## Notes

# On the value of persuasion by experts [☆]

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### Abstract

We consider a persuasion model in which a sender influences the actions of a receiver by selecting an experiment (public signal) from a set of feasible experiments. We ask: does the sender benefit from becoming an expert — observing a private signal prior to her selection? We provide necessary and sufficient conditions for a sender to never gain by becoming informed. Our key condition (sequential redundancy) shows that the informativeness of public experiments can substitute for the sender's expertise. We then provide conditions for private information to strictly benefit or strictly hurt the sender. Expertise is beneficial when the sender values the ability to change her experimental choice according to her private information. When the sender does not gain from expertise, she is strictly hurt when different types cannot pool on an optimal experiment.
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## 1. Introduction

A prosecutor would like to persuade a judge to convict a defendant. She can submit to the court the testimony from one of several expert witnesses, who vary in their expertise in evaluating the available evidence. Before choosing which testimony to submit, she has private access to some information relevant to the case (e.g., she may be able to privately ask the witnesses exploratory questions, or privately observe unofficial reports from law enforcement). Can she increase the chances of a conviction by accessing such information? That is, is an "informed" prosecutor a more successful persuader?

We investigate this question in the broader setting of a sender (she) who can affect the decisions of a receiver (he) by controlling his information environment — as in Kamenica and Gentzkow (2011) (KG henceforth).[1] The receiver chooses the action $a$ that maximizes his utility $u_R(a, \theta)$, where $\theta$ is an unknown state of the world. The sender wants to maximize her utility $u_S(a, \theta)$, and can influence the receiver's action by providing a public signal (an experiment) whose outcome is correlated with $\theta$. We expand on the KG model in two ways. First, the sender in our model might be constrained in her choice of an experiment; she must choose one experiment $\pi$ from a given set $\Pi$, but she can garble its outcome.[2] For instance, the prosecutor can frame the questions to the expert witness in a way that coarsens the informativeness of his testimony, or she may refrain from asking certain questions altogether. Second, the sender in our model privately observes the realization of an exogenous signal $\pi_e$ before committing to an experiment $\pi$. The sender in KG commits to an experiment $\pi$ prior to observing any private information. We contrast this uninformed-sender case with the case in which the sender is an expert.

Does the sender benefit from becoming an expert? That is, does she prefer to observe $\pi_e$ before choosing $\pi$, or does she prefer to commit to a public signal without observing $\pi_e$? The answers to these questions depend on the informational content of $\pi_e$ relative to experiments in $\Pi$. We say that experiment $\pi_e$ is *redundant given* $\Pi$ if, for every experiment $\pi \in \Pi$, there is an experiment $\pi' \in \Pi$ such that $\pi'$ is at least as Blackwell-informative as jointly observing the outcome of $\pi_e$ and $\pi$. In effect, when the private signal is redundant, disclosing its outcome alongside the outcome of any other experiment in $\Pi$ does not generate a more informative signal than what is already available through experiments in $\Pi$.

It is easy to see how a sender may benefit from privately observing a non-redundant signal: if she could credibly disclose its outcome, she could then convey more information to the receiver than if uninformed.

While a sender may benefit from observing non-redundant information, redundancy by itself does not guarantee that the sender cannot gain from becoming an expert. In some cases, even if $\pi_e$ is redundant given $\Pi$, she can use its outcome to revert to an experiment that is more likely to induce the desired behavior in the receiver, as in the following example.

**Example 1** (*$\pi_\varepsilon$ redundant given $\Pi$, but positive value of expertise*). A prosecutor wants to persuade a judge that a defendant is corrupt. The prosecutor has evidence that the defendant has a secret offshore account, but she is not sure if it is in country A or country B. The money in this account is either legal (the defendant is innocent (I)) or the result of corruption (the defendant is