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
AKQ65
(3-2 break)

432
J987
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*

Possible card combinations for one opponent | Count | \( N \text{ choose } K \) |
--- | --- | --- |
- (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 | 1 | \( (5,5) \) | 3.125 % |

Odds of 3-2 break would seem to be 2 x 31.25% = 62.5%

*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 x 13 – 5).
• Total number of LHO/RHO layouts is (26,13)

\[
P(\text{LHO has 3 trump}) = \frac{(5,3) \times (21,10)}{(26,13)} = 33.91\%\]

Lesson: Odds of 3-2 break are actually 2 x 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 odd number of outstanding cards, most favorable split is most likely.

For even number of outstanding cards, second most favorable split is most likely (except for 2 cards).
The finesse (a 50-50 proposition)

Vocabulary: declarer finesses the queen, finessing against the king.
The double finesse

- **3 tricks – 25%**
- **2 tricks – 50%**
- **1 trick – 25%**

**Examples:**

- ♥AQT
  - ♥KJ...
  - ♥...
  - ♥xxx
  - (both onside)

- ♥AQT
  - ♥K...
  - ♥J...
  - ♥xxx
  - (J offside)

- ♥AQT
  - ♥...
  - ♥KJ...
  - ♥xxx
  - (both offside)

- ♥AQT
  - ♥J...
  - ♥K...
  - ♥xxx
  - (K offside)
You call that a finesse?!!
Improve your chances with an endplay!

Advanced Topic!

♠️ AQ
♦️ 2
♣️ 6

♠️ JT
♥️ K3
♦️ Q
♥️ 52

Lead this!
Finesse or drop? (9-card fit)

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

Total: 40.7% + 24.9% x ¼ + 24.9% x ¼ = 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

<table>
<thead>
<tr>
<th>♠KJ32</th>
<th>♠KJ32</th>
<th>♠KJ32</th>
<th>♠KJ32</th>
</tr>
</thead>
<tbody>
<tr>
<td>♠Q</td>
<td>♠Qx</td>
<td>♠Qxx</td>
<td>♠T98</td>
</tr>
<tr>
<td>♠T98</td>
<td>♠xx</td>
<td>♠x</td>
<td>♠Q</td>
</tr>
<tr>
<td>♠A7654</td>
<td>♠A7654</td>
<td>♠A7654</td>
<td>♠A7654</td>
</tr>
</tbody>
</table>

| 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% x ¼ + 24.9% x ¼ = 51.5%

With a 9-card fit, the drop (53.1%) slightly beats the finesse (51.5%).
Finesse or drop? (8-card fit)

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

Drop works when Q is doubleton or Q is singleton

- ♠KJ2 ♠Qx ♠xxx ♠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

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 finesses”
Conditional Probability
(or never say “never”)

Q: How to play clubs: drop or finesse?

“Weak Two” overcall: 6 hearts and a poor hand (5-11 hcp)
Without the 2♥ preempt

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

\[ P(\text{LHO has 2 trump}) = \frac{(4,2) \times (22,11)}{(26,13)} = 40.7\% \]

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!

\[ P(\text{LHO has 2 trump | 6 hearts}) = \frac{(4,2) \times (9,6) \times (13,5)}{(9,6) \times (17,7)} = \frac{(4,2) \times (13,5)}{(17,7)} = 39.7\% \]
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.

\[ P(\text{success}) = 67.8\% \ (3\text{-}2 \text{ break}) \times 75\% \ (\text{double finesse}) = 50.9\% \]

**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 trade off 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)

6N – best NS result

6♣/♦ – 2nd best NS result

21 ♠T
♦A
♠A8543
♠AQ9542
♣AQ753
♥984
♥9765
♥QJ83
♦Q9
♦762
♣J
♣T86

Dlr: North
Vul: N-S

♠K62
♥KT42
♦KJT
♣K73

Double Dummy Makes

14 3 NS: 6♣ 6♦ 1/2♥ -/1♠ 5/6NT ♠6/7
10 3 EW: ♠0 ♠0 ♥5 ♣6 6NT0

LoTT: 18 - 18 = 0
Par: +1440 6NT-S