

SMARTsig Confidential 8.05, May 2001

In this month's issue . . .

- | | | |
|-----------|-------------------------------------------|-----------------------|
| 2 | Up Front - Calling Me a Gambler? | SMARTsig |
| 6 | Commercial HTF Lists Final Results | Terry Collins |
| 11 | Blackjack Counting Phenomenon III | Michael Bowers |
| 17 | So Good, I Can't Get a Game | PH |
| 18 | AI Horserace Forecasting Methods I | Peter May |
| 31 | KISS - 14 Winning Years From 14 | Keith Thompson |
| 34 | Keeping A Level Head | Russell Hart |
| 40 | Commercial Neural Networks | SMARTsig |
| 58 | Owner / Trainer Partnerships | Email Group |
| 64 | Level Headed, Level Stakes? | Peter Orchard |
| 71 | Soccer Superiority Spreads | SMARTsig |
| 76 | Subscription Rates / Back issues | |

**NEXT
ISSUE**



June 2001, issue 8.06, is scheduled for posting on Thursday, 31st May 2001.

SMART UP FRONT

The intelligent choice

oi! - who are you calling a gambler?

A few weeks ago I was at one of those things that modern society likes to call a "dinner party" - though the name is thoroughly inappropriate if you ask me.

A party is an occasion where the participants have fun isn't it? Well, we're off to a bad start there already.

We arrived at 7:30 (for 8:30) and were offered gin & tonics and were engaged in polite conversation whilst the other guests arrived. We were encouraged to help ourselves to the olives, displayed artistically - a la Master Chef. "The green ones are in brine, the black ones in olive oil and those are stuffed with . . ." - oh I can't even remember.

Back in the (good?) old days when I was at school I stayed for school *dinners*. I used to take my *dinner* money every Monday morning for the teacher, and when the *dinner* time bell sounded we went in to eat *dinner* served to us by the school *dinner* ladies.

Can't image how, but my naïve and impressionable young mind somehow associated *dinner*, with mid day, 12:30 as far as I can remember. When did it get altered? Another Thatcher legacy I bet.

Back at the 'party', tucking into among other things, something which looked like my old mum's stew but it had a rather grander title (I think the difference is you use red wine as a constituent in place of the beef dripping) the conversation was not even going in one ear and out of the

other, it was bypassing my consciousness altogether. Part way through the *fa, fa, fa, fa* however I was broken out of my dreamworld when someone said "I've don't really know what you do Stef. Other than it's about - (pause) - gambling!?!"

That remark was a red rag. And at that particular moment I was a bull. "No - it has nothing to do with gambling at all". I was in at the deep end now, there followed a debate about dictionary definitions, inferences and <horseracing does not have to be about gambling> explanations which I won't bore you with right now.

At least the exchanges enlivened what otherwise would have been a very dull evening for me, but my cage had been rattled by this stage to such an extent I carried the fight home with me, even going as far as checking out the dictionary definition.

gamble, *gam'bl*, *v.i.* to play for money, esp. for high stakes: to engage in wild financial speculations: to take great risks for the sake of possible advantage. - *v.t.* to squander or lose by staking. - *n.* a transaction depending on chance.

The first part of the above definition I'm okay with, "play for money, especially high stakes." Thumbs up to that one, I'm with you there my old son. But thereafter the dictionary definition and I part company. What's this . . . "Wild financial speculation"?? "Great risks"?? "*Possible* advantage . . . squander . . . lose"???

My head hits the pillow this evening convinced in the fact that the dictionary is totally wrong, everyone else at tonight's dining table was wrong and there was a high probability that the majority of the world was wrong too.

I'm one of a minority here who *really* understand what's what and need to begin a crusade to put the world to rights.

What a difference a day makes. Or maybe that should be, what a difference a few g&t's, red wine and a couple of alcoholic 'calmers' before I went out last night makes.

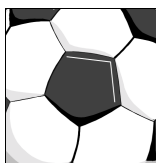
In a 'mood' already, I'd been asked a perfectly civilised question and overreacted somewhat. Mind you, the raised eyebrow of the questioner didn't help, followed by a look I interpreted at the time, that my subsequent status had fallen to somewhere between frogspawn and a house brick.

But, language is not governed by literal definitions is it? It evolves by the way it is used. A screw used be something with which you fastened a shelf bracket, not any more it isn't! And witness what happened to the word 'gay'!

What about "The horse hacked-up in a 2 mile hurdle at Plumpton last month"? After drinking sessions with the lads as an 18 year-old, hacking-up is something I did around the back of the garages before I got home. And "The filly won doing handstands" conjures a wonderful picture doesn't it? It is all around us now, perhaps it's the television age that has helped journalistic cliché replace what used to be considered as 'normal' language.

Football is a classic example. The terms of wingers, headed, penalty area and even 'the ground' have been largely replaced by flankers, nodded, box and deck. We don't have to translate this football-speak, so normal is it now that it goes completely unnoticed.

If you're anything like me, next time you're watching a boring televised game you'll find the proceedings can be greatly enhanced by listening to current 'commentator' language.



Square ball, long ball, hospital ball.

Short ball, delicate ball, high ball, loose ball, bad ball, poor ball, curling ball, are far more entertaining when taken literally.



My current favourite football commentary 'pundit' is Ron Atkinson. Not for his astute tactical awareness you understand, but he's long been sunk without trace into the sea of cliché. But many others have their moments too. The following extracts I will not attribute to particular individuals

"He should have had a quick pop with his left peg"
... *pardon?*

"Giggs' backside was on fire for a ten-minute period earlier this half."
... *are you forming a mental picture?*

"Chelsea's problems are that every move is breaking down with that final ball"
... *oh! - not with the next-to-last ball then?*

"A handy player to have, sometime during every game he'll literally explode".

"That would have been a brilliant goal had it gone in".

"Everton equalised with the very last kick of the match, a header at the far post".

Other sports have their classics too, notably Murray Walker's formula one gaffs and BBC radio cricket commentaries are legendary. Simply listening can be a very entertaining recreation in its own right. Was it Dan Maskell who was attributed with "Virginia Wade is the only woman I know who holds two balls in her left hand whilst throwing up"? (or did he mean hacking up?)

So long as we know what was *intended* rather than what was *said*. life can be a pleasure rather than full of irritations.

From now on I know a dinner party is an evening meal with - or as - guests. And, if I'm ever asked if my business is gambling ever again, I'll say yes and be done with it.

Life's too short to get rattled about words!



This National Hunt season's final report on the progress of four horses-to-follow lists available through commercial publications.

HORSES TO FOLLOW PUBLICATIONS

Terry Collins

Final results,
subtitled: "We wuz robbed!"

A twist in the tale, mugged in the home straight or a well deserved victory? All looked set fair for Mark Howard's *One Jump Ahead* book and his horses-to-follow list to take the SMARTsig comparison honours yet again. Mark's list has after all led for the entire race so far this season.

The four National Hunt books featuring horses-to-follow lists that were monitored for our competition were;

One Jump Ahead - Mark Howard. (£4.99)
Available from WH Smith's and elsewhere.

Jumping Annual - Racing & Football Outlook (£4.95)
Available from most good newspaper shops.

10 to Follow - Karl Dennis (£5.00)
Available via email from karlatkz@netcomuk.co.uk..

NH Season Betting Guide 2000 -Weatherbys (£6.95)
As advertised on the back page of SMARTsig 7.12.
Further details of each list can be found in SMARTsig 7.12.

The initial intention was to check all lists, as per previous years, from mid October until after the Grand National. However, the loss of the Cheltenham Festival and a Grand National where just 2 jockeys managed to finish without the need for a pit stop. This seems to be the best place to curtail our comparison checks over a National Hunt season that has been beset with problems of one kind or another.

Final assessments then;

ONE JUMP AHEAD (+£16.13 brought forward)

	selections	winners	BALANCE	win SP's
05-Apr	1	0	£15.13	
06-Apr	7	1	£12.63	7/2
07-Apr	6	1	£13.63	6/1
14-Apr	2	0	£11.63	
16-Apr	3	1	£10.88	5/4
20-Apr	3	0	£7.88	
21-Apr	5	0	£2.88	

Final monthly tally:

Selections = 27
Winners = 3
Strike rate = 11%

A poor final month reduces One Jump Ahead's profits to single figures and gives the chasing pack a chance to make

up some ground. But have they taken advantage?

JUMPING ANNUAL (-£28.14 brought forward)

	selections	winners	BALANCE	win SP's
31-Mar	2	1	-£24.14	5/1
04-Apr	1	1	-£21.64	5/2
06-Apr	4	1	-£21.14	7/2
09-Apr	6	2	-£10.14	9/1, 6/1
10-Apr	1	0	-£11.14	
14-Apr	1	0	-£12.14	
20-Apr	3	1	-£11.39	11/4
21-Apr	5	1	-£3.39	12/1

Final monthly tally:

***Selections* = 23**
***Winners* = 7**
***Strike rate* = 30%**

A month to dream of for Jumping Annual followers with a best-yet 25 point profit being recorded. A disappointment however, throughout the whole of the period checked, they never did manage to get into profit at any time.

KARL DENNIS (-£1.05 brought forward)

	selections	winners	BALANCE	win SP's
06-Apr	4	0	-£5.05	
07-Apr	1	0	-£6.05	
20-Apr	1	0	-£7.05	
21-Apr	2	0	-£9.05	

Final monthly tally:

***Selections* = 8**
***Winners* = 0**
***Strike rate* = 0%**

The worst possible result for depleted Karl Dennis with no winners from 8 selections resulting in a loss of the 2nd place in the table that he had held for so long.

Maybe that's the gamble of having such a small list of horses-to-follow initially.

MAJOR TURNAROUND - 33/1 WINNER SHOCK!

WEATHERBYS (-£7.09 brought forward)

	selections	winners	BALANCE	win SP's
04-Apr	1	0	-£8.09	
06-Apr	3	1	-£6.59	7/2
07-Apr	2	1	£25.41	33/1
14-Apr	1	0	£24.41	
16-Apr	1	0	£23.41	
18-Apr	1	0	£22.41	
21-Apr	1	0	£21.41	

Final monthly tally:

Selections = 10

Winners = 2

Strike rate = 20%

A 33/1 winner causes a major upset with Weatherbys going into profit for the very first time in this season and snatching the lead from a weakening One Jump Ahead right on the line.

So one gulp does make a Summer!

STAKING:

As long standing SMARTies will remember, previous years profits were increased by only betting on horses with starting prices of 3/1 or greater.

So the final results for this plan are as follows...

	All SP's	SP's 3/1+
Weatherbys	£21.41	£33.50
One Jump Ahead	£2.88	£11.00
Jumping Annual	-£3.39	£8.50
Karl Dennis	-£9.05	-£9.00

A major change in the table with Weatherbys finally taking the honours at the death. It can be seen that all of our lists benefit from implementing the starting price 3/1 or greater rule which is good news.

SUMMARY:

Weatherby's 33/1 shock win (Red Maruder to save you looking it up!) finally broke One Jump Ahead's grip on this series but One Jump Ahead deserves an award for consistency over the past 3 years. They're there or thereabouts in every head-to-head analysis we've run.

Jumping Annual made some inroads into getting into profit but never quite got there. Maybe it needs a longer trip?!

Karl Dennis never recovered from the loss of 2 of its previous winners but did at least spend most of the winter in profit.

Finally, competition stats that may be of interest (not 3/1)

	high profit	high loss	losing run
One Jump Ahead	£18.06	-£5.95	9
Jumping Annual	-£3.20	-£36.14	15
Karl Dennis	£5.58	-£9.05	12
Weatherbys	£25.41	-£17.11	8



Our sincere thanks to Terry Collins for monitoring the four lists. To be automatically informed by email of your own list of hot-horses, or those you'd like to know the next and/or every time they're running - take a look at . . . www.trackingservice.co.uk

(free trial period available)

Part three of the mini-series from Michael Bowers on how you too can profit from the Blackjack table using simple observation techniques.

BLACKJACK – THE COUNTING PHENOMENON (part III)

Michael Bowers

John F Julian (Julian's No-Nonsense Guide to Winning Blackjack) first introduced his 'Scan Techniques' for the popular single and double deck games played in American casinos.

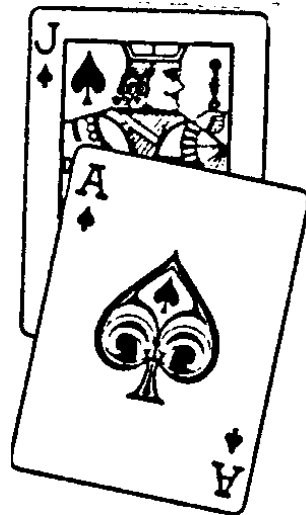
Scanning, as its name implies, consists of quickly looking at the dealt cards on the table for tens and aces. In these single deck games you are not going to get more than a couple of rounds dealt out at a table containing four or more players.

So, if the first round dealt shows a paucity of these cards your chances of obtaining a Blackjack or pair of tens on the next are improved.

With a little improvisation we can adapt this method to the multi-deck games played here in the UK.

Although not as accurate as a 'proper' count, it does allow the player to obtain an advantage, particularly in regard to changes in basic strategy when the cards assume a 'clumping' pattern during the game.

It has been computed that the



average hand at Blackjack consists of three cards (more accurately, actually 2.9 cards). The ratio of tens to non-tens in a deck is 9/4, or approximately 2:1. From this we can ascertain that every hand dealt should contain a ten card – given that the pack has received a random shuffle. We are going to use this simple formula as a yardstick to gauge the pattern of cards during play.

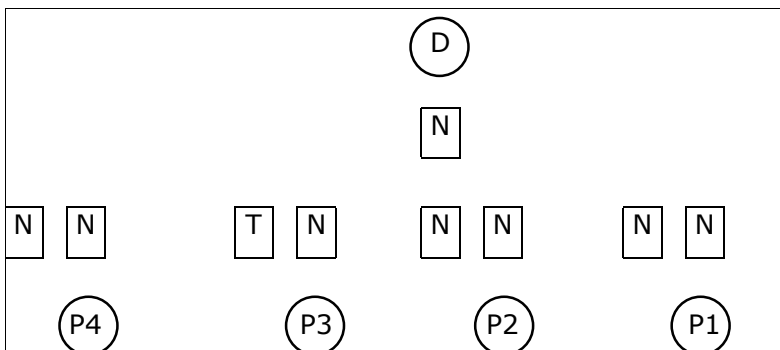
As tens are important to us (they give us high hands and one half of our Blackjacks), it is this single card value that we are going to scan for. In actual fact we are going to count them, but on a round to round basis.

It is important to make a note of the actual hands dealt out on the table, and not the number of players, because some players often play more than one hand. So, a table of four players, one of whom is betting on two hands, plus the dealer is a total of six hands and not five.

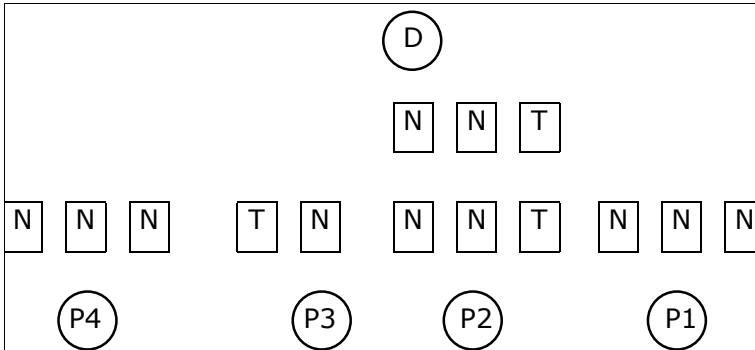
It will be necessary to make this simple adjustment every new round as players either leave or join the game. A simple way is just to count the number of betting squares occupied by chips at the commencement of each new round.

The number of tens you want to see is equal to the number of hands played.

Let us take our imaginary game of four players and see how this ‘pans out’ during practice:



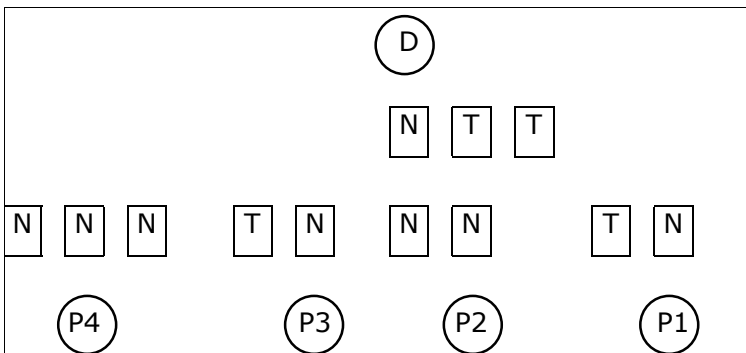
In this initial deal, only one player receives a ten card. So, at this moment in the proceedings, you are 4 x tens 'short'.



On completion of the deal a further 2 x ten value cards have been dealt, but this still leaves us three short of our expectation.

On the commencement of a new round we therefore carry over this shortfall and add it to our expectation for the next, therefore $3 + 5 = 8$.

On this new round we expect to see 8 x ten cards to be dealt in order to return to 'the norm'.



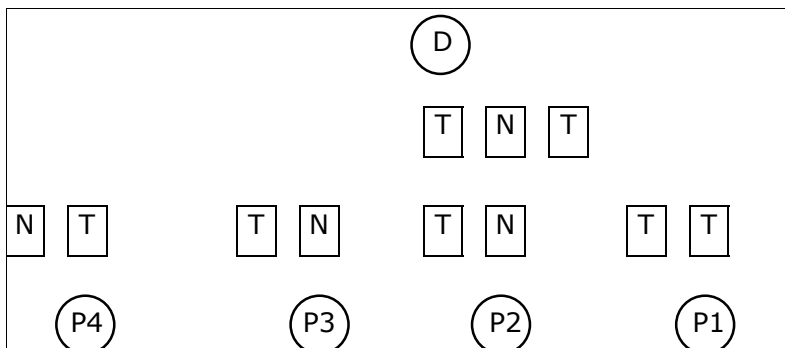
The deal completed we see a further four, our 'shortfall' is now four (8 - 4) which raises our expectation on the next round to nine.

You should now be alerted to the fact that the tens in this situation are 'overdue' to make an appearance. Whilst it is not possible to gauge your exact advantage with this system - as you can with the Hi-Lo count which has a betting efficiency of 95% - you should be aware that the appearance of all these low cards would put you into a (+) situation were you using it.

“You should now be alerted to the fact that the tens in this situation are ‘overdue’ to make an appearance.”

In the next round you could raise your bet by a unit or so, reasonably sure that at least one of your cards would be a ten. Why?

You will notice that the last two cards drawn from the shoe by the dealer to complete the hand were both tens, one of which 'busted' him. It is not unreasonable to assume that the appearance of these two final cards at the end of the deal signals a 'change' in the make-up of the deck and that a state of equalisation is about to occur.



In this round, seven of our expected nine 'tens' make their appearance. If another sequence of predominantly ten-cards should follow on from this one, it will obviously take us into a negative or minus expectation for the next hand.

Remember the (-) symbol we allocated to the Hi-Lo system indicating that a surplus of tens had been counted?

Here we simply deduct the number of surplus tens observed from the expectation for the next round.

But what of the Ace? – after all, this is the other half of our Blackjack!

Obviously one card in every thirteen will be an ace. In a full table of seven players you can expect to see two aces, because about half a deck of cards will be necessary to supply this number of hands.

Until you get used to the method described here, I would suggest you delay the counting of the aces until you are ready, at which time you could try the following method;

As aces appear on the table simply put aside a playing chip for each one seen. As the cards are being shuffled, or during a quiet period during the game and before the next round is dealt, if your sidelined chips count four, exchange them for a different coloured chip to represent one deck.

In this manner the chips you put to one side will never number more than eight. For example, two red chips will represent two decks of aces seen and two yellow chips a half-deck or two aces.

Look at the discard tray and ascertain how many decks are there. If you think there are three you are two aces short of expectation – or, to put it another way, the remaining decks are two aces 'heavy'.

Being able to tell approximately how many decks have been

dealt out is necessary if you are using the Hi-Lo count, to ascertain your divisor for the true count as well as tracking aces.

One way to help your eye co-ordination is to purchase about a dozen cheap packs of playing cards and make them up into bundles of 1, 1½, 2, 2½, 3, etc. decks secured by an elastic band.

Write the number of decks on the bottom of the bundles and line them up on a table in front of you.

Without looking change the position of each one, select a bundle at random and make a guess as to the number of decks it contains, then turn it over to see if you are correct.

Repeat this exercise as often as is necessary to enable you to correctly guess the number of decks contained relative to the size of the pile of cards.

Playing your hand in Blackjack, i.e. standing, drawing cards, doubling or splitting your hands has nothing to do with the cards that you have, it depends solely on the dealers up-card and what you assume his final total will be – together with a knowledge of the count or make-up of the decks.

In a final article to this series I will take a look at Basic Strategy and how you should play your hand whilst counting or tracking tens. We will look at the insurance bet, rules of the game and how you can select a table at which to play.

SMARTsig

Michael's final article in his quartet of Blackjack-busting insights is on my desk now and will be published very soon.

- Stef

Always good to hear comments from other enthusiasts when an item appears. The 'Counting Phenomenon' series brought in the following letter.

SO GOOD, I CAN'T GET A GAME!

PH

Feedback on previous Michael Bowers Blackjack articles:

I thought the article by "Michael Bowers" on Blackjack (SMARTsig issue 802) was extremely good and most comprehensive for just nine pages.

British players have been neglected for a long time as regards books on the subject and as "M.B" mentioned, American play is different to British play.

He went on to mention four books which I would agree are among the best (and I have nearly 50 books on the subject!). However I think it should be strongly emphasised that the three books by Ken Uston, although excellent reads, are not accurate for British play.

Of the few books which are appropriate, most have minor shortcomings. Needless to say I have the book he recommends, by Dr. Mohsen Zadehkoochak (and £600 of follow-ups!), but I pointed out to Dr.M.Z., and he conceded, that the tables on page 16 were inaccurate.

Hopefully these have been amended in recent editions, in which case I would rate it as one of the top two books, for learning how to win at Black Jack.

Unfortunately, as I know to my cost, once you beat the system you find it virtually impossible to play in this country.

Beginning this month we've yet another great horseracing book for serialisation over the coming months.

First published in 1998 Forecasting Methods for Horseracing by Dr. Peter May is now out of print and no longer available.



Presented in monthly 'bite-size' extracts, such serialisations allow the reader a better chance to absorb the theories discussed.

AI FORECASTING METHODS (I)

Peter May

Forecasting Methods: the case of Horseracing

Forecasting the outcome of given situations provides a means of satisfying our natural desire to know the future. In almost every commercial environment there is a need to provide forecasts, from likely crop yields in agriculture to the value of Sterling in the field of finance. The demand for more accurate predictions, coupled with the advances in computer technology, has led to dramatic changes in forecasting methods.

It is now possible to supplement traditional statistical forecasting techniques, which have been used for many decades, with rule-based and knowledge-based approaches, which utilise the knowledge gained from human experts in their construction, and machine learning methods in which the computer learns from available examples without

significant human intervention. This book examines the application of these forecasting methods to the domain of horseracing in Great Britain with the aim of producing a range of techniques which can be used to forecast the results of horseraces.

Forecasting

Forecasting concerns the relating of an outcome to a specific set of circumstances, a 'conjectural estimate of something future' according to the Concise Oxford Dictionary. Humans make many forecasts, or predictions, every day, whether in regard to the likely position of an oncoming vehicle, or the possible result of a sporting event. However, whilst the latter would be unanimously accepted as a forecast, the former would not necessarily be viewed as such.

This illustrates two facts: the high degree of diversity associated with forecasting techniques and the importance of this deductive process.

The diverse nature of forecasting results from the many different approaches employed in different situations. For example, the fact that the sun always rises in the east, and can be predicted as doing so, can be explained by the laws of planetary motion. However, a knowledge of this theory is not the only basis on which the prediction could be made. For instance, someone who had seen the sun rise in the east for the previous 25 years might also conclude, with as much certainty as the physicist, that the sun will rise in the east tomorrow.

These two approaches could hardly be more diverse, however both are valid methods and generate equally accurate predictions. The fact that we devote so much time to forecasting is evidence of its importance, and, furthermore, the way we make our predictions has a bearing on our view of events. Casti¹ asserts in the book *Searching For Certainty* that 'making sense of the things we see and predicting the future course of events have always played

an essential role in the formation of each individual's world view'. In essence, forecasting is part of our lives and our ability to make accurate predictions is essential to our survival.

Sporting events, especially horse and greyhound racing, are designed to encourage the public to form an opinion about the event and to express this opinion in the form of a bet. After all without betting neither of these two sports would exist. However, unlike the Lottery and other completely random numbers games, where attempting to forecast the outcome is a pointless task, horseracing poses the race analyst with a challenge that can vary in terms of complexity from the (apparently) trivial to a level commensurate with the most testing Times crossword.

It is interesting to note that this level of complexity, although a product of the task itself, is also linked to the analyst's knowledge of racing. To the novice racegoer selecting the probable winner from a field of 24 runners is simply a matter of identifying a well-known jockey or appealing name. To the experienced race bettor such a race may take hours of intensive form study before a conclusion is reached, unfortunately, with no guarantee that this painstaking work will yield a more accurate prediction than the former approach for a single race. Whichever approach you choose, the horseracing problem offers a challenge worthy of our best efforts.

The Horseracing Problem

Thoroughbred horseracing in Great Britain has been extremely well documented for many years. Records still exist detailing the very first organised horseraces, such as the Newmarket Town Plate in which King Charles II was successful in 1671.

Consequently, a wealth of information is available to the race analyst, concerning all races and the horses which compete. The historical records include the peculiarities of

each race track, whether right or left handed, undulating or flat. For each horse, all previous race details including times, race distances, course conditions and race commentary, together with the animal's pedigree are documented. Jockey and trainer statistics are also available indicating success rates by several variables including track and race type. The fact that racing is so well documented is helpful to the race analyst providing the basic information with which to work.

Although the availability of a large volume of data is advantageous for modelling purposes, the level of information relating to each horse in a race is extremely detailed which severely complicates the task of generating workable systems. Discussion of race analysis methods with recognised racing experts suggests that this level of detail, coupled with a lack of structured approaches to race analysis, has resulted in wide disagreement between the experts regarding optimal solution methods. Although there is general agreement between the experts in the identification of horses with either very high, or very low, probabilities of success, there is considerable disagreement for less well defined runners. Interestingly, these problems mirror those found when developing computerised methods for other prediction problems, such as assessing mortgage applications².

A second problem with the horseracing domain is the competition between the runners in a single race. A horse may possess outstanding winning credentials, but the likelihood of its success is also dependent on the abilities of the other runners in the race.

This comparison between the animals is a problem even the experts find difficult to handle. For example, a well-known race analyst discussing selection techniques commented: 'and now the guessing starts' when faced with comparing several animals with similar credentials. This competitive element must be considered in any horserace forecasting model in both the output of the system and in the data used to construct the model.

In addition to the vast number of example cases, a major characteristic of the data is the high level of uncertainty associated with many of the components used in the modelling process. This uncertainty is due to the methods used to determine the attributes of the animals on which the forecasts are made.

Whilst accuracy is possible with respect to variables such as age, others are subject to measurement error, and some rely totally on opinion. This, naturally, increases the complexity of any modelling procedure. Furthermore, in some cases data will be missing, and to make matters more complicated, a high degree of inter-correlation can exist between the variables. Thus the best jockeys tend to ride for the most successful stables and owners, an important consideration which should certainly not be overlooked, especially when constructing betting systems.

So, we are faced with a complex problem, which although well-documented, comprises missing and uncertain data, complex inter-relationships and an element of within race competition. But it is not an insurmountable problem, and a range of techniques exist to provide a solution.

Intelligent Systems

Many computer systems have been developed that are labelled intelligent. For instance, chess programs are now capable of beating even the very best players. However, any assessment of machine intelligence is dependent upon the definition of the word intelligent.

Sharkey and Brown³ argue that, in the main, programmed solutions simply reflect, but do not possess, the intelligence of a human. Since the programs do not produce the solution method themselves they cannot be thought of as intelligent. Other definitions simply require the system to exhibit a level of understanding to be labelled intelligent. Understanding implies a depth of knowledge about a specific issue from which, given a reasoning strategy, a conclusion or

explanation may be derived. This is where conventional programs and systems categorised as artificial intelligence differ.

Traditional systems are generally algorithmic: each instruction is performed in an order determined by the program code and they do not exhibit any apparent understanding of the problem. In contrast, some artificial intelligence systems are not constrained by rigid algorithms that dictate the order in which the instructions are performed, and they are able to demonstrate useful reasoning strategies, thereby exhibiting an apparent knowledge of the domain.

Three different forecasting approaches using the ideas and theories of artificial intelligence are examined in this book: rule-based methods, knowledge-based systems and connectionist approaches. Of these methods, the first two, rule-based and knowledge-based techniques are already widely used by race analysts. However, connectionist systems have so far been all but ignored.

As the name suggests, rule-based methods rely on the formulation of rules on which the prediction is based. In horseracing this type of selection method is also referred to as a system. Systems provide the bettor with a rigid set of rules to apply to each race in order to determine whether a bet should, or should not, be made. The rules normally take the following form:

if . . . Condition A is true
and . . . Condition B is true
then . . . bet

In this example, the bettor needs to determine whether the two conditions, A and B, are met, if so the bet should be placed. Complex systems have large rules with many antecedents which need to be satisfied such as in the following rule which is designed for American flat racing⁴:

if . . . the horse has run within the last 15 days
and . . . latest race distance = today's distance + 220yds
and . . . the horse led coming into the home straight in last race
and . . . the horse won its last race by at least 1½ lengths
then . . . bet

However, their precise and unambiguous form means that even complex rules can be applied without too much difficulty. An investigation of plausible horseracing systems is given in Chapter 5.

Systems offer an easy-to-apply solution to the horseracing problem which is particularly appropriate if the bettor does not have sufficient time to assess each race. Knowledge-based methods, on the other hand, are in general more time-consuming to operate, but offer a more detailed and analytical approach.

In a knowledge-based approach the race analyst assesses each horse in the race using a set of predetermined factors considered to provide a basis for discriminating between potential winners and losers. These critical factors form the credentials of each runner in the race, and include its ability based on form or time and the suitability of the race conditions.

The difficult part of this approach is combining the factors into a single measure to facilitate comparison of the runners. However, several ways of combining these critical factors have been developed for other applications and these methods are discussed and evaluated in Chapter 6.

The third forecasting technique covered in this book concerns connectionist systems, and specifically the use of artificial neural networks. Artificial neural networks[†] have

[†] *In the remainder of this text, the terms neural networks and networks will both refer to artificial neural networks.*

been defined to be intricate systems of simple units which dynamically adapt to their environments⁵, and they offer a radically different approach to processing data from traditional programmed systems.

Neural networks comprise a number of interconnected processing elements (nodes) which are analogous to a biological neuron. Numerical weights are associated with the links (connections) between the nodes, which, essentially, constitute the knowledge of the system.

These weights are derived during a period of training, where the system is repeatedly presented with a set of examples until some predetermined convergence criterion is achieved. Hence the system is deemed to learn automatically from the data without instruction from the programmer. Whereas knowledge-based systems model an idealisation of the physical situation as perceived by experts, artificial neural networks model real events.

The concept learned by a neural network is represented by the architecture of the system and its numerical weights. A concept is, therefore, often distributed across many node activations, with these nodes also representing parts of other concepts. This approach has advantages when representing imprecise relationships.

In fact, Kandel⁶ states that 'most real-world problems are too complex and too imprecise to lend themselves to solution by methods based on symbolic manipulation'. In this context symbolic refers to knowledge-based approaches utilising rules to represent concepts.

Clearly, neural networks seem appropriate to the horseracing problem. Since they do not rely on existing theory and knowledge, the neural network solution will be unique in terms of its development, resulting in alternative methods of selection which exploit any inaccuracies in currently held beliefs pertaining to traditional race analysis.

Neural networks are simple to implement, and once trained, are quick to execute which means that many races can be analysed in a few seconds.

Furthermore, the networks can be tailored to suit the bettor's requirements by modifying the training data. For example, if required the neural networks can be trained with respect to a specific race type, price band (i.e. short priced or long priced animals) or a single trainer.

Neural networks can thus be employed in a data mining role identifying certain characteristics to aid the selection process. The applicability of neural networks to the horseracing problem is examined in Chapter 7.

Data Processing

Although neural networks, like other forecasting systems, can be used to map raw input data directly to the required outputs, for non-trivial applications it is often necessary to transform, or pre-process, the input data into a new representation.

Except for very simple problems, using raw data as inputs to the model will usually result in poor forecasting performance. Furthermore, it may also be necessary to transform the output from the models, known as post-processing, to an acceptable form. The complete process is presented schematically in figure 1.1.

For the horseracing problem, post-processing entails transforming the outputs into degrees of belief (probabilities of success) and ultimately into odds since this is the normal

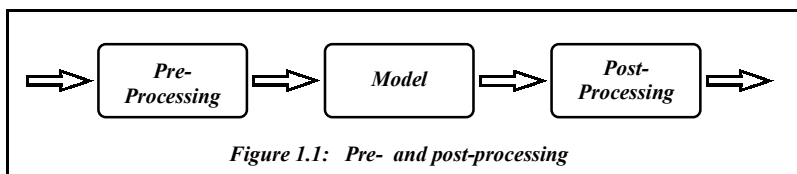
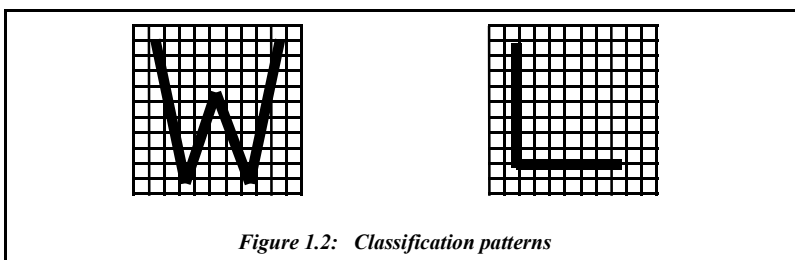


Figure 1.1: Pre- and post-processing

way of expressing chance in this domain. This is discussed in detail in Chapter 4.

The choice of data pre-processing method(s) is one of the most significant decisions in the model building process and it can have a great impact on the performance of the model. Data pre-processing can take many forms, from simple linear transformations to more complex feature extraction. Pre-processing can also introduce prior knowledge into the model as well as providing a means for handling missing data. As an example consider figure 1.2.



When presented with these two patterns the aim of the system is to discriminate between the 'W' and the 'L'. A sample of similar letters would be provided for building the model which would then be tested on new examples.

Each letter occupies a subset of the squares on the 10 x10 grid. Therefore it would be possible to use each square (or pixel) as an input to the system, with a used pixel represented by a one and a blank pixel represented by a zero. Naturally, the system would need to be capable of handling 100 inputs, given the size of the grid.

While it would be possible for a neural network, trained on the sample patterns, to classify each correctly, such a system would not, however, be guaranteed to classify new (different) patterns very well.

In other words it might not generalise well. Generalisation is naturally of great importance in classification and forecasting systems where the aim is to generate statistical models of the data rather than systems which merely memorise historical patterns.

As an example, a new pattern could consist of a very small 'W' located in the lower left quarter of the grid. To the human eye the letter is clearly a 'W', however, to the system the arrangement could be meaningless.

One possible solution is to extract features from the training data to use in the model. For this example these features could refer to the angle the lines of the letters intersect some defined axes. A (near) horizontal line would then indicate the letter 'L'.

A second feature may relate the length of the lines to each other generating a set of ratios which could form another input to the model. Given this information the model is more likely to generalise well to previously unseen patterns.

Another advantage with feature extraction is the reduction in dimensionality which normally accompanies such an operation. For instance in the character classification problem discussed above, 100 inputs would be required to represent the raw data.

As the number of dimensions increases the volume of historical data required to build the model also increases. Increasing dimensionality rapidly leads to sparse data sets and, as a result, poor input-output mappings.

For the horseracing problem a great deal of pre-processing is required. The majority of the data is included in race results and hence needs conversion into an acceptable form.

Intermediate conclusions about the animal's likes and dislikes (i.e. suitable race distance) can be gleaned from these results and used as inputs to the model as opposed to

the complete race result.

Furthermore, it is possible to include prior knowledge in the form of the indicators to the general level of ability of the horse (i.e. a rating) or previous success rates of the trainer or jockey (i.e. classifying the experienced jockeys from the less experienced riders).

The primary aim of this book is to demonstrate how techniques taken from the field of artificial intelligence can be used to generate forecasting methods for the horseracing problem.

Methods for pre-processing the horseracing data using feature extraction, inclusion of prior knowledge, and techniques for handling missing data are discussed in Chapter 3.

Objectives

The primary aim of this book is to demonstrate how techniques taken from the field of artificial intelligence can be used to generate forecasting methods for the horseracing problem.

Although three, simple, rule-based systems that identify good betting opportunities are presented in Chapter 5, the main focus of this text concerns more complex, computer-based, forecasting methods.

Consequently, a knowledge of computer programming and access to a computer is considered beneficial, although a version of the knowledge-based approach could be implemented using a spreadsheet.

Apart from the rule-based systems, this text does not include ready-to-use methods, instead it provides a discussion of techniques which are applicable to the

horseracing domain and illustrates how these techniques can be combined into forecasting systems.

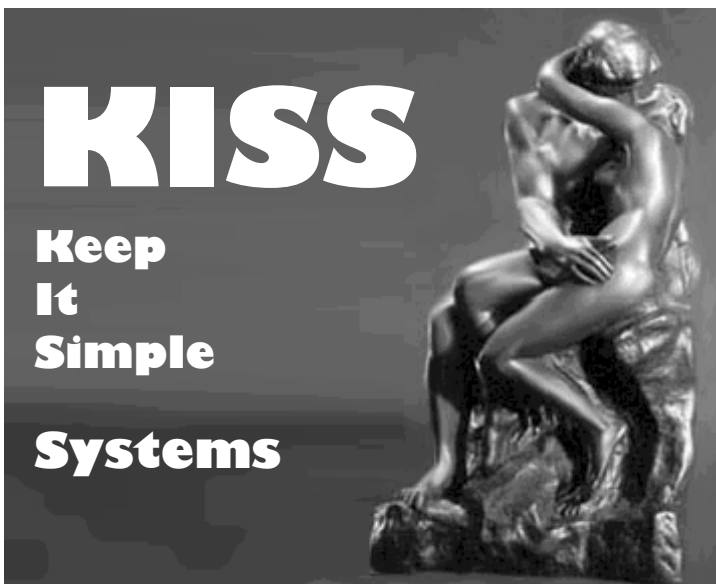
Hopefully the reader will be able to recreate the methods presented, and more importantly, generate new, unique, forecasting systems that produce even more impressive results by constructing more detailed approaches by using the theories expounded in this text.

To assist with the development of neural network approaches, a back-propagation algorithm is given in the appendix which can be easily implemented in any programming language.

Alternatively, a basic neural network simulation program, details of which are given in appendix A4, which can be used to train small neural network applications can be downloaded from the internet.

References

- ¹ *Searching For Certainty - what science can know about the future*, by J. L. Casti, Scribners, London, England, 1992.
- ² *An Application of a Multiple Neural Network Learning System to Emulation of Mortgage Underwriting Judgements*, by E. Collins, S. Ghosh and C. L. Scofield, in *IEEE International Conference on Neural Networks*, San Diego, CA, II, pp459-466, 1988.
- ³ *Why Artificial Intelligence needs an Empirical Foundation*, by N. E. Sharkey and G. D. A. Brown, in *Artificial Intelligence: Principles and Applications*, M. Yazdani (ed.), pp267-293, 1986.
- ⁴ *Scientific Handicapping: Tested Ways to Win at the Track*, by I. S. Cohen and G. D. Stephens, Prentice-Hall, Englewood Cliffs, N.J. 1963.
- ⁵ *Connectionism and the Mind: Introduction to Parallel Processing in Networks*, by A. Bechtel and A. Abrahamsen, Oxford, England: Blackwell, 1991.
- ⁶ *Hybrid Architectures for Intelligent Systems*, by A. Kandel, CRCP, London, May 1992.



Well, the last time Keith reported on this system it had a record of ten winning years from ten. Things have moved on since then though, it's now . . .

14 WINNING YEARS FROM 14

Keith Thompson

Further to my 10 winning years from 10 system sent to you in November 1999 (and published in SMARTsig issue 7.02, February 2000)

The system was created using Racedata Modelling's excellent *Racing System Builder*, RSB Fast (1988 to 1997)

I am bringing you and other SMARTies up to date with the results achieved since.

Firstly however I will remind everyone of the system rules;

- **Horse gender:** Fillies in filly-only races, colts & geldings in any race.
- **Topspeed info:** All RSB's Topspeed options (basically all Topspeed top-rated, all categories)
- **Time of Year:** May to October inclusive.
- **Starting Price:** Evens or greater, but less than 4/1.
- **Going conditions:** Good to soft, good, good to firm and firm.
- **Racetypes:** 3-y-o maidens

The system is still winning, but hindsight always allows for a further bit of system tweaking. In so doing I'm hoping that the addition of one further filter is not going too far down the blatant back-fitting road!

This further filter is;

- **Race value:** £1,000 or greater, but less than £6,000

For research evaluation, this figure is based upon RSB penalty value (at 1985 values), so today's price range filter will be proportionally higher. Anyone any idea what a good rule-of-thumb figure might be to reflect this inflationary change?

The complete results for the fourteen year period of 1987 to 2000 using this additional factor are re-printed over on the next page.

A small profit maybe, in comparison to the effort necessary to follow this system in real-time, but nevertheless 14 winning years out of 14 is not to be sniffed at!

Maybe back-fitting does work after all.

Year	won	Ran	Strike%	Profit
1987	4	8	50	2.48
1988	8	20	40	2.64
1989	16	27	59	17.09
1990	13	23	57	10.24
1991	15	27	56	12.75
1992	9	18	50	8.19
1993	22	40	55	22.98
1994	18	42	43	6.59
1995	22	41	54	18.10
1996	22	48	46	9.84
1997	15	32	47	5.69
1998	23	52	44	6.98
1999	24	56	43	3.03
2000	22	49	45	7.11
	233	481	48.44	133.71

Selections placed 1st, 2nd or 3rd = 401 from 481 (83%)

Selections placed 1st or 2nd = 341 from 481 (70.9%)

Gross profit = £133.71 less factoring in a notional 9% tax-paid on 481 bets of £43.29

= £90.42 profit to £1 level stakes.

By the way, I am 71 years old, can't type and haven't got a printer. But I love my mouse and my RSB Fast package (after someone kindly installed it for me!) Do you think I would be able to handle the Ward artificial intelligence programs?

 SMARTsig

Although Ward and the other ANN programs are simple to use, they do require a modicum of computer skills. The input files have to be created and output in the correct format for each package (.csv from Excel for example). Someone who needed help to install RSB would also unfortunately be likely to struggle with these minimum basic requirements. Sorry Keith.*

- Stef

Items about staking and the practice of betting more than one runner per race are always a popular subject. Russell Hart examines both of these two topics with a systematic eye.

KEEPING A LEVEL HEAD

Russell Hart

I was thinking about racing propositions – trying to find a new angle. When an idea came to me. Are there any races in which the first and second favourite lose and the winners come from the next five in the betting? Sure enough there are.

Now this creates a problem. How do you bet on a race where you have more than one runner?

Every One Can Do Two

The theory behind betting on two horses is simple. If you fancy a 3/1 and a 4/1 shot then the process is as follows:

- Write down the name and forecast starting price for each runner

Runner	Forecast SP
Horse 1	3/1
Horse 2	4/1

- Then add 1 to the forecast SP of each horse and use it as the stake of the other horse

Runner	Forecast SP	Stake
Horse 1	3/1	5
Horse 2	4/1	4

- If either horse wins then you make 11 points profit on a 9 point stake, a Return on Investment (ROI) of 122% that is the 11 point return divided by the 9 point investment.

Runner	Forecast SP	Stake	Return	Profit	ROI
Horse 1	3/1	5	20	11	122%
Horse 2	4/1	4	20	11	122%

How Do You Do Three Or More?

My system frequently gave four and five runners in a race.

The difficulty was that I did not know how to calculate the stakes on a race with five runners so as to maximise my profit.

The only answer seemed to be a computer spreadsheet. To do this I had to understand the theory behind the staking technique.

After a period of experimenting, I developed a spreadsheet that allowed me to put in the forecast SP for two, three, four or five runners and get a stake for each horse.

The bottom line for any number of runners is that your ROI is:

$$\frac{1 - \text{sum of the odds (expressed as a decimal)}}{\text{sum of the odds (expressed as a decimal)}}$$

To convert standard odds to its decimal equivalent, divide the number to the right of the slash by the sum of the numbers both sides of the slash.

e.g. 2/1 as a decimal

$$\begin{aligned} &= 1 \text{ (r/h number)} / (2+1) \text{ (sum of both numbers)} \\ &= 1 / 3 \\ &= 0.333 \end{aligned}$$

$$\begin{aligned}
 \text{or } 6/4 \text{ as a decimal} &= 4 / (6+4) \\
 &= 4 / 10 \\
 &= 0.4
 \end{aligned}$$

In the two horse example above the sum of the odds (expressed as a decimal) is 0.45 (0.25 + 0.2) and thus the calculation is;

$$\begin{aligned}
 (1 - 0.45) / 0.45 \\
 = 0.55 / 0.45 \\
 = 122.22\%.
 \end{aligned}$$

So To The System

The system was based on examining races where the first and second favourite were beaten almost every time by horses in the next five of the betting.

It seems that this occurs in certain types of race at infrequent intervals during the flat season. Also the size of the field seems to have an impact with smaller fields working against the top two in the betting.

The following table summarises the number of races the system produced each year that met the criteria.

Year	Number of Races
1993	6
1994	6
1995	6
1996	3
1997	5
1998	6
1999	7

I now applied the spreadsheet model, guaranteed to give the best use of your money when betting on up to five horses in a race, to the results from the last seven years.

The basis of each bet was that an average of 25 units were placed on each horse.

Thus, 125 units staked with five qualifiers down to 50 units staked with two qualifiers.

The following table summarises the results:

Year	Winners	Runners	Staked	Profit	ROI
1993	6	23	568	865	151%
1994	5	27	647	576	89%
1995	4	21	503	546	109%
1996	2	12	295	193	65%
1997	4	22	538	580	108%
1998	4	24	590	249	42%
1999	5	28	685	967	141%
			3826	3969	104%

Well clever me, I thought.

Here, I have worked out the optimum stakes for every race and made a very nice profit thank you.

The Archie for the system was over 6, which I thought was all right. But the test of any system is of course, what does it do to level stakes.

A Real Surprise?

I then took the same system and staked 25 units on each runner irrespective of the starting price. I thought this to be a rather silly way of betting if all the third favourites won, but the research said that fourth, fifth, sixth and seventh favourites won too.

The table at the top of the next page summarises the results:

Year	Winners	Runners	Staked	Profit	ROI
1993	6	23	575	1087	189%
1994	5	27	675	737	109%
1995	4	21	525	637	121%
1996	2	12	300	300	100%
1997	4	22	550	275	50%
1998	4	24	600	1300	217%
1999	5	28	700	287	41%
			3925	4625	118%

The system produced better results to level stakes than it did to a carefully constructed staking plan. There was one further test needed.

Betting A Bit Of The Bank

Many a system comes with a recommendation to bet $x\%$ of your bank. Well if this made money with either staking plan then maybe the infamous 5% of your bank would make a significant difference.

Each year I started with a bank of 500 units and thus 5% gave a starting stake of 25 units; the same as the other two staking plans.

The following table summarises the results:

Year	Runners	Winners	Staked	Profit	ROI
1993	6	23	1168	2562	196%
1994	5	27	857	1052	113%
1995	4	21	576	679	110%
1996	2	12	382	282	72%
1997	4	22	577	293	48%
1998	4	24	1542	2022	126%
1999	5	28	976	293	26%
			6078	7183	109%

The system produced worse results than level stakes.

What To Do?

The following table compares the ROI for the three staking systems over the seven years.

Year	Staking Plan	LSP	5% Solution
1993	151%	189%	196%
1994	89%	109%	113%
1995	109%	121%	110%
1996	65%	100%	72%
1997	108%	50%	48%
1998	42%	217%	126%
1999	141%	41%	26%
	104%	118%	109%

As you can see, the Level Stakes approach is better in five of the seven years and overall compared to the staking plan.

It is also better than the 5% solution in five of the seven years and uses less in the way of stakes to make a better return.

The answer rests in your approach to betting. The staking plan is for the conservative bettor; it ensures you make a consistent amount on each race.

Level staking is the high-risk option; betting the same amount on a 33/1 shot as a 5/2 shot.

The 5% solution is a higher risk option than level stakes and yet gives a worse return. It looks like level stakes wins again.

- I don't know why, but there it is.

The betting assessments we make are often made after evaluating several different angles. But how much weight do we assign to each criteria?

COMMERCIAL NEURAL NETWORKS

SMARTsig

In a recent posting to our email List, member John Williams asked;
What is the best/correct means of combining percentage strikes from several variables, assuming that the variables concerned are independent from each other? I guess the correct method is to multiply them, but the results vary somewhat.

A flurry of proposals and much debate followed to what looked to be, on the surface at least, a straightforward mathematical problem. However, just because the problem is mathematical does not necessarily mean there is an exact numeric solution. For example, $x + y = 20$ is a maths problem, it also has a mathematical solution, but if you're looking for an accurate numeric value for x and/or y you'll be disappointed – they're impossible evaluate to a specific value.

The definitive answer perhaps came via email from Steve Tilley;
*Interesting this. Let's divert from horses briefly. Assume we have bags of coloured balls.
I tell you that red bags contain ten balls, whilst green bags only have five.
I also tell you that spotted bags contain twenty balls and striped bags contain eight.*

*I give you a red bag so you expect ten balls to be in it.
I give you a blue & white striped bag so you expect eight balls to be in it.*

But then I give you a red bag with green spots. How many balls would you expect to be in this one? Clearly you can't give an answer to this in terms of what I've told you before.

Is it a spotted bag, red bag or even a green bag or none of these? Clearly it is not sensible to say it contains thirty balls because it's red and spotted. A similar case arises with horse assessment.

Horses with variable A win 40% of the time, horses with variable B 30% However can we accurately assess the chance of a horse with both A and B attributes? Such a combination might win 90% of the time, but then again it might be just 5% of the time. We cannot tell from the information given.

The only way to correctly assess this is to find how many $A+B$ horses you have and how many winners they produce.



This gives the betting investigator a problem. Although we may have many examples of condition A , and a plentiful supply of B examples, our statistics showing both conditions together may be far too few to be useful.

Two samples with one winner is indeed 50%, but basing a betting strategy on the strength of just two examples is a sure way to the poor-house!

Once you start examining 3, 4 or maybe a dozen criteria or more, the chances of good sized samples in all the various combinations of these decreases dramatically in line with the additional factors.

We may well be stumped for an exact numerical solution to this problem, but these are the very circumstances that cry out for the application of artificial intelligence.

The strength of Artificial Neural Networks (ANNs), what they're designed to cope with, is the situation that's been

outlined above. Scattered samples in lots of categories, but when the individual criteria are combined the sample sizes are extremely low or even non-existent.

ANNs are not, a probably never will be the definitive solution, but they are one way of tackling such problems. This is not an article about how ANNs do what they do – that’s a subject best left to the experts (see Peter May, this issue page 18) here we’ll be examining and comparing commercial ANN software from a user’s viewpoint.

A comparative examination of the performances of commercial ANNs though is not the easiest task in the world. They all follow the same principles, but achieve their goals in differing ways. Rather than good or bad ANNs, it’s more a case of one may have strengths in a particular area, but be weak elsewhere. Another product may be the exact opposite.

The other thing to bear in mind is the old computer adage known as GIGO, an acronym for Garbage In, Garbage Out. You can’t feed sausage meat in one side and expect prime steak out to come out of the other (but in that particular case it would work the other way round?). Essentially, the quality of output is heavily dependent upon the quality, and the method of presentation, of the information fed in for processing.

The world is full of ANN software ranging in cost from a few pounds (I saw one at just £5.00) to several thousands, so the choice of which of these to examine was a case of juggling expenditure with availability. Several thousands of pounds for a computer program? Well, if it offers you the chance to spot winners and generate profits you wouldn’t otherwise have had access to – it must be worth it.

Maybe the true test of any computer ANN package is; Whatever I pay for it, can I then get that cost back from my profits made as a result of using it - and make some more besides?

Football results were the subject matter for this initial testing and comparisons - horseracing we'll leave until a follow-up item.

You'll no doubt be aware from previous SMARTsig articles, or artificial intelligence explanations elsewhere, that stage one entails feeding past results into our ANN enabling it to 'learn' how the different fields within the data presented are interrelated. It evolves a 'best' method of weighting the various inputs in order to 'predict' the outcome.

Stage two involves feeding the newly 'trained' ANN with new data, in the same format as before, and asking it to suggest probable outcomes based upon its 'knowledge' of the previous and similar situations.

Simply put, data fed into the ANN has to represent (a) the conditions in place before the event, and (b) what resulted from those conditions. In the case of a soccer game, Team (A) versus Team(B), result home win. Like all computer software however, conversation in English is not their strong point, so we need to present the data in a numeric format.

Exactly what is contained in the data, and the way it is presented could merit a whole series of articles in its own right. Indeed, many would argue that in the true spirit of GIGO it is the single most important part of the whole process.

There is a plethora of information available for possible data inclusion prior to each soccer game, but good ANN practice suggests that although they are better than a human brain at fitting the information available into a workable model, too much information still reduces the combined sample sizes and as such could well weaken the final product.

Bearing these facts in mind I selected the following elements as simple data 'inputs' for our exercise.

A comparison of the merits of the two teams playing. To

simplify this it was based merely on league games played and points attained. It was calculated as $(Hteam\ points / games\ played) - (Ateam\ points / games\ played)$.

Put another way, the average points per game of the home side, minus the average points per game of the away side. Effective range of values -3 to +3. **Input (1) Team's comparison.**

Using the above comparison, two equal teams with a game rating of 0 (zero) gives little indication as to whether they are two equal teams at the bottom of, the top of, or in mid-table. With that in mind, our next data item will be;

An evaluation of the home team's status. Measured again by dividing their league points by the number of games played. This would give us a range of 0 to 3. Because such a value will fluctuate wildly in the first few games of the season all data inputs were from teams having played a minimum of 8 games. **Input (2) Home team's evaluation.**

Finally an input to measure the most recent form. I decided to follow the same structure as before, but based just on the most recent six games for each side. Home side average points per game over last six games - Away side average points per game over last six games. Range -3 to +3.

Rather than use this as an input I decided it may have more impact if presented as a comparison of season-long form to recent form.

e.g. Input (1) comparison may be +1, but *Last Six* comparison may be +2. This shows a 'shift' in recent fortunes and may be better presented as a performance 'shift'.

For the above reason therefore, **Input (3) Performance 'shift'. (Last 6 comparison minus Seasonal team comparison).**

The output (or match result) for each of these lines would be simply represented by (home goals scored minus away goals scored). A 2-0 score would equate to +2, a 1-3 score as -2, and all draws represented as 0 (zero)

Domestic seasons, English leagues only were used. For training purposes the file was built from results from the three seasons 1996/7 to 1998/9 inclusive.

With the restriction imposed of both teams having to have played a minimum of 8 games in the current season, this provided our training file with 4,979 samples.

With similar qualification restrictions, the 'testing' file was built from 1999/2000 domestic season providing a test-bed of 1,654 games.

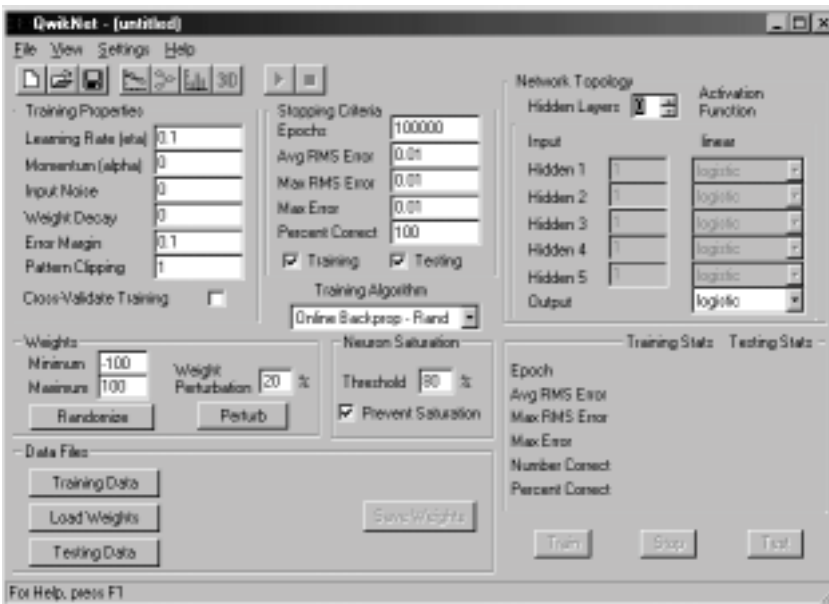
How did they perform?

First up was a program recommended by a Scandinavian SMARTsig member, called **QwikNet**. It is from an American outfit, Kagi Software and costs US\$50. However, evaluation copies (limited file sizes) are available for download for free from <www.kagi.com>

All of the packages I've examined have a variety of bells, whistles and parameters that can be pre-set by the user. So many in fact that with some it would take forever to evaluate every possible avenue.

All the commercial ANN software we're testing then are used, in the main, with the settings in place when the package is first loaded.

This then is another consideration to bear in mind from this limited evaluation. It may be that a tweak here, and a variation in a setting there, may transform the predictive powers of the ANN up to genius level – but then again it may make very little overall difference, or turn it into the class dunce!



QwikNet is a traditional ANN which allows the user to set the number of 'hidden layers' in the network to be trained. (For more information on hidden layers, nodes, etc. follow our new serialisation of Peter May's book this issue page 18)

From what I understand from Peter's explanations on using neural networks, if a particular problem is 'linear' (an output graph would show near enough a straight line) then often no hidden layers are necessary and network building should be at least tried with option in place.

The first trial with QwikNet then, it was set to train with no hidden layers and then subsequently tested against the 1999/2000 season.

The very first test I made was from the 1,654 outputs generated for the test games, the highest ten and lowest ten outputs were examined for their accuracy;

Best 10 Homes (ANN highest 10 outputs)

Match no.	ANN output	Actual gl diff	H/A/X
93	1.190489	2	H
5	1.141068	1	H
1135	1.108333	-1	A
3	0.992662	1	H
689	0.985085	1	H
34	0.972888	2	H
513	0.930201	3	H
346	0.923531	-1	A
1644	0.919633	0	X
102	0.906217	1	H

Best 10 Aways (ANN lowest 10 outputs)

Match no.	ANN output	Actual gl diff	H/A/X
1551	-0.904780	-1	A
163	-0.763160	0	X
226	-0.736090	0	X
512	-0.716940	-1	A
1099	-0.682000	-2	A
301	-0.680900	0	X
1352	-0.677250	0	X
671	-0.675240	0	X
859	-0.655330	-1	A
397	-0.651290	2	H

The model was trained on a data set that represented a drawn game as 0 (zero), so I also examined the 10 games with outputs closest to zero.

Best 10 draws (ANN outputs closest to zero)

Match no.	ANN output	Actual gl diff	H/A/X
1208	0.000147	0	X
431	-0.000160	2	H
115	-0.000270	0	X
1287	0.001056	-1	A
1367	-0.001420	0	X
313	0.001599	1	H
917	-0.001820	-1	A
1347	0.002142	1	H
342	0.002792	0	X
575	-0.002940	1	H

No matter what the performance thus far, to derive any benefit from possibly extracting and betting opportunities within the 1,654 sample we need rather more than 30 games – 1 game in 55 represents just one game on the weekend coupon.

Using the rule of thumb that around half of games will result in home wins (H), with away wins (A) and draws (X) accounting for a quarter each. We'll examine the performances of the highest 413 outputs (about top 25%) for home wins, the lowest 206 outputs (about 12½% of the total) for away games, and the same for draws, but the 206 outputs closest to zero.

At this level we're predicting about one game in every two.

ANN Outputs	H		D		A	
Lowest 206	59	28.64%	56	27.18%	91	44.17%
Highest 413	255	61.74%	90	21.79%	68	16.46%
Midrange 206	90	43.69%	52	25.24%	64	31.07%

The best home and away predictions seem quite reasonable, but the midrange draws at a little over 25% is nothing to write home about – and is in fact even worse of a predictor than the low outputs we'd assume should be our best away wins.

If we further reduce the samples by half again, we should expect to see improvements across the range. But do we?

ANN Outputs	H		D		A	
Lowest 103	26	25.24%	28	27.18%	49	47.57%
Highest 206	132	64.08%	48	23.30%	26	12.62%
Midrange 103	45	43.69%	23	22.33%	35	33.98%

Lowest output (best aways) performance improved by 3.4%, home wins (highest outputs) improved by over 2¼%.

Draws improved slightly (but they couldn't have got any worse really!)

As a yardstick, at this stage it would help comparisons if I showed the percentage of homes, aways and draws in the test data set.

Homes	Draws	Aways
745 (45.04%)	456 (27.57%)	453 (27.39%)

Certainly helps to put the draw prediction performance in perspective, in both cases the ANN under test worse than random. (without investigation this – it may be just that I'm using the wrong range from which to select the draws)

One Hidden Layer

Let's try training QwikNet with one hidden layer in the network, and again check out the results;

The larger sample,

ANN Outputs	H		D		A	
Lowest 206	59	28.64%	60	29.13%	87	42.23%
Highest 413	255	61.74%	93	22.52%	65	15.74%
Midrange 206	91	44.17%	50	24.27%	65	31.55%

. . . and the smaller sample size

ANN Outputs	H		D		A	
Lowest 103	23	22.33%	27	26.21%	53	51.46%
Highest 206	133	64.56%	40	19.42%	33	16.02%
Midrange 103	44	42.72%	29	28.16%	30	29.13%

Reducing the samples to the 'better end' of the outputs has again improved the picture, this time for all three categories. And . . . more importantly, the model with 1 hidden layer outperforms our original network with none.

For interest, the top-ten performances remain unaltered. (at this stage I noticed that the ten highest ratings gave 7/10 home wins, but more impressively out of the highest 31 ratings no fewer than 27 were home victories!)

Spurred on by the success of adding a hidden layer, let's now check the performance with 2 hidden layers;

The larger sample,

ANN Outputs	H		D		A	
Lowest 206	63	30.58%	54	26.21%	89	43.20%
Highest 413	258	62.47%	92	22.28%	63	15.25%
Midrange 206	87	42.23%	54	26.21%	65	31.55%

. . . and the smaller sample

ANN Outputs	H		D		A	
Lowest 103	26	25.24%	27	26.21%	50	48.54%
Highest 206	134	65.05%	43	20.87%	29	14.08%
Midrange 103	39	37.86%	34	33.01%	30	29.13%

At the expense of a three-game, and almost 3% drop in the away win performance we've gained an extra home win. But at last, we're witnessing an upturn in the fortunes of our draw finding prowess!

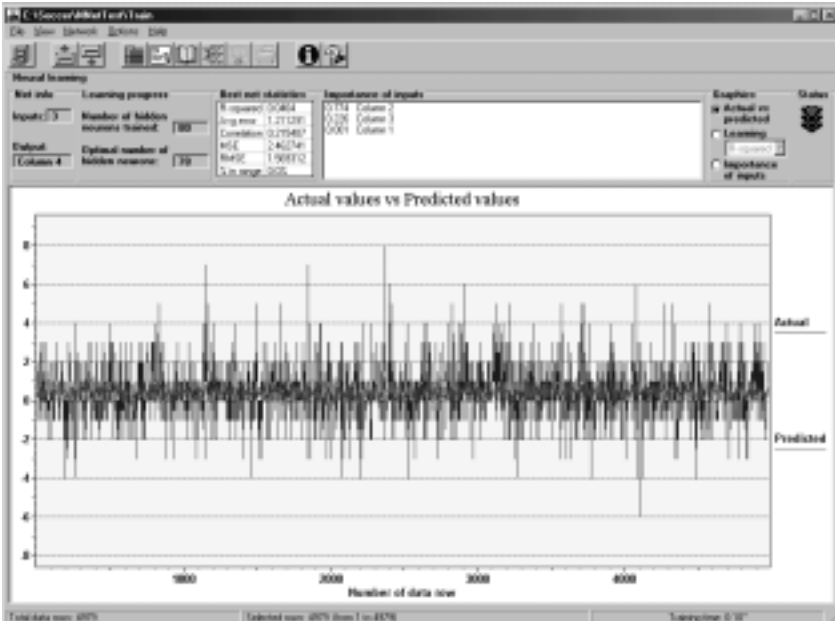
It really is fascinating stuff playing about with the parameters of an ANN and re-evaluating the new abilities!

Installing and using QwikNet was a breeze, the interface is very friendly and the on-line help clear and concise. This particular project took around 5 or 10 minutes for the ANN to reach my pre-set training threshold. (My machine runs a 1.2GHz processor)

But how does Qwiknet compare to other commercial neural network packages?

Neuroshell Predictor

First competition we bring into the ring is the heavyweight (at least from a price point of view) Neuroshell Predictor from Ward Systems. Another American software package, discussed in these pages before.



Predictor sells for US\$395.00, although with the SMARTsig negotiated discount of 20% it can be obtained for considerably less.

Ward's *Predictor* differs from the main stream ANNs inasmuch as there is no hidden layers parameter to juggle with. In fact it is a product that takes many of the network architecture decisions for you, it leaves you to merely tweak the targets you're aiming for and methods/parameters of the learning mode.

It has two main options for its network training, neural or

genetic. This is a user's review however, so we're more interested in what useful results (if any?) are generated from their application.

In neural mode, Predictor was far and away the fastest program to 'learn' from the 4,979 record training file - a little under 10 seconds in fact! Is this a case of more haste, less speed though?

We'll check it against the testing file and use the same testing parameters we used earlier to give a direct comparison.

Neuroshell Predictor (neural mode)

The ten best homes again gave 7/10, but whereas the highest rating Qwiknet generated was 1.19, Predictor's top figure was 1.71

Whether that has any bearing on any of this I'm not at all sure, but both figures suggest these networks produce conservative predictions. From a list of 1,654 games neither network suggested any game would result in a home win as high as a 2 goal margin!?!?!?

Only speculation, but this may say more about how we should deal with the outputs than anything else. We should perhaps view the product of a trained ANN as 'ratings' for guidance rather than literal game 'scores'.

The ten lowest outputs also matched Qwiknet's 4/10, and the outputs of the two systems were closer at this end of the scale too. Predictor's lowest rating was -0.94 against Qwiknet's -0.90. Looking at the ten nearest to zero this time we had 3/10, one fewer than Qwiknet.

But a better comparison test would perhaps come from the bigger picture, how did Predictor shape-up with the bigger sample sizes?

The larger sample,

ANN Outputs	H		D		A	
Lowest 206	62	30.10%	57	27.67%	87	42.23%
Highest 413	255	61.74%	94	22.76%	64	15.50%
Midrange 206	57	27.67%	66	32.04%	83	40.29%

. . . and the smaller sample size

ANN Outputs	H		D		A	
Lowest 103	26	25.24%	28	27.18%	49	47.57%
Highest 206	134	65.05%	42	20.39%	26	12.62%
Midrange 103	27	26.21%	36	34.95%	40	38.83%

Home wins, away wins and draws, by again homing in on the best of the lowest, highest and mid-range output values were all improved upon.

In direct comparison with Qwiknet, some results were improved upon and others were worse. It may though be a folly to hold too much stock on direct comparisons, this after all is a single and uniquely presented problem. Each ANN generator may make improvements to its predictive prowess if the training files were reorganised, presented differently or used alternative data items.

As mentioned earlier, Predictor also has a 'genetic' training option as part of the same package, it's this version of the ANN we'll be testing next;

In direct contrast to Predictor 'neural' being the quickest to train, 'genetic' is the slowest by a long way. Left to its own devices, this version took almost two hours to complete its training task!

The finished trained ANN was then applied to the test file as we've done for the other tests. Highest output values give 8/10 home wins, the lowest outputs produce 5/10 away wins, these two mini-checks showing the best strike rate

encountered thus far. The ten closest to zero show 3 of the these resulted in drawn games - whoops, can't win 'em all!

The wider picture shows, from the larger sample first,

ANN Outputs	H		D		A	
Lowest 206	58	28.16%	59	28.64%	89	43.20%
Highest 413	251	60.77%	95	23.00%	67	16.22%
Midrange 206	58	28.16%	65	31.55%	83	40.29%

Then by reducing the catchment to the 'better' half of these samples, the reduced list gives;

ANN Outputs	H		D		A	
Lowest 103	28	27.18%	30	29.13%	45	43.69%
Highest 206	134	65.05%	44	21.36%	28	13.59%
Midrange 103	27	26.21%	31	30.10%	45	43.69%

Some performances improved, others worse, so I'll leave you to draw your own conclusions.

Moving on to another software package, from the same source as Predictor, this one called Neuroshell Classifier - which comes in at the same price as its stable mate.

Classifier differs from the other two in the way that data outputs are represented. In our previous trails we formatted the output variable numerically, based upon each game's goal difference . . . -1 denoting the away side had won by one goal, +2 indicating a home win by 2 goals, etc.

Classifier outputs however are 'sybolic'. If it is fed with the same training file outputs as before, it would attempt to classify every unique output as a separate category. The outputs would therefore be categorised as "+7", "+6", "+5", . . . "-2", "-3", etc. When the finished trained net is applied, a 'likelihood' output figure would be generated for each of these 'classes'.

Clearly so many categories are unnecessary for our trial, so the training file outputs for this test were re-designated simply as "H", "A" or "D". Neuroshell Classifier again allows both for neural and/or genetic ANN model training.

In 'neural' mode, our larger sample of predictions gave;

ANN Outputs	H		D		A	
206 best Aways	56	27.18%	58	28.16%	92	44.66%
413 best Homes	255	61.74%	90	21.79%	68	16.46%
206 best Draws	64	31.07%	68	33.01%	74	35.92%

. . and the refined 'better' sample

ANN Outputs	H		D		A	
103 best Aways	27	26.21%	29	28.16%	47	45.63%
206 best Homes	129	62.62%	50	24.27%	27	13.11%
103 best Draws	31	30.10%	27	26.21%	45	43.69%

Using 'neural' mode as above trained in less than 10 seconds, but using 'genetic' mode it again took several hours to train.

Classifier genetic mode results;

ANN Outputs	H		D		A	
206 best Aways	58	28.16%	60	29.13%	88	42.72%
413 best Homes	253	61.26%	93	22.52%	67	16.22%
206 best Draws	90	43.69%	62	30.10%	54	26.21%

And selecting the best end of the results

ANN Outputs	H		D		A	
103 best Aways	29	28.16%	29	28.16%	45	43.69%
206 best Homes	133	64.56%	45	21.84%	28	13.59%
103 best Draws	49	47.57%	24	23.30%	30	29.13%

There literally hundreds (if not thousands) of commercial ANN products out there, and I cannot possibly review them all. Among those that I looked at for this review were;

Neu-net (www.cormactech.com/neunet) version 1.1 This older (1995) trial shareware version from Canada had a "nag" screen (appears on screen reminding you to register and buy the full product) which was just too annoying. It stopped the computer processing any task until a button was clicked, but kept popping up as often as twice per minute! Testing this product was abandoned.

NeuNet Pro, version 2.2 (1999) Updated and much improved (visually) of the previous program. Nag screen has been removed but trial product is limited to processing 250 lines of inputs.

For \$99 US Dollars it can be upgraded(?) to allow the processing of 1,000 input rows. Incremental 'levels' can be purchased, each at \$99 allowing more and more rows to be processed each time. The ability to process unlimited rows is level 8 - or \$792.00!!

There are limits as to what I'll pay for review purposes, and with no guarantees as to its performance, testing this product was abandoned.

Trans-Dimensional Learning (TDL) (www.upso.net) version 2.3 from Universal Problem Solvers Inc. USA. \$99.00 After several hours of trying testing was abandoned. This product is soooo fussy over the way data is presented for training that frustration begins to set in extremely quickly!

An email help line does return with the solution (albeit 24 hours later), but from this reviewers viewpoint, the basic product appears to be a DIY job made of balsa wood and model aeroplane glue. Poke it too hard and it falls to bits around your ears! It could not for example even locate its own user-help files correctly! Not recommended.

The tests carried out in this review can never be as definitive as say, a review of several different cars. Many automotive items like 0-60 mph times can be directly related and compared.

ANNs do not offer comparative similarities in the same way. Sure we can compare the accuracy of the outputs against the same project, but a change in the variables used for the modelling, or simply the way they are presented can give a totally different set of results.

Some of the products reviewed here will show improvements, some may not but the chances are different ANNs will respond in different ways and each will respond better to its 'preferred' input set.

All we have to do is to discover exactly what and where that is. But if you're anything like me, the fun and fascination you'll get along the way make it all worthwhile. In a future article I'll process some horseracing data through the ANN packages.



SAVE ALMOST £50!

To help SMARTsig readers wishing to take the plunge in Neural Networks we have an exclusive 20% discounts with Ward Systems for their Predictor and Classifier AI programs.

Usual price is \$395 + \$16 Air Mail shipping (to Europe)

20% discount SMARTsig reader price \$316 + shipping

SAVING OF \$80 (almost £50.00 Sterling)

Purchases direct from:

**Ward Systems Group Inc., Executive Park West
5 Hillcrest Drive, Frederick, MD 21703. USA**

**Tel: (USA) 301 662 7950 Fax: (USA) 301 663 9920
(Simply ask for the SMARTsig 20% discount deal)**

Or take a look at their website www.wardsystems.com

Horses for courses is an old and well used maxim. But is there any mileage in examining an "owners for trainers" strategy?

OWNER/TRAINERS PARTNERSHIPS

Email Group

Does anyone use owner/trainer statistics as a basis for their betting. I had a look the other evening and saw a few interesting combinations. For example;

K ABDULLA/J H M Gosden 2yo		
2000	5-12 (41%)	+14.61
1999	8-16 (50%)	+27.23
1998	9-20 (45%)	+21.25

RICHARD GREEN (FINE PAINTINGS)/ P F I Cole		
2000	3-20 (15%)	+7.50
1999	30-96 (31%)	+115.86
1998	17-48 (35%)	+39.13

I would do some more research and post the findings if anyone was interested and/or thought the idea had merit

Tim Chapman



When I asked my wife how she managed to find, and bet on, the winner of the Grand National she replied that it was the only owner trainer horse in the race.

Actually she was wrong, there was another in the race, but I could not spoil her moment of triumph.

Years ago I looked at this approach Tim and found some good winners from the small yards.

Tom Whitley

For general interest here are the results of a few hours on the racing post owners statistics pages.

The 'angle' I am interested in is that whilst I am sure most race horse trainers do their level best to produce winners for all their owners, as it would be logical to assume unhappy owners would go elsewhere and take their training fees with them.

It might also be the case that some trainers consistently produce more winners for certain owners than for others (My Favourite Owner), and since owner/trainer relationships are most likely not an area that the majority of punters consider there could be some value to be had. At the very least it could be a factor worth adding to the mix.

I looked for high strike allied to high return on investment ROI (don't we all), and I appreciate that chance could play a big factor in the results, most of the best results were for 2-y-olds. Most recent year first.

CHEVELEY PARK STUD Sir Mark Prescott 2-y-o			
9-18	27-63	12-57	8-32
(50%)	(42%)	(21%)	(25%)
+25.85	+38.55	-35.69	+10.34

Three winning years from the last four, certainly the last two years are 'interesting'

CHEVELEY PARK STUD J R Fanshawe 2-y-o			
3-13	9-27	6-11	2-6
(23%)	(33%)	(54%)	(33%)
+4.00	+58.88	+38.50	+6.00

Four from four profitable

K ABDULLA J H M Gosden 2yo			
5-12	8-16	9-20	0-13
(41%)	(50%)	(45%)	
+14.61	+27.23	+21.25	-13.00

A losing year in 1997 but tasty since.



My KISS for 2001 Stef

Back all Godsen trained K Abdulla owned 2-y-o to level stakes - none out so far, I've been looking!



K ABDULLA Mrs A J Perrett	3-y-o		
5-25	6-36	9-22	1-10
(20%)	(16%)	(40%)	(10%)
+9.50	-15.00	+63.75	-1.00

4 years overview, 21 from 93 for a 57 point profit.

SHEIKH AHMED AL MAKTOUM M P Tregoning	2-y-o		
2-6	6-19	9-33	
(33%)	(31%)	(27%)	
+0.38	+22.85	+20.25	

Three from three years, all profitable.

H R H PRINCE FAHD SALMAN B W Hills			
0-0	9-24	4-9	
	(37%)	(44%)	
+0.00	+32.40	+14.00	

A couple of good years then nothing - ?!

RICHARD GREEN (FINE PAINTINGS) P F I Cole	all ages		
3-20	30-96	17-48	
(15%)	(31%)	(35%)	
+7.50	+115.86	+39.13	

RICHARD GREEN (FINE PAINTINGS) P F I Cole	2-y-o		
1-6	9-35	8-33	
(16%)	(25%)	(24%)	
+7.00	+46.75	+9.50	

RICHARD GREEN (FINE PAINTINGS) P F I Cole 3yo
 1-7 18-47 9-15
 (14%) (38%) (60%)
 -0.50 +38.11 +29.63

A partnership worth a second look when it appears. As was pointed out by Peter this relationship could be on the rocks - is G L Moore the new man for Richard Green?

RICHARD GREEN (FINE PAINTINGS) G L Moore all ages
 9-24
 (37%)
 +49.50

J C SMITH J M P Eustace all ages
 6-32 9-69 14-38
 (18%) (13%) (36%)
 +11.00 +3.00 +133.25

Three from three, but low strike rate.

I'm sure there are many more, and I'd be interested in any feedback.

Tim Chapman

Is Richard Green winding down his patronage with Cole viz 3-20 in 2000? If so, why would Greene do that given the statistics, and what's happening to his horses?

Peter Orchard

Philip & Tim

Thanks for posting the information on owners with trainers.

According to Horses in Training 2001, Richard Green (Fine Paintings) has the following horses with Paul Cole:

Three Year Olds:

Art Expert (Fr) 3 b g
George Stubbs (USA) 3 b br g
Prime Version 3 b c

Two Year Olds:

Constable 2 gr c 45,000gns as a yearling
Henri Lebasque (Ire) 2 b c 30,000gns
Jan Breughel (USA) 2 ch c 70,000gns
Pieter Breughel (USA) 2 b c 62,000gns
Signed And Dated (USA) 2 b c 23,229gns
Van De Velde 2 ch c 17,000gns
Zandomeneghi (Ire) 2 ch c 55,000gns

This compares with six horses listed in Horses In Training 2000 and seven in 1999.

Geoff Brown



Just a point of clarification of my earlier message. When I referred to owner/trainer I was meaning that the owner and the trainer were one and the same person.

Others have been referring to the achievements of certain trainers on behalf of certain of their owners. Not to be confused with the method I used.

I found it profitable some years ago, with a few filters thrown in.

Tom Whitley



Tom, you mention that you used a system using the owner/trainer method successfully a few years ago by using some filters, would you mind letting me know what filters you employed? There are just too many selections without bringing in some kind of filtering.

David Junkier

David,

I was quite successful in this respect at the end of my first time around in horseracing.

Then came an enforced lay off before I picked up interest again. The memory is not as good as it used to be but I do recollect that one filter was distance travelled. If the owner/trainer sent his own horse a long distance I deemed it significant.

- I'd think was doubly significant if it was the trainers only runner at the meeting, or that any other runners were all owner/trained. - Ed

Another filter was dropping in Class, and yet another was only bet when the horse was running at the same distance that it had shown its best form at previously.

Some of the filters are obvious but I felt that they assumed more significance in respect of owner/trainers, especially those with small yards.

Finally, as stated previously, I am talking only owner/trainers with the same name.

Tom Whitley

Tom, Thanks for that information.

On another tack, I'm forever trying to work out when PD Evans (trainer) is going to get his next big-priced winner.

I rarely succeed, but, because he used to train locally to me, he has quite a following around here, and I'm almost convinced that a blanket policy of blindly backing any of his runners, priced at 10/1 or more, would make a profit.

PJ

SMARTsig

Many in the betting game look for staking plans to enhance their profits. But they're often left disappointed.

LEVEL HEADED . . LEVEL STAKES?

Peter Orchard

The debate on staking is endless, and pre-occupies the members of SMARTsig and others, despite the passage of time.

The concept that enhanced stakes on winners means increased profits is true of course inasmuch as the larger the stake on a winner the bigger the profit, but to state the obvious conversely increased stakes on losers means bigger losses!

Note the final comment. No matter whether you choose level stakes, percentage of the bank, stop at a winner, increased stakes after a winner or after a loser or any other staking method, the consensus is that if you do not make a profit at level stakes You will lose!

I am writing this after participating in the SMARTsig *TippingComp* for some 14 months. Initially I staked 10% of the betting bank (initially 100 points) per day, and despite constantly reviewing and amending this aspect I now consider in hindsight that my staking method was flawed.

My failure I feel was not to faithfully record my bets and carry out a thorough and ongoing comparison with level stake results, throughout this period.

I have now done this using an Excel 97 spreadsheet. The only variation is that I have not recorded, when I have used Any-To-Come bets as such, although I have used the appropriate stakes.

I have however used the same stakes where I ventured a double. On each of these occasions the stake was 1 Point.

Any inaccuracies in this spreadsheet may arise because I failed to retain accurate records but I believe this to be a fairly accurate representation of my bets over the period.

Doubles produced a profit of 13.78 Points. If these were removed from the two scenarios the loss on variable stakes would increase to – 30.73 Points, whereas the profit to fixed 1 Point stake would be reduced to 3.04 Points.

Perhaps I should add that the selections were derived methodically from the tipsters in the Daily Mail.

Peter Orchard Betting results sheet; January 2000 to end of March 2001

Date	Crse	Time	Nor	Form	DSL	Tips	Horse	Odds	PIF	Ratin	STK	Fin	SP	PIB	Prof/	Cum	BANK	S/B	Mthly
31-Jan-00	Sth	1.50	11	311	7	GF	Telecaster	2/1	j1	78	2	2	6/4	f	-2.00	-2.00	98.00	100	
31-Jan-00	Sth	2.20	12	231	3	GF	Priceless Second	11/4	2	78	5	0	9/4	f	-5.00	-7.00	93.00		
31-Jan-00	Sth	4.20	7	351	7	F	Stravsea	2/1	2	78	2	1	5/2		5.00	-2.00	98.00		
1-Feb-00	Kem	3.25	8	311	34	RG	Jemaro	11/4	j3	77	3	0	7/2	jf	-3.00	-5.00	95.00		
1-Feb-00	Kem	4.30	14	F21	30	GF	Richmond Lady	5/1	j3	78	2	0	?		-2.00	-7.00	93.00		
2-Feb-00	Lin	4.30	5	31-1	28	GF	Castle Sempill	11/4	2	78	6	2	2/1	f	-6.00	-13.00	87.00		
3-Feb-00	Wol	1.50	13	45-1	12	RGF	Ring of Love	7/2	1	78	6	3	4/1	jf	-6.00	-19.00	81.00		
4-Feb-00	Sou	3.10	10	121	4	G	Rafters Music	7/4	1	76	7	0	9/4	f	-7.00	-26.00	74.00		
5-Feb-00	Wet	2.15	5	431	14	RGG	Panama House	7/2	3	77	7	0	2/1	f	-7.00	-33.00	67.00		
7-Feb-00	New	3.40	9	31	19	RGF	Plumbob	4/1	j2	78	6	3	6/1		-6.00	-39.00	61.00		
8-Feb-00	Wol	1.40	13	111	3	GF	French Spice	5/4	1	78	6	1	2/7	f	1.71	-37.29	62.71		
9-Feb-00	Lin	3.10	7	261	4	F	Topton	11/4	1	78	5	0	4/1		-5.00	-42.29	57.71		
10-Feb-00	Wol	2.00	12	111	2	RGG	French Spice	5/4	1	77	5	1	8/13	f	3.08	-39.21	60.79		
10-Feb-00							Dble Ital. Symp				1	0			-1.00	-40.21	59.79		
10-Feb-00	Wol	2.00	12	651	9	F	Evezio Rufo	5/1	2	78		3	8/1		0.00	-40.21	59.79		
11-Feb-00	Ban	2.00	9	511	7	G	Supreme Fortune	5/4	1	77	5	3	2/1	jf	-5.00	-45.21	54.79		
12-Feb-00	Lin	4.40	5	8-11	7	GF	Bluebell Wood	5/2	1	78	5	1	9/4		11.25	-33.96	66.04		
14-Feb-00	Sou	3.10	7	131	7	RGF	Kirisnippa	7/2	2	78	3	0	?		-3.00	-36.96	63.04		
15-Feb-00	Wol	2.10	9	0-21	5	GF	Tylers Toast	3/1	2	78	3	1	7/4	f	5.25	-31.71	68.29		
15-Feb-00	Wol	2.40	9	211	4	RG	Bachelors Pad	5/2	2	72	3	2	7/4	f	-3.00	-34.71	65.29		
16-Feb-00	Lei	4.50	8	111	7	GF	Chicago Bear	9/4	1	78	6	3	9/2		-6.00	-40.71	59.29		
17-Feb-00	Wol	4.45	8	0-11	27	RGF	Oscar Pepper	11/4	1	78	5	2	5/4	f	-5.00	-45.71	54.29		
18-Feb-00	San	1.45	11	111	14	RGGF	Mr Cool	13/8	1	78	5	1	13/8	f	8.13	-37.58	62.42		
19-Feb-00	Wol	9.30	9	331	4	GF	Our People	3/1	2	78	6	3	7/4		-6.00	-43.58	56.42		
21-Feb-00	Fon	4.30	7	1-F1	13	RGG	Gunner Welburn	5/2	1	67	5	1	7/4	f	8.75	-34.83	65.17		
22-Feb-00	Wol	2.10	8	321	6	G	Toldya	2/1	1	76	6	3	4/1		-6.00	-40.83	59.17		
24-Feb-00	Win	2.05	11	401	6	RGF	Upham Lord	9/2	1	78	3	0	?		-3.00	-43.83	56.17		
24-Feb-00							Arctic Chanter					2			-2.00	-45.83	54.17		
25-Feb-00	Kem	4.50	13	11/1	10	GF	Brambledown	7/1	3	78	5	3	10/3		-5.00	-50.83	49.17		

Date	Crse	Time	Nor	Form	DSL	R	Tips	Horse	Odds	PIF	Ratin	STK	Fin	SP	PIB	Prof/	Cum	BANK	S/B	Mthly
26-Feb-00	Lin	5.00	6	31	7	G		Stretford Lad	2/1	1	77	4	0	2/1		-4.00	-54.83	45.17		
28-Feb-00	Sou	2.10	10	931	9	F		Doberman	4/1	2	78	4	0	?		-4.00	-58.83	41.17		
29-Feb-00								Far Removed				4				-4.00	-62.83	37.17		Jan/Feb
02-Mar-00	Lud	4.30	13	3R1	7	F		Henry Island	9/4	1	78	5	0	11/4	f	-5.00	-5.00	95.00		100
04-Mar-00	Wol	7.30	9	8-41	7	F		Pedro Pete	9/4	1	78	5	0	4/6	f	-5.00	-10.00	90.00		
06-Mar-00	Sou	3.40	16	211	4	GF		Telecaster	9/4	1	78	5	0	?		-5.00	-15.00	85.00		
08-Mar-00	Lin	4.40	10	241	4	RGF		Paddywack	5/2	1	78	8	1	13/8	f	13.00	-2.00	98.00		
11-Mar-00	Wol	5.00	7	111	3	GF		Maknaas	2/1	1	78	8	1	2/1	f	16.00	14.00	114.00		
15-Mar-00	Hun	4.10	9	511	6	GF		Sharazan	6/4	1	78	11	1	1/1	f	11.00	25.00	125.00		
18-Mar-00	Lin	3.25	16	281	7	RGF		Enrique	11/2	1	78	5	1	6/1	jf	30.00	55.00	155.00		
25-Mar-00	Don	3.40	24	111	7	F		Zanay	12/1	7	78	5	0	?		-5.00	50.00	150.00		
27-Mar-00	Sou	3.15	7	931	7	RGGF		Dahlidya	3/1	2	78	15	3	4/1		-15.00	35.00	135.00		
28-Mar-00	San	3.05	13	P21	7	RG		Noyan	9/2	3	70	5	1	2/1	f	10.00	45.00	145.00		March
01-Apr-00	MRa	2.20	8	7-P1	7	RGG		Ghadames	4/1	3	76	5	2	3/1	f	-5.00	-5.00	95.00		100
07-Apr-00	Ain	3.45	24	481	6	F		Northern Starl	8/1	3	78	3	1	7/1		21.00	16.00	116.00		
20-Apr-00	Che	2.55	9	191	1	F		Celtic Native	9/2	2	78	5	1	2/1	f	10.00	26.00	126.00		
24-Apr-00	Car	3.45	11	131	2	F		I'm The Man	4/1	2	78	5	1	4/1		20.00	46.00	146.00		
24-Apr-00								Extra Bet				1				-1.00	45.00	145.00		
24-Apr-00	Utt	3.55	3	211	2	RGGF		Father Krismas	6/4	2	78	5	1	11/10		5.50	50.50	150.50		
28-Apr-00	San	3.40	9	221	4	RG		My Legal Eagle	5/1	2	74	5	3	5/1		-5.000	45.50	145.50		April
01-May-00	Fon	4.55	13	P51-	4	F		Contes	7/1	5	78	5	0	7/2	f	-5.00	-5.00	95.00		100
03-May-00	Asc	5.15	30	111	4	GF		Polish Spirit	5/1f	1	78	5	1	9/4	f	11.25	6.25	106.25		
06-May-00	Her	1.45	11	1L-1	5	RGGF		Ozzie Jones	4-5	1	78	6	2	8/13	f	-6.00	0.25	100.25		
06-May-00	Thi	3.50	18	191	5	F		Yarob	11/2	1	78	4	0	?		-4.00	-3.75	96.25		
09-May-00	Bri	2.50						Alberkinnie				5				-5.00	-8.75	91.25		
11-May-00	Wol	2.30	13	101	4	G		Will Iveson	3/1	1	75	5	0	9/4	f	-5.00	-13.75	86.25		
11-May-00	Che	5.10	12	L01	2	GF		Noukari	6/1	2	78	4	0	7/1		-4.00	-17.75	82.25		
12-May-00	Car	3.10	16	311	5	GF		Etsalat	7/2	1	78	5	1	13/8	f	8.13	-9.63	90.38		
13-May-00	Wor	3.15	18	90-1	5	GF		Marsh Marigold	6/1	3	78	1	1	5/1		5.00	-4.63	95.38		
13-May-00	Bev	4.30	20	861	3	F		At Large	5/1	1	78	2	0	5/1		-2.00	-6.63	93.38		
13-May-00	Bev	5.00	16	051	2	F		Pentagonal Lad	3/1	1	78	2	4	3/1		-2.00	-8.63	91.38		
13-May-00	Mra	6.55	7	F-51	7	F		Miss Pennyhill	7/2	2	78	1	3	1/4		-1.00	-9.63	90.38		
17-May-00	Exe	4.50	8	71-1	4	RG		Marisol	5/1	4	NR	5	0	?		-5.00	-14.63	85.38		
18-May-00	Yor	4.20	21	611	6	RGGF		Take Manhattan	4/1	1	78	5	0	4/1	f	-5.00	-19.63	80.38		
22-May-00	Win	6.15	7	331	7	F		Fire Dome	5/2	1	78	5	1	11/8	f	6.88	-12.75	87.25		
22-May-00	Mus	7.00	16	041	2	G		Sweet Magic	10/1	6	75	3	0	?		-3.00	-15.75	84.25		
24-May-00	Wor	3.50	8	51-1	4	RGGF		Khatani	5/2	1	78	8	1	8/11	f	5.82	-9.93	90.07		
29-May-00	Car	4.00	9	011	2	RGG		Suggest	7/2	1	77	4	1	4/1		16.00	6.07	106.07		
29-May-00	Her	5.05	8	11-1	3	GF		Shampoed	9/4	1	78	4	1	2/1		8.00	14.07	114.07		
29-May-00								Dble above 2				1	1	10/1		10.00	24.07	124.07		24.07
01-Jun-00	Ayr	3.50	16	331	5	RGGF		Rafters Music	6/1	1	78	5	3	5/1		-5.00	-5.00	95.00		100
01-Jun-00	NAb	5.05	11	111	5	GF		Marsh Marigold	3/1	1	78	5	3	5/1		-5.00	-10.00	90.00		
03-Jun-00	New	2.00	141	7	G			Hoh Gem	10/1	4		1	0			-1.00	-11.00	89.00		
03-Jun-00	Cat	5.05	431	7	G			Elsie Bamford	7/1	3		4	1	2/1	f	8.00	-3.00	97.00		
05-Jun-00	Lei	4.00	14	0-71	6	RGGF		Firecrest	5/2	1	78	7	1	11/8	f	9.63	6.63	106.63		
07-Jun-00	Bev	7.10	9	121	5	F		Red Millenium	7/2	2	78	3	2	11/4		-3.00	3.63	103.63		
07-Jun-00	Bev	8.10	9	221	7	G		BouncingBowler	4/1	2	77	2	2	11/4		-2.00	1.63	101.63		
07-Jun-00	Che	9.00	11	0L1	6	RG		Bodfari Pride	4/1	1	75	2	1	2/1	f	4.00	5.63	105.63		
08-Jun-00	Hay	4.30	6	L11	1	G		Bodfari Pride	2/1	1	73	10	0	11/10	f	-10.00	-4.38	95.63		
09-Jun-00	Cat	3.40	14	241	4	F		Bowlers Boy	4/1	2	78	4	2	11/2		-4.00	-8.38	91.63		
09-Jun-00	Cat	4.50	15	211	7	GF		College Maid	7/4	1	78	4	2	1/1	f	-4.00	-12.38	87.63		
09-Jun-00								Dble				1	0			-1.00	-13.38	86.63		

Date	CrseTime	NorForm	DSLRL	Tips	Horse	Odds	PIF	Ratin	STK	FinPo	SP	PIB	Prof/	Cum	BANK	S/B	Mthly	
10-Jun-00	Don	3.20	22	741	3	F	Melodian	99/1	78	1	0	?	-1.00	-14.38	85.63			
10-Jun-00	Eps	5.10	12	681	7	G	ThreeGreen Leav	9/2	2	77	3	0	?	-3.00	-17.38	82.63		
10-Jun-00	Eps	5.45	17	111	3	F	Silica Blanka	6/1	1	78	2	0	4/1	f	-2.00	-19.38	80.63	
15-Jun-00	Yar	5.10	17	36-1	3	G	Julius	4/1	1	77	5	2	4/1		-5.00	-24.38	75.63	
16-Jun-00	Yor	3.50	16	111	6	F	Fire Dome	3/1	1	78	2	0	11/4	f	-2.00	-26.38	73.63	
16-Jun-00	Goo	7.25	7	871	7	RGGF	Forebearing	9/4	1	78	2	1	1/1	f	2.00	-24.38	75.63	
16-Jun-00	NAb	9.15	6	111	4	G	Lord Strickland	9/4	2	77	3	0			-3.00	-27.38	72.63	
17-Jun-00	Not	4.25	12	90-1	4	RGG	Bahamas	6/4	1	76	3	2	4/5	f	-3.00	-30.38	69.63	
17-Jun-00	Bat	4.40	16	211	2	F	Adobe	5/2	1	78	3	1	5/2	f	7.50	-22.88	77.13	
17-Jun-00	Bat	4.40	16	0-10	24	RGG	Moon At Night	6/1	3	72	3	3	5/1	0.00	-22.88	77.13		
17-Jun-00							Dbl Bahs/Ad+Adj				1			-1.00	-23.88	76.13		
21-Jun-00	Kem	8.35	14	211	3	F	The Wild Widow	7/4	1	78	6	1	7/4	f	10.50	-13.38	86.63	
22-Jun-00	Sou	2.55	11	L21	6	GF	Canadian	7/4	1	78	4	1	2/1	f	8.00	-5.38	94.63	
22-Jun-00	Sou	5.15	8	U71	3	GF	Xellance	5/2	2	78	3	1	6/4	jf	4.50	-0.88	99.13	
22-Jun-00							Dble CanApp/Xell				1	1	13/2		6.50	5.63	105.63	
23-Jun-00	Hex	9.25		351	6	G	In Good Faith	7/2	2	4	1	13/8		6.50	12.13	112.13		
23-Jun-00	Goo	7.35		111	6	GF	Adobe	3/1	1	78	5	1	9/4	f	11.25	23.38	123.38	
23-Jun-00							Dble above 2				1	1	5.28/1		5.28	28.66	128.66	
24-Jun-00	Ayr	3.10	13	021	7	F	Friar Tuck	6/1	3	78	3	0	?		-3.00	25.66	125.66	
24-Jun-00	Red	3.55	6	611	3	RGG	Colway Ritz	7/2	2	77	6	0	9/4		-6.00	19.66	119.66	
24-Jun-00							Dbl CIRitz/FrTuck				1	0			-1.00	18.66	118.66	
26-Jun-00	Mus	3.30	8	111	2	GF	Xellance	5/4	1	78	8	0	4/5	f	-8.00	10.66	110.66	
27-Jun-00	Bev	2.45	9	241	4	G	PennysFromHea	2/1	1	73	10	2	3/1	f	-10.00	0.66	100.66	
28-Jun-00	War	2.50	20	0-21	2	G	Marino Street	4/1	1	76	2	1	7/2		7.00	7.66	107.66	
28-Jun-00	Che	7.15	5	211	6	RGGF	Julius	4/6	1	78	4	1	4/9	f	1.78	9.43	109.43	
28-Jun-00	Ham	9.25	7	031	7	GF	OnceMoreforLuc	5/2	1	78	4	0	11/8	f	-4.00	5.43	105.43	
29-Jun-00	Car	3.00	15	131	6	F	Court Shareef	11/2	2	78	5	1	9/2	f	22.50	27.93	127.93	
30-Jun-00	Nec	7.00	13	701	7	F	Toejam	99/1	78	7	0	?		-7.00	20.93	120.93	June	
01-Jul-00	Bat	2.45	7	221	6	GF	Forgotten Times	6/4	1	78	6	0	1/2	f	-6.00	-6.00	94.00	100
01-Jul-00	Don	8.55	8	441	7	G	Fiori	3/1	2	76	2	3	6/1		-2.00	-8.00	92.00	
01-Jul-00							Dble above 2				1	0			-1.00	-9.00	91.00	
05-Jul-00	Cat	2.45	16	041	7	F	Kalar	99/1	78	1	0	?		-1.00	-10.00	90.00		
05-Jul-00	Bri	4.00	16	231	5	F	Twin Times	5/1	1	78	1	0	15/8	f	-1.00	-11.00	89.00	
05-Jul-00	Cat	4.45	7	471	7	F	Wethaab	7/4	1	78	2	0	5/4	f	-2.00	-13.00	87.00	
05-Jul-00	Yar	6.50	12	411	5	G	Missile Toe	9/2	2	77	2	0	?		-2.00	-15.00	85.00	
07-Jul-00	Bev	7.50	8	471	5	GF	Style Dancer	5/1	4	78	8	1	5/1		40.00	25.00	125.00	
10-Jul-00	Rip	8.20	7	321	4	G	Maron	5/2	1	76	8	0	?		-8.00	17.00	117.00	
10-Jul-00	Kem	6.30	14	111	4	GF	The Wild Widow	6/4	1	78	5	0	7/4	f	-5.00	12.00	112.00	
12-Jul-00	Kem	8.00	5	611	6	RGGF	Give Notice	6/4	1	78	5	1	4/6	f	3.33	15.33	115.33	
14-Jul-00	Che	8.30	12	431	2	G	Pips Way	6/1	2	75	5	0	?		-5.00	10.33	110.33	
15-Jul-00	Asc	2.00	15	131	6	G	Captains Log	9/1	3	77	2	0	?		-2.00	8.33	108.33	
15-Jul-00	Asc	2.00	15	211	6	F	Octane	11/2	1	78	2	0	10/3	f	-2.00	6.33	106.33	
15-Jul-00							Extra bet				1	0			-1.00	5.33	105.33	
15-Jul-00	Not	3.20	10	401	4	GF	Iron Mountain	2/1	1	78	5	0	13/8	f	-5.00	0.33	100.33	
17-Jul-00	NAb	4.30	8	511	5	RGG	Cage Aux Folles	3/1	1	78	5	0	7/4	f	-5.00	-4.67	95.33	
17-Jul-00	Win	7.25	9	211	5	F	Granted	7/2	1	78	4	0	?		-4.00	-8.67	91.33	
17-Jul-00							Dble				1	0			-1.00	-9.67	90.33	
19-Jul-00	Lin	2.10	11	511	5	GF	Krystal Max	5/4	1	78	5	1	2/1	jf	10.00	0.33	100.33	
19-Jul-00							Dble				1	0			-1.00	-0.67	99.33	
19-Jul-00	Kem	7.20	16	921	6	GF	Pengamon	9/2	1	78	3	2	3/1	f	-3.00	-3.67	96.33	
21-Jul-00	Car	3.10	15	831	6	F	Bodfari Anna	4/1	1	78	3	0	?		-3.00	-6.67	93.33	
21-Jul-00	Nby	4.00	8	951	2	F	Little Brave	7/1	4	78	2	0	?		-2.00	-8.67	91.33	

Date	CrseTime	NorForm	DSLRR	Tips	Horse	Odds	PIF	Ratin	STK	FinPo	SP	PIB	Prof/	Cum	BANK	S/B	Mthly
21-Jul-00	Pon 7.05	10 811	1	F	Sposa	8/1	7	78	1	0	?		-1.00	-9.67	90.33		
26-Jul-00	Cat 3.30	13 L21	5	GF	Flak Jacket	11/2	2	78	9	1	6/5	f	10.80	1.13	101.13		
28-Jul-00	Asc 3.15	18 081	6	G	Cadeaux Cher	7/1	2	77	2	0	?		-2.00	-0.87	99.13		
28-Jul-00	Thi 4.45	10 001	5	F	Mount Park	14/1	8	78	2	0	?		-2.00	-2.87	97.13		
28-Jul-00	Sal 8.05	14 L11	2	G	Lake Sunbeam	11/4	1	77	2	0	?		-2.00	-4.87	95.13		July
02-Aug-00	Kem 6.00	9 L31	3	F	Mana D'Argent	9/4	1	78	5	3	10/11	f	-5.00	-5.00	95.00		100
02-Aug-00	Lei 7.40	19 531	5	GF	Noble Pasao	4/1	1	78	4	3	10/3		-4.00	-9.00	91.00		
02-Aug-00					Dble				1	0			-1.00	-10.00	90.00		
04-Aug-00	Goo 5.35	16 331	2	G	Zuhair	9/4	1	76	9	0	?		-9.00	-19.00	81.00		
05-Aug-00	New 4.50	16 311	5	GF	Chaka Zulu	2/1	1	78	8	3	4/6	f	-8.00	-27.00	73.00		
07-Aug-00	Rip 2.45	12 681	6	F	Jonloz	99/1		78	4	2	8/1		-4.00	-31.00	69.00		
14-Aug-00	Thi 7.55	8 711	3	F	BeauchampMagi	9/2	3	78	6	1	4/1	jf	24.00	-7.00	93.00		
15-Aug-00	Ayr 3.15	8 L71	6	F	Riberac	2/1	1	78	9	1	2/1	f	18.00	11.00	111.00		
18-Aug-00	Cat 6.45	6 251	4	F	Sharp Secret	11/4	1	78	8	0	6/4	f	-8.00	3.00	103.00		
19-Aug-00	Wol 9.30	13 621	5	GF	Tapage	4/1	1	78	10	0	7/4	f	-10.00	-7.00	93.00		
22-Aug-00	Yor 4.15	18 121	4	G	Warning Reef	9/1	4	77	5	3	10/1		-5.00	-12.00	88.00		
23-Aug-00	Yor 2.05	17 721	5	F	Westender	8/1	3	78	3	0	?		-3.00	-15.00	85.00		
23-Aug-00	Bri 7.55	10 421	5	GF	Absolute Fantasy	9/4	2	78	4	2	15/8	f	-4.00	-19.00	81.00		
26-Aug-00	Bev 3.25	18 721	3	G	Statoyork	11/2	2	75	1	4	5/1		-1.00	-20.00	80.00		
26-Aug-00	Bev 3.25	18 001	6	F	Classy Cleo	12/1	8	78	1	0	?		-1.00	-21.00	79.00		
26-Aug-00	Bev 3.55	11 7-31	6	RGGF	Octavius Caesar	3/1	2	78	4	2	8/11	f	-4.00	-25.00	75.00		
30-Aug-00	Bri 5.50	10 311	6	G	Mytton's Again	3/1	2	77	7	0	?		-7.00	-32.00	68.00		
31-Aug-00	Sal 3.50	14 251	6	F	Be My Wish	5/1	2	78	6	0	?		-6.00	-38.00	62.00		Aug
01-Sep-00	Sed 5.00	6 261	6	F	Master Henry	7/4	1	78	10	0	7/4	f	-10.00	-10.00	90.00		100
02-Sep-00	Str 2.10	15 741	5	G	Night In A Mill	11/4	1	72	5	0	?		-5.00	-15.00	85.00		
06-Sep-00	Eps 4.30	7 771	4	G	Elmhurst Boy	7/2	2	67	8	0	?		-8.00	-23.00	77.00		
07-Sep-00	Don 4.40	22 031	2	G	Arpeggio	7/1	1	74	7	3	4/1	f	-7.00	-30.00	70.00		
08-Sep-00	Goo 3.15	16 711	2	GF	Riberac	7/4	1	78	6	0	5/2	f	-6.00	-36.00	64.00		
09-Sep-00	Goo 5.35	17 081	5	RGGF	Branston Pickle	3/1	1	78	6	2	2/1		-6.00	-42.00	58.00		
16-Sep-00	Ayr 2.50	29 00-1	2	F	Ptmigan Ridge	12/1	4	78	5	0	10/1	jf	-5.00	-47.00	53.00		
18-Sep-00	Lei 2.15	22 111	4	G	American Cousin	4/1	1	77	5	0	7/2	f	-5.00	-52.00	48.00		
19-Sep-00	Bev 3.30	16 231	5	G	Thihn	7/2	1	74	2	2	7/4	f	-2.00	-54.00	46.00		
21-Sep-00	Pon 3.50	10 611	6	RGGF	Golden Way	4/5	1	78	4	2	4/6	f	-4.00	-58.00	42.00		
23-Sep-00	Hay 4.15	17 381	3	F	Polly Golithly	12/1	9	78	3	1	11/1		33.00	-25.00	75.00		
27-Sep-00	Bri 3.40	14 L41	5	RG	Coruscating	3/1	1	76	6	0	9/2	f	-6.00	-31.00	69.00		
30-Sep-00	Chp 4.00	5 2-51	6	GF	Monsieur Tagel	13/8	1	78	3	1	9/4	f	6.75	-24.25	75.75		
30-Sep-00	Red 4.55	15 011	6	GF	Level Headed	7/2	1	78	3	0	11/4	f	-3.00	-27.25	72.75		-27.25
02-Oct-00	Pon 3.45	18 141	2	F	Wilemmege	6/1	3	78	4	1	4/1		16.00	16.00	116.00		100
05-Oct-00	Yor 4.30	20 261	3	F	Lancer	99/1		78	3	0	11/2	cf	-3.00	13.00	113.00		
07-Oct-00	Yor 3.10	17 411	2	RGGF	Evening Scent	13/2	1	78	3	0	9/4	f	-3.00	10.00	110.00		
07-Oct-00	Sou 5.00	8 P11	6	G	Sassy	6/4	1	70	8	0	2/1	f	-8.00	2.00	102.00		
17-Oct-00	Exe 3.40	14 5-31	3	F	MichelDe Moeurs	7/4	1	78	10	0	?		-10.00	-8.00	92.00		
24-Oct-00	Red 3.35	20 041	6	F	Ginner Morris	12/1	8	78	2	0	?		-2.00	-10.00	90.00		
24-Oct-00	Red 4.45	7 4L1	5	RGF	Greyfield	2/1	1	78	7	0	1/1	f	-7.00	-17.00	83.00		
27-Oct-00	New 4.15	13 201	2	RGG	Acebo Lyons	99/1		75	8	0	?		-8.00	-25.00	75.00		
28-Oct-00	New 4.05	30 511	4	F	Greenaway Bay	11/1	5	78	3	1	8/1		24.00	-1.00	99.00		Oct
01-Nov-00	Mus 4.15	14 321	6	F	Ace Of Trumps	7/1	3	78	5	0	?		-5.00	-5.00	95.00		100
03-Nov-00	Don 4.00	21 111	6	GF	Greenaway Bay	9/4	1	78	9	2	5/2	f	-9.00	-14.00	86.00		
14-Nov-00	NAb 2.40	5 1-1	5	RGGF	Tensile	1/1	1	78	4	0	5/6	f	-4.00	-18.00	82.00		
14-Nov-00	Lin 3.50	16 341	5	G	Janiceland	7/1	3	77	4	1	2/1	f	8.00	-10.00	90.00		
15-Nov-00	Wol 1.55	10 861	4	F	Light Evidence	99/1		78	2	0	?		-2.00	-12.00	88.00		
17-Nov-00	Sou 12.10	16 411	3	G	Janiceland	13/8	1	77	8	0	2/1	f	-8.00	-20.00	80.00		

Date	Crse	Time	Nor	Form	DSL	R Tips	Horse	Odds	PIF	Ratin	STK	Fin	SP	PIB	Prof/	Cum	BANK	S/B	Mthly
21-Nov-00	Wol	2.50	13	051	6	F	PursuitOfDreams	7/2	1	78	8	2	2/1	f	-8.00	-28.00	72.00		
25-Nov-00	Wol	9.30	12	381	5	G	Palo Blanco	7/2	1	77	7	1	5/2	f	17.50	-10.50	89.50		
27-Nov-00	Sou	2.00	13	711	3	GF	Flambe	7/4	1	78	4	1	13/8	f	6.50	-4.00	96.00		
27-Nov-00	Sou	2.30	16	011	3	F	Blakeset	4/1	1	78	4	1	7/1	f	28.00	24.00	124.00		Nov
02-Dec-00	Wol	8.00	12	231	4	F	Stand By	5/2	1	78	8	0	?		-8.00	-8.00	92.00		100
09-Dec-00	Che	3.05	8	3-21	6	RG	Youneverwalkalo	7/4	1	75	5	0	13/8	f	-5.00	-13.00	87.00		
11-Dec-00	Sou	12.30	16	111	2	F	Indian Dance	5/2	1	78	7	2	4/6	f	-7.00	-20.00	80.00		
15-Dec-00	Sou	3.10	6	111	2	G	Inzacure	7/2	3	77	8	1	11/8	f	11.00	-9.00	91.00		Dec
1-Jan-01	Exe	3.25	13	511	6	F	Returning	4/1	1	78	5	0	?		-5.00	-5.00	95.00		100
6-Jan-01	Wol	8.30	10	21-1	2	F	Captain Kozando	5/1	2	78	5	0	4/5	f	-5.00	-10.00	90.00		
8-Jan-01	Fon	2.30	12	111	6	G	Miners Dance	5/1	4	77	5	0	?		-5.00	-15.00	85.00		
11-Jan-01	Wol	2.40	13	72-1	6	F	Effervescent	6/1	3	78	2	2	10/3	f	-2.00	-17.00	83.00		
11-Jan-01	Win	3.35	14	63-1	6	RGF	Dulas Bay	11/4	1	78	3	0	6/4	f	-3.00	-20.00	80.00		
11-Jan-01	Wol	4.15	12	9-51	6	GF	Arpeggio	9/4	1	78	3	0	7/4	f	-3.00	-23.00	77.00		
12-Jan-01	Sou	1.10	10	93-1	4	F	Kestral	3/1	1	78	7	0	5/4	f	-7.00	-30.00	70.00		
13-Jan-01	Lin	12.45	14	4-81	3	F	Lost Spirit	5/1	3	78	3	2	4/1		-3.00	-33.00	67.00		
13-Jan-01	War	1.55	18	011	3	GF	Creon	2/1	1	78	4	0	5/4	f	-4.00	-37.00	63.00		
15-Jan-01	Sou	2.30	10	11-1	6	RGGF	Massey	7/4	1	78	6	0	4/7	f	-6.00	-43.00	57.00		
16-Jan-01	Chp	2.40	10	L41	5	F	Selberry	3/1	1	78	5	1	9/2		22.50	-20.50	79.50		
22-Jan-01	Sou	4.15	11	27-1	4	F	Level Headed	7/2	1	78	7	0			-7.00	-27.50	72.50		
23-Jan-01	Wol	3.00	10	12-1	4	GF	Chispa	7/2	1	78	7	0			-7.00	-34.50	65.50		
25-Jan-01	Wol	2.00	13	111	6	GF	Colonel Custer	3/1	1	78	2	1	6/1		12.00	-22.50	77.50		
25-Jan-01	Wol	3.00	6	5-11	6	RGF	Ballymagan	11/10	1	78	4	2	4/7	F	-4.00	-26.50	73.50		
30-Jan-01	Tau	4.30	11	581	5	RG	Mayb-Mayb	11/4	1	71	7	0			-7.000	-33.50	66.50		Jan
935																			YR2000 TOTAL
2-Feb-01	Sou	3.30	15	9-11	3	GF	Robandela(nots)	3/1	1	78	0	0	11/8	F	0.00	0.00	100.00		100
3-Feb-01	Wol	7.00	12	9L-1	2	RGGF	Semiramis	6/4	1	78	10	2	11/4	f	-10.00	-10.00	90.00		
6-Feb-01	Car	2.50	11	4U1	6	F	Cherry Tart	7/2	2	78	5	0	7/4	f	-5.00	-15.00	85.00		
6-Feb-01	Wol	3.15	12	2-81	6	RG	Qandil	99/1	?	77	3	0			-3.00	-18.00	82.00		
6-Feb-01							Dble above 2				1				-1.00	-19.00	81.00		
09-Feb-01	Ban	3.50	9	531	6	RGGF	Dr Jazz	2/1	1	78	8	0	6/4	f	-8.00	-27.00	73.00		
14-Feb-01	Lin	3.10	8	14-1	4	RGF	Tapage	11/4	1	78	3	1	4/1		12.00	-15.00	85.00		
14-Feb-01	Lin	3.40	10	371	4	GF	Spinetail Rufous	9/4	1	78	3	1	15/8	f	5.63	-9.38	90.63		
							Dble above 2				1	1	13.4/1		13.38	4.01	104.01		
15-Feb-01	Wol	2.00	11	461	3	F	Madame Jones	4/1	1	78	5	1	4/1	jf	20.00	24.01	124.01		
17-Feb-01	War	1.55	11	111	2	RGGF	Guard Duty	5/4	1	78	6	1	10/11	f	5.45	29.46	129.46		
19-Feb-01	Sou	1.50	13	0/51	6	RGGF	Arpello	6/4	1	78	6	1	4/5	f	4.80	34.26	134.26		
6-Feb-01	Car	2.50	11	4U1	6	F	Cherry Tart	7/2	2	78	5	0	7/4	f	-5.00	-15.00	85.00		
6-Feb-01	Wol	3.15	12	2-81	6	RG	Qandil	99/1	?	77	3	0			-3.00	-18.00	82.00		
6-Feb-01							Dble above 2				1				-1.00	-19.00	81.00		
09-Feb-01	Ban	3.50	9	531	6	RGGF	Dr Jazz	2/1	1	78	8	0	6/4	f	-8.00	-27.00	73.00		
14-Feb-01	Lin	3.10	8	14-1	4	RGF	Tapage	11/4	1	78	3	1	4/1		12.00	-15.00	85.00		
14-Feb-01	Lin	3.40	10	371	4	GF	Spinetail Rufous	9/4	1	78	3	1	15/8	f	5.63	-9.38	90.63		
							Dble above 2				1	1	13.4/1		13.38	4.01	104.01		
15-Feb-01	Wol	2.00	11	461	3	F	Madame Jones	4/1	1	78	5	1	4/1	jf	20.00	24.01	124.01		
17-Feb-01	War	1.55	11	111	2	RGGF	Guard Duty	5/4	1	78	6	1	10/11	f	5.45	29.46	129.46		
19-Feb-01	Sou	1.50	13	0/51	6	RGGF	Arpello	6/4	1	78	6	1	4/5	f	4.80	34.26	134.26		
20-Feb-01	Wol	2.40	10	80-1	4	GF	Vice Presidential	2/1	1	78	6	0	15/8	f	-6.00	28.26	128.26		
21-Feb-01	Lin	3.50	8	1U1	4	RGF	Border Glen	9/2	2	78	6	0	7/2		-6.00	22.26	122.26		
22-Feb-01	Wol	4.40	12	111	2	F	MadameJones	4/1	2	78	3	0	7/4	f	-3.00	19.26	119.26		
23-Feb-01	Sou	3.20	7	111	3	GF	Silver Socks	5/2	1	78	3	1	4/5	f	2.40	21.66	121.66		

Date	Crse	Time	Nor	Form	DSLR	Tips	Horse	Odds	PIF	Ratin	STK	Fin	SP	PIB	Prof/	Cum	BANK	S/B	Mthly
23-Feb-01	Sou	5.00	8	511	4	RGGF	Arpello	1/1	1	78	3	0	3/1		-3.00	18.66	118.66		
							* Dble above 2									-1.00	17.66	117.66	
24-Feb-01	Lin	3.25	11	581	5	F	Base Line	8/1	7	78	2	1	7/1		14.00	31.66	131.66		
24-Feb-01	Kem	4.10	7	121	5	G	Gastina	11/4	2	68	2	0	11/4		-2.00	29.66	129.66		
							* Dble above 2									-1.00	28.66	128.66	
26-Feb-01	Sou	1.40	11	251	4	GF	Rimatara	5/1	2	78	2	0	2/1	f	-2.00	26.66	126.66		
26-Feb-01	Sou	4.50	8	111	3	RGGF	Silver Socks	3/1	1	78	3	0	6/5	f	-3.00	23.66	123.66		
							* Dble above 2									-1.00	22.66	122.66	22.66
10-Mar-01	Wol	3.15	13	601	2	F	Thunder Sky	99/1	NQ	78	5	0	?		-5.00	-5.00	95.00	100	
14-Mar-01	Wol	3.00	11	251	4	F	Illusive	7/2	1	78	5	0	11/2		-5.00	-10.00	90.00		
22-Mar-01	Wol	4.50	7	821	1	F	Calling The Shots	11/2	5	78	5	1	7/2		17.50	7.50	107.50		
24-Mar-01	Wol	7.00	7	251	3	RG	Madame Jones	5/1	3	73	5	0	?		-5.00	2.50	102.50		
27-Mar-01	Wol	4.40	12	231	3	GF	Anstand	2/1	1	78	5	0	5/4	f	-5.00	-2.50	97.50		
30-Mar-01	Sou	4.10	7	121	1	G	Vodka	7/2	2	76	5	3	4/1		-5.00	-7.50	92.50		-7.50

The answer seems to be to bet level stakes, perhaps with increasing stakes only if the betting bank justifies an increase.

Anyone else analysed their own betting results?

Is the solution in my case to bet only when a double is indicated? Anyone care to do a similar comparison?



Anyone with a strategy they reckon can help turn Peter's fortunes around, we'd love to hear from you! - Stef

IDEAS, SYSTEMS, STRATEGIES, STAKING, RESEARCH, STUDIES

AT SMARTsig WE'RE ALWAYS GLAD TO RECEIVE YOUR SUBMISSIONS FOR INCLUSION IN THE MAGAZINE.

ALL ITEMS PUBLISHED ARE REWARDED BY ADDING EXTRA MONTHS TO THE CONTRIBUTOR'S SUBSCRIPTION PERIOD.

Handwritten, typed, computer file or what have you.

Don't go unnoticed, get yourself into print!



The season ends with our profits taking yet another knock. But should we be downhearted—or learn from the experience?

SOCCER SUPERIORITY SPREADS

SMARTsig

The simplistic approach to cracking the football superiority spreads has not panned out the way we had hoped it would when we begin this investigation with higher hopes earlier this season.

A clattering loss sustained over a single weekend in early January has now been followed by more adverse results as the season draws to its close. In fact the plan has lost more over this final month than it had in the entire preceding period.

Is this as good a time as any to abandon this approach? *He who learns to walk away lives to fight another day* (with at least some of his betting bank intact!) Has this all been a fruitless exercise then? We tried, we failed, so we move on. Well, not without a thorough investigation we don't.

We can learn just as much - if not more - from our adversities as we can from our triumphs. There must be many thousands of promising systematic approaches that have ended their brief lives at the bottom of a waste-paper bin.

But first the bad news. The trading account in all its gory detail is concluded below;

Final accounting period 31 March to 22 April 2001

Bank brought forward:	-14.80
Loss this period:	-22.15
Final balance:	-36.95

score	date	Home side	PI	pts	Away side	PI	pts	Ratg.	Pred	Trade	Edge	Bet	stake	BANK		
20	31/3	Arsenal	30	54	Tottenham	30	39	0.5	0.8	no edge			2	-14.80		
22	31/3	Bradford	29	17	Newcastle	29	38	-0.8	0.0	(2/5) H	2	SAF	2	0	0.40	-14.40
21	31/3	Chelsea	29	42	Middlesbro	30	31	0.4	0.7	11/14 CH	4	SHF	0.5	1	0.05	-14.35
20	31/3	Coventry	30	24	Derby	30	35	-0.4	0.3	no edge			2			-14.35
20	31/3	Liverpool	28	46	Man Utd	30	70	-0.7	0.0	no edge			2			-14.35
13	31/3	Man City	30	27	AstonVilla	29	38	-0.5	0.2	no edge			-2			-14.35
02	31/3	Sunderland	30	48	Leeds	30	47	0.0	0.5	.15ch S	3	BH	1	-2	-2.15	-16.50
02	31/3	West Ham	30	35	Everton	30	32	0.1	0.6	no edge			-2			-16.50
20	1/4	Charlton	30	42	Leicester	29	45	-0.2	0.3	no edge			2			-16.50
22	7/4	AstonVilla	31	44	West Ham	31	35	0.2	0.6	no edge			0			-16.50
04	7/4	Derby	31	35	Chelsea	30	45	-0.4	0.3	(0/3) C,S	3	SAF	2	-4	-8.00	-24.50
20	7/4	Leeds	31	50	Southampt	30	44	0.1	0.6	10/13 all	4	SHF	0.5	2	-0.50	-25.00
13	7/4	Leicester	31	45	Coventry	31	27	0.5	0.8	3/6 C	2	BHF	1	-2	-2.60	-27.60
31	8/4	Everton	31	35	Man City	31	27	0.2	0.6	no edge			2			-27.60
11	10/4	Ipswich	31	52	Liverpool	29	49	-0.1	0.4	.15ch X,S	3	BH	1	0	-0.15	-27.75
21	10/4	Man Utd	31	70	Charlton	31	45	0.8	1.0	17/20 S	7	SHF	0.5	1	0.35	-27.40
21	10/4	Tottenham	31	39	Bradford	30	18	0.6	0.9	11/14 I,S	2	SHF	0.5	1	0.05	-27.35
12	13/4	Liverpool	30	50	Leeds	32	53	0.0	0.5	no edge			-1			-27.35
22	13/4	Bolton	39	73	Birmingha	41	69	0.1	0.6	no edge			0			-27.35
20	13/4	Bradford	31	18	Charlton	32	45	-0.9	-0.1	no edge	5	SHF	0.5	2		-27.35
42	14/4	Man Utd	32	73	Coventry	32	30	1.3	1.3	15/18 H	5	SHF	0.5	2	-0.25	-27.60
20	16/4	Blackburn	40	77	Huddersfie	41	43	0.8	1.0	12/15 CSX	2	SHF	0.5	2	-0.40	-28.00
10	16/4	Coventry	33	30	Sunderland	33	49	-0.6	0.1	no edge			1			-28.00
20	16/4	Derby	33	35	Leicester	33	45	-0.4	0.3	no edge			2			-28.00
12	16/4	Middlesbro	33	35	Ipswich	33	56	-0.7	0.0	no edge			-1			-28.00
21	16/4	Newcastle	31	39	West Ham	33	39	0.0	0.5	no edge			1			-28.00
33	17/4	Charlton	33	45	AstonVilla	33	48	-0.1	0.4	no edge			0			-28.00
03	17/4	Tottenham	33	45	Chelsea	32	51	-0.3	0.3	(0/3) S	3	SAF	2	-3	-6.00	-34.00
41	21/4	Arsenal	33	60	Everton	34	38	0.7	1.0	15/18 X	5	SHF	0.5	3	-0.75	-34.75
00	21/4	AstonVilla	33	48	Southampt	32	44	0.0	0.5	9/12 I	4	SHF	0.5	0	0.45	-34.30
20	21/4	Bradford	32	21	Derby	34	38	-0.5	0.2	(0/3) I	2	BH	1	2	2.00	-32.30
01	21/4	Chelsea	32	51	Charlton	33	45	0.2	0.6	14/17 H,X	8	SHF	0.5	-1	1.40	-30.90
20	21/4	Ipswich	34	59	Coventry	34	33	0.7	1.0	no edge			2			-30.90
03	21/4	Leicester	34	45	Middlesbro	34	35	0.2	0.6	.15ch H	5	BH	1	-3	-3.15	-34.05
11	21/4	Man Utd	33	76	Man City	34	30	1.4	1.4	18/21 I	4	SHF	0.5	0	0.90	-33.15
11	21/4	Sunderland	34	49	Newcastle	32	42	0.1	0.6	no edge			0			-33.15
02	21/4	West Ham	34	39	Leeds	33	56	-0.6	0.1	(3/6) H	4	SAF	2	-2	-3.40	-36.55
31	22/4	Liverpool	32	53	Tottenham	33	45	0.2	0.6	12/15 C,X	6	SHF	0.5	2	-0.40	-36.95

The bottom line of -36.95 at the season's end could be enough by itself to alienate all but the most persistent of systemites. But with a little spadework we can maybe find a little comfort to at least ease the pain, if not repair the bruised pride entirely.

Back-fitting is, as I understand it, engineering your criteria to fit the results - in order to claim a more profitable outcome. Our losses here will remain, they're already admitted, so my examination is more to do with seeing where things went wrong in order to get it right next time - a sort of forward-fitting if you like.

First thing I must admit to is a cardinal sin. And one that has been referred to so many times in these pages you would have thought by now it was second nature to most of us. But hands up, I admit to it, this is a clear case of red handed "Do as I say, not as I do".

My reference is of course to staking. I'd fallen prey to that punter trap which affects the majority of us from time-to-time - using staking in an (often vain) attempt to get more money on the winners than on the losers. - And of course if we *really* knew which ones the winners were beforehand would be better not to back the losers at all. Stop fooling yourself Stef, you *don't* know beforehand which will win and which won't, so why suggest a staking strategy to gain from such an unknown quantity.

In January, after analysing the results to date, it indicated that the bulk of the profits were coming from selling away team superiorities, and that the biggest loss maker was selling home sides. So I suggested adjusting stakes accordingly. Selling away side 2 point stake, selling home side, half point, all other bets, 1 point.

Final outcome from level stake start, graded stakes later on = -36.95. Outcome if series had been continued in level 1 point stakes = -19.60

That foolish, rash and irresponsible act, probably led by greed, had the effect of all but doubling our losses. Read it and weep, but take on board the message that comes through loud and clear. Greed can be your downfall.

One of the tables published in my original article last November (SMARTsig 7.11) showed the spread quotes necessary to give an 'edge' of 0.5 of a goal and higher. This was in fact based upon the model I used in 1996 and did indicate the minimum edge I used back then. Why then, for this magazine exercise this season, did I accept 'edges' of just 0.2 of a goal and over? I don't honestly know.

If we look at the whole betting period using the [0.2 edge or better] rule it reveals 142 bets. If we'd stuck to level 1 point stakes that would have resulted in a loss of -19.60.

Using the more conservative (and 'safer?') edge of 0.5 goal minimum gave an improved picture as you'd expect. 60 bets with a loss of -9.85.

And one final point. You've read it countless times before, it is referred to in many specialty football betting books and it governs my own real life betting activities.

- Betting early or late season is often unpredictable and best left alone. -

My own methods, and the system referred to in this article do not allow early season betting because of compiling current season form, I always wait for a minimum of 8 league games played. My rule of thumb for the season end is to stop betting at the end of March.

There is still mileage in this approach I'm convinced. So, in preparation for next season I'm re-compiling an up-to-date superiority chart using recent data (rather than relying on the 1994/5 stats) to attack the same market next season.

Only next time we'll be better armed for the experience.

! NEW ! NEW ! NEW ! NEW ! NEW ! NEW ! NEW ! NEW !

@ www.smartsig.com

In a move to help our bookloving members, the SMARTsig Internet web site now has a direct link with Gambler's Book Store. Simply -click- on the SMARTsig bookstore link on our web site home page for the best selection of betting books around.

RacingSystemBuilder

SMART members qualify for 10% discount RSB software packages.

Racedata Modelling Ltd.,
Upper Buckenhill
Farmhouse, Fownhope,
Herefordshire HR1 4PU
Tel: 01432 860 864



HOOF

**HORSERACE
OPTIMUM
ODDS
FORECASTER**

**NH value ratings on the Internet
“. . simply in a class of their own . .”**

email: tony@hoof.demon.co.uk

Tel: 01873 811427

SMARTsig results-on-disk

FLAT 2000 results available NOW !

8 seasons of **NH** (1992/3 – 99/2000) & **9** seasons of **Flat** (1992 –2000)

PC comma separated text files only £31 post paid per season.

SAVE! purchase any 5 seasons or more at the one time and qualify for 20% discount (5 seasons @ £124 post paid - 10 seasons @ £248 etc.)

Only available through SMARTsig, PO Box 44, Hayle. TR27 6YH
Credit/debit cards `phone/fax 01736 754400 or email stef@smartsig.com

Soccer results on disk, weekly results & odds by email

For further information regarding the weekend odds service, soccer results files and almost every other up-to-the-minute soccer statistic you can think of – all at realistic, value for money prices, contact Bill Hunter at;

Mabels-Tables, PO Box 14555, Dunfermline KY11 4WA

Tel: 01383 721 729 email: bill@mabels-tables.co.uk

Internet: www.mabels-tables.com

**SMARTsig members qualify for a further 10% discount
. . . even on top of existing discounts.**

All advertisements are published in good faith, and do not imply any recommendation. SMARTsig members should satisfy themselves as to the suitability of a product/service before proceeding.

SMARTsig member benefits are for subscribers only. Payment by cheque, money order or credit/debit card. Card payments can be made by telephone or fax (01736 754400)

Tick (✓) box	UK & N. Ireland	Irish Republic & other European	Rest of the World
3 months	£13.00	£14.05	£15.58
6 months	£25.00	£27.10	£30.16
12 months	£45.00	£49.20	£55.32

Please enrol me as a subscriber, every issue hot off the press, by first class mail.

Name		Telephone
Address		<i>(Please PRINT)</i>
Post Code		

Card number

Expiry Issue no (Switch) Signature

EASY PAYMENTS!

Subs can be paid by bank standing order at only £3.75 monthly (UK customers). Call for details.

BACK ISSUES: £3.50 each whilst stocks last. (Single issues add 50p postage, order of 2 or more, post free) We are no longer able to reprint out-of stock issues. However, work is underway to publish back issues in electronic book format in volumes.

SMARTsig Confidential

Published by: **SMARTsig, PO Box 44, HAYLE. TR27 6YH**
'phone and fax 01736 754400

email stef@smartsig.com

Internet: www.smartsig.com

The opinions expressed herein are not necessarily those of the Editor or publisher, but are often taken directly from members contributions. **SMARTsig** does not accept any liabilities for inaccuracies within the content of the magazine, nor for any consequences thereof. We will always endeavour to print replies and/or corrections by or on behalf of parties who may feel they may have been misrepresented in any way. **SMARTsig** encourages and welcomes contributions from its members but is unable to accept any responsibility for loss or any damage of any material, solicited or otherwise. Everything published in done so in good faith, and is the copyright of either **SMARTsig**, the contributor, or both - subject to it not having been published elsewhere beforehand. This Journal, nor any of its contents must not, in whole or part, be copied, duplicated, loaned or distributed without the written permission of the copyright holder(s).

We recommend you exercise caution with any contacts established through our group and never speculate with money you cannot afford to lose.

© **2001 SMARTsig**