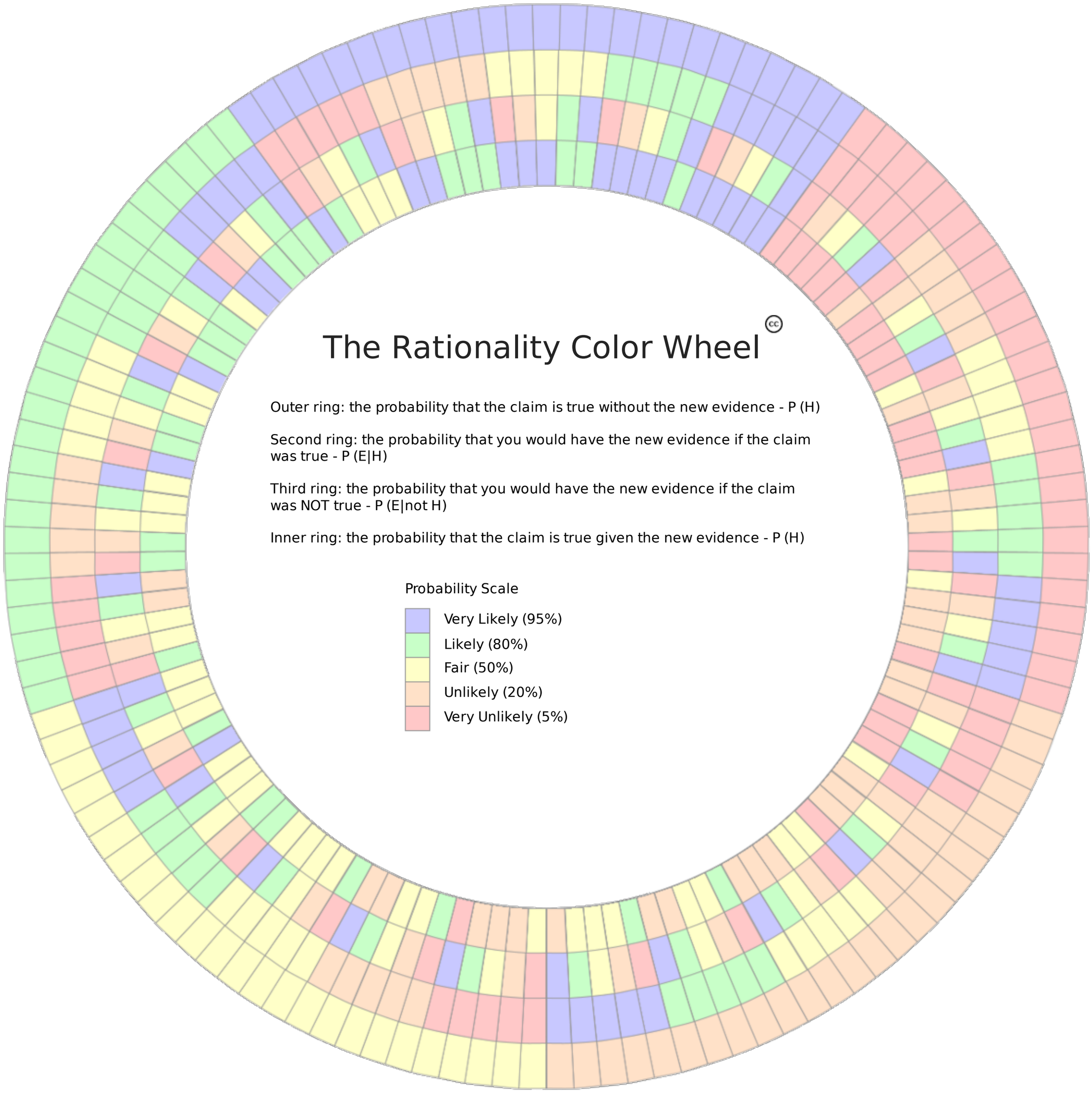
The Rationality Color Wheel©



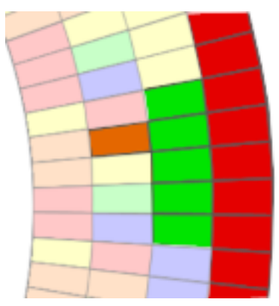
The Rationality Color Wheel is a tool for weighing evidence. When presented with evidence for a claim, simply move your finger from one color region to the next to determine how likely the claim is given the evidence. For example:

Imagine that a woman takes a medical test to determine whether or not she has a rare disease that afflicts 5% of the population. The test is highly sensitive: when a person has the disease, it returns a positive result 90% of the time. Otherwise, the it returns a positive result 10% of the time. The woman gets a positive test result. What is the likelihood that she has the disease?

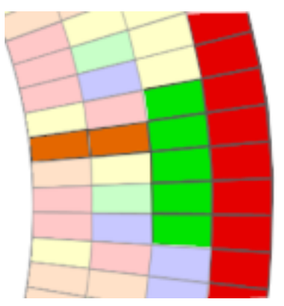
Only 5% of the population has the disease, so before the test result, the woman was "very unlikely" to have the disease. Therefore, start in the red segment of the outermost ring.

When a person has the disease, they are "likely" to get a positive test result. Therefore, move to the green region in the second ring.

When a person does not have the disease, they are "unlikely" to have a positive test result. So we move inward onto the orange region in the third ring.



Now, we simply move inward to the adjacent cell. It's orange so we conclude that the woman is "unlikely" to have the disease.



When given this scenario, many people incorrectly believe that the woman has a high probability of having the disease. We can easily find the correct answer however by using the color wheel. In general, this color wheel can be used whenever the probabilities involved are not extremely small or extremely large. The calculations are based on a branch of mathematics called Bayesian Inference, which is used by statisticians in science, medicine, and research. You can find more information about Bayesian Inference at https://en.wikipedia.org/wiki/Bayesian_inference.

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