

# Extending Blackwell's ordering by repeated signals \*

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A decision maker who needs to choose an action for a state-dependent payoff but does not know the true state is offered information structures with noisy signals. Which should be preferred? The classical answer is to use the Blackwell informativeness ordering, which is an extremely partial ordering. We permit the decision maker to conduct multiple sequential queries of an information structure, with each query reducing the expected error in distinguishing between the states, towards identifying the true state. Comparing information structures by the reduction in state distinction error per query, we obtain a total ordering that monotonically extends the Blackwell ordering. Moreover, our ordering is 'objective' in the sense of being calculable from the information structures themselves, independently of priors or of specific decision problems, and yields a simple operational interpretation.

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\*Based on a joint work with Ehud Lehrer.