Never Forget a Face (Double-Dealing with a Difference)

Low-Down Triple and Quadruple Dealing Reviewed

In October 2004, in the inaugural Card Colm, Low Down Triple Dealing, we presented something discovered accidentally in the spring of 2003 while living in a Madrid suburb. It concerns surprising properties of a kind of "low-down deal"—in which at least half of the cards in a packet are dealt to a pile and the rest are dropped on top—done three or four times, dealing the same number of cards each time. More recently, in February 2011’s Low-Down Double Dealing With the Big Boys, we discussed something useful that can be said about only doing it twice, in the case of palindromic (i.e., symmetric) packets.

In the October 2008 print incarnation of "Low-Down Triple Dealing" from the Martin Gardner tribute book A Lifetime of Puzzles (A K Peters), we mentioned a generalization first brought to our attention about a year earlier by Martii Siren, then (and now) editor of Finnish magic magazine Jokeri. He wrote about it in that publication in March 2008. Austrian magician Werner Miller also took advantage of this observation in a trick in his 2010 manuscript Enigmaths. Our upcoming Mathematical Card Magic: Fifty-Two New Effects (A K Peters) devotes an entire chapter to this extension of Low-Down Triple Dealing, so it seems like an opportune time to introduce it here.

Let's start with the basics of the original low-down triple dealing. Imagine a face-down packet which runs Ace-King of Hearts. Fanned face up from left to right it looks like this:

Now fix a number between 7 and 13, perhaps 9. Hold the face-down packet in one hand, and deal 9 cards to a pile, thus reversing their order. Drop the remaining 4 cards on top. Fanned face up from left to right, we now have:

A second application of the "deal 9, drop 4" move converts that to this:

A third application of the "deal 9, drop 4" move converts that in turn to:

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The first surprise is that the original bottom card (the King) is now on the top, in fact many of the original bottom cards are now on top in reversed order. This low-down triple dealing observation is the basic for many magic effects, some of which are explored in *Low Down Triple Dealing*. Also discussed there, and in much greater detail in the opening chapter of *Mathematical Card Magic: Fifty-Two New Effects* (A K Peters), is the fact that a fourth application of the "deal 9, drop 4" move restores the packet to its original order, as is easily checked above. The only thing about 9 which makes all of this work is that it's at least half of the packet size, 13, or, equivalently, 9 + 9 is at least 13.

**Low-Down Dealing With a Difference**

Let's start once more with a face-down packet which runs Ace-King of Hearts, and this time consider any two numbers $s$ and $t$ for which $s + t$ is at least 13, or to put it another way, two numbers which are at least half of 13, on average. For instance, we might select 5 and 10. Focus on the 5 first: deal 5 cards to a pile, thus reversing their order, and drop the remaining 8 cards on top. Fanned face up from left to right, we now have:

![Image of cards after first deal](image1)

Next, focus on the 10: deal 10 cards to a pile, thus reversing their order, and drop the remaining 3 cards on top. Fanned face up from left to right, we now have:

![Image of cards after second deal](image2)

Now we return to the 5: deal 5 cards again to a pile, thus reversing their order, and drop the remaining 8 cards on top. Fanned face up from left to right, we now have:

![Image of cards after third deal](image3)

At this point we have done three deals (of sizes 5, 10 and 5, respectively), and 10 of the original bottom cards are now on the top, in reverse order.

Furthermore, it's clear that one more deal of 10 cards to a pile, dropping the remaining 3 cards on top, restores the packet to its original order. All told, dealing 5, 10, 5, and 10 cards, each time dropping the rest on top, restores any packet of size 13 to its original order, just as four deals of 9 cards did.

Try it dealing 10, 5, 10, and 5 cards, instead, i.e., using the same two numbers but switching the order, once more starting with the same packet of 13 cards as above. It works there too, and after the third deal it will be seen that the bottom 5 cards are on the top, in reverse order. Try it again, dealing 3, 11, 3, and 11 cards, or dealing 6, 9, 6, and 9 cards.

All of the above holds more generally: starting with a packet of size $n$, and any two numbers $s$ and $t$ for which $s + t$ is at least $n$, i.e., numbers which are at least half of $n$, on average, then if we first deal $s$ cards, dropping the rest on top, then deal $t$ cards, dropping the rest on top, then deal $s$ cards again, dropping the rest on top, it turns out that the bottom card appears on the top. Moreover, a final deal of $t$ cards, dropping the rest on top, restores the packet to its original order. The *Low Down Triple Dealing* discovery of a decade ago is the special case $s = t$.

There is much to explore when $s$ and $t$ are different, and Chapter 5 of *Mathematical Card Magic: Fifty-Two New Effects* (A K Peters) is devoted to such fun. We think of the first two deals and drops, dealing $s$ and $t$ cards, respectively, as a kind of double-deal. We close with a spelling application which works for any 9 cards.

**Never Forget a Face**
Use any 9 cards from a deck. Have a spectator shuffle them and call out a number between 1 and 9 inclusive, then looking at and showing around the card in that position while you look away. Have the card replaced in that position and take the packet of nine cards, holding them under the table. Claim that you are feeling the face of the card shown around, and that your fingers never forget a face.

Explain that you want the spectator to do a packet randomization based on the spelling of the name of the card in question, demonstrating with cards from the rest of the deck. For instance, using a packet of around 10 cards, you say, "Suppose your card is the Nine of Diamonds, then first I will spell out the word NINE, dealing one card to the table each time, and after that dropping what is left on top." Matching your words, you deal out 4 cards and drop the remaining ones on top. "We do it again for DIAMONDS." This time, deal out 8 cards and drop the remaining ones on top. Repeat, once for the value and once for the suit. Now set those cards aside, and have the spectator do it, using the nine cards from before and the value and suit of the selected card. Make sure it's done twice, and turn your head while it is done so that you have no knowledge of the number of letters used.

Take back that packet of nine cards, and hold it under the table again. Stress that after the unknown card value and suit was used to mix the cards, twice, you obviously don't know where the selected card is. Bring the cards into view once more, and remind the audience that your fingers never forget a face: place one card face down on the table and ask what the selected card was. When the card is named, have the face-down card turn over, it should match.

Based on the earlier discussion, in the case of Nine of Diamonds, setting \( s = 4 \) and \( t = 8 \), since \( 4 + 8 > 9 \), we know that two rounds of double-dealing and dropping as suggested, using the card value and suit for the respective deals each time, restores the packet to its original order. So if the card selected started in position 3, then it's back there after you get the cards back. However, for the shorter words corresponding to cards such as the Ace of Clubs, where \( s = 3 \) and \( t = 5 \), there are no such guarantees. Actually, these are the only values of \( s \) and \( t \) to worry about arising from card values (which have 3, 4 or 5 letters) and suits (5, 6 or 8 letters), so basically it's the just Ace, Two, Six, Ten and Clubs which need separate consideration.

One option is simply to make sure those five cards are not among the nine which the spectator uses, but let's not take the easy way out. Imagine a face-down packet Ace-9 of Diamonds. It is readily checked that dealing 3 cards, and dropping the rest, then dealing 5 cards, and dropping the rest, all done twice to the packet, and fanning the results face up from left to right, yields:

In other words, two application of double-dealing in this case doesn't restore the whole packet to its original order, but the cards in positions 2, 3, 4, 5, 6, 7 and 8 are certainly back where they started! So if the selected card is in any of those positions, you'll know where to find it after the double spelling of value and suit, regardless of what cards in the deck was used to determine the dealings and droppings. If the selected card is in position 1, 4 or 9—admittedly rather square choices—simply move it under the table, to one of the other six positions, remembering which one. You retrieve it from the same position, also out of sight, after the spectator's spellings and droppings are completed.

This effect was of course inspired by Jim Steinmeyer's landmark "Nine Card Speller" from twenty years ago (available today in his booklet *Impuzzibilities* (2002), as discussed in the February 2009 Card Colm, *Esteem Synergism*. As in that trick, the card can always be located no matter what its identity, leading to the amusing possibility of a repeat performance where the spectator is encouraged to lie about the card value and suit when spelling. (Lying about the position is not an option, however.)

There is a workaround, if desired, to avoid having to worry about the cards in positions 1, 4 or 9. First, ask for a number between 1 and 9, and reject 1 or 9 if either is suggested. Second, if 4 is called out, have the packet of 9 cards dealt to a pile, with the card in position 4 being shown around before the rest are dealt on top of it. It's now in position 6 from the top, so all is well.