#1 The Monty Hall Problem

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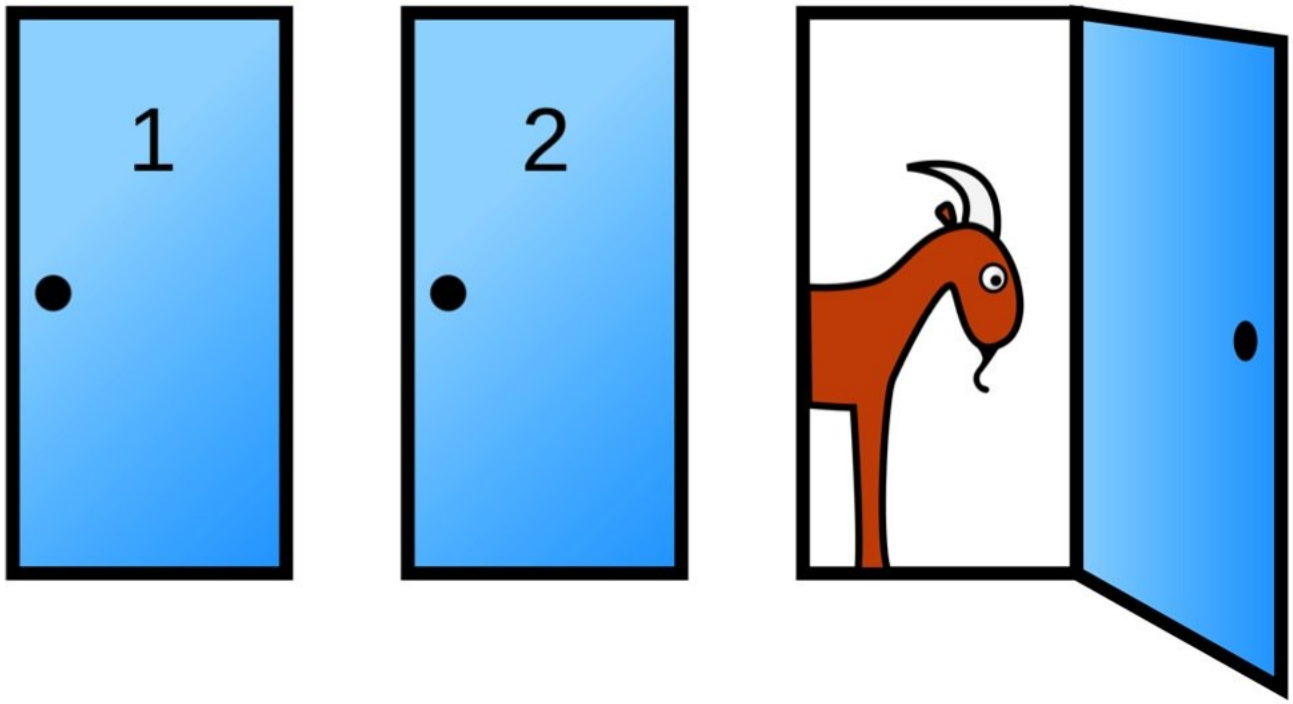
Let's say you're on a game show where the host shows you three doors. Behind one of these doors is a brand new car. Behind the other two are goats. You get to pick a door. Then, the host will open one of the doors you didn't open to reveal one of the goats.



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He asks you:

Do you want to switch doors?

Or do you want to stay with the door you chose?

What do you do?

Walter I

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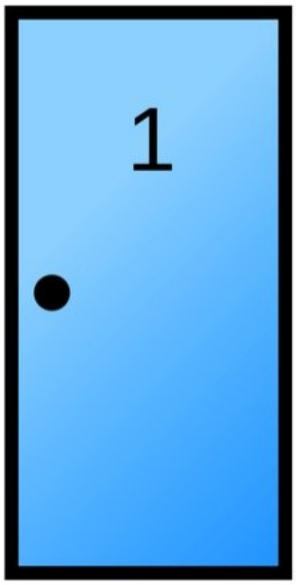
Your first thought is to stay with the door you chose.

- It's worked out pretty well so far, right?
- Since there are only two doors at this point, you reason, it's a fifty-fifty shot at winning the car.
- **Right?**



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WRONG.

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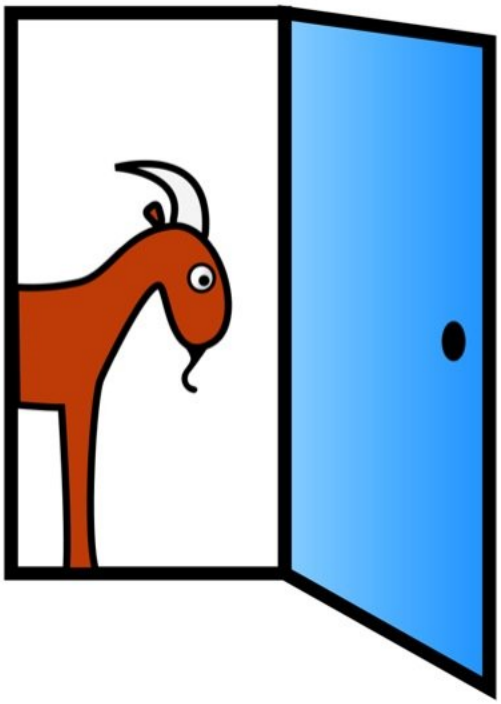

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The best strategy with the game is to **switch.** Every time.

- A player whose strategy is to switch every single time **will only lose when the door they initially selected had the car behind it.**
- Since the odds of choosing the car on the first move are one in three, the odds of losing the game when you switch every time are also one in three.
- This means that a person who switches every time will win two-thirds of the time.
- This is double the odds of winning of the person whose strategy is to stay every time.

Walter I

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Still don't believe me? Let's say you picked door #1. Here are all the possibilities of what could happen:

Door # 1	Door # 2	Door # 3	Result if stay with # 1	Result if switch
Car	Goat	Goat	**Car**	*Goat*
Goat	Car	Goat	*Goat*	**Car**
Goat	Goat	Car	*Goat*	**Car**

If you stay, you win one in three times. If you switch, you win two in three times.

Walter H

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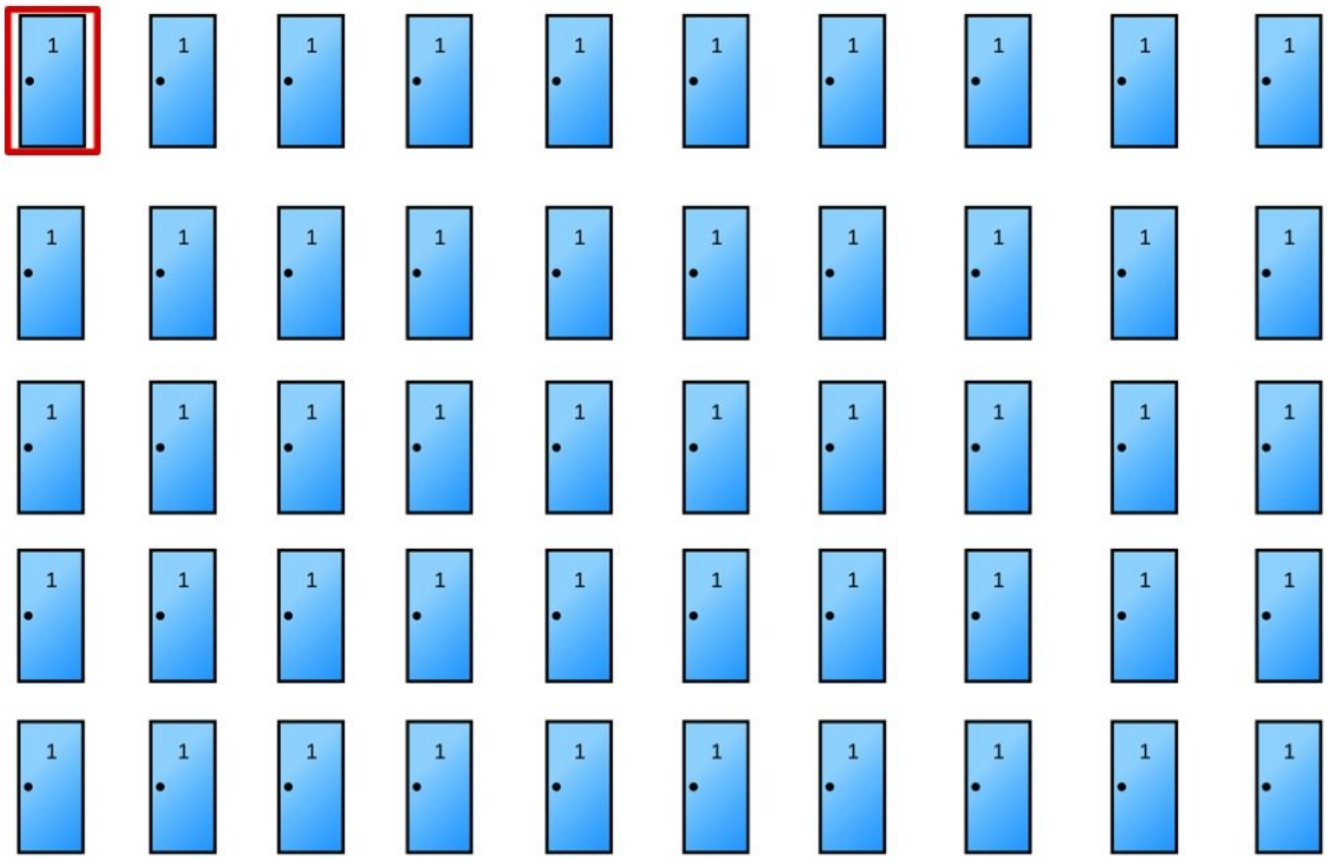
Wait, you still don't believe me?
Let's do the same game, but with 50 doors. You pick the first one.



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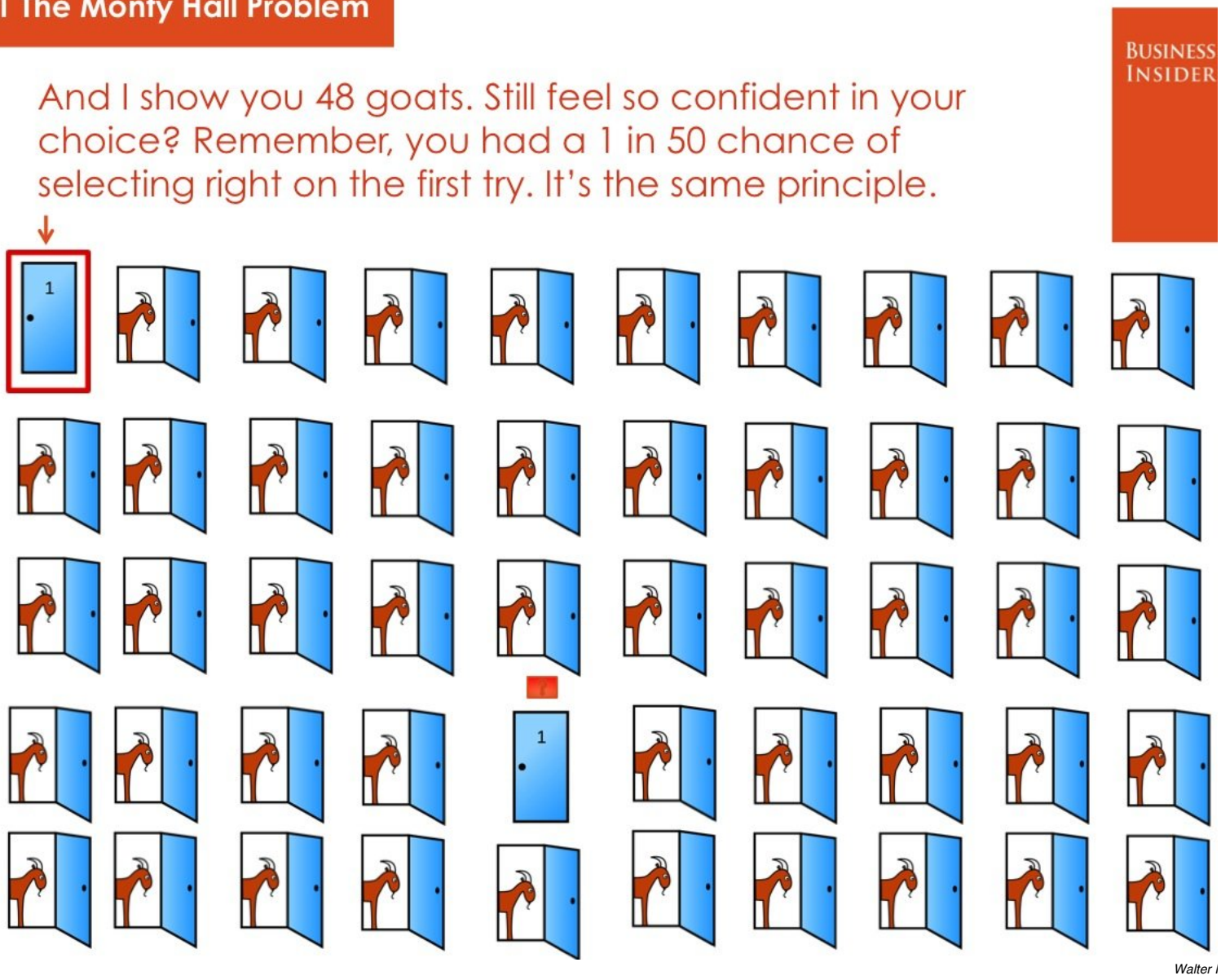
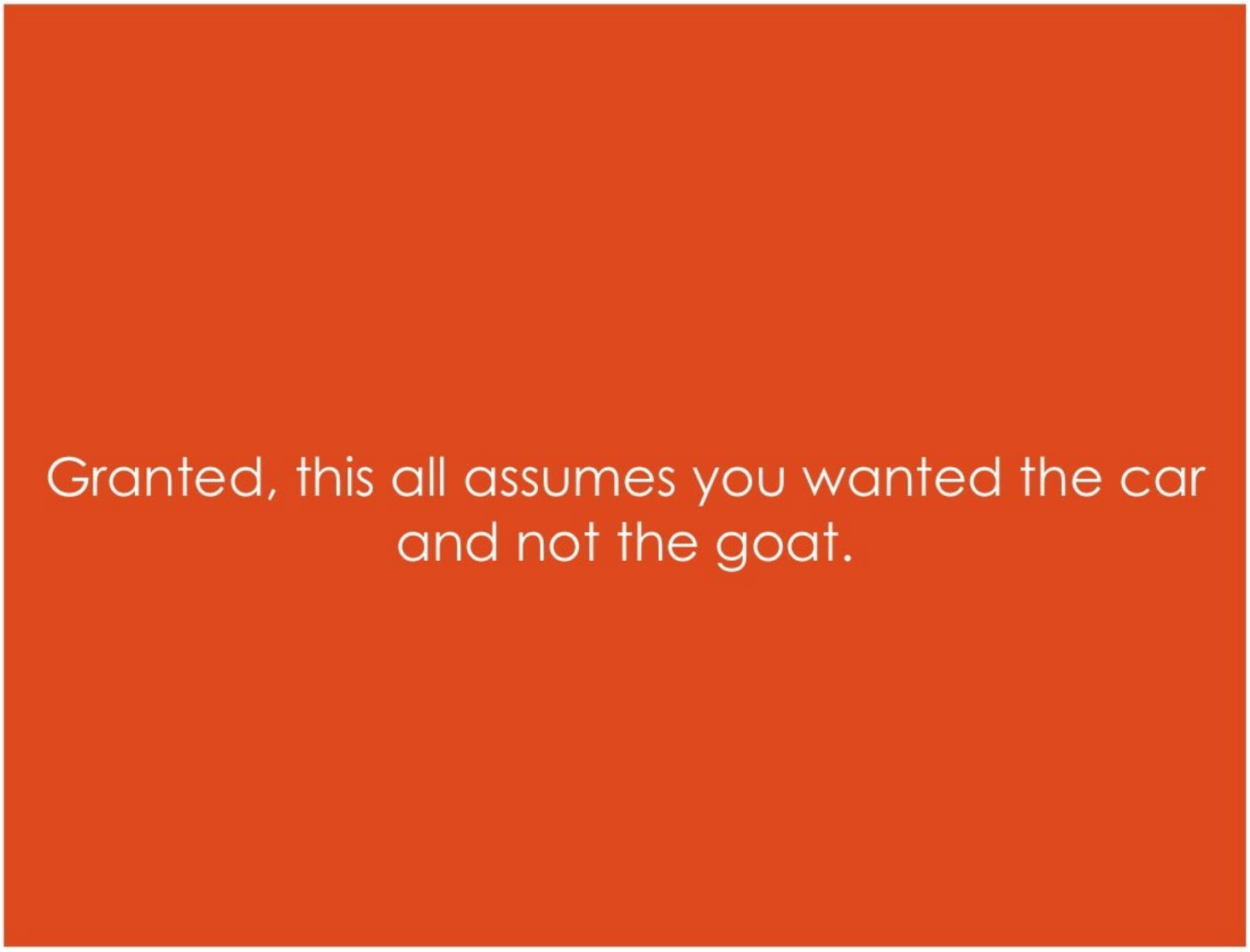


Walter



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