ABSTRACT. Condorcet's Jury Theorem shows that on a dichotomous choice, individuals who all have the same competence above 0.5, can make collective decisions under majority rule with a competence that approaches 1 as either the size of the group or the individual competence goes up. The theorem assumes that the probability of each voter's being correct is independent of the probability of any other voter being correct. Contrary to several authors, the presence of mutual or common influences such as opinion leaders does not easily rule independence either in or out. Indeed, and this ought to be surprising, under certain conditions deference to opinion leaders can improve individual competence without violating independence, and so can raise group competence as well.

Keywords: Condorcet, Jury Theorem, voting, democracy, independence, judgments.

1. INTRODUCTION

Condorcet's Jury Theorem shows that on a dichotomous choice, individuals who all have the same competence (or probability of being correct) above 0.5, can make collective decisions under majority rule with a competence that approaches 1 (infallibility) as either the size of the group or the individual competence goes up. For example, 250 voters at competence of 0.51 have a group competence of 0.62, while a group of 10,000 at the same competence have a group competence of 0.98. The theorem assumes that the chance that voters A and B will both be correct is the probability of A's being correct times the probability of B's being correct. This is only warranted if A's being correct and B's being correct are independent events in the following sense: the probability of A's being correct = the probability of A's being correct given that B is correct. If this does not obtain—if, for example, A is sure to do whatever B does—then each could have a 0.5 chance of being correct, while the chance of A's being correct would be 1 given that B is correct. This makes the probability of both being correct 0.5 rather than $0.5 \times 0.5 = 0.25$ as the independence assumption would have it.
Worries arise over whether the existence of common influences such as opinion leaders necessarily undermines the independence of voters. If so, independence will be violated for many voters in democratic political communities, since political parties, national press, and other elements have wide influence. I ignore other objections to the theorem’s applicability such as whether the idea of a ‘correct’ political choice makes sense.  

The problem of independence in the democratic application of the Jury Theorem has been thought to be more severe by some than by others. John Rawls, in a brief discussion of the theorem (1971, p. 538), has said that it is “clear that votes of different persons are not independent,” because their views will be influenced by the course of discussion, and so “the simpler sorts of probabilistic reasoning [such as those employed by Condorcet’s Jury Theorem] do not apply.” Similarly, Grofman and Feld (1988, p. 570) claim that the independence involved in the Jury Theorem requires that “each voter is polled about his or her independently reached choice, without group deliberation.” On the other hand, Waldron (in Estlund et al., 1989, pp. 1327–1328) argues that “the sort of interaction between voters that would compromise independence would be interaction in which voter X decided in favor of a given option just because voter Y did.” “It does not matter, for Condorcet’s argument, whether or not individual competences are independent of one another . . . . What matters, for the purposes of independence, is what happens when competence is exercised.” Independence is met, he suggests, so long as there is no causal interaction between voters after the time the individual competences are assigned. Contrary to these authors, I will argue below that the presence of mutual or common influence among voters does not necessarily violate the requirement of independence. Indeed, and this ought to be surprising, under certain conditions deference to opinion leaders can improve individual competence without violating independence, and so can raise group competence as well.  

2. AN ACCESSIBLE PROOF OF CONDORCET’S JURY THEOREM

It is useful to begin with an accessible proof of the Jury Theorem, in order to see just where the issue of independence originates. 

A few preliminaries: