

Comment

Diane E. Duffy

1. INTRODUCTION

Professor Banks has successfully produced a provocative review of industrial statistics in the U.S. In much of this article, however, I found myself thinking, "This is not industrial statistics as I know and practice it." I have never used a control chart, never calculated a process capability index, never applied Taguchi methods. Industrial statistics is an umbrella term covering statistical activity in fields as diverse as manufacturing, communications and marketing. The common ground that these diverse areas share is the negative distinction of being non-academic. Banks writes, "Most of this paper relates these issues to the manufacturing sector, but a large part is pertinent to service industries; very little aims at statisticians working in such areas as high finance." I found rather less than "a large part" of this paper to be directly relevant to my experiences in the telecommunications industry. The diversity of statistical practice across fields and industries is such that I am doubtful of the existence of a single common body of critical issues. This is not to say, however, that I found the points in this review uniformly orthogonal to my perceptions and concerns.

Banks writes as "an academic statistician who has enjoyed broad consulting experiences and a relatively large number of interactions with various companies." I write as an industrial statistician who has enjoyed a sometimes fascinating, sometimes frustrating, often rewarding and always challenging career in the telecommunications industry. My views are rooted in my experiences, but I make no claim as to their wider relevance for industrial statisticians either within or beyond the field of telecommunications. Rather than emphasize points of agreement with Banks, in the ensuing paragraphs I deliberately focus on issues that look much different from my corner of the world of industrial statistics. In addition, I address a couple of critical topics omitted from his article.

2. THE ROLE(S) OF INDUSTRIAL STATISTICS

Banks touches upon the role of industrial statisticians in several places. For example, in Section 4 he writes, "[C]ompanies rarely need academic researchers; rather they must have access to Ph.D. level statisti-

cians internally, who may not be developing new theory, but can comfortably command the old." Banks' Section 5 is relevant as well, as it describes his view of the skills and knowledge industrial statisticians should have in order to be effective.

Glaringly missing throughout this article is mention of, much less serious discussion of, collaboration and interdisciplinary research. Collaboration is not the same as consulting. Consulting involves a consultant and a consultor, if you will—one who gives expert advice and one who asks for it. The distinction between these two roles implies a fundamental asymmetry in the consulting relationship. Collaboration involves a team of individuals with a common goal or objective, shared ownership of problems and issues, joint responsibility for resolutions and a shared stake in the final results or outcomes. Not all of the practice of industrial statistics is collaborative, and there are certainly interactions of a consulting nature. However, the real meat and excitement are in collaboration. Essentially any important industrial problem is multidisciplinary and any successful attack requires an integrated approach. The opportunity to work with others on a variety of problems across a range of different fields and subfields is one of (if not the) major attractions of industrial statistics.

As collaborators, statisticians may make careful or sophisticated application of existing methodology to messy real-world problems. They may be required to extend or revise available statistical approaches, either slightly or significantly. They may develop new theory and methods spurred by real problems which escape tidy textbook classification. Certainly the abilities to ask the right questions, to quickly glean the critical domain information and to aid in defining the problem, are as important as a command of the key statistical issues. To be positioned to be effective collaborators, industrial statisticians need to stay up-to-date in their profession, and industrial statistics departments need to develop new approaches where needed.

What part of this is research? The short academic answer, rooted in the all-powerful metric of publishability, goes along the following lines: developing new methodology is research; extending existing methodology is research when the extensions are significantly complex; applying existing methodology may be research if the application area is of sufficient current interest. Rather than give a comparable industrial answer, I would argue that in industrial statistics, and certainly in management of industrial statistics, the critical

Diane E. Duffy is Director of the Statistics and Data Analysis Research Group, Bellcore, 445 South Street, MRE-2Q-342, Morristown, New Jersey 07962-1910.