ADDITIONAL MATERIAL FROM:

BRIDGE, PROBABILITY AND INFORMATION

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VIRTUAL VACANT PLACES

Kelsey's Rule shows how the vacant places remaining for two or more suits can be related to the probability that one defender or the other holds a missing honor. The rule requires all insignificant cards in a suit be played before their subtraction from the vacant places can be justified. What if it is not convenient to reduce a suit to that extent? Then one must employ an inferential count. Such estimates will be subject to an increased level of uncertainty, but one needn't bury one's head in the sand. So we come to the concept of a virtual vacant place. If we can associate probabilities with real, discrete vacant places, why can't we do the opposite and relate virtual vacant places to probabilities in a continuous relationship?

Here is how it works. Suppose that a declarer in a spade contract receives the opening lead of a low diamond. There are six diamonds missing, so the defenders hold twenty cards between them in the other suits. Say declarer wins the first trick with the ace in dummy, the RHO following, and decides go about drawing trumps. Which defender is the more likely to hold the missing trump queen? That depends on what declarer makes of the opening lead.

Suppose the diamonds are split 5-1, leaving 8 vacant places on the left and 12 on the right. The differential in vacant places is 4. If the remaining spades, hearts and clubs are shuffled and dealt, the chance of any card ending up on the right is 12 out of 20, or 60%, regardless of the rank of that card. If the diamonds are split 4-2, the probability of a card being dealt to the right becomes 55%. The differential in vacant places is 2.

Usually the diamond lead is from length, either a four-card suit or a five-card suit, and there are just 2 vacant place differentials possible, but on average the number of cards in the suit lies between four and five, even though there is the occasional short-suit lead. This idea gives rise to the concept of a virtual vacant place differential that represents an average length that can't exist in reality. Here are the results for integer differentials:

Real Conditions

Split	Vacant Places	Probability (%)	Differential
3 – 3	10 –10	50.0 – 50.0	0
4 – 2	9 – 11	45.0 – 55.0	2
5 – 1	8 – 12	40.0 – 60.0	4

Virtual Conditions

Split	Vacant Places	Probability (%)	Differential
3.5 – 2.5	9.5 –10.5	47.5 – 52.5	1
4.5 – 1.5	8.5 –11.5	42.5 – 57.5	3

A virtual split involving half cards is not physically possible, but it is possible when one is dealing with the average length of the suit led. Naturally, declarer would prefer to gather more evidence relating to the situation that actually exists. Nonetheless, he can estimate probabilities if he is able to judge the opening lead with respect to how many cards he expects the opening leader to hold, on average, in the suit led. In Chapter 8 of Bridge, Probability and Information we further explore the relationship between the opening lead, information and probability.