

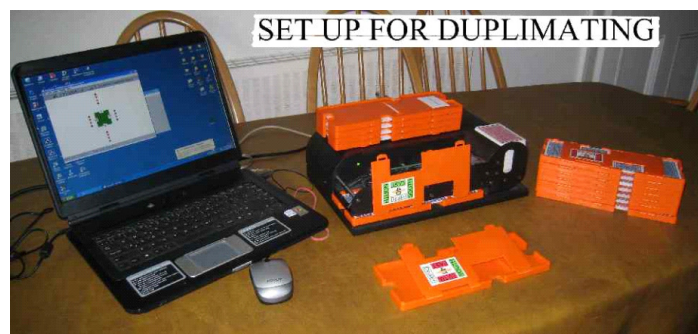
## THE NORTH DEVON DUPLIMATE

We have been asked several times about computer dealt hands and the dealing machine. The Duplimate is used, under computer control, to deal hands into special boards from a file. The file will normally have been filled with random hands which have either been produced by the computer using a suitable program or supplied from another source such as ECATS for Sims Pairs events.

We do not look at or bias any hands, except for those individually selected and modified by Carol for her teaching. We know that some players believe that computer dealt hands are either more unbalanced or more likely to favour one direction than those dealt by hand. In fact hand-dealt boards tend, if not shuffled properly, to give more flat distributions than statistically probable. That is because cards of the same suit end up next to each other when the cards are played. If these aren't separated by careful shuffling, it ends up that one card in that run of cards of the same suit goes to each player during the deal, so for example if an Ace is in one hand the next is more likely to hold the King and so on. In addition voids and singletons become less likely. Our analysis of over a thousand boards dealt is on the next page.

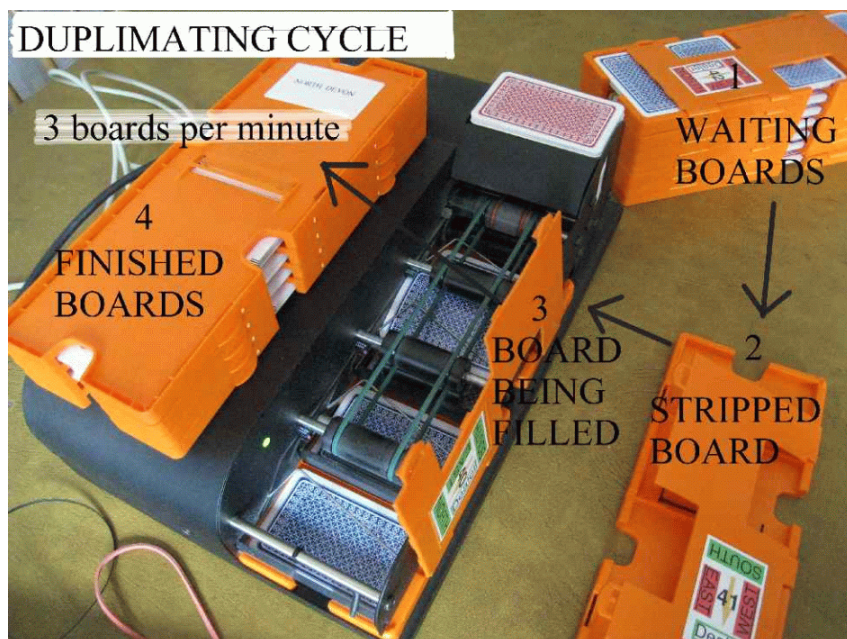
The set of hands can be analysed by a programme such as Deep Finesse to show what contracts CAN be made from each seat, but you should not assume that the number of tricks the analysis says can be made is what you should bid and make at the table. Deep Finesse does not play as a good player would but 'knows' where all the cards are. Thus for example it will always drop singleton kings and take finesses in the right direction.

In this printout of Board 6 E is the dealer & EW are vulnerable. The highest making contract is 2S (8 tricks) by E or W. But the optimum or best result for NS is shown as -100 which in this case is a sacrifice. (-100 in 3H \*-1 by N or S after bidding over a making 2S by E or W which would cost NS 110)



# 6	♠AT5		N S
E/EW	♥KQJ942		N - -
	♦T4		S 8 8
Opt. res.	♣Q8		H 7 7
			D - -
			C 110
♠J97	♠K842		
♥53	♥T8		E W
♦A85	♦KJ7		N - -
♣KJ972	♣A643		S 8 8
			H 7 7
			D - -
			C 110
	♠Q63		
	♥A76		
	♦Q9632		
	♣T5		

### DUPLIMATING CYCLE



This photograph shows the duplimate in use. The cards have a bar code on them which is scanned as they move between the rollers while guide wires oscillate and direct the cards into the correct section in the board. While one board is being dealt the next can be opened, stripped and the cards placed in the hopper. Each deal takes about 15 seconds and, provided no cards are missing, damaged or faced 200 boards an hour can be processed. However, a misdeal caused by, for example, a curtain card left in a board or boards out of order, can take several minutes to correct.

At present, 2010/11 we hold 720 boards in 4 sets of 49 8 of 48, 2 of 32, 2 of 26 and 2 of 12. We expect to deal about 4500 boards for teaching, sims pairs, teams, congresses etc. The county rate for duplimating is at present 11p per board with a minimum charge of £5. At present we do not charge for boards used in North Devon by affiliated clubs and the section.



## Are our hands biased?

We deal using a program called WinDup which is part of the Bridge Organising Software suite (BOS). We have checked that the computer has been giving each player their fair share of the High Card Points and distributional hands.



### High Card Points

The average points per hand for twenty sessions representing over 500 boards in the 2010/11 season was

North 9.88   South 10.23   East 10.11   West 9.77

A similar number of sessions in the 2008/9 season gave averages of

North 10.18   South 9.85   East 9.98   West 10.00

Putting these together to give an average for over a thousand boards.

North 10.03   South 10.04   East 10.05   West 9.89

In other words of the 104 honour cards West might expect to receive in a 26 board session in this period one was usually in one of the other hands.

The highest individual average for a session was 12.58 by S and the lowest 7.94 by N.

### Distribution

The number of singletons and voids should statistically average 9.28% of the suits held.

In 2010/11 over 21 sessions representing 572 boards the number of singletons or voids held was

North 204   South 208   East 224   West 213   Expected 212

In 2008/9 a similar number of sessions with the same number of boards produced

North 205   South 204   East 202   West 202   Expected 212

Together these give

North 409   South 412   East 426   West 415   Expected 425

Giving a total of 1662 singletons or voids in 4576 individual hands which is an actual proportion of 9.08% compared with the predicted 9.28%

In other words in the 520 suits that a player will have in five 26 board sessions in which they might expect to have 48 singletons or voids the computer only gave North and South an average of 47!

In a single 26 board session a player might expect to hold 9 or 10 singletons or voids. The highest number in our sample of over forty sessions was 16 by W with the lowest 3 by N

### Conclusion

Whilst in any individual session there may be wide variations from the average we do not think there is any evidence of bias on the part of our computers using WinDup to randomly produce the hands.