

**THE PROMOTION AND DEVELOPMENT OF
APPLIED PROBABILITY:
A NOTE ON THE CONTRIBUTIONS OF J. GANI**

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In his article in this volume (Gani (1990)), Joe Gani (JG) has given an outline of the genesis of an identity for Applied Probability. His modesty, however, has precluded him from indicating just how important his own role has been in the shaping of this identity. He has mentioned the coining of the term *Applied Probability* for an American Mathematical Society Symposium in 1955 but he has not mentioned his many publications, beginning from 1955, which in no small measure helped to establish the vitality of the newly identified sub-discipline.

This work, initially in dam and storage theory and Markov chains, but later in mathematical genetics, biology and epidemiology, saw the firm establishment of the new principle of specialization in applications of probability, as distinct from occasional forays into the area which had been common.

The time was ripe for such developments. The success of operations research during World War II was a precursor. The early 1950s had seen key publications in storage from Hurst (1951) and Moran (1954), in queues from Kendall (1951) and Lindley (1952) and in inventories from Arrow, Harris and Marschak (1951) and Dvoretzky, Kiefer and Wolfowitz (1952). Through these works a convenient mathematical foundation was laid down for topics which were to be central in applied probability. JG began his Ph.D. studies at the Australian National University under Moran in 1954 in time to ride the ensuing wave of activity. A list of his publications appears in Heyde (1988, pp. 1-13). Amongst the most influential of his early ones is Gani (1957) which provided a comprehensive review and synthesis of the current state of dam and storage theory and which stimulated much subsequent research.

The new activity in probability soon raised publication problems. Mathematical journals tended to favour only the more theoretical of the probability papers and statistical journals favoured applications directly concerned with statistics. Much good probabilistic research was not adequately catered for and the need for new avenues of publication became clear.

The first probability journal to be established was *Teoriya Veroyatnostei i ee Primeneniya* which appeared in 1956 and this was followed by *Zeitschrift für*

Wahrscheinlichkeitstheorie und verwandte Gebiete in 1962. Both made provision for applications, and were very influential from the outset, but in essence they were devoted to theory.

JG embarked upon the task of creating a journal to cater properly for work in applied probability in 1962. His labours came to fruition in 1964 with the creation of the Applied Probability Trust (APT) and the establishment of the *Journal of Applied Probability*. *Advances in Applied Probability* was added in 1969. The story of these beginnings is told in Gani (1982) and the preface to Gani (1988a) and it is a fascinating one of enterprise in the face of conservatism.

The *Applied Probability* journals have now been operating for more than a quarter of a century and they have had a profound influence on the evolution of probability and its applications. The richness of the subject and the symbiotic relationship between theory and applications are now well established. The spectrum of APT activities is, I believe, the single most significant of JG's achievements and it is the one which has given him the most persistent satisfaction (Gani (1982)).

Considerable autobiographical information appears in Gani (1988b) and a brief biography and catalogue of JG's achievements can be found in the preface to Heyde (1988). The *Applied Probability* journals will be an enduring legacy. However, his remarkable success in building a major Department of Probability and Statistics in Sheffield over the years 1965-74 and later the Manchester-Sheffield School of Probability and Statistics (1967-74) is particularly notable. Also in this category is the achievement of his period of seven years in CSIRO (1975-82) where he greatly expanded the scope of his Division from Mathematical Statistics to Mathematics and Statistics and changed its perspective to that of a high profile international operation. Government pressures and institutional restructuring later led to the Division going a different route but JG had shown what could be done and how it could be achieved. In all these developments, applied probability flourished as never before. It is in recognition of these achievements that the 1989 Sheffield Symposium in Applied Probability was held in his honour.

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