non-Talossan name. In that case, in which Senator del Val served as Counsel for the Government, the Senior Justice acquitted Senator Sevastáin Pinátsch of providing authorities with a fraudulent name when he immigrated to Talossa in 2014. What do you make of this situation?

VM: The Rule of Law rests on three pillars: (1) that no actor, state or individual, is above the law; (2) an independent judiciary; and (3) the judiciary applies the law equally and fairly to all as to earn the trust of those over whom it has jurisdiction. People must be mindful that when advocating for State action against a justice because of an unpopular decision, even if that decision attacks the third pillar, their conduct is equally as egregious because it undermines the second pillar. Forcing a justice or judge to decide cases worried whether their judicial philosophy is in vogue with the present Ziu is to eviscerate an independent judiciary, which collapses the Rule of Law. Removal of a justice or judge should be for those occasions where that person commits an actual crime, treason, or acts in such a manner as to embarrass themselves and the Bench. I introduced, argued for, and helped pass an impeachment and removal bill of a Justice because of his pattern of behavior both on and off of the bench. It was not singular and was not based on any one errant decision, but the cumulative effect of his conduct. That is not the case here.

#### LS: Does any Talossan jurisprudence stand out as being particularly significant to you?

VM: Yes. Among others, the cases that arose out of the so-called Proclamation Crisis. These matters speak to the balance of Power between the King and the Ziu, but also help to establish the independence of the Judiciary. In the 2015 matter, the Uppermost Cort issues a decision and sets a rule; that happened to favor the King. The 2016 matter, although related, concerned a different circumstance. The Uppermost Cort explained its 2015 decision. It happened to go against the King in that case. In 2015, those challenging the King disparaged that decision. In 2016, the King disparaged the second decision. But what we see is the Cort acting as it shouldan independent and impartial arbiter of the law. The two decisions flow easily together. Contrary to what some might think, the Cort did not reverse course or ignore a rule, but properly applied its prior holding. It entrenches stare decisis. Both have been accepted by Talossans.

#### **2019 – 2020 Article of the Year**

Having found the offices of the Talossan Press Association abandoned for the past five years and having realized that organization has not given out any awards for fine journalism during that time, La S'chinteia is staging a hostile takeover. Go to https://forms.gle/df9YajNs7W8SeMj49 to rank your favorite articles from the past year (as, in keeping with tradition, Talossan Press Association awards are given for periods from April 1st to March 31st). Nominations are:

- Elegy for a Seahorse (from Volumes I and II)
- The Four-Color Theorem and Non-Contiguous Provinces (from Volume I)
- The Necessity of Talossan Press (from Volume II)
- August Referendums Halted by King's Veto (from Volume III)
- The Royal Veto A Check That Has Become Imbalanced? (from Volume III)
- Structured to Fail (from Volume IV)
- Taro, par alt-J (from Volume V)
- Buckeye Benitians (from Volume VII)
- 54th Cosa Election Results (from Volume VII)
- The Scariest Phone Call of the 20th Century (from Volume VIII)

The voting deadline is April 3<sup>rd</sup>, 2020, and results will be announced the next day in Volume X of La S'chinteia.

#### **End Matter**

La S'chinteia is always hiring! If you want to write it, La S'chinteia wants to publish it. Get in touch with Ian Plätschisch if you would like to become a contributor (no set schedule, publish as many or as few times as you want) or staff writer. No experience required.

If you...

- Have feedback on one of our articles or an idea for an article
- Want to join our email list to get early access to new volumes
- Would like to get in touch with La S'chinteia for some other reason

Send Ian Plätschisch a message on Wittenberg or post in the Wittenberg thread corresponding to this volume.

Thanks for reading!