

Why brains are excellent ‘prediction machines’

How our brain, a three-pound mass of tissue encased within a bony skull, creates perceptions from sensations is a long-standing mystery. Abundant evidence and decades of sustained research suggest that the brain cannot simply be assembling sensory information, as though it were putting together a jigsaw puzzle, to perceive its surroundings. This is borne out by the fact that the brain can construct a scene based on the light entering our eyes, even when the incoming information is noisy and ambiguous.

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Consequently, many neuroscientists are pivoting to a view of the brain as a “prediction machine.” Through predictive processing, the brain uses its prior knowledge of the world [to make inferences](#) or generate hypotheses about the causes of incoming sensory information. Those hypotheses — and not the sensory inputs themselves — give rise to perceptions in our mind’s eye. The more ambiguous the input, the greater the reliance on prior knowledge.

“The beauty of the predictive processing framework [is] that it has a really large — sometimes critics might say too large — capacity to explain a lot of different phenomena in many different systems,” said [Floris de Lange](#), a neuroscientist at the Predictive Brain Lab of Radboud University in the Netherlands.

[**This is an excerpt. Read the original post here.**](#)