

# Nicely Done Gaming

Gaming Math & Casino Game Design



## Unexpected Risk with Pascal's Wager

Pascal's Wager is a well-known concept taught in a surprisingly wide-array of courses including probability, game theory, risk analysis, logic and philosophy.

It introduces the interesting concept of an infinite negative payoff. Blaise Pascal applied the following logic to support why one should believe in God.

	God exists (G)	God does not exist ( $\neg$ G)
Belief (B)	$+\infty$ (infinite gain)	-1 (finite loss)
Disbelief ( $\neg$ B)	$-\infty$ (infinite loss)	+1 (finite gain)

The practical impact of this argument, which has stuck with me for years, is that a real possibility of total disaster will swamp out all other factors in an Expected Value calculation.

Recently, I had the opportunity to refer to Pascal's Wager when discussing a proposed game rule which, in my opinion, would guarantee that a client's game would spectacularly fail in the market. After explaining Pascal's Wager, I drew the parallel to their situation:

While no one in fashion industry like gaming can be 100% accurate in success predictions, my track record is well above average thus the probability of my disaster assessment being correct is well above zero. The "benefit" the clients perceived of their rule change made the game "a little better".

Seems an excellent application of Pascal's Wager, yes? Unfortunately, one of the clients took offense by the introduction of religion. No idea whether this person was very religious or an atheism activist, but his disapproval was unmistakable.

Looking into the backstory, I discovered that Pascal's Wager was more than just an intellectual exercise for Blaise Pascal who pretty much gave up mathematics in order to devote himself to the study of religion.