Dice

1/25/08

The Kind of Studies We Can't Do Anymore

- Negative operant conditioning with a random reward system
- Addictive behavior under a random reward system


5000
777
MONEY MAKER

Tali's Weird Scoring System

(1,3,4,6) : *Venus* -- all different sides.
(6,6,6,4) : Total = 22
(6,6,6,3) : Total = 21
(6,6,4,4) : Total = 20
(6,6,6,1) : Total = 19 (high)
(6,6,4,3) : Total = 19
(6,6,3,3) : Total = 18
(6,6,4,1) : Total = 17
(6,6,3,1) : Total = 16
(4,4,4,3) : Total = 15
(6,6,1,1) : Total = 14 (high)
(4,4,3,3) : Total = 14
(4,4,4,1) : Total = 13
(4,4,3,1) : Total = 12
(4,3,3,1) : Total = 11
(4,4,1,1) : Total = 10 (high)
(3,3,3,1) : Total = 10
(4,3,1,1) : Total = 9
(3,3,1,1) : Total = 8
(4,1,1,1) : Total = 7
(3,1,1,1) : Total = 6
(6,x,x,x) : *Senio* -- a single six and anything
(6,6,6,6) : *Vultures* -- all same
(4,4,4,4) : *Vultures* -- all same
(3,3,3,3) : *Vultures* -- all same
(1,1,1,1) : *Dogs* -- lowest of the Vultures

Birth of Probability Theory

- Antoine Gombaud, Chevalier de Méré, writes to Blaise Pascal in 1654
- Does well betting that he'll roll at least one "ace" (1) in 4 throws
- Figures he'll do as well rolling at least one "double ace" in 24 throws
- Not quite working out as planned

One Die

- 1 in 6

Two Dice

Total	2	3	4	5	6	7	8	9	10	11	12
Outcomes	1-1	1-2	1-3	1-4	1-5	1-6	2-6	3-6	4-6	5-6	6-6
		2-1	2-2	2-3	2-4	2-5	3-5	4-5	5-5	6-5	
			3-1	3-2	3-3	3-4	4-4	5-4	6-4		
				4-1	4-2	4-3	5-3	6-3			
					5-1	5-2	6-2				
						6-1					
Favorable	1	2	3	4	5	6	5	4	3	2	1
Probability	1/36	1/18	1/12	1/9	5/36	1/6	5/36	1/9	1/12	1/18	1/36
Percentage	2.78	5.56	8.33	11.1	13.4	16.7	13.4	11.1	8.33	5.56	2.78

Three Dice

- 6 x 6 x 6 = 216 possible throws
- What is the probability of throwing a total of 4?
  - Only three ways: 1-1-2, 1-2-1, 2-1-1
  - 3/216 = 1/72
- What is the probability of throwing a triplet?
  - 6/216 = 1/36

Three Dice

- What is the probability of throwing exactly two 6s?

1-6-6	2-6-6	3-6-6	4-6-6	5-6-6
6-1-6	6-2-6	6-3-6	6-4-6	6-5-6
6-6-1	6-6-2	6-6-3	6-6-4	6-6-5

15/216

Three Dice

- What is the probability of not throwing any 6s at all?
  - 5 x 5 x 5 = 125 possibilities, ∴ 125/216
- Probability of exactly one 6?
  - All outcomes must have 0, 1, 2, or 3 6's
  - Thus, add up all other outcomes and subtract from total
  - 216 - 1 (triplet) - 15 (two) - 125 (none) = 75, ∴ 75/216

Games of Pure Luck

they *can* be fun!

Even Minus Odd

- Any number of players, 10 counters per player in center
- Each turn, roll 6 dice - add even numbers, subtract odd numbers
- Take sum counters from center (if negative, place counters into center)
- e.g., 2, 4, 4, 5, 5, 6 = (16-10) = 6
- When all counters are gone from center, player with most counters wins

7-up

- Any number of players, 21 counters for each held privately, 10 counters in center
- Roll 2 dice - if 7, take 7 counters, otherwise pay the difference
- e.g. 1, 3 - pay 3 counters
- First player out of counters is the loser

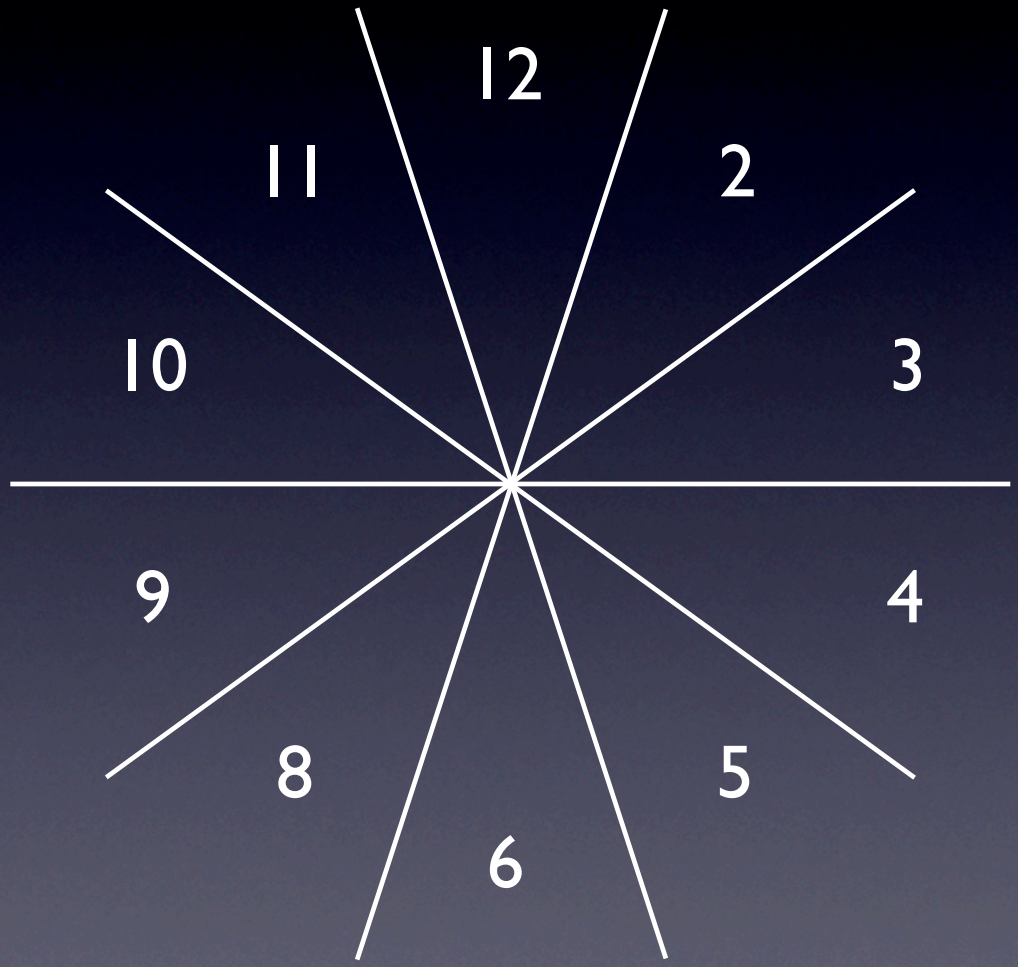
Put and Take (variant)

- All players start with 10 counters
- All players ante 1 chip per turn
- Roll 1 die:
  - 1 - put 1 counter in middle
  - 2 - put 2 counters in middle
  - 3 - all players put 1 counter in middle
  - 4 - take 1 counter
  - 5 - take 2 counters
  - 6 - take all counters
- Game ends when one player loses all counters - player with most counters wins

Boston

- Roll 3 dice - keep highest
- Re-roll other 2 - keep highest
- Re-roll final die, sum total
- Highest score of round wins 1 point for the round
- 2nd round worth 2 points, 3rd worth 3, etc.
- Play 10 rounds (55 points up for grabs)

Spider



Notebook

- Boston - how would the game aesthetics change if each round was worth 1 point?
- Spider - how would the game aesthetics change if the first player to cross off all numbers lost instead of won?