Pandemic Multiplicative Viruses, Conditional Probabilities and Occam's Razor

Adrian Scott, Ph.D.*†

†SomaCapital.com, *Freedom Stack Ltd.

Conditional Probability and Occam's Razor can be useful tools in analyzing questions such as the origin of multiplicative viral epidemics.

In probability, a very useful concept is called conditional probability. It means what is the probability of something given that we know something else exists or has happened. It can be really useful as a thinking tool when we want to consider the probabilities of whether something is true or not. In many circumstances we don't need perfect information or so-called 'data' in order to make decisions, especially decisions to be cautious. Some insight into probabilities can be enough. "Biodefense" — being able to protect humans against 'enemy' biology or chemistry, especially of the multiplicative and non-natural kind, has been on my mind for several years. I even discussed the idea of a startup to work on biodefense briefly with some friends at a major venture capital fund when we had dinner together in Panama many years ago. My main issue was that such a startup might actually increase the risk of biodefense situations and especially downside risk for those working there (me! if I did it), so I didn't take the idea further.

Now we have the COVID-19 virus from Wuhan, China. It's worth using the conditional probability concept to consider where the virus came from, in conjunction with another thinking tool, "Occam's Razor". We usually think of Occam's Razor as meaning that "the simplest solution is most likely the right one". Rather interestingly, the actual principle is: "entities should not be multiplied without necessity". Perhaps we can think of a virus entity that need not be multiplied.

We can consider the conditional probability that given that a pandemic comes out of China, what is the probability that it would come out of Wuhan, home of China's only known biosafety level 4 facility. There are several other givens we can mix into our analyses of probabilities to later do an analysis of what is the probability that this virus was human-engineered or human-bred. Additional sample givens could include proximity of the Wuhan lab to the live animal market (if that market really was any factor) and known instances of lab workers selling lab animals to such markets instead of destroying them, reaction and behavior patterns of authority figures and government process to the proceedings of the awareness of the initial viral spread, etc. More items can be to compare the important unknown but gradually comparable parameters of the virus to other viruses in the past and consider why it is so different than them. Sample parameters can include the period of non-symptomatic contagion (how long people can be infecting others before they realize they might have it), contagiousness, length of delay til death, reinfection rate, etc.

My goal in this note is not to come to a conclusion nor to enumerate all of the possible givens to which we apply conditional probability and Occam's Razor. It is more to present this form of analysis to the reader, so that they may employ it in their own analysis of this and other questions. In a simplified, brief analysis of this current pandemic without deep research, it does indicate to me a very significant probability that the virus is human-engineered/enhanced or bred.

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