Comment

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Among those asked to review the Mosteller–Youtz path-breaking paper, I am "very likely" ($p \geq 0.75$) to be more dissimilar to the other reviewers than they are to one another. What I mean by this is that the work that I do in the field of international economics, and the people and writings that I encounter frequently, at least once per day ($p \geq 0.5$), employ words that connote probabilities, but leave the reader or listener rather mystified as to the precise meaning that is intended. For example, some of the work involves relations between macroceconomics on the one hand and defense policy and foreign policy on the other; and some of the work involves connections between the international economy and the domestic U.S. economy, e.g., the "twin" deficits—the budget and trade deficits—and the relations between them. In these fields, and such related ones as the studies done by Sovietologists and Japanologists, results are often cast in terms of scenarios and forecasts and expressed as "probable," "likely," "possible," etc. The referents of these terms are remarkably unclear to their intended audiences, whether or not their authors intend to communicate or simply to obfuscate.

In these fields, there is a vital and neglected need for two types of bridges or crosswalks to whose construction the Mosteller–Youtz paper makes a notable contribution. The first type requires a bridge between qualitative expressions of degrees, disposition, and attitude on the one hand and the implicit probabilities associated with these expressions. The second type involves bridges or crosswalks between quantitative expressions of forecasts and estimates on the one hand and their translations into clear, colloquial and nontechnical prose.

The first type is a need one finds among social scientists at the "softer" end of that disciplinary spectrum, as well as among politicians, bureaucrats, and the more artful sciences (such as medicine) to facilitate and clarify their communication with people in the more exact sciences. The second type is a need that one finds among statisticians, physical scientists, and economists to facilitate and to de-jargonize their communication with audiences other than their own specialized peer group.

Examples of the first type include policy studies that use simulations and formulate scenarios characterized as "likely," or as "worst case." The latter often ($p \geq 0.75$) carry the erroneous implication that the less "bad" excluded contingencies either are of negligible probability, or are somehow included within the "worst case" one. And both of these assumptions are often unwarranted. National intelligence estimates provide another example of verbal formulations couched in qualitative terms that would benefit by making explicit the implicit probabilities, thereby better informing the user, and helping in tracking, scoring, and evaluating the estimators.

An example of the second type of bridge or crosswalk is the practice of economic forecasting based on large macroeconometric models. These generally give a central or base case forecast rather than a range that would reflect the real uncertainties involved in the models. Even when these uncertainties are suggested by verbal descriptions of such forms as "employment is expected to hold steady," or "the Treasury 90-day bill rate will probably rise by up to ½ percentage points," the implicit probabilities are seldom made explicit. And even when they are (rarely, $p \leq 0.1$), the associated forecast seldom ($p \leq 0.01$) indicates the track record of the forecaster's prior forecast. (See Wolf, 1987.)

The Mosteller–Youtz paper makes two especially valuable contributions to this entire area. The first one is the authors' derivation of the implicit probability estimates for those terms that have a small variance or relatively small interquartile range (e.g., "always," "almost always," "very likely," etc.), so that in the future those who use these terms will be able to convey more clearly to their readers and their listeners what their intended meanings are. Their second notable contribution is to identify those terms that have high variances and high IQRs (e.g., "likely," "possible," "might," etc.), so that readers who encounter these terms will not go away from the exercise with other than a clear awareness of the diffuseness and ambiguity—whether intended or inadvertent—implicit in the account.

In sum, the Mosteller–Youtz piece makes an invaluable contribution to efforts to improve the quality of communication, to raise the level of understanding, and to reduce inadvertent misunderstanding, let alone obscurantism, that arises from the use of vague, but implicitly probablistic, verbiage. That even the most deliberate and meticulous among us are not entirely immune to this practice is suggested by the fact that even Mosteller and Youtz themselves occasionally use terms like "might" (see the Abstract, page 2), "the

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