ULTIMATE DEBUNK OF ALL REBUNKS AND THE YUMEKO DICE CONTROL FEAT

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I actually wanted to not make another Doc, but because of many false information in the new rebunk of SoundStorm I think I have no other choice than to make one final ultimate debunk to finally get this out of the world. So this is how it's gonna work, I will name false information and false claims about my arguments from SoundStorm's new Doc and debunk them with facts. I also don't wanna argue on discord about it like SoundStorm suggested because I want everyone to see. Because this is the ultimate debunk I will also add new things over time.

We should start first with my theory of this feat from my first debunk to fully understand the whole context behind it.

"The main flaw in the doc is the assumption that Yumeko performs real-time physics calculations to control the dice. The author even attempts to quantify how many calculations per second she would need to perform, estimating a lowballed number of 652,000 calculations per second. But this is built on pure speculation. (...) A study by researchers from University College London and Université Pierre et Marie Curie shows that the brain can learn through subliminal instrumental conditioning, basically, learning without conscious awareness. (...) So if Yumeko learned to "read" the dice motion, sound, or shaker feedback in a split second and developed an instinctive response, that's absolutely possible, especially in a heightened manga world where characters are designed to be exceptional. (...) The doc points out that Tsugiko says the technique isn't magic, which is fair. But just because something isn't supernatural doesn't automatically mean it's physics simulation. (...) More realistically, Yumeko could be using a combination of: Pattern recognition (detecting sound or tactile feedback from the shaker), Focused motor control (consistent wrist motion), Learned rhythm and timing, Gut-based decision-making refined by observation (...) The dice scene is impressive and can definitely be interpreted as a feat of: Learning Ability (LA), Sensory Perception (SP), Intuition/Instinct, Quick Pattern Recognition"

This was my theory about this feat I put out as a doc in the first debunk. Now we start with the first quotes from SoundStorm.

"So, in order to control the results of the dice roll, then they'd need to constantly factor in all these aspects in real time, use countless calculations to predict and visualise the trajectory of the dice, determine whether it aligns with how they need the dice to be moving in order to get the desired end result, and adjust their shakes on a ***micro*** *level to ensure it does align. (...) This includes the exact force applied, shaking duration, shaking pattern,* ***friction****,* ***air resistance****, collision angles, etc."*

Alright this quote comes from the original doc about Yumekos's Dice Control. It clearly states she needs to calculate on a micro level and also include things like air resistance and friction. Keep those things in mind they are gonna be important later.

"The second debunk focuses on the idea that dice control is too difficult to perform, because Yumeko would have to detect nanometer irregularities in the dice, air currents, temperature, and other very minute details that are impossible to detect without having powers. (...) But if you actually read Kakegurui before trying to debunk a feat from a manga you haven't read, you'd realise that the Dice Control skill is shown to not be 100% consistent."

*"**Microscopic Surface Irregularities:** Those are imperfections on the surface of something in the nanometer range (0,000001 mm = 1 nanometer). To detect them you would need a raster force microscope or a laser scanner making it impossible for Yumeko to actually detect all of them and make calculations about it.*
***Air currents:** The smallest air movements can alter the outcome of a dice. You would need to detect those with a Laser Doppler Anemometer or a smoke visualization. At sub 0,1 m/s they become impossible to detect for a human but can still alter the outcome.*
***Temperature Differences:** Even tiny changes in temperature can have a huge influence in the outcome of the dice. To detect those you would need a high resolution thermal camera to detect those because we're talking about a >0,1 Celsius range. Those alter the outcome because the surface of objects react differently with different temperatures.*
***Internal Mass Distribution:** Alright at this point it becomes absolutly impossible. Yumeko would need to know the internal differences inside the dice and extremely tiny weight differences. To measure that you would need a CT scanner or X-Ray equipment. Maybe Superman could do it but definitely not Yumeko, at this point we are in a supernatural range.*
***Substrate Vibrations:** Those are tiny vibrations that change the outcome of the dice. Detecting these minor vibrations would require a seismometer or a highly sensitive accelerometer.*
***Muscle Movements:** A slight nearly unnoticeable muscle movements can cause a completely different outcome. Those can only be measured by EMG sensors or a high speed camera."*

Alright the first quote was from the newest rebunk and the second one from my last debunk where all the things needed for calculations are listed and what is needed, we can see here it's now just getting ignored that it was first about micro level calculations and now… Yeah what does she even calculate now? It's not mentioned anywhere. She would need equipment to measure what to calculate, maybe she uses the average conditions from the factors but that wouldn't really make any difference on the outcome. Even if she did calculate 99,9% of all factors it would still be unpredictable because of chaos theory, this 0,1% makes a huge difference. But hey it was mentioned that it wasn't 100% accurate all the time because of those factors (which is also wrong because the times of the prediction being right via chaos theory would be almost zero), surely this won't be a contradiction again, right?

"The fact that it is based on skill is further backed up by the fact that Souko fails to do it consistently once her focus is broken."

Quote from the original doc, let's analyze this… so… she failed because her focus was broken and not because of the chaos theory, right? Well then this argument is debunked too,

she failed because her focus was broken and not because of chaos theory. But let's look at the next arguments and claims, maybe there is gonna be a great one there.

“Furthermore, how does it make sense Yumeko learned all those extremely complicated physics calculations and superhuman capabilities by watching people play dice? I mean that's like the main flaw in the theory, how is that possible? You don't learn physics by watching people play dice, Yumeko could have watched thousands of dice games but that would do absolutely nothing if she doesn't know all the laws and techniques behind it. This would carry Yumeko on a level beyond characters like Junko Enoshima who can analyze and learn things perfectly, this would make Yumeko completely supernatural and unrealistic.”

This is a quote from my last debunk, why I put it here is simple. SoundStorm sadly completely failed to get the point from my argument and that's why I have to explain it here again. But first SoundStorms quote from the newest rebunk:

“And claiming that Yumeko wouldn’t have been able to grasp the physics behind Dice Control because she’s just not smart enough for it is just desperate. You even admit that if it was Junko Enoshima there, you wouldn’t doubt it, but because it’s Yumeko you automatically class it as invalid because you don’t judge her as capable enough.”

Well first of all I never said Junko would be able to do that, I even said it would go beyond Junko which is a clear difference to I wouldn't doubt it. Second I never said Yumeko is not smart enough to understand the physics behind it, I said it's impossible for her to learn and understand such complex physics by simply observing people playing dice, that's just simply not possible and a huge difference.

“Speaking of which, you have done nothing to defend your interpretation that Yumeko used intuition against the points in my previous rebunk. Once again, I assert that using calculations remains as the only possible explanation for how she performed this feat.”

This is the last quote from the newest rebunk. I wanna ask a question directly here, what did you prove? You ignored or messed with my arguments to make yourself look better, ignored your previous arguments, just changed them and gave absolutely no explanation for how this is gonna work. Everything in this theory does **NOT** work with our physics and is simply impossible. Chaos theory would make the outcome unpredictable even if you calculate 99,9999% factors. That's just a scientific fact backed up by this study. We already established **NO ONE** can calculate everything even with superhuman senses because then it would fail at the Internal Mass Distribution which can only be measured with X-Ray equipment which would be in this case X-Ray Vision but that's not possible because we already know it's not supernatural.

“The second debunk completely abandons all the points made in the first, probably because I destroyed them, so I’ll take this as an admission that all of the previous points are invalid.”

This is a quote from the newest rebunk. I literally did not abandon any of my points, I went more into detail on how they work. If you can't tell the difference between that I don't know what to tell you. Also you did not destroy anything, I don't know where you got that impression.

“Total calculations per timestep = 3260
Timesteps per second = 200
Calculations per second = 3260 x 200 = 652000. This is a heavy underestimate, lowball values were chosen at pretty much every opportunity. But the fact that I have chosen to lowball it so much should compensate for the theoretical nature of these calculations.”

This is a quote from the original doc about how many calculations she did, the conclusion was 652000 per second. Let's just say even with all the unknown micro factors she still has a 99% accuracy per calculation, that's pretty unrealistic but we will just use it as an example. It takes about 3 seconds to roll a dice in a cup which would make this 1956000 calculations. Now when she has a 99% accuracy on every calculation the chance of her completely controlling the outcome would be ca. 1 in 10 −8.534, that's a one followed by 8.534 zeros, basically impossible. This gets even worse if we take an accurate guess of 60 - 70% accuracy. The more you calculate, the higher the accuracy becomes. Means if you calculate 99% your accuracy is 99%, if you calculate 70% your accuracy is 70% etc. This is because the micro factors influence every calculation.

If someone wants to know the math behind it: **log10(0,99) ≈ -0,0043648**
log10(P) = 1.956.000 * (-0,0043648) ≈ -1.956.000 * 0,0043648 ≈ -8.534

But now SoundStorm is going to say, “But the calculations aren’t independent!” Yes, they are. Because the data for every calculation constantly changes, the calculations are independent and not interdependent; you can’t correct previous calculations with old data. The data would have to be updated after each calculation, which is why each calculation is independent. Soundstorm once used a bike analogy, so I'm going to debunk that too, it's actually pretty easy to do. When you ride a bike, you keep it on a steady course, which is why you're able to correct mistakes, because the bike is steady. But if you were to start moving the bike rapidly back and forth, like you would with a dice, chaos theory would prevent you from correcting your errors, and you would crash. This is why error correction wouldn't work on dice without complete data. Also, you ride a bike with intuition so this is actually a buff for my argument.

This also shows in this study, they used 219 different dice and had 4,380,000 throws. They had tools to measure everything and expected to be wrong in only 5% of the throws but they were actually wrong on 15% of all throws. And they had computers and tools to measure everything and were in a laboratory environment, but this study is from 1971 so maybe it's not completely accurate. That's why I have another study showing that the predictability of a dice throws changes drastically after only 0,1 seconds which makes predictions almost impossible.

“Namely, a dice’s trajectory can be predictable for short horizons and unpredictable for long ones. (...) The difference among the experimental and two natural processes is in the time length of the high-predictability window, which is of the order of 0.1 s, 10 min and 1 h for dice, rainfall and wind processes, respectively.”

Before someone points out this talks about a high-predictability window, this means after this amount of time the predictions get inaccurate.

I have another study but I have to point out first this talks about digital systems and not about dice and physics in particular but it should do because the concept is the same. This study talks about error corrections, it says that error corrections get inaccurate and cause more errors if they don't have all the information to work with.

I, of course, have it explained in math too why error corrections with not enough input cause more errors:
- E {old} = Number/size of errors before correction
- E {new} = Number/size of errors after correction
- C = Effectiveness of correction (proportion of errors actually corrected; 0 < C < 1)
- F = Number/size of new errors caused by the correction

Then:
E {new} = (1 - C) * E {old} + F

- (1 - C) * E {old} are the errors remaining after correction.
- F are the errors additionally introduced by the correction.

Suppose you have E {old} = 10 errors. The correction corrects C = 70% of the errors (C = 0.7), but causes F = 3 new errors:

E {new} = (1 - 0.7) * 10 + 3 = 0.3 * 10 + 3 = 3 + 3 = 6

So, after the correction, there are 6 errors. If F is large or C is small, the error correction may cause more errors overall. If F is small and C is high, the errors are actually reduced. But that's very unlikely when you don't have enough information and micro factors are getting ignored. That only 70% are getting corrected is realistic because modern systems for the industry also only correct 70% to 90% but considering Yumeko is human and does not have all the data like a machine 70% is very generous. And even if we were really really generous and gave her 90% the errors would still increase to 4 errors overall, meaning even if she corrects almost all errors the outcome still is unpredictable because 10% of all errors remain.

But even if we ignore all of that and say she has 99% accuracy all the time, the doc claims she does 200 timesteps with calculations per second, then we are optimistic and say she only needs 1 second to throw the dice. Then we calculate:
$P = 0{,}99^{200} \approx 0{,}1326$
This makes the chance of her actually having dice control 13,26%. Really really low.

Final Conclusion:
SoundStorm is desperately trying to somehow save his theory even if it's not possible by science. My main arguments from previous debunks got ignored or changed which made my chances of winning this debate lower. But I now present the final debunk with all information of the previous ones combined with new extra arguments. My final conclusion is that this feat is intuition, LA and sensory. Nothing more and nothing less. This debunk nerfs LA, perception and CPI. Also it's stated to be a learnable skill, you can't really learn perception or calculations on that level but you can learn intuition. Intuition is a skill, a learnable skill, which

makes this theory completely possible and correct with the manga narrative. Also doing thousands of calculations per second is not really a skill, let alone a learnable one. Occam’s Razor is also on my side here which makes this interpretation even more plausible.

Again I am still saying that the author just probably doesn't know that a trick like that doesn't exist. If we count it as a feat my theory makes the most sense. We will see if SoundStorm is gonna try to debunk this doc, I don't really know how a comeback is possible now but we will see.