Bold Thrust or *Swift Strokes* - a probabilistic review

I guess we have all wondered at a time whether it is better to play *Bold Thrust* or to play *Swift Strokes*. I will elaborate this question in this small article! I hope you all know how to calculate the probability of a certain outcome when rolling 2D6 (I call that $\mathcal{P}(n)$). The results are shown in the table on the left. As in MECCG we dont care about rolls that are higher than the required number, the table on the right shows the more significant summed probablities (which I will call $\mathcal{P}_\Sigma(n)$) of rolling at least the given number:

Result n	$\mathcal{P}(n)$ in %
2	2.78
3	5.56
4	8.33
5	11.11
6	13.89
7	16.67
8	13.89
9	11.11
10	8.33
11	5.56
12	2.78

Result n	$\mathcal{P}_\Sigma(n)$. in %
2	100.00
3	97.22
4	91.67
5	83.33
6	72.22
7	58.33
8	41.67
9	27.78
10	16.67
11	8.33
12	2.78

I will only for the purposes of visualising use %. In all formulas probabilities are to be taken as numbers between 0 and 1.

The Bold Thrust is easy to calculate. Just shift the whole column by 3 steps:

$$P_{Bold\ Thrust}(n) = P_\Sigma(n-3) \tag{1}$$

To deal with swift strokes, we have to handle the 2 rolls. This is done by calculating the probability of the complementary event (failing on both rolls):

$$P_{Swift\ Strokes}(n) = (1-(1-\mathcal{P}_\Sigma(n-1))^2) \tag{2}$$

So now lets have a look at the results in a table:

Result	$\mathcal{P}_\Sigma(n)$. in %	$\mathcal{P}_{Bold\ Thrust}(n)$ in %	$\mathcal{P}_{Swift\ Strokes}(n)$ in %
2	100.00	100.00	100.00
3	97.22	100.00	100.00
4	91.67	100.00	99.92
5	83.33	100.00	99.31
6	72.22	97.22	97.22
7	58.33	91.67	92.28
8	41.67	83.33	82.64
9	27.78	72.22	65.97
10	16.67	58.33	47.84
11	8.33	41.67	30.56
12	2.78	27.78	15.97
13	0.00	16.67	5.48
14	0.00	8.33	0.00
15	0.00	2.78	0.00

As we can see *Bold Thrust* is superior to *Swift Strokes* in almost all situations, only a needed 7 calls for *Swift Strokes*. A surprising result as I think many players preferred *Swift Strokes* just by intuition.

Of course in the above calculations we didnt put in that *Bold Thrust* gives a -1 penalty to body. Especially when high numbers are required this needs to be taken into account. So, here is the additional calculation:

Let the fighting character have a body of B. Until now, it was up to you defining your n as the number needed for a tie or as the number needed to defeat the strike. I will now set this to the number to tie. The probability to have that character killed by the strike is the product of the character failing and the body check being succesful:

$$\mathcal{P}_{KILL} = (1 - \mathcal{P}_{\Sigma}(n)) \cdot \mathcal{P}_{\Sigma}(B + 1) \tag{3}$$

Obviously, using a *Bold Thrust* this changes to:

$$\mathcal{P}_{KILL\ with\ Bold\ Thrust} = (1 - \mathcal{P}_{Bold\ Thrust}(n)) \cdot \mathcal{P}_{\Sigma}(B) \tag{4}$$

and using *Swift Strokes* to:

$$\mathcal{P}_{KILL\ with\ Swift\ Strokes} = (1 - \mathcal{P}_{Swift\ Strokes}(n)) \cdot \mathcal{P}_{\Sigma}(B + 1) \tag{5}$$

And here is the table of probabilities to have your character killed. Red numbers are with *Bold Thrust*, Green with *Swift Strokes*, black are normal. In this case we see, that our intuition matches the analytic result:

Result n	Body Value				
	6	7	8	9	10
2	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00
	1.62	1.16	0.77	0.46	0.23
	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00
	4.86	3.47	2.32	1.39	0.69
	0.05	0.03	0.02	0.01	0.01
5	0.00	0.00	0.00	0.00	0.00
	9.72	6.95	4.63	2.79	1.39
	0.41	0.29	0.19	0.12	0.06
6	2.01	1.62	1.16	0.77	0.46
	16.20	11.57	7.72	4.63	2.32
	1.62	1.16	0.77	0.46	0.23
7	6.02	4.86	3.47	2.32	1.39
	24.31	17.36	11.57	6.95	3.47
	4.50	3.22	2.14	1.29	0.64
8	12.04	9.72	6.95	4.63	2.78
	34.03	24.31	16.20	9.72	4.86
	10.13	7.23	4.82	2.89	1.45

Result n	Body Value				
	6	7	8	9	10
9	20.06	16.20	11.57	7.71	4.63
	42.13	30.09	20.06	12.04	6.02
	19.85	14.18	9.45	5.67	2.84
10	30.01	24.31	17.36	11.57	6.95
	48.61	34.72	23.15	13.89	6.94
	30.43	21.73	14.49	8.69	4.35
11	42.13	34.03	24.31	16.20	9.72
	53.47	38.19	25.46	15.28	7.64
	40.51	28.94	19.29	11.57	5.79
12	52.16	42.13	30.01	20.06	12.04
	56.71	40.51	27.01	16.20	8.10
	49.02	35.01	23.34	14.01	7.01
13	60.19	48.61	34.72	23.15	13.89
	58.33	41.67	27.78	16.67	8.33
	55.14	39.38	26.26	15.75	7.88
14	66.20	53.47	38.19	25.46	15.28
	58.33	41.67	27.78	16.67	8.33
	58.33	41.67	27.78	16.67	8.33
15	70.22	56.71	40.51	27.01	16.20
	58.33	41.67	27.78	16.67	8.33
	58.33	41.67	27.78	16.67	8.33

On a side note: This article should have made obvious that the *Lucky Strike* as the hero version of *Swift Strokes* without the +1 on prowess is MUCH worse than the *Risky Blow*!

I hope I was able to help and did not further enhance boring burner decks by writing this article!

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