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THE VISUAL SYSTEM: A "CHICKEN AND EGG" PROBLEM SOLVED

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"What comes first: the chicken or the egg?" Eyes and vision were a great concern for Darwin. Recently, religious fundamentalists have started to attack evolution on the grounds that this is a chicken and egg problem. How could eyes improve without the brain module to use the new information that eye provides? But how could the brain evolve a neural circuit to process data not available to it until a new eye capability emerges? We argue that neural plasticity in the brain allows it to make use of essentially any useful information the eye can produce. And it does so easily within the animal's lifetime. Richard Gregory suggested something like this 40 years ago. Our work resolves a problem with his otherwise-insightful work.

Keywords: Evolution; eyes; neuroplasticity