

Logical Thinking In Bridge by Nye Griffiths

I'm going to talk about logical thinking in bridge and show you what I think your approach should look like (and what it should not look like) when it comes to solving problems at the bridge table. It's very important to be able to gather all the information available to you on each hand and then logically piece it together to create an accurate picture of the full hand which will lead you to find the correct bid, play or defense. It is also very important to make sure that your emotions do not interfere with this logical thinking process.

Let's take a quick look at a hand I played earlier this year in the Final of the Open Team Playoffs to see the role that clear logical thinking can play in determining your bridge results.

So, you're going into the final set of 16 board of the 2016 Open Playoffs, down 28 IMPs and on the first hand you pick up this hand and your right hand opponent opens 2C showing 10-15 with 6+C. You bid 3C to show both majors. Left hand opponent bids 4C. Partner volunteers 4S. Right hand opponent now bids 5C and **you have to make a decision.**

The image shows a bridge hand interface. At the top left, a score of 14 D is displayed. Below it, the bidding table is shown:

WEST	NORTH	EAST	SOUTH
4♣	4♠	2♣ 5♣	3♣

Below the bidding table, the South player's hand is shown:

S South
♠ AQJ9874
♥ AQ9754
♦
♣

At the bottom right, there are buttons for "Pass" (green), "Dbl" (red), and "Alert" (blue). Below these buttons are three buttons labeled "5", "6", and "7".

Now, clearly there is a very decent chance that this hand is going to determine the match. If you get this one right and pick up a slam swing on the first hand, you will be putting the opponents under a lot of pressure for the remaining 15 boards. I'll run you through my thought processes on this hand which led me to make my final decision.

So in any bidding situation where you need to make a critical decision, **you must assign your partner with a range of possible hands for their actions thus far.** I thought about possible hands which my partner might hold for their voluntary 4S bid and concluded that at the very least, they were likely to hold one of the following hands:

- 1) xxx Spade and a good hand (which would likely contain the KH as well) (e.g. xxx Kx AKxxx xxx);
- 2) Kxx Spade and some other cards to go with it on the side (a reasonable chance they'd also hold the KH) (e.g. Kxx Kx Qxxx xxxx or Kxx xx Axxxx xxx); or
- 3) xxxx or better in Spades and possibly not much else (e.g. xxxx x Qxxx xxxx);

At this point, I concluded that the other table was certain to be in at least slam as well so I needed to be making 7S 56% of the time or better to justify bidding it (11 IMP gain vs 14 IMP loss = $14/25 = 56\%$). I estimated that given partner's range of possible hands (see above), we would be laydown in 7S (or close to it) around 50% of the time, and would be on a finesse (which due to the 2C opening was more likely to be onside than offside) around 25% of the time and would be on either two finesses or a finesse and a break around 25% of the time. This adds up to well over 56% so I bid 7S, excited that we had a good chance to put a big dent in the match deficit on the first hand.

Now, I'm going to come clean and tell you now that this hand does not have a happy ending. I've included it first off as an example of how incorrect logical thinking and emotion can lead you to make **THE WRONG DECISION**. I let the state of the match and my emotions interfere with my logical thinking so I missed a **crucial logical step** which would have significantly improved the accuracy of us placing the final contract.

After giving my partner a range of hands and coming to the conclusion that Grand Slam was odds-on vs his range, **I SHOULD HAVE GONE FURTHER** and stopped to think about whether I could show something further about my own hand and pass control over to partner, helping them to place the final contract with **even greater accuracy**.

I should have bid 6C.

Partner would now have bid 6S if they held none of the KS, KH or AD. If he does this, it is likely correct to pass and play in 6S.

If partner held the AD, they would have bid 6D and we could bid 6H to say that we still needed something extra from them. They would still have to guess what we were looking for and might bid 7S sometimes when holding the wrong cards like xxxx xx AKxx xxx. In this case, things get a big murky - there is no real upside to just bashing 7S when partner bids 6D - it is break even.

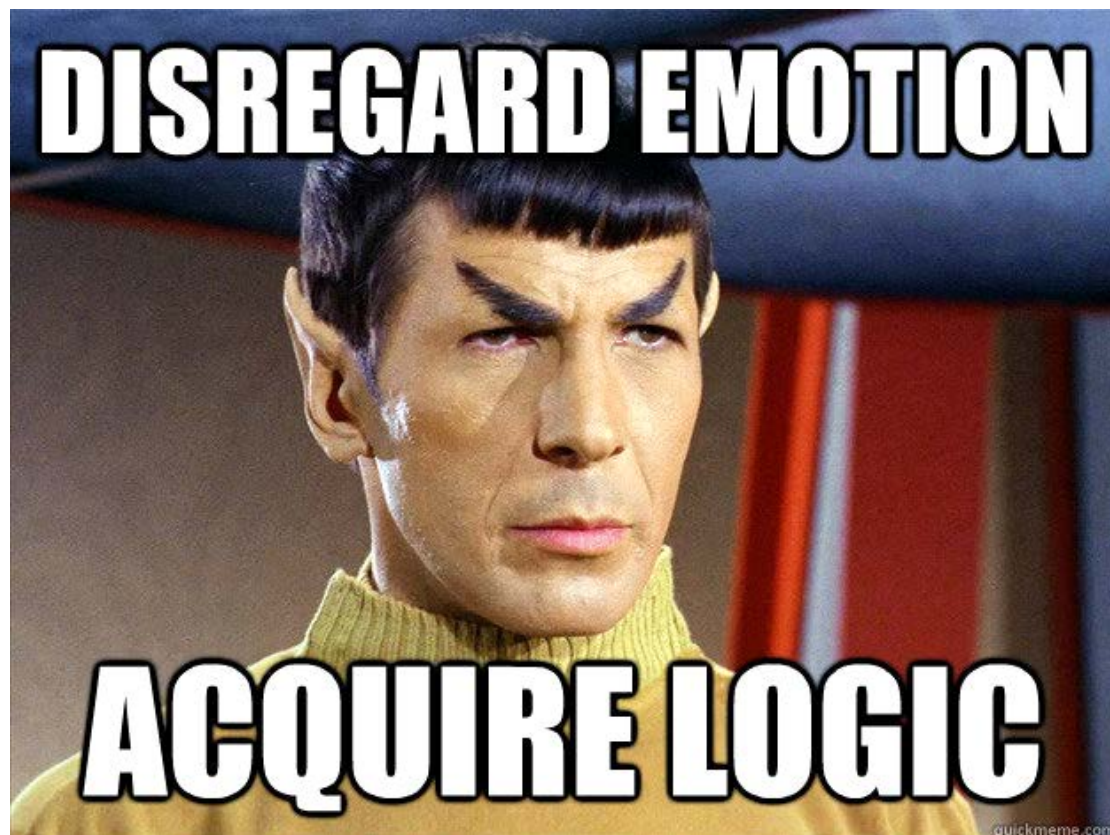
However, what if partner bids 6H to show the KH? Now we can comfortably bid 7S knowing it is AT WORST on a finesse or break in Spades (there's still a chance partner has something like xxxxx Kx xxxx xx where slam will be laydown). AND if partner holds the KS they will surely bid 7S themselves over 6C. In these two cases partner will have a clear action which would lead us to the correct contract and avoid bidding a bad 7S.

<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <div style="border: 1px solid black; padding: 2px; display: inline-block;">14</div> <div style="margin-left: 5px;">D</div> </div>		N North ♠ 1053 ♥ 10 ♦ AQ852 ♣ 10642	<table border="1"> <thead> <tr> <th>WEST</th> <th>NORTH</th> <th>EAST</th> <th>SOUTH</th> </tr> </thead> <tbody> <tr> <td>4♣</td> <td>4♠</td> <td>2♣ 5♣</td> <td>3♣</td> </tr> </tbody> </table>	WEST	NORTH	EAST	SOUTH	4♣	4♠	2♣ 5♣	3♣
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On the hand, I went down two after partner misguessed the Hearts. At the other table, they played in 6S and guessed the Hearts correctly after a 3C opening from East. If we **WENT FURTHER** with our logical thinking and did not get affected by the emotions surrounding the state of the match, bidding 6C instead of 7S, we would never miss a laydown Grand Slam, we would bid most of the good ones and would miss a ton of the bad ones which required two finesses or a finesse and a break.

The Moral Of The Story

The moral of the story (for all you Star Trek fans out there):



I believe that the success and failure of most bridge hands boils down to whether logic prevailed or whether emotion prevailed on the hand. The above hand is a good example of a hand where emotion prevailed and it led to failure.

Let's look at some hands where logic prevailed and led to success.

3NT Defensive Problem

We'll start with a defensive problem from the 2015 Open Team Playoffs (which my team went on to win).

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1S was a transfer to 1NT.

My partner led the QS. I discouraged with the 7S. Declarer won the AS in hand. Declarer then played the 3 of Diamonds to the Q (Partner playing the 6). There was nothing to be gained by ducking so I won the KD and stopped to think.

I began by counting the tricks. They have 2 Spades, 5 Diamonds and 1 Club once they set up their Diamonds. If they hold the Ace of Hearts (which is likely for the 1C opening bid) that gives him 9 tricks so if we are going to beat this hand we will probably need to set up 5 tricks for the defense before declarer sets up his Diamonds.

If partner began with QJTxx or better in Spades, I would easily beat the hand by continuing Spades. Declarer would win the KS, play the QD seeing the bad news and have no way to stop us from getting 3 more Spade tricks and 2 Diamond tricks.

However, unlike on the previous hand, this time I **WENT FURTHER** with my logical thinking and counted the High Card Points. Dummy has 13. I have 7. Declarer has 11-14. This gives partner 6-9.

At nil vulnerability, Liam and I overcall very aggressively at the 1 level. Because we have both discussed our expectations for a 1 level overcall and have a clear understanding, I was able to make several **negative inferences** about hands which Liam could no longer hold for his pass over 1C. I knew that any time Liam held QJxxxx (or longer) Spades, he would have preempted in Spades. I also knew that if he held a hand like QJTxx Kxx x xxxx he would have overcalled 1S. Accordingly, I was able to **rule out** the possibility of Liam holding all of these hands. I knew that Liam's lead of the QS was therefore very likely to be from a four card suit. If I continued Spades, declarer would win the KS and set up their Diamonds. We could cash our 2 Diamonds and 2 Spades, but would then have to concede the rest of the tricks to the declarer.

Because I was able to draw the above clear, logical negative inferences, I was able to rule out a Spade continuation because I knew it was unlikely to result in us setting the contract.

I considered my other options. I could see 2 Diamond tricks in my hand and 2 Spade tricks in partner's hand if we set them up. We also had a **potential trick** in the KC in my hand if we could force the AC out.

I knew declarer held the Ace of Spades, nothing in Diamonds and at most the Queen and Jack of Clubs. This means they must hold a minimum of 4 High Card Points in Hearts for their opening bid (and very likely to hold more like 6-7). I then considered whether a Heart switch was going to provide us better chances to set the contract than a Spade continuation.

I used logical thinking to narrow down the Heart holdings that I needed to consider: If declarer held both the Ace and King of Hearts, there was nothing I could do to stop him from making so I did not need to consider that possibility. If declarer held the King and Queen of Hearts (or worse), they were always going down regardless of what I do, so I didn't need to consider that possibility either. **See how we have used clear, logical thinking to narrow down the possibilities and work out what the critical layout is?**

Yes! The critical layout is when declarer holds the **Ace and Queen of Hearts**. Having worked that out, I calculated what would happen if I switched to a Heart. I then worked out that Declarer would have no answer to the Heart switch. If he ducks the Heart, Liam can win and establish his two Spade tricks before declarer has set up their Diamonds. If declarer wins the Ace of Hearts and leads a Club to the dummy, he sets up our King of Clubs so we can take 2 Diamonds, 1 Club and 2 Hearts.

I switched to the 8 of Hearts (telling my partner not to play back another heart), declarer played low. My partner won the JH and switched to the 4 of Spades, setting up the suit so that when declarer played Ace and another Diamond, we could cash 2 more Spades to beat the contract.

In the Open Playoffs, every table played 3NT on the QS lead and nobody else was able to draw the **correct logical inferences** to beat this hand - everyone played another Spade when they won the KD and the defense could only make 4 tricks.

Open Qualifying Board Results for Round 4 Board 24.

Board 24 ♠ QJT4

Dealer W ♥ KJ95

Vul None ♦ 6

♣ J642

♠ A983

♥ AQ42

♦ 3

♣ QT75



♠ 762

♥ 873

♦ KJ72

♣ K83

♠ K5

♥ T6

♦ AQT9854

♣ A9

[Click on the table number to display the match results](#)

Datum NS : -330

Team	Cont	Dec	Lead	NS Score	Match IMPs
4	3NT	W	♠Q	50	10
5	3NT	W	♠J	-400	1
1	3NT	W	♠Q	-400	0
3	3NT	W	♠Q	-400	0
6	3NT	W	♠Q	-400	-10
2	3NT	W	♠2	-430	-1

3NT Declarer Play Problem

This hand is from the VCC earlier this year.

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I open 1NT which at these colours is 9-12. Partner raises to 3NT. All Pass.

West leads the 6 of spades (4th Best).

I can count 2 Spade tricks, 3-4 Heart tricks, 0-1 Diamond tricks and 3-5 Club tricks but it's unclear the best way to go after them.

I win the King of Spades (wanting to hide my Jack from the defense). East plays the 2 (low encourage).

Tackling the Clubs

We are going to have to tackle the Club suit so it looks right to start there. We don't know how to play the Hearts yet and if we wait to play the Hearts later, we might get some more information which will help us take the correct line. **What is the best way to play the Club suit in isolation?**

In isolation, (with two or more entries to the dummy) the best way to play the Club suit for the most tricks is to start with the Queen, then if East covers the King you cross to dummy with a Heart and run the 9 on the next round.

However on this hand, there is another factor which we need to consider. **Can you work out what it is?**

We do not want the defence to switch to Diamonds when they get in (or the defence might get 1 Spade, 1 Club and 3/4 Diamonds before we get our 9 tricks). If we lose a Club trick to West, they are much more likely to find the Diamond switch when it is right (East doesn't know how good West's Spades are so

they won't know if West wants Spades continued or Diamonds switched to) and then we might be in trouble.

Picture East holding Kx or Kxx Club and West Txx or Tx - if we go with the "best in isolation" play in the Clubs, now West will have two entries to play the Diamonds through rather than one. So when they have Diamond holdings like J9x, Q9x, J9xx, Q9xx, all of a sudden they can untangle these (as well as avoiding having to make the correct play of the Q or J from Qxx or Jxx if given just one entry).

So after taking this into consideration, I felt that the best way to tackle the Club suit was to run the Queen then cash the Ace. This is a **slightly inferior** way to play the suit in isolation, but the **loss in equity** from playing a slightly worse line is **gained** by keeping West off lead on many more layouts. At the time I just went with gut feel (obviously it is impossible to accurately calculate this all at the table) but I put it into the computer when I got home and it turns out I was correct - my line will make 5 tricks 16.3913% of the time and 4 tricks 76.3043% of the time with an expectancy of 3.927 tricks and also keeps West off lead the most. The alternate line of running the Queen then crossing to dummy in Hearts and running the 9 will make 5 tricks 12.4348% of the time and 4 tricks 81.9565% of the time with an expectancy of 3.9439 tricks. (NB: running the Queen then playing small to the 9 if it is covered is the best way to make 4 tricks 84.7826% of the time but only makes 5 tricks 6.2174% of the time with the lowest trick expectancy of the three lines - 3.91 tricks).

On this hand, my Queen was covered by the King. I won the Ace and West played the 2. I then cashed the Jack of Clubs and West showed out, pitching the 3 of Diamonds (low encourage), East following with the 5.

So now I stopped to think. I've got 2 Club tricks so far, 1 Spade trick and have 3 Hearts on the top so I need to make 3 more tricks which will have to be 1 from each of Spades, Hearts and Diamonds (hoping that the 3 of Diamonds was a true card). The question is now how to time everything correctly and how to play the Heart suit.

You can gather a LOT of information when a defender shows out in one of the suits!

It's clear to go after Hearts now - **but what is the correct way to play the suit? What clues do we have so far?**

Let's think back to the opening lead. West led the 6 (4th Best) and East played the 2 (low encourage). Can we work out what the Spade suit looks like based on this? **I think we now have enough information to work out the whole hand!!**

What holdings would East encourage with on the opening lead? From Axx, they would have to win the Ace and play another Spade (their partner may have led from JTxxx or JTxx). Is it possible that West has led from a 3 card suit (or shorter)? No, because then they would have a 5+ card suit in one of the Red suits (remember they have a singleton Club) and would surely have led that. Accordingly, the Spades must be Axxx with West and Txx with East.

Now, counting the vacant spaces, West has 8 vacant spaces (4 Spades, 1 Club, 8 spaces in the Red Suits) and East has 6 vacant spaces (3 Spades, 4 Clubs and 6 spaces in the Red Suits). Based on this alone it is mathematically correct to cash one big Heart from the dummy (unblocking the T from hand), then play a small Heart back to the King followed by finessing dummy's 9. However, if we think back again to the opening lead this should actually be 100%. Can you see why?

West has 4 Spades and a singleton Club. How many Hearts and Diamonds must they now have? Yes, they must be 4441 or they would have led from their 5 card suit rather than from Axxx Spade.

Accordingly, I play the Hearts as suggested above and make 4 Heart tricks ending in the dummy, East showing out on the third round.

The rest of the hand is easy. I can play a big Spade from dummy setting up a spade trick for myself (they ducked) so I played another Spade to the Jack and forced West to take my Diamond finesse for me after they finished cashing their two Spades.

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+400 at our table and +50 at the other table where declarer didn't draw the correct inferences.

4Sx Declarer Play Problem

This last hand is from the Open APBF in Bangkok in 2015.

	N North ♠ K6 ♥ 9542 ♦ A103 ♣ AJ52	<table border="1"> <thead> <tr> <th>WEST</th> <th>NORTH</th> <th>EAST</th> <th>SOUTH</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td>1♠</td> </tr> <tr> <td>Pass</td> <td>1NT</td> <td>Pass</td> <td>2♦</td> </tr> <tr> <td>Pass</td> <td>2NT</td> <td>Pass</td> <td>3♣</td> </tr> <tr> <td>Pass</td> <td>4♠</td> <td>Pass</td> <td>Pass</td> </tr> <tr> <td>Dbl</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table>	WEST	NORTH	EAST	SOUTH				1♠	Pass	1NT	Pass	2♦	Pass	2NT	Pass	3♣	Pass	4♠	Pass	Pass	Dbl	Pass	Pass	Pass
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I was South and I opened 1S (10-15, 5+S). My partner, Liam, bid 1NT (semi forcing). I bid 2D. Liam bid 2NT (natural and invitational, usually around 11-12 points). I bid 3C showing my shape. He now bid 4S knowing that I had a singleton Heart which is a good bid since he has excellent sharp cards for 4S, good cards in Diamonds and has no Heart wastage.

West (a very active Singaporean player) now enquired about the auction and chose to double after asking some questions about whether 2NT was invitational etc which ended the auction.

West led the Ace of Hearts and his partner played the 3. He then continued with the King of Hearts, East playing the 6 and I ruffed with the 3 of Spades.

I figured that to make the contract I would need to take 5 Spade tricks and 5 tricks in the minors.

I now stopped to have a think about what sort of hands my opponent may have doubled on. What inferences do you think we can make from the information we have so far?

The first thing you need to make sure you remember in situations like this is **DONT PANIC**. Remember we need to remove the emotional element from our thought process so that we can have clear, logical thinking in working out the best way to play the hand. I have seen so many people (myself included) go down in makeable contracts in situations like this. If trumps were breaking very badly on my left there was not much I could do (and given how many questions my opponent had asked before doubling it did not feel like he held a "clear" double but more of a speculative one) and I felt that it was unlikely my opponent would probably not have doubled if trumps were breaking 3/3 so I thought the most likely layouts included a 4/2 trump break one way or the other or West holding a singleton and East holding 5. (I thought West could easily have a singleton or doubleton Spade for the double knowing that on the

bidding his partner had 4, since Liam and I had guaranteed a 5-2 fit from our bidding – This was **MUCH MORE LIKELY** given the questions that had been asked).

I had a long think about what hands West would have for their double and figured that there was one card which West was almost certain to hold. Can you work out which one it is?

West almost certainly has the **Queen of Diamonds** for their double, hoping that it will take a trick sitting behind my diamond suit (or else the double becomes very strange indeed since the only other card outstanding is the Queen of Clubs). Working out that the one card which West **MUST HOLD** for their double is the Queen of Diamonds is a **KEY POINT** to making this hand.

So, from our initial deductions, we've placed West with the Queen of Diamonds and probably 1-2 Spades (though it is still possible that they hold four). After these initial first-thoughts, how are you going to go about making this 4SX?

I wanted to find a line which worked on **ALL THE TRUMP LAYOUTS** (all 4/2 trump breaks and 5/1 trump breaks with East holding the length).

I started off by playing a diamond to the Ten straight away which held (as we expected) since that was a play that I was always going to make. I then cashed the Ace of Diamonds. I now reached the first critical point in the hand – what was I going to do next? Do I try for three Club tricks? Or for three Diamond tricks?

I stopped to think. We know West has the AK of Hearts and the Q of Diamonds (and presumably Singleton or Doubleton Spade). They might not have made a takeout double with a hand like Tx AKx Qxxx Qx though. Certainly the chances of East holding the QC are higher because a lot of West's layouts can now be removed due to their lack of making a takeout double but we don't want to throw all our eggs into the one basket of East holding the QC since we have better lines of play. There was also one other tiny clue that East held the QC though I wouldn't place a huge amount of faith in it: at trick 1, East played the 3 of Hearts. This should be suit preference here because my Heart holding is known so count and attitude are irrelevant so it is possible that he was trying to show his Queen of Clubs here.

However, since I know for sure that the Queen of Diamonds is with West (either Qxxx or Qxx), it is much safer to play to try and make a third Diamond trick. We need to be careful though because if we play our third Diamond straight away and East started with a doubleton in both minor suits, he will be able to throw away his club. Accordingly, I cashed my King of Clubs and Ace of Clubs first (we want to end in the dummy to play our diamond through the hand which might show out). East dropped the QC on the second round.

Now we should take stock of the hand again since we know the layout in both minor suits. (It is worth stopping to count any time someone shows out in a suit). We know West is 4/4 in the minors with the QD and East is 2/2 in the minors with the QC. West has already played to 2 rounds of Hearts so we know he has either 3 Spades and AK doubleton Heart, 2 Spades and AKx Heart or 1 Spade and AKxx Heart. It's very unlikely that he has 3 Spades (Would he really double 4S with Txx AKx Qxxx xxxx knowing that

trumps were breaking and that his Hearts weren't cashing? – of course not!) so we should cater to both the other two layouts.

We can guarantee making on almost all the 4/2 and 5/1 breaks now with careful play – can you see how?

N North
 ♠ K6
 ♥ 95
 ♦ 3
 ♣ J5

WEST NORTH EAST SOUTH
 Pass 1NT Pass 1♠
 Pass 2NT Pass 2♦
 Pass 4♠ Pass 3♣
 Dbl Pass Pass Pass

W West

E East

S South
 ♠ AQ98
 ♥
 ♦ KJ
 ♣ 10

Now we can play our third Diamond from the dummy. East has two choices.

Scenario 1: If East pitches a Heart instead of ruffing in front of us, we will win our King of Diamonds and play the Ten of Clubs. East must ruff this.

1a) If East plays a Spade now, we play the 8. If West doesn't cover, we play low. We then ruff our Jack of Diamonds with the King and play the JC. We will make all the rest of the tricks unless East started with JTxxx in Spades (where they can ruff the JC high and we must lose another trump trick).

1b) If East plays a Heart now, we ruff with the 8. We then ruff our Jack of Diamonds with the King and play the JC. We will make all the rest of the tricks unless East started with JTxxx in Spades (where they can ruff the JC high and we must lose another trump trick).

Scenario 2: If East ruffs in front of us, we play low.

2a) If East plays a Spade now, we can draw trumps and then cash our winners.

2b) If East plays a Heart now, we ruff with the 8. **This is the critical layout where we need to be careful to avoid making one final error.** If we played the Ten of Clubs now, forcing East to ruff, they could play a Heart and try to give their partner a trump promotion when Spades were 4/2. We would have to ruff

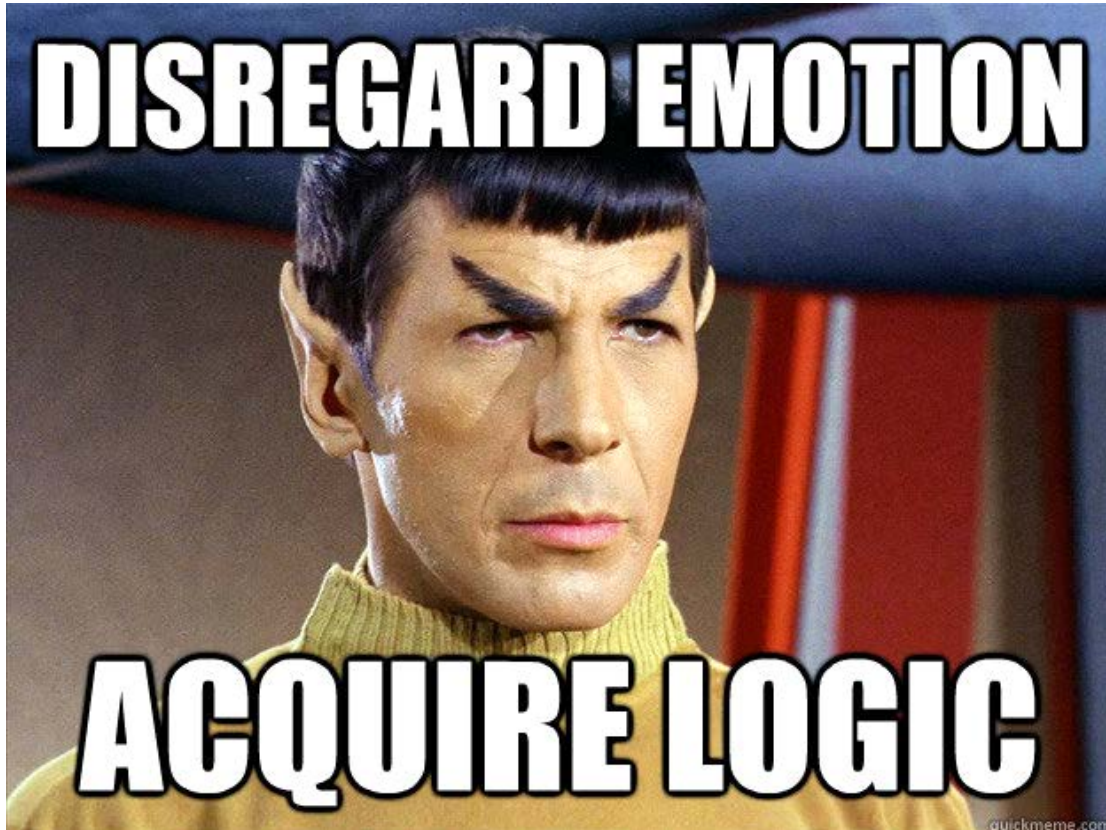
high and West could pitch their club and we would go down, not being able to avoid another trump loser.

We can make though on all layouts if they ruff in front of us and play a Heart. We should play the KD, pitching dummy's last Heart. East ruffs. If they play a Spade, we can draw trumps even if they were 5-1 to begin with and cash our winners. If they play a Heart, we can pitch our Club, then West must follow when trumps were 5-1 to begin with (because then Hearts were 4/4) and we will be able to ruff with dummy's 6 of Spades. If Spades were 4/2 (and Hearts 5/3) then West can ruff the Heart with their biggest Spade, but we can confidently overruff with dummy's King, and draw trumps from the top knowing that they were 4/2 to begin with (East must now be 4522 once West shows out in Hearts).

Scenario 2b was the one which happened at the table and is the defence's best chance to beat the contract. However, I was able to use **clear logical thinking** to work out the best line catering to all 4/2 and 5/1 Spade breaks and was able to bring back +790 when most of the room was going down in either 4S or 3NT. Our team mates defeated 3NT by cashing the first 5 Hearts so we won 13 IMPs.

Conclusion

So...what have we learned from all this?



-The majority of bridge hands are either won or lost depending on whether the players have adopted **clear logical thought processes** or whether they have let their emotions cloud their thinking.

-It is important to try and work things out in a clear, systemic manner, where you eliminate possibilities one by one and come down to the **critical layout of the hand** which you can calculate.

-Do not mix your calculations, trying to work everything out at once. **Do your calculations in a clear, logical manner** and **work things out one by one**.

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