West leads a trump against 6C after the “2C-checkback” auction which marks South for 14 HCP and the precise 4-3-3-3 shape.

East follows and South wins with the A. On the ♥Q, both follow. Assuming that the last trump is with West, in view of his lead, what is South’s best line of play from here? Using this line, what is the chance of success?

**SOLUTION:**
Four lines are considered in detail.

**Line A (ruff a heart):**

The basic idea here is to play off the top two hearts at a convenient stage, then later play a low heart toward the J. Either

- West wins with the Q and the J becomes top, or
- West’s ruffs and later South ruffs dummy’s last heart, or
- East’s Q beats dummy’s J and South ruffs dummy’s last heart.

Thus declarer can claim once the low heart is led to dummy provided his preparation -- playing off two hearts, two spades and two diamonds (pitching a spade) -- succeeds without West ruffing. The basic line works if West has at least two cards in each side suit, this being a 81.09% chance given the information after trick 2 (see Appendix).

There are, however, some refinements which lift the probability of overall success. These include the order in which the outside tricks are cashed. On trick 3 one leads low to the ♥A.

- If either defender plays an honour\(^1\) or if West shows out and opts not to ruff\(^2\), draw the trump, run the ♦10 and claim (citing 3 tricks in spades -- with obvious care in preserving the ♦K as an entry to the 9 if required).
- If West does ruff, duck in dummy and win his heart (or diamond) exit. Then cash ♠K (or ♥A). Cross to ♥J and cash ♥A (pitching a heart). If the ♥10 is high, claim. If not, cross to ♦A and run clubs, pitching a heart and the ♥10 (or a spade if a 3-suit squeeze has forced East to shed his last diamond from ♥QJx). On trick 11, cross to the ♠K. If 12 tricks are not now evident, take the heart finesse\(^3\).

If both defenders follow low on trick 3, play the ♥K, ♥A and, if both follow low, the ♥K.

- If the ♥Q falls, draw the last trump immediately and claim. Likewise if the ♥109 falls doubleton.

If both follow low to two heart rounds, cross to the ♥K, cash the ♦A pitching a spade and, if West has not ruffed to date, play the low heart and claim. If the ♥A, ♥K, ♥K or ♦A is ruffed, you concede. (Chance = 87.98%.)

Footnote: If East shows out on the first round of spades, the prospects do not look good for Line A. It is now only a 39.56% chance that West will be 2-2 in the red suits. Nevertheless, it is best to proceed with the plan, because the best

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\(^1\) The conditions when West splits spade honours is discussed in the Appendix.

\(^2\) The Appendix deals with the ruffing issue.

\(^3\) This is a line suggested by Tom Goodyer and it seems best when West ruffs the low spade. It succeeds when the ♥Q is with West or single with East and also when East has 6-2-3-2 with all of the red honours. The line also wins when either defender has ♥QJ doubleton (or, as Tom states, when East has a 6-5-0-2 or 6-4-1-2 shape, though my assumption that West does not have 8+ diamonds nullifies this).
alternative relies on West having the ♥Q and this is now only a 26.67% chance.

Line A1: (another ruff-a-heart strategy)
This line plays off the side winners in a different order to Line A -- namely, low to the ♦K, ♥A, ♠A, low to the ♦K, ♠A pitching a spade. Usual claims are made when/if the ♥Q or ♦QJ fall or the ♠A fells an honour.

The line continues with a low heart toward ♥KJ8 intending to play the K.
• If the Q falls or the 10 has fallen, draw trumps and claim.
• If West ruffs, play the ♥8 and claim, citing a ruff by North of West’s exit card and a ruff by South of the ♥J.
• If West shows out, play the ♥K, exit with a heart to East and claim.

Otherwise, after winning with the ♥K, exit with a heart. If hearts are 3-3 or East has 4, you claim. The contract fails, however, if West was dealt 4-5 hearts with the Q (except for the case, mentioned above, where East has 109 bare). West exits with a trump in this case and later wins his ♥Q.

This last aspect, playing away from the ♥J8 instead of toward it, is a drawback. There are compensations, however, compared with Line A. If West has a singleton heart he cannot (as shown above) defeat the contract.

Moreover, if West ruffs the ♦A or ♠K, declarer can still come home on the ♥J finesse and heart ruff (a line which has reasonable chances since West now has likely length in hearts).

Still further, if West ruffs the ♥A, declarer pitches the ♥10. Counting now reveals whether West started with 6-3-1-3, 5-4-1-3 or 4-5-1-3 (the case 3-6-1-3 being discounted by lead considerations: see Appendix).

• With 5-4-1-3, he holds both the spade honours (since, with only one, there would have been an earlier claim), and exits with the ♦Q. North ruffs and hopes that East was dealt ♥Qx.
• With 4-5-1-3 and both spade honours, West also exits with the ♦Q and the contract fails.
• The contract also fails with 6-3-1-3.
• With 4-5-1-3 and one spade honour, West is endplayed in a cute way.

It turns out that the inefficiency of leading away from the ♥J8 dominates the other gains. (Overall chance = 83.86%.)

Line B (try for 3 heart tricks):
This is a line with little sophistication regarding the spade suit and a focus on hearts. Draw trumps, play ♦K, then ♥A, claiming if the Q falls. If not, play ♠A (claiming if an honour falls). If not, play ♦K and ♠A pitching a spade (and claiming if the ♦10 is now high). If not, take the heart finesse (normally low to the J, but of the form “low to the 8” if the 10 or 9 fell from East under the A). If this loses, hope for a 3-3 heart break. The line also succeeds if West started with ♥109 doubleton. (Chance = 72.32%.)

Line C (low to ♦10, then ♠A & ♠K and perhaps heart finesse):
Cross to ♦K, then back to ♦J. Then play low to the ♦10.
• If West plays an honour, cover with the A and claim.
• If West shows out, rise with the A and run the ♦10. East must cover and South must allow him to win the trick. Declarer can now claim, citing the marked spade finesse.
• If the ♦10 wins on trick 5, claim. Otherwise, when East wins with an honour, win his diamond exit with the
♦A discarding a heart (usual claim if ♠10 is high). Now cash the ♥A (usual claim if Q falls) and then play ♦A. If the remaining honour falls, or if West shows out (marking a winning finesse), claim. Otherwise, cross to the ♠K. If spades are 3-3, claim. If not, finesse the ♥J. (Chance = 86.22%.)

**Line D (low to ♠10, then apply squeeze):**
Cross to ♦K, then back to ♣J. Then play low to the ♠10, claiming under the same circumstances as Line C. Otherwise, win East’s diamond exit with the A (pitching a heart) and claiming if the ♠10 is high. If not so, cross to the ♥A and cash ♥K, claiming if the ♥Q has fallen. If it hasn’t, play ♠A (claiming if the remaining honour falls or West shows out). If not, play a club to reach the following position.

North: ♠7 ♥J ♦ - ♠10
South: ♠K9 ♥ - ♠10 ♦ -

There is a chance that East may already have been squeezed in three suits (if he were dealt 4+ spades, both red queens and the ♦J). If not, play the ♠10. East will now be subject to a ♠-♦ squeeze if dealt 4+ spades and both diamond honours (one of which would have been shed earlier than trick 10)⁴.

If he discards the master diamond, claim. If not, pitch the ♠10 and rely on either the ♠-♥ squeeze (since either defender with 4+ spades originally will be in difficulty if also holding the ♥Q) or the prosaic 3-3 spade break. (Chance = 89.35 %.)

**Conclusion:** Line D wins by a little over 1%.

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⁴ The squeeze possibility that East held 4+ spades and 7 diamonds with one honour (the other honour having fallen from West) is ruled out by the assumption that East has at least one heart.

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**APPENDIX:**

**The defence’s knowledge:**
The defence knows South’s exact shape and point-count and has a fair idea about North’s hand even before the opening lead.

East and West know that North probably has only 4 hearts⁵, at least 5 clubs and at most 3 cards in each pointed suit (as he would not bypass the 1D bid with such a strong 0-4-4-5 hand and would opt for 6S with 4-4-0-5).

The defence also knows, from North’s leap to 6C, that he has either
- 19+ HCP, thereby ruling out the possibility that the defence has two aces, or
- 17-18 HCP with first-round control in at least three suits and at worst second round control in any suit where he lacks first-round⁶.

Moreover, by the lack of interest in a grand slam, he is limited above by about 21 HCP. The actual hand that North tables will be no surprise to the defence.

**Inference from the opening lead and bidding:**
Assume, since both defenders passed when the bidding was at the one level, that neither has 9 diamonds.

Given the knowledge that declarer has a 4-3 heart combination, the opening lead indicates that West has fewer than 6 hearts (otherwise he would have certainly led a heart for partner to ruff). He would also be likely to lead from length with 8 diamonds, hoping that partner is void. So he has <8 diamonds.

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⁵ North might have 5 hearts if he has 6+ clubs.
⁶ A jump response to 2C-checkback establishes the game force, so 4C by North would be forcing with slam interest. This would allow South the chance to cue an ace. North’s failure to use this route clearly points to a hand which is not dependent on an outside ace and his failure to employ a 4NT keycard-ask suggests that he holds one of the top two clubs.
One entrant has suggested that the trump lead indicates that West does not have a singleton in a side suit (as a singleton would be a preferred lead when he holds 3 trumps). I think that such an inference is not justified given:

- the high likelihood from West’s viewpoint that North has control (i.e. an ace or a shortage) in each outside suit;
- in the case of hearts, the potentially detrimental effect on partner’s holding in the suit which declarer must play for tricks;
- in the case of spades, the undesirability of leading into South’s longest suit (which must also be played for tricks unless North’s spade control is in the form of shortage);
- in the improbable case of diamonds, similar considerations.

Furthermore, a trump lead is highly desirable when playing against a 4-3-3-3 hand. If declarer has a 5-3 trump fit, he is attracted to a “dummy reversal” play -- ruffing three times with the 5-card trump holding. In effect, he exploits shortage in the hand with long trumps because there is no shortage in the 4-3-3-3 hand.

Declarer needs at least 3 entries in the 4-3-3-3 hand to make the three ruffs and (hopefully) a fourth entry to cash the master trump in the 4-3-3-3 hand (though this last step is not always necessary). The surest source of these entries is usually in the trump suit.

As an example, consider the effects of a non-trump lead in our problem hand. Such a lead does no damage to South’s entries and he can readily unblock the diamond suit, cash the top hearts and cross to the South hand twice in trumps and once in spades to ruff a diamond and two spades with North’s 5-card trump holding. The ♠A is also cashed early. This gives 12 tricks -- made up of 6 club tricks and 6 from the outside aces and kings.

Note that the trump lead uses up one of South’s entries prematurely\(^7\), before the ruffing positions can be established!! This is so common that the lead of a trump against 4-3-3-3 hands is highly desirable\(^8\).

**Line A: West splitting his spade honours?**

When South leads a low spade on trick 3, will West split his spade honours should he have both Q and J (not bare)? He knows that declarer has 7 HCP outside the club suit and these could comprise:

- the ♠A and ♠K;
- the ♠AQJ;
- the ♠A, ♠J and ♥Q;
- the ♠K, ♦Q and ♥Q.

Some of the alternatives may be ruled out by West’s possession of red honour cards.

Suppose all 4 alternatives are still valid from West’s viewpoint. In the last two of these, declarer would draw trumps and claim. In the first two, a heart-ruff line is appropriate for declarer and should be suspected, since South’s failure to draw trumps and unblock the diamonds first suggests that he is not adopting another line.

In the ♠AQJ case, it is indifferent whether or not West splits his honours.

In the ♠A-♠K case, he should not split the spade honours if he knows that the heart-ruff line is destined to fail, (just in case South has the ♠9 and changes his plan). Otherwise, he should split to protect the spade suit should the ♠9 be with East (and even then South might

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\(^7\) Although South has three entries in trumps on this deal, the nature of the dummy reversal restricts him to two, since we wish to make three ruffs with the 5-card holding.

\(^8\) Note that the defender with three trumps and a singleton will often score his ruff in any case -- because declarer plays many cards in the side suits before drawing all the trumps. Even the defender with two trumps has a chance of a ruff!
still bring home the spade suit, if critical pips fall from East).

In conclusion, West splits only when he has 2+ spades, 2+ hearts and 2+ diamonds.

Lines C and D: Splitting spade honours?
West assumes that South has the ♠A-♦K hand. From the limited entries left in the South hand, West knows that declarer intends to play the ♠10 (whether or not South has the ♠9).

So it is clear that West will always split his honours holding ♠QJxx or ♠QJxxx to prevent the 10 scoring. He knows that a declarer who does not have the ♠9 cannot score three spade tricks if he splits. His entries are insufficient. If South has the ♠9, splitting costs nothing.

If South turns out to have the ♠AQJ hand, splitting has cost nothing.

Line A: West ruffing when void in spades?
West can reason which combinations of 7 HCP outside the club suit are possible in South’s hand. If West has 0 HCP himself, then the possibilities are:

- ♠A and ♠K;
- ♠A, ♠Q and ♠J; *
- ♠A, ♠Q and ♠J; @
- ♠A, ♥Q and ♠J; *
- ♠A, ♥Q and ♠J; *
- ♠A, ♥Q and ♠J; @
- ♠A, ♠Q and ♠J; *
- ♠A, ♠Q and ♠J; *
- ♠A, ♠Q and ♥Q; *
- ♠K, ♠Q and ♥Q; *
- ♠K, ♠Q and ♥Q; #
- ♠K, ♠Q, ♠J and ♠J; #
- ♠K, ♥Q and ♠Q; *
- ♠K, ♥Q, ♠J and ♠J; #
- ♠K, ♠Q, ♠J and ♠J; #
- ♠Q, ♥Q, ♠Q and ♠J; *
- ♠Q, ♥Q, ♠Q and ♠J; *
- ♠Q, ♥Q, ♠J and ♠J; *
- ♠Q, ♥Q, ♠J and ♠J; *
- ♠Q, ♥Q, ♠J and ♠J; *

Should West have an honour himself, he can rule out some combinations.

In any case, with those combinations marked (*), South can draw trumps and claim. He would also draw trumps on trick 3 with those marked #. He would lead low to the ♠K, then back to the ♠J with those marked @.

With the two remaining cases, South’s play at trick 3 suggests the heart-ruff line. This cannot be defeated in the ♠AQJ case by West declining to ruff -- and ruffing puts South to a guess as to who has the ♥Q (there being a squeeze on East or a finesse on West available). So ruffing is better.

In the ♠A-♦K case, West knows the heart-ruff line is doomed. He also knows that:

- if he has 7 diamonds headed by the 9 or ♠QJ bare with South having ♠A10x, the contract comes home anyway;
- otherwise, if South has the ♠9, failure to ruff gives away the contract whilst ruffing will defeat it when East has the ♥Q (and is not squeezed in three suits);
- if East has the ♠9, failure to ruff allows declarer to pitch a loser (a spade) and the contract comes home on either a 3-3 heart break or the ♥Q onside. Ruffing allows only the latter.

The conclusion is that West will always ruff when he is void in spades!

Without the ♠9?
Without the ♠9, South would still approach Line A by leading a low spade at trick 3, to allow some chance should West be void in spades. Chance for Line A without the ♠9 = 85.08%.

Declarer would certainly not lead low to the ♠10 on trick 3 as this is much
inferior to Line A and inferior to the
similar play (either Line C or D) taken
after drawing trumps. Chance for line D
when missing the ♠9 = 78.18%.

So if South leads a low spade at trick 3,
West (ignorant of the location of the ♠9)

can assume that declarer will play the
♠A. Therefore he is not tempted to split
spade honours.

**Hand shapes:**
After trick two West has 10 vacancies in
his hand, east 11. These 21 vacancies are
filled with 6 spades, 6 hearts and 9
diamonds. One can write down the
chance that West was dealt any given
shape, say s-h-d-3, using the formula

\[
\frac{\binom{6}{s} \binom{6}{h} \binom{9}{d}}{\binom{21}{10}}
\]

where, for example,

\[
\binom{21}{10} = \frac{21 \times 20 \times ... \times 13 \times 12}{10 \times 9 \times ... \times 2 \times 1} = 352716
\]

which is (in words) the number of
distinct ways that West’s 10 vacancies
can be filled from the 21 cards available.

For each defined line of play, one
calculates the success chance given the
shape that West has, then adds these
with weighting calculated from the
formula above.

There are 33 cases, after we apply the
constraint that West has <6 hearts and “1
to 7” diamonds. Further detail is
available on request.