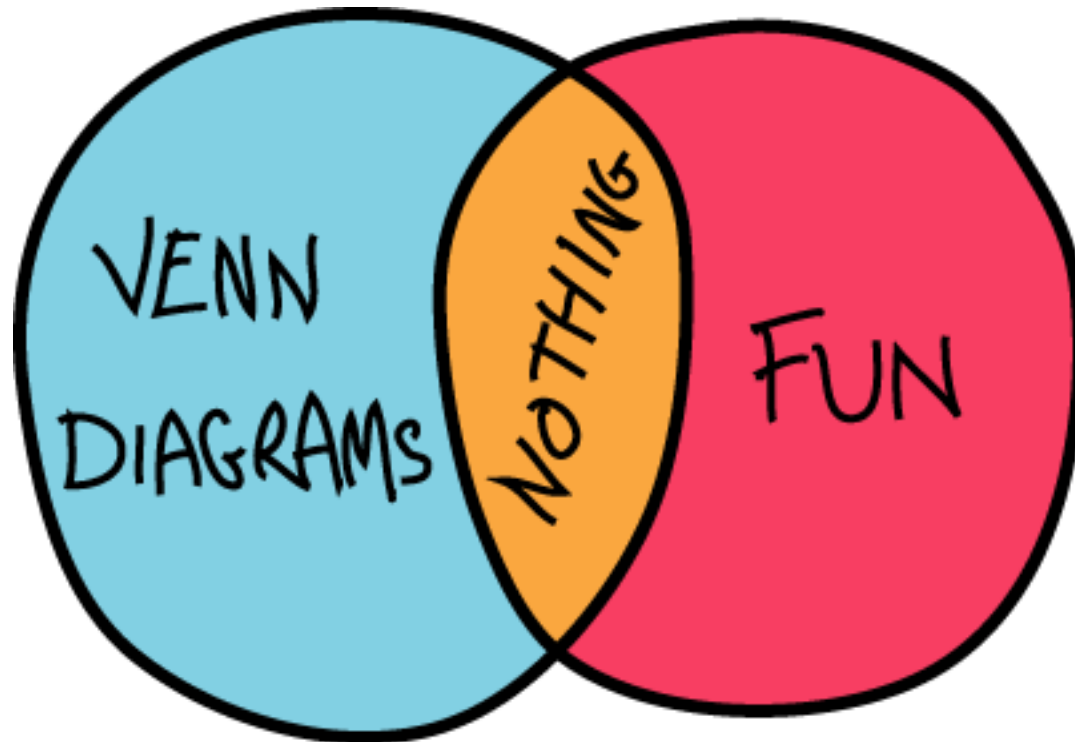


The art of being lucky (probability in bridge)

Matthew Kidd, 2009



*“Dans les champs
de l'observation le
hasard ne favorise
que les esprits
préparés.”*

- Louis Pasteur

*“It's better to be
lucky than good.”*

*“Chance favors the
prepared mind.”*

Hoping for a 3-2 break

♠432

♠J87 ♠T9

♠AKQ65

(3-2 break)

♠432

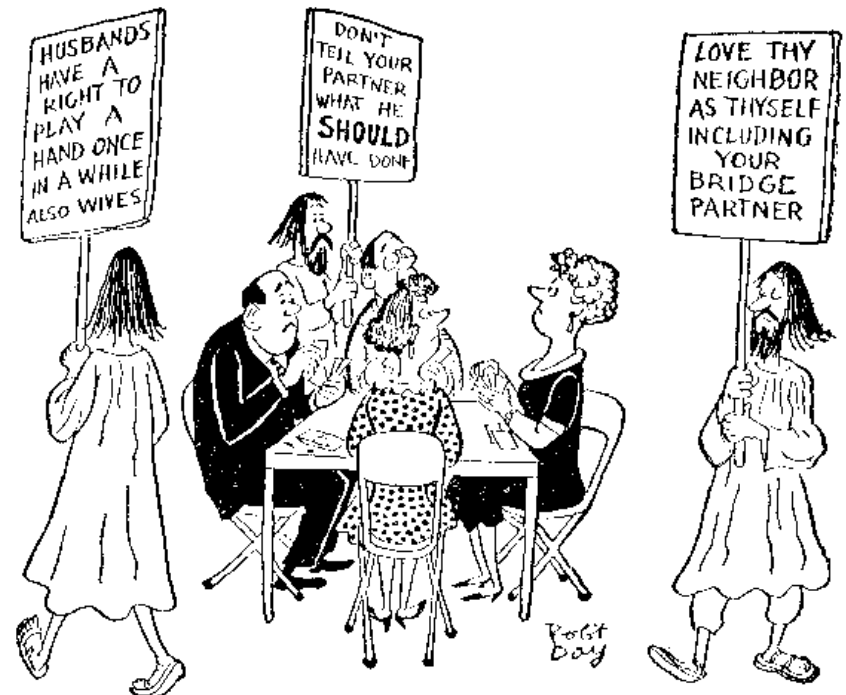
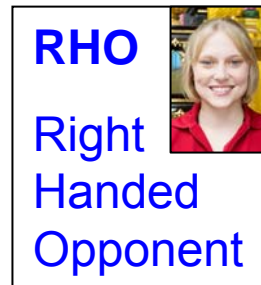
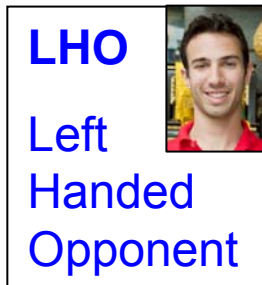
♠J987 ♠T

♠AKQ65

(4-1 break)

What does a “3-2” break mean?

- Most of the time a 3-2 break means either 3-2 (LHO has 3, RHO has 2) **or** 2-3 (LHO has 2, RHO has 3).
- Sometimes it means exactly the case where LHO has 3 cards and RHO has 2 cards.
- Usually it is clear which, but not always (ask if confused).



The Wrong Way*

N choose K



<u>Possible card combinations for one opponent</u>	<u>Count</u>		
- (void)	1	= (5,0)	→ 3.125 %
J, T, 9, 8, 7	5	= (5,1)	→ 15.625 %
JT, J9, J8, J7, T9, T8, T7, 98, 97, 87	10	= (5,2)	→ 31.250 %
JT9, JT8, JT7, J98, J97, J87, T98, T97, T87, 987	10	= (5,3)	→ 31.250 %
JT98, JT97, JT87, J987, T987	5	= (5,4)	→ 15.625 %
JT987	<u>1</u>	= (5,5)	→ 3.125 %
	32		

Odds of 3-2 break would seem to be $2 \times 31.25\% = 62.5\%$

		1	1		
		1	2	1	
		1	3	3	1
	1	4	6	4	1
1	5	10	10	5	1

Remember
Pascal's
Triangle?

*but not horribly wrong

What's wrong?

- We are not merely flipping coins!
- There are cards in the other suits, “spectator cards”.



Probability of holding a specific 2 or 3 card combination (e.g. JT or T87) >
Probability of holding a specific 1 or 4 card combination (e.g. T987 or 8) >
Probability of holding 0 or all 5 cards.

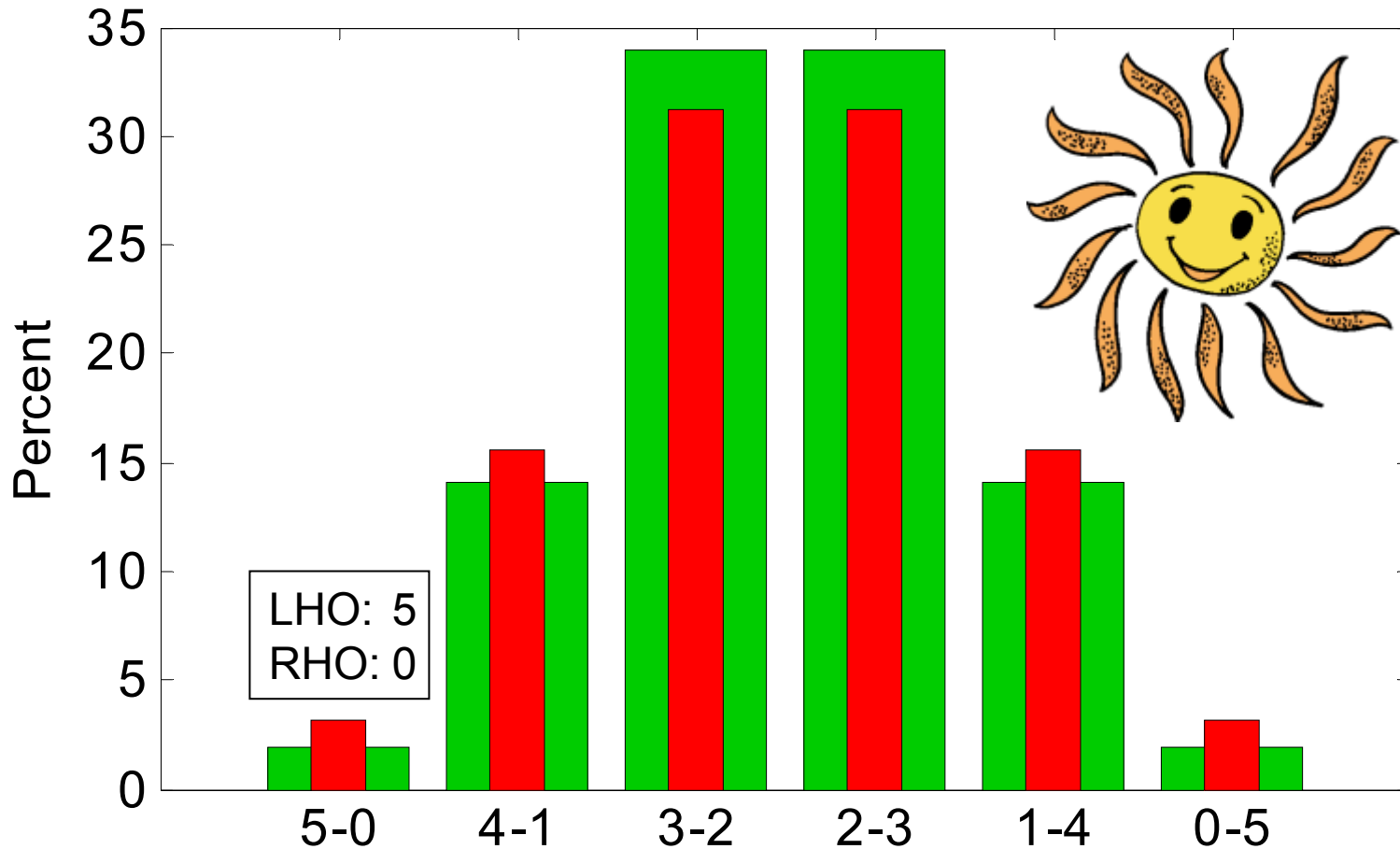
The Correct Way

- The opponents hold 5 trump and 21 other cards ($2 \times 13 - 5$).
- Total number of LHO/RHO layouts is (26,13)

$$\begin{aligned} P(\text{LHO has 3 trump}) &= (5,3) * (21,10) / (26,13) \\ &= 33.91 \% \end{aligned}$$

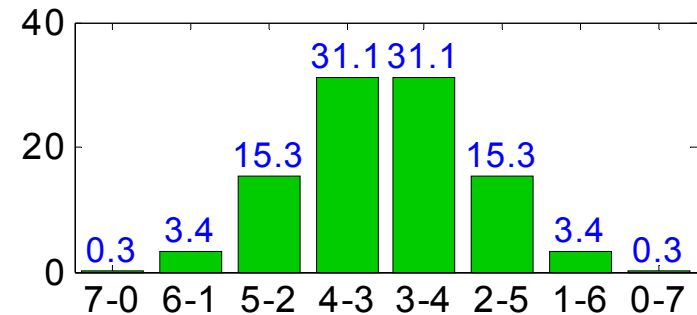
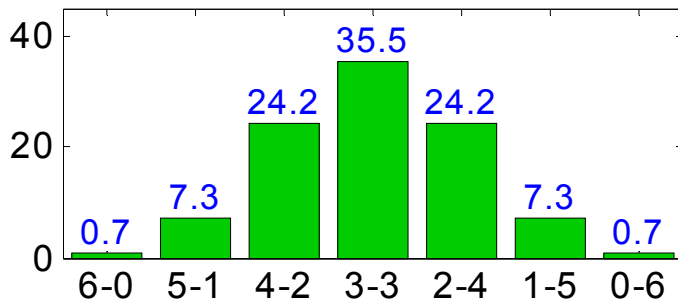
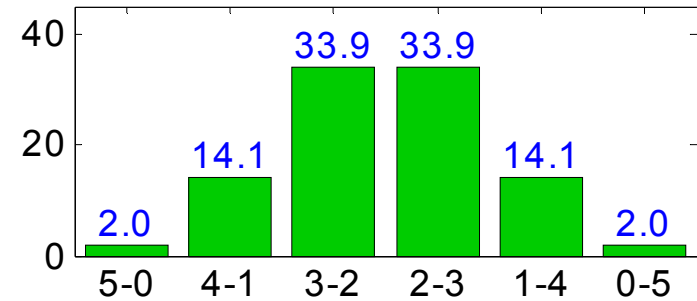
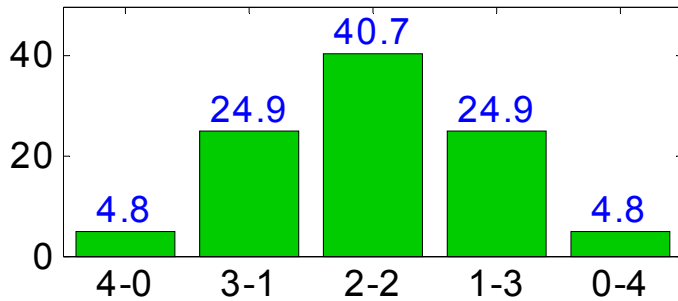
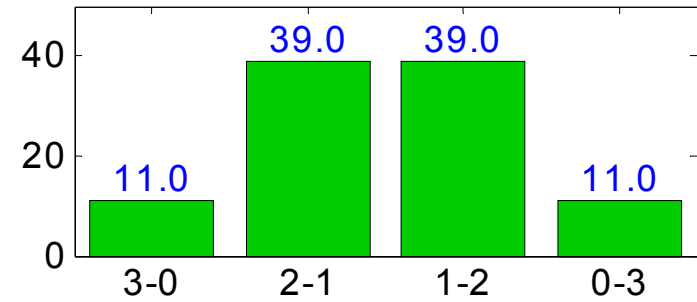
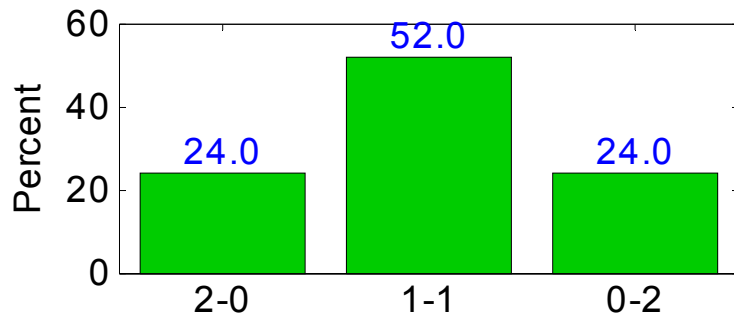
Lesson: Odds of 3-2 break are actually $2 \times 33.91 = 67.8\%$ (5.3% higher)

Comparison of methods



Lesson: The Bridge Gods smile more often than they frown.

Split probabilities for 2-7 outstanding cards



For even number of outstanding cards, second most favorable split is most likely (except for 2 cards).

For odd number of outstanding cards, most favorable split is most likely.

The finesse (a 50-50 proposition)

♥AQ

♥K... ♥...

♥xx

(onside K)

♥AQ

♥... ♥K...

♥xx

(offside K)



Vocabulary: declarer *finesses* the queen, *finessing against* the king.

The double finesse

♥AQT

♥KJ...

♥...

♥xxx

(both onside)

♥AQT

♥K...

♥J...

♥xxx

(J offside)

3 tricks – 25%

2 tricks – 50%

1 trick – 25%

♥AQT

♥...

♥KJ...

♥xxx

(both offside)

♥AQT


♥J...

♥K...

♥xxx

(K offside)

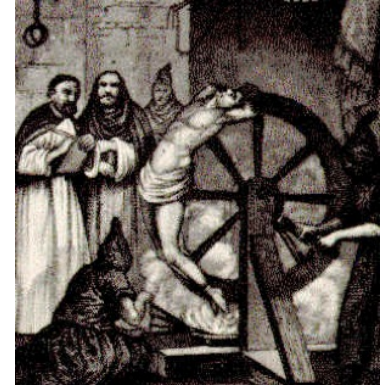


A photograph of a group of reindeer in a mountainous landscape. One reindeer in the foreground is rearing up on its hind legs, facing right. A speech bubble is positioned above it, containing the text "You call that a finesse?!!". Other reindeer are visible in the background, some standing and some partially obscured. The landscape features rolling green hills, a body of water, and snow-capped mountains under a cloudy sky.

You call
that a
finesse?!!

Improve your chances with an endplay!

Advanced
Topic!



♠
♥ AQ
♦
♣ 2

♠
♥ JT
♦
♣ J

♠
♥ K3
♦
♣ Q

♠
♥ 52
♦
♣ 6 ← Lead this!

Finesse or drop? (9-card fit)

♠KJ32

♠?

♠?

♠A7654

Play the ♠A and then either:

- 1) Lead to the ♠J
(playing for the finesse)
- 2) Lead to the ♠K
(playing for the drop)

Which line is best?



or



Drop works when suit is 2-2 or Q is singleton

A diagram showing a 2-2 spade suit distribution. The top half is a cyan rectangle containing the cards ♠KJ32 at the top, ♠T8 on the left, ♠Q9 on the right, and ♠A7654 at the bottom.

40.7%

A diagram showing a 2-2 spade suit distribution with the Queen as a singleton. The top half is an orange rectangle containing the cards ♠KJ32 at the top, ♠T98 on the left, ♠Q on the right, and ♠AJ654 at the bottom.

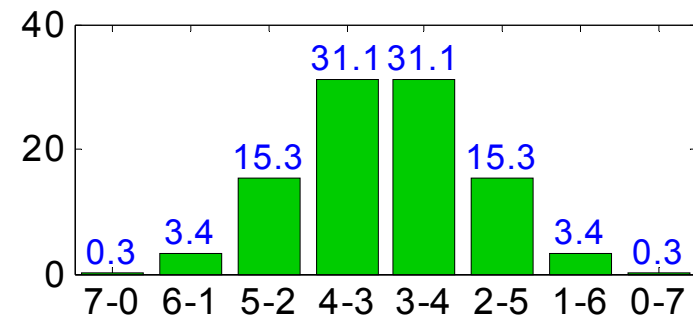
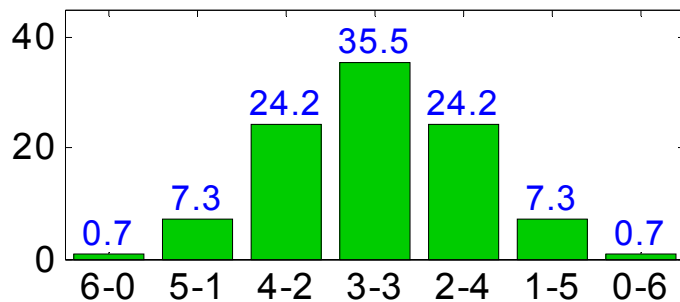
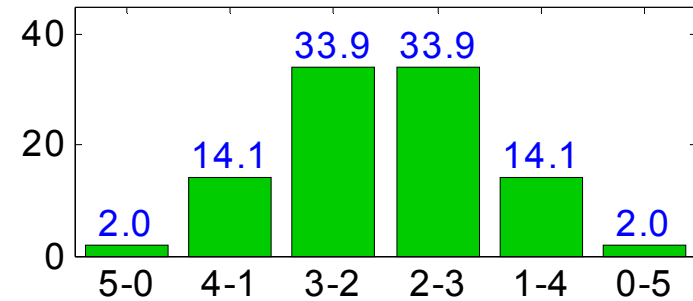
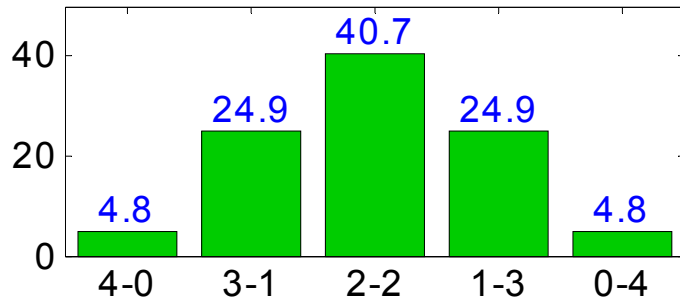
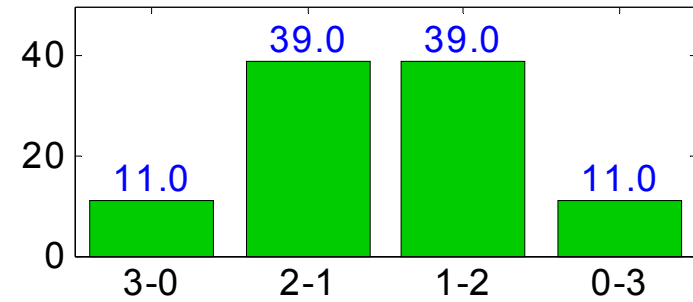
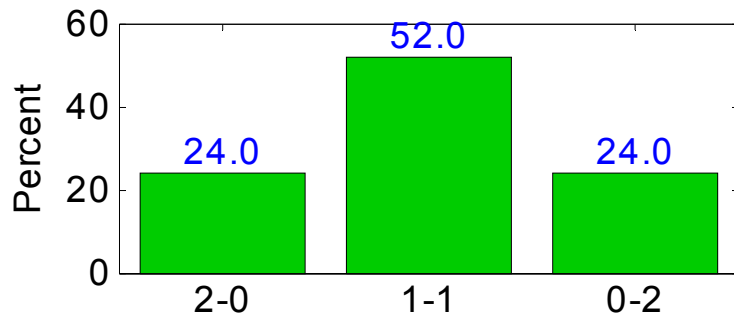
24.9% x 1/4

A diagram showing a 2-2 spade suit distribution with the Queen as a singleton. The top half is an orange rectangle containing the cards ♠KJ32 at the top, ♠Q on the left, ♠T98 on the right, and ♠AJ654 at the bottom.

24.9% x 1/4

Total: $40.7\% + 24.9\% \times \frac{1}{4} + 24.9\% \times \frac{1}{4} = 53.1\%$

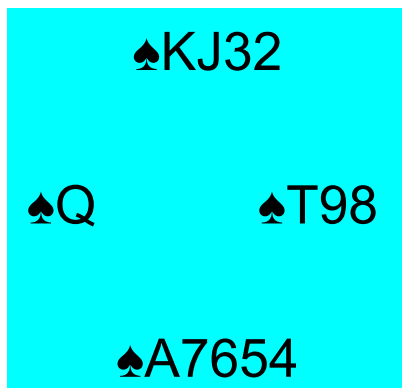
Split probabilities for 2-7 outstanding cards



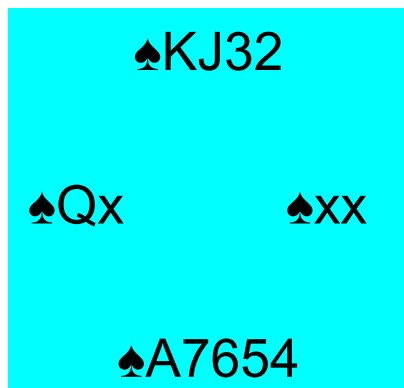
For even number of outstanding cards, second most favorable split is most likely (except for 2 cards).

For odd number of outstanding cards, most favorable split is most likely.

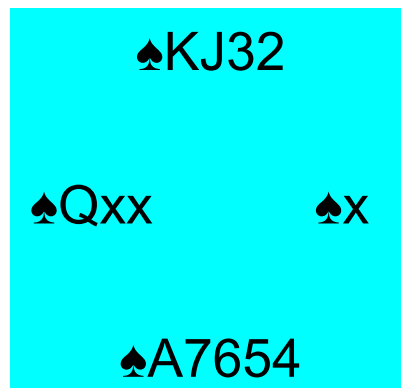
Finesse works when Q is onside & suit not 4-0



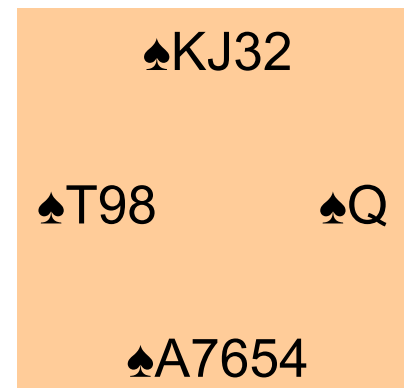
24.9% x 1/4



40.7% x 1/2



24.9% x 3/4



24.9% x 1/4

Total: $40.7\% + 24.9\% \times \frac{1}{4} + 24.9\% \times \frac{1}{4} = 51.5\%$

With a 9-card fit, the drop (53.1%) slightly beats the finesse (51.5%).

Finesse or drop? (8-card fit)

♠KJ2

♠?

♠?

♠A6543

Play the ♠A and then either:

- 1) Lead to the ♠K
(playing for the drop)
- 2) Lead to the ♠J
(playing for the finesse)

Which line is best?

Drop works when Q is doubleton or Q is singleton

♠KJ2
♠xxx ♠Qx
♠A6543

33.9% x 2/5

♠KJ2
♠Qx ♠xxx
♠A6543

33.9% x 2/5

♠KJ2
♠Q ♠T987
♠A6543

14.1% x 1/5

♠KJ2
♠T987 ♠Q
♠A6543

14.1% x 1/5

Total: 32.8%

Finesse works when Q is onside (3-2 split) or Q singleton

♠KJ2

♠Qxx ♠xx

♠A6543

33.9% x 3/5

♠KJ2

♠Qx ♠xxx

♠A6543

33.9% x 2/5

♠KJ2

♠Q ♠T987

♠A6543

14.1% x 1/5

♠KJ2

♠T987 ♠Q

♠A6543

14.1% x 1/5

Total: 41.0%

With an 8-card fit, the finesse (41.0%) significantly beats the drop (32.8%).

“8-Ever, 9-Never”

With an 8-card fit, the finesse (41.0%) significantly beats the drop (32.8%).

With a 9-card fit, the drop (53.1%) slightly beats the finesse (51.5%).

Q: Should you finesse? “Eight ever; nine never.”

“A peek is worth 2 finessees”



Conditional Probability

(or never say “never”)

♠ KQT62
 ♥ 54
 ♦ K6
 ♣ A764

Q: How to play clubs:
 drop or finesse?

“Weak Two” overcall: 6
 hearts and a poor hand
 (5-11 hcp)

♠ ?
 ♥ XXXXXX
 ♦ ?
 ♣ ?

♠ ?
 ♥ XXX
 ♦ ?
 ♣ ?

♠ AJ7
 ♥ A3
 ♦ T83
 ♣ KJ532

<u>S</u>	<u>W</u>	<u>N</u>	<u>E</u>
1♣	2♥	2♠	P
4♠			



Without the 2♥ preempt

- The opponents hold 4 trump and 22 other cards.
- Total number of LHO/RHO layouts is (26,13)

$$P(\text{LHO has 2 trump}) = (4,2) * (22,11) / (26,13) = 40.7 \%$$

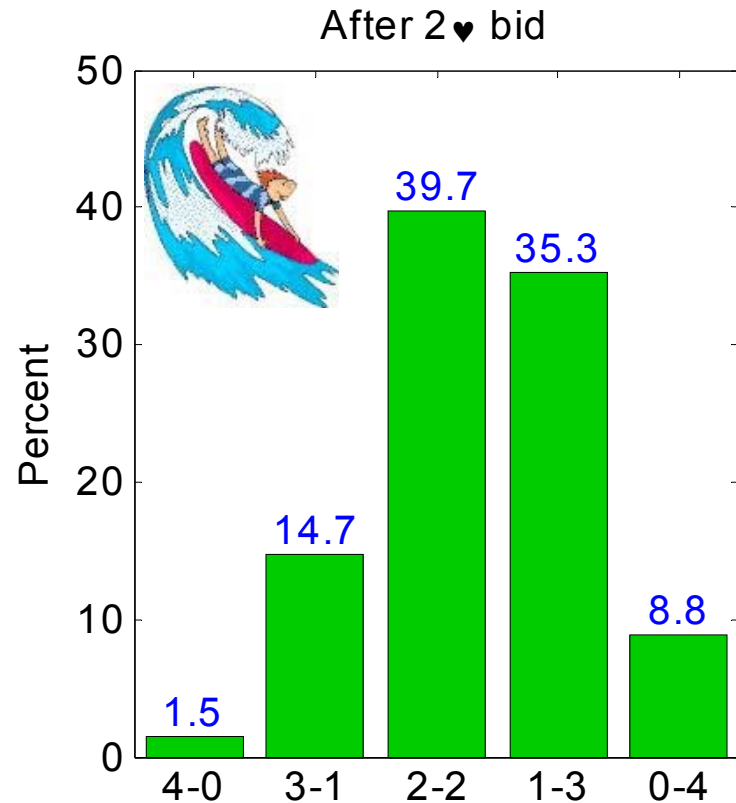
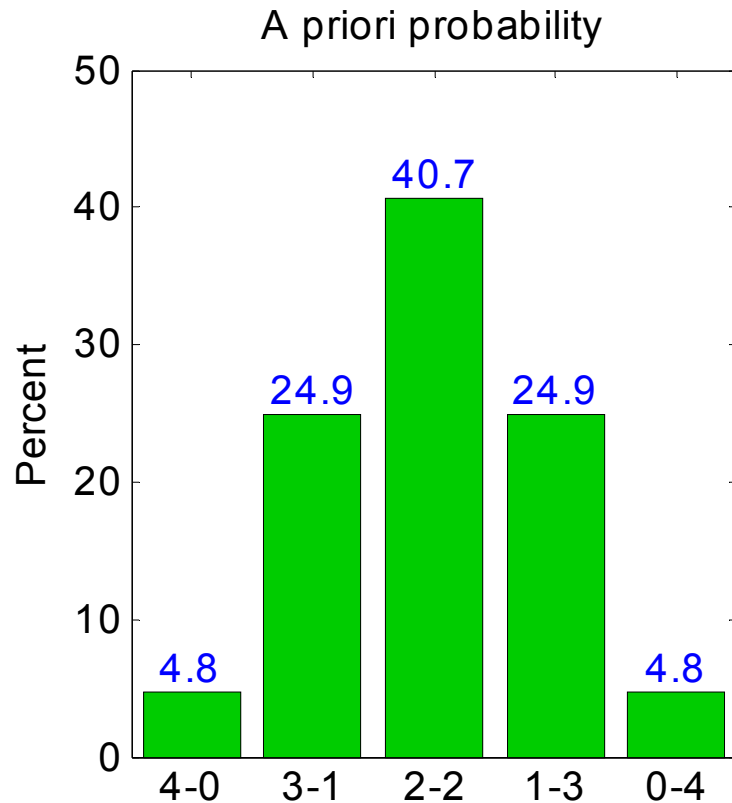
With the 2♥ preempt

- The opponents hold 4 trump, 9 hearts split 6-3, and 13 other cards.
- Total number of LHO layouts is $(9,6) * (17,7) = (9,3) * (17,10) =$ Total number of RHO layouts

Remember: $(9,6) = 9! / 6! (9-6)! = 9! / 6! 3! = 9! / (9-3)! 3! = (9,3)$; symmetric!

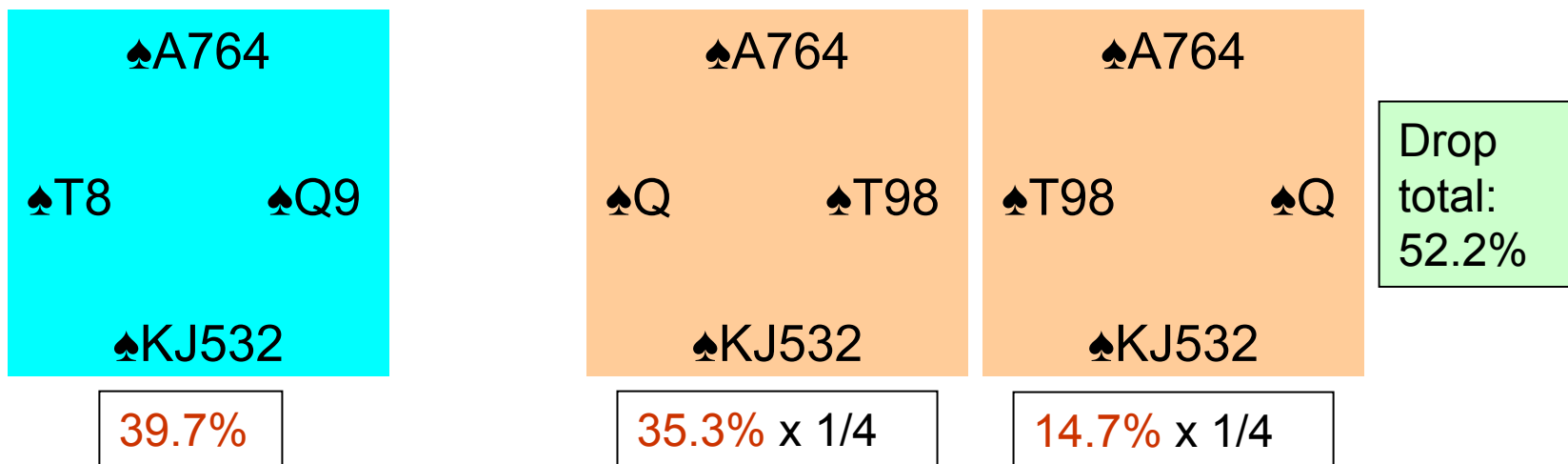
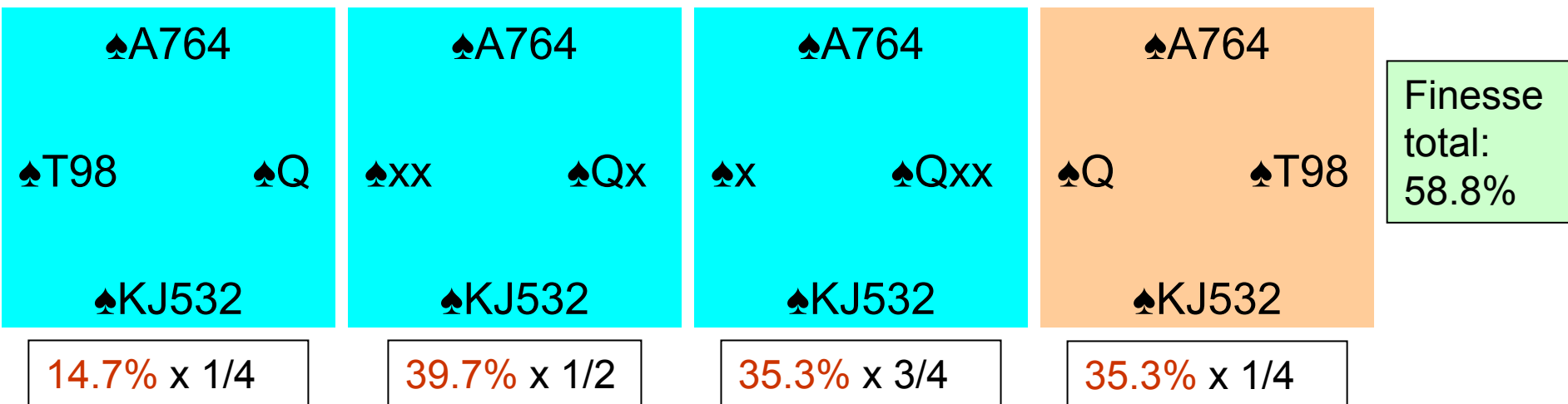
$$\begin{aligned} P(\text{LHO has 2 trump} \mid 6 \text{ hearts}) &= \\ (4,2) * (9,6) * (13,5) / (9,6) * (17,7) &= \\ (4,2) * (13,5) / (17,7) &= 39.7 \% \end{aligned}$$

Shifting Probability



Note: 2-2 split is still quite likely. Preempts do not reduce the chance of a favorable (trump) split nearly as much as intuition might suggest. This is generally true. Do not live in fear!

Recomputing the probability



Different result! Now finesse has a 6.6% edge.

Joint Probability

Say you need the following to make your contract:

1. Favorable 3-2 trump break.
2. At least two tricks from an AQT double finesse.

$$P(\text{success}) = 67.8\% \text{ (3-2 break)} * 75\% \text{ (double finesse)} = 50.9\%$$

Warning: The above calculation is fairly accurate because #1 and #2 are nearly independent probabilities. In some cases there are significant correlations, e.g. a favorable break in one suit makes a favorable break in another more likely. In such cases, a more careful calculation must be made if accuracy is desired.

Do bridge players care about the odds?

- Some don't; the better ones do.
- In most case it suffices to know the best line of play, not exactly how much better it is than the alternatives.
- It is handy to know a few numbers (e.g. chances of 2-3 and 3-3 breaks).
- Experience counts; good players have an instinctive feel based on encountering common situations many times.
- Intuition is not always right (worried about flying? Try driving if you really want to risk death).
- Proving partner or teammates wrong can be satisfying, even if it requires several hours of computation.



More on bridge probability

- *Bridge Odds for Practical Players* (Hugh Kelsey)
- *Dictionary of Suit Combinations*, J.M. Roudinesco
- SuitPlay program

Selected Bridge Websites

- American Contract Bridge League
<http://www.acbl.org>
- La Jolla Unit
<http://lajollabridge.com>
- Soledad Club (Mon Aft, Thu Eve games)
<http://www.soledadclub.com/soledad-bridge-club.htm>
- Adventures in Bridge (games every day)
<http://www.adventuresinbridge.com/>



La Jolla Bridge (Unit 526)

Welcome to the website for ACBL Unit 526 (U526). We are the La Jolla and Beach Unit in [District 22](#) (D22) of the American Contract Bridge League ([ACBL](#)). Our [games](#) are held at 1 PM on the second and fourth Sundays of each month at the [Soledad Club](#) at 5050 Soledad Road in Pacific Beach. We tradeoff the occasional fifth Sunday with [San Diego Unit 539](#). If you play bridge but are unfamiliar with duplicate (tournament) play, check out Karen Walker's [introduction](#). Completely new to the game? Check out the ACBL's [Learn to Play](#) software.



Five board positions are opening for the 2009-2011 term. If you are interested in running, contact any board member or [e-mail](#) the board president. New board members will be joining Manoochehr Bahmanian, Bill Grant, Steve Johnson, Matthew Kidd, and Diana Marquardt.

♥ **Hang in there, Anne Terry!** Anne is now staying with her daughter Susan near Rose Canyon just a short distance out of La Jolla cove. Call the house at (858) 455-7979 if you would like to visit.

NEW! Please welcome the [Eastlake](#) bridge club, located near highway 125 east of Chula Vista, to the San Diego region. Tell all your friends.

Upcoming Events

May 31 - **Unit Championship (Pairs)***

June 14 - **Membership Game (Pairs)***

[Full 2009 Schedule](#)

***Joint event with the San Diego Unit held at Adventures in Bridge.**

***Annual Meeting & Election**

The 2009 Youth North American Bridge Championship (YNABC), for players 19 years old and younger, will be held in Washington, DC from July 30 through August 1st. See [schedule](#) and [website](#).

Example Matchpoint Result (Top = 17)

21 ♠T Dlr: North
♥A Vul: N-S
♦A8543
♣AQ9542

♠AQJ753 ♠984
♥9765 ♥QJ83
♦Q9 ♦762
♣J ♣T86

♠K62
♥KT42
♦KJT
♣K73

14 Double Dummy Makes

10 3 NS: 6♣ 6♦ 1/2♥ -1♠ 5/6NT ♠6/7

13 EW: ♠0 +0 ♥5 ♠6 NT0

6N – best NS result

6♣/♦ – 2nd best NS result

N-S	E-W	N-S	E-W	
1440		17.00	0.00	A11-Lawrence-Jarvis vs A4-Guner-Nardone
1370		16.00	1.00	A5-Marquardt-Johnson vs A3-Reiss-Abston
690		14.50	2.50	A3-Tatham-Jelusich vs A10-Bessinger-Bessinger
690	3N+3	14.50	2.50	A6-Leicht-Blum vs A5-Kalish-Westlake
660	3N+2	12.50	4.50	B4-Seltzer-Seltzer vs B1-Anderson-Dunham
660	3N+2	12.50	4.50	B10-Novak-Naumann vs B2-O'Neill-Grant
620		10.00	7.00	A4-Greene-Ballin vs A1-Petersen-Pankow
620	5♣/♦+1	10.00	7.00	B2-Deeby-Figueiredo vs B8-Borack-Monderer
620		10.00	7.00	B11-Barton-Wilson Jr vs B4-Bloomberg-Bloomberg
600		6.00	11.00	A1-Walters-Mollenkopf vs A6-Roberts-Schulman
600		6.00	11.00	A2-Ansfield-Pennario vs A8-Prairie-Chan
600	5♣/♦	6.00	11.00	A7-Schumsky-Lane vs A7-Ishihara-Bahmanian
600		6.00	11.00	B1-Hughes-Waxler vs B6-Pottenger-Chapman
600		6.00	11.00	B6-Andrecht-Andrecht vs B5-Slough-Hastings
170	4♣/♦+2	3.00	14.00	A10-Blumberg-Blumberg vs A2-Huffaker-Huffaker
		100	1.00	B3-Graves-Hoersch vs B10-Zeldin-Reith
		100	1.00	B5-Schreiber-Holmes vs B3-McCay-Oakley
		100	1.00	B7-Chaffee-Busby vs B7-Latus-Latus

LoTT: 18 - 18 = 0

Par: +1440 6NT-S

