

Horse betting and the math-made billionaire

Out of the Box

Tony Chan Fan-cheong is president of the Hong Kong University of Science and Technology. He has spent his life pursuing his dreams relating to teaching and research, and has unique views on education, scientific and technological development, and nurturing the young.



THERE ARE SKEPTICS who doubt whether there is money in tech in Hong Kong's future.

But would you believe that a STEM expert had earned big money (HK\$7.8 billion) in Hong Kong in the recent past? And it was not in some trendy field like AI or robotics but in horse racing – the quintessential Hong Kong pastime!

The story is fascinating. The main character is an American called William Benter.

I first heard of him in 2010, when the City University of Hong Kong announced a HK\$100,000 William Benter Prize in Applied Mathematics.

Almost no mathematicians anywhere had heard of Benter. I was told Benter made his money in horse racing in Hong Kong and that he used math as part of his betting methodology.

I promptly forgot about the whole thing.

Then recently I read a long article in *Bloomberg* published in May about Benter.

Benter's story is the stuff of legend. And given that horse racing is so pervasive in Hong Kong and that he made so much money out of it, Hong Kong people deserve to know more about him.

Benter studied physics in college.

In contrast to Hong Kong culture, his parents had always given him freedom to choose what he studied and how to lead his life.

While in college, he hitchhiked across Europe to Egypt and driven through Russia – quite a feat in those days.

Then he dropped out from college and went to Las Vegas to play blackjack. Most Hong Kong parents would have had a fit!

What motivated Benter was a book titled *Beat the Dealer*, authored by Edward Thorpe, which outlined a methodology to use math and probability theory to get an edge over the dealer in playing blackjack.

I was similarly inspired by the book when I was in college. My roommate and I went to Vegas to try it out and found that it actually worked.

However, our success was limited by gambler's ruin – a streak of bad luck emptied our reserves.

And it was hard work – the small mathematical advantage and our small bets would have taken too long to make our winnings significant.

So we did not pursue it further.

But it was fun.

The hook was the realization that math is not purely abstract but can be useful in real life.

Apparently, that was Benter's motivation too, not just money.

Benter started out first in blackjack in Vegas and Monte Carlo. When he became too successful, he was blacklisted by the casinos.

Looking around for new opportunities, he discovered Hong Kong horse racing, which had the largest betting pool globally. Benter came to Hong Kong in 1985. He took a very scientific approach in his betting algorithm, which took into account many factors: speed, size, record, jockey skill, rest days. He used computers to crunch the numbers.

The result is a small probabilistic edge, which is sufficient to overcome the house's 17 percent cut. He was a pioneer in "big data" science.



William Benter, right, with George Papanicolaou, the winner of the first William Benter Prize in Applied Mathematics.

He went from betting using cash, to using phones, to online. But when the Hong Kong Jockey Club discovered the size of his winnings, it was concerned about negative reaction from the Hong Kong betting public so it revoked his online betting privileges.

Benter then set up office next to a Jockey Club off-course betting center and would print the betting slips 15 mins before the close of a race and rush over to the shop to place the bets.

In 2001, he won the HK\$100 million Triple Trio jackpot but chose not to claim his winnings (which the club automatically allocated to charity in the absence of a claim) – creating a stir in Hong Kong.

Benter estimated that he (and his partners) had earned close to HK\$7.8 billion overall in his career.

Some may view his winnings as ill-gotten ones and say horse racing is just gambling. Benter claims he was not a cheat – he simply played it smart.

After all, the stock market is a big casino and many smart people are earning huge money from it using math and science. Thorpe himself had switched from Vegas to Wall Street.

I am not advocating gambling – my point is that science is not just something abstract but applicable to real life, sometimes in unexpected ways. And life itself is a game of chance in many respects.

I bet there will be a movie made based on Benter's story.

It should be made in Hong Kong, not Hollywood.