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Pace Handicapping with Brohamer Figures

Part 2 of the 4 Part Series
"The Brohamer Track Decision Model"

This is the second of a four-part series covering the groundbreaking concepts in Tom Brohamer's book, "Modern Pace Handicapping", based, in part, on the Sartin Methodology to which Tom Brohamer was a key contributor. With permission from both Tom Brohamer and Howard Sartin, these concepts have been implemented in ALL-Ways Handicapping Software. This second part of the series looks at the Brohamer Track Decision Model, a unique and very powerful way to evaluate how a horse's preferred running style pattern matches up with the "race type specific" pace demands of the track. And, separate models are maintained for win horses and place horses. **It is this kind of advanced information that handicappers need to gain an edge over their competitors.**

This article will start with a brief recap of the material in Part 1. However, if you would like to read Part 1 of this 4-part series in its entirety, you will find it in the Favorite Articles Series that is posted in the Newsletter Section of the Frandsen Publishing Web site at www.Frandsen.com.

Even if you are not an ALL-Ways Software handicapper, we suggest you read this and the subsequent articles in the series. The concepts presented are fundamental to effective pace handicapping. And, pace handicapping should, in our opinion, be a part of everyone's analysis of the races. Remember, most races are won by horses that are not the top speed figure horse coming into the race. More often than not, the top speed figure horse does not win because it not well suited to the pace match-up scenario in the race.

Recap of Part 1: *"Velocity Based Pace Figures"*

First, races are divided into three fractions as shown below.

Internal Race Fractions	**Sprints**	**Routes**
Fraction #1:	gate to 2 furlongs	gate to 4 furlongs
Fraction #2:	2 furlongs to 4 furlongs	4 furlongs to 6 furlongs
Fraction #3:	4 furlongs to finish	6 furlongs to finish

ALL-Ways software determines each horse's actual running time for each fraction of the race. The actual time is adjusted by the daily track variant and, if required, a track-to-track adjustment is made. ALL-Ways software then calculates the feet-per-second velocity for each fraction. These velocity based pace figures are then used to calculate the four key Brohamer Pace Ratings described below.

1) **EP**: **E**arly **P**ace is the horse's average velocity from the gate to the Second Call (4 furlongs in sprints and 6 furlongs in routes). Thus, EP encompasses both Fraction #1 and Fraction #2 of the race.

    Early Pace (EP) Pace Rating = Second Call distance/Second Call time

2) **SP**: **S**ustained **P**ace is the average of the horse's EP velocity and Fraction #3 velocity. It relates a horse's potential Second Call performance with its finishing ability.

    Sustained Pace (SP) Rating = (EP + 3rd fraction)/2

3) **AP**: **A**verage **P**ace, in sprints, is the average velocity of all three race fractions. In routes, it is the average of the horse's EP and SP figures.

    Sprints: Average Pace (AP) Rating = (1st fraction + 2nd fraction + 3rd fraction)/3
    Routes: Average Pace (AP) Rating = (EP+ SP)/2

4) **FX**: **F**actor **X** is used only in sprints. It is the average of the horse's 1st fraction and 3rd fraction velocities. It relates a horse's potential First Call performance to its finishing ability.

    Factor X (FX) Rating <u>for sprints only</u> = (1st fraction + 3rd fraction)/2

Here is an array of information for the performance of a horse in a typical 6 furlong dirt sprint.

Fraction	#1	#2	#3
Furlongs	2	2	2
Feet	1,320	1,320	1,320
Horse's Times	22.2	45.3	70.5
Fraction Time	22.2	23.1	25.2
Feet-Per-Second	59.46	57.14	52.38

Early Pace (EP)	Average Pace (AP)	Sustained Pace (SP)	Factor X (FX)
58.28	56.33	55.33	55.92

Part 1 of this series went on to explain how to use these figures to make handicapping and wagering decisions. Now, we turn our attention to the powerful Brohamer Track Decision Model.

All past ALL-Ways Newsletters, as well as a Major Topic Index, are posted on both the BRIS and Frandsen Publishing Web sites and they are always free. Also, articles already published as part of the Favorite ALL-Ways Newsletter Article series are posted in the Newsletter Section on the Frandsen Publishing Web site and they are free as well. See the links at the end of this article.

Part 2: Brohamer "Track Decision Model"

Rankings

The first thing to understand is the simple concept of ranking horses by their Brohamer pace figures. We are going to use a dirt route as an example. Remember that we do not use Factor X (FX) for route races. The first chart below shows each horse's Brohamer Pace Ratings of Early Pace (EP), Average Pace (AP) and Sustained Pace (SP). The second chart shows each horse's Brohamer Rankings for these pace ratings.

Example of Brohamer Pace Ratings and Rankings

(From an Actual Dirt Route Run at Calder Race Course)

Brohamer Pace Ratings

	EP Rating	AP Rating	SP Rating
Horse A	51.65	49.96	48.26
Horse B	52.20	51.25	50.31
Horse C	51.84	51.06	50.27
Horse D	51.88	50.42	48.95
Horse E	52.47	50.20	47.94
Horse F	51.20	50.78	50.13
Horse G	50.47	48.63	47.21
Horse H	51.03	50.75	50.47
Horse I	51.09	51.10	51.12
Horse J	51.87	50.90	49.92
Horse K	51.79	51.08	50.36
Horse L	52.03	49.81	47.59

Brohamer Pace Rankings

	EP Ranking	AP Ranking	SP Ranking	Total Score
Horse A	8	10	9	27
Horse B	2	1	4	7
Horse C	6	4	5	15
Horse D	4	8	8	20
Horse E	1	9	10	20
Horse F	9	6	6	21
Horse G	12	12	12	36
Horse H	11	7	2	20
Horse I	10	2	1	13
Horse J	5	5	7	17
Horse K	7	3	3	13
Horse L	3	11	11	25

In the example above, Horse "B" is ranked second in Early Pace, first in Average Pace and fourth in Sustained Pace. Horse "B"s total ranking score is 7, which is the best of all the horses. Horse "B" is a pretty balanced horse but a better early runner than closer within the context of this field of contenders. Contrast this to Horse "E" that is the best EP horse but among the worst AP and SP horses. At the other extreme is Horse "I" that is near the worst EP horse but is the best SP horse.

Narrowing Down the Field

Before we look at the Brohamer Track Decision Models, there are some important preliminary conclusions we can usually make by just looking at the ranking figures. Specifically, these ranking figures can be a good way to reduce large field sizes. First, Average Pace rankings and/or the Total Ranking Score will often identify some horses that are simply not competitive. In the example above, horses "A", "F" and "G" have poor rankings for all three factors (EP, AP and SP). Horses "E", "H" and "L" can also be eliminated from consideration. Horses "E" and "L" both have bad AP and SP rankings, but they do have good EP rankings. This points out another common "elimination consideration", specifically what we refer to as "One Fraction Wonders". Based on this, we would also eliminate horse "H" that has a good SP ranking, but poor AP and EP rankings. So, at this point, we have eliminated horses "A", "E", "F", "G", "H" and "L", reducing the primary contenders down to six horses.

Some players may prefer to do this elimination step after reviewing the Track Decision Model for the race being run. Indeed that is acceptable. However, in practice, we have found that doing this early in the process generally eliminates the same horses and it allows us to construct a "Contenders Only Ranking List" as shown below:

Brohamer Pace Rankings
Contenders Only

	EP Ranking	AP Ranking	SP Ranking	Total Score
Horse B	1	1	3	5
Horse C	4	4	4	12
Horse D	2	6	6	14
Horse I	6	2	1	9
Horse J	3	5	5	13
Horse K	5	3	2	10

The "Track Decision Model"

It is important to understand the pace biases that are in play at the track being played. The biases will generally be different for sprints and routes and for dirt, turf and synthetic race surfaces. ALL-Ways software includes detailed pace and post position bias statistics for both the current meet and the current week at each individual track, including for the specific distance of the race being handicapped.

ALL-Ways software also looks at pace bias in another way, namely the Brohamer Track Decision Model. This model shows you the average Brohamer EP, AP, SP and FX rankings and Total Ranking score for winning horses at each track you handicap. Separate models are maintained for dirt sprints, dirt routes, turf sprints, turf routes, off-track dirt sprints and off-track dirt routes and for the specific distance of today's race. Separate models are also maintained for the inner and main tracks at the New York circuit tracks. **And, a separate model is also maintained for place horses as well.**

Let's look at some sample data from the Track Decision Models for Belmont Park, Churchill Downs and Golden Gate Fields. **Remember, we are looking at the average *ranking* of winning horses for each Brohamer pace figure.**

Sample Track Decision Models for Dirt Sprints

Track	EP	AP	SP	FX	Total
Belmont	2	3	4	3	12
Churchill	4	4	4	4	16
Golden Gate	3	3	3	3	12

In dirt sprints, Belmont favors Early Pace runners. Churchill Downs seems to like even runners and the "4" rankings across the board indicate you can go a bit deeper in the contender list for the winner. Golden Gate, which has a synthetic "dirt" track, also likes even runners, but you cannot go as deep in the contender list for the winning horse.

Important: One of the most revealing pieces of information in these Track Decision Models is looking at the EP and SP values together. The relationship of these two numbers shows us if the model leans towards early runners or leans towards late runners or is evenly balanced. Remember, the formula for Sustained Pace is SP = (EP + Fraction #3)/2.

	EP	AP	SP	
Belmont Dirt Sprints:	2	3	4	Favors early runners.
Belmont Dirt Routes:	4	3	3	Favors late runners.
Churchill Dirt Sprints:	4	4	4	Favors even runners.

A couple more points about the Track Decision Models in ALL-Ways Software: Once again, separate Track Decision Models are maintained for win horses and for place horses. Second, ALL-Ways Software automatically excludes aberrations that would distort the model such as a winning horse with a ranking pattern of 8-8-8 = 24. This kind of winning horse rarely occurs.

Sample Track Decision Models for Dirt Routes

Track	EP	AP	SP	FX	Total
Belmont	4	3	3	n/a	10
Churchill	4	4	4	n/a	12
Golden Gate	4	3	3	n/a	10

In dirt routes, Belmont has shifted to favoring Sustained Pace. Churchill Downs remains favoring even runners and still allows us to go deeper in the contender ranking list for the winning horse. Golden Gate has made a slight shift away from Early Pace.

Sample Track Decision Models for Turf Sprints

Track	EP	AP	SP	FX	Total
Belmont	3	2	2	3	10
Churchill	3	2	2	2	9
Golden Gate	4	2	3	2	11

Perhaps contrary to conventional wisdom, in turf sprints, all three tracks favor Sustained Pace. Note how "tight" Belmont and Churchill Downs are with the “2” rankings for both Average and Sustained Pace. Also, Golden Gate eases up a bit on the need for Early Pace.

Sample Track Decision Models for Turf Routes

Track	EP	AP	SP	FX	Total
Belmont	4	3	3	n/a	10
Churchill	4	3	4	n/a	11
Golden Gate	4	3	3	n/a	10

Moving from Turf Sprints to Turf Routes, the need for Early Pace has loosened up for Belmont and Churchill Downs, which is not really a surprise. Belmont and Golden Gate have loosened up on Average Pace and Sustained Pace, but with EP = 4 and SP =3, both still favor Sustained Pace. Churchill Downs, on the other hand, still looks for more even runners.

Evaluating Horses

Now we will come full circle and see how to use the Brohamer Track Decision Model to actually help us handicap a race. Specifically, we will look at the six horses in the sample ranking chart shown earlier for Calder Race Course.

The example race is for an actual one-mile dirt route race run at Calder. Note that ALL-Ways Software maintains separate Track Decisions Models for both win horses and for place horses and for the specific distance of today's race. These Track Decision Models are shown below.

Track Decision Models for <u>One-Mile Dirt Routes</u> at Calder Race Course

Win Horses

Track	EP	AP	SP	FX	Total
Win Model	4	3	2	n/a	9

Place Horses

Track	EP	AP	SP	FX	Total
Place Model	4	4	5	n/a	13

Here is what these two Track Decision Models for 1-mile Dirt Routes at Calder reveal:

Win Horses: Favor good Average Pace horses with a strong bias towards Sustained Pace. And, the Early Pace "4" value tells us that these good Sustained Pace winners need to at least be in touch with the field at the 2nd Call, ready for its strong closing run.

Place Horses: Place horses also need to be in touch at the 2nd Call (EP=4), but we can go deeper in Average Pace and Sustained Pace. It is not surprising to see this big a difference in the Win Model and the Place Model. However, most handicappers to not have this kind of information, which provides a nice edge for us at the track.

Given this insight, let's look at each horse in the Contender Ranking Chart shown earlier. The numbers in parentheses are the horse's ranking figures for EP, AP and SP respectively. Remember that we already eliminated six of the twelve horses in the race leaving us with six contenders. Here is a repeat of the Contenders Only Ranking Chart shown earlier.

Brohamer Pace Rankings
Contenders Only

	EP Ranking	AP Ranking	SP Ranking	Total Score
Horse B	1	1	3	5
Horse C	4	4	4	12
Horse D	2	6	6	14
Horse I	6	2	1	9
Horse J	3	5	5	13
Horse K	5	3	2	10

Note: This is a repeat of the chart shown earlier in this article.

Now we will look at an analysis of the six contenders using just this pace information.

Horse B (1-1-3 = 5)

Obviously one of the best horses from a pace standpoint; However, because of its strong Early Pace, it is out of balance with the Win Model. We suspect the horse is a better Place candidate than Win candidate.

Horse C (4-4-4 = 12)

An obvious good fit only with the Place Model

Horse D (2-6-6 = 14)

Because of the poor AP and SP rankings of "6", this horse is obviously not a Win candidate.

Horse I (6-2-1 = 9)

Clearly a good AP and SP fit with the Win Model, but we would like better than a "6" EP ranking. Nevertheless, this horse must be considered a Win candidate.

Horse J (3-5-5 = 13)

Another good fit with the Place Model

Horse K (5-3-2 = 10)

Also, clearly a good fit with the Win Model, but we would like better than a "5" EP ranking. But, just like Horse "I", this horse must also be considered as a Win candidate.

So, based solely on these pace considerations, we would place the horses as follows in our Win and Place (and Show) lists.

Our Win Candidates are: Horse "I" and Horse "K"

Both horses are in good balance with the Win Track Decision Model

Our Place (and Show) Candidates are: Horse "B", Horse "C", Horse "D" and Horse "J"

Horses "B", "D" and "J" are out of balance with the Win Track Decision Model and are more suited to the Place Track Decision Model. Horse "C" is an even runner, also better suited to the Place Model.

Once again, these assignments have been made just using the pace concepts in this article. Class, speed and current form must also be considered before making final handicapping decisions. You would also want to verify suitability to distance and surface and this "Ranking vs. Model" analysis is a big help in this area, even for horses trying a distance or surface for the first time. In this particular race, the top BRIS Speed horses were Horse "I" and Horse "K", the top Hall Speed horses were Horse "B", Horse "I", Horse "J" and Horse "K". The best BRIS Class horses were Horse "C", Horse "D", Horse "H" and Horse "I".

Here is how the race actually turned out:

Actual Finish and Payoffs
for the Sample Race at Calder

Finish	Horse	$ Win	$ Place	$ Show
Win	Horse "I"	22.80	8.40	6.60
Place	Horse "D"		4.00	2.80
Show	Horse "K"			5.00
4th	Horse "B"			

$2 Exacta paid $88. $2 Trifecta paid $643

Summary

ALL-Ways Software automatically does all the work to create and update/maintain the Brohamer Track Decision Models every time you handicap a race card. Then, all the information covered in this article can be found on the ALL-Ways "Pace-Line Handicapping Report" and the "Brohamer Plus Handicapping Report.

Coming Up

In Part 3 of our four-part “Pace Handicapping with Brohamer Figures” Series, we will cover the the Sartin Methodology of “Percent Early” Energy Distribution. Then in Part 4, we will present a discussion of Turn Time, the “hidden fraction” and we will finish with a wrap up of the full series.

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More about ALL-Ways Software

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