Essay for Professor Haruo Yanai,
for his retirement from the NCUEE, March 2006

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First time I met Professor Yanai in a conference held in Versailles, France, in October 1985, almost 21 years ago. Surely I had been reading with great interest his papers, like Rao and Yanai (1979) and his book, Takeuchi, Yanai and Mukherjee (1982). They were in particular of great interest to me since the approach, strong emphasis on geometric approach including the use of orthogonal and oblique projectors, was very close to my way to handle statistical methods. The paper by Rao and Yanai (1979) has been one of the most influential papers provoking the usefulness of projectors in statistical methods.

In the Versailles conference my talk was on an interesting feature of the partial correlation coefficient, which in its simplest form can be described as follows: Let u be the residual when y is regressed on x and v is the residual when x is regressed on y. Then the $cor(u, v) = -cor(x, y)$. I soon learnt that these kinds of problems are just the area where Professor Yanai is a master. Hence it was soon easy to find problems of common interest.

Next time I met Professor Yanai in August 1989 in Neuchâtel, Switzerland, where a conference was held in Honor of Professor C.R. Rao. During that conference Professor Yanai and I had an opportunity to discuss topics of joint interest, and it was here when Professor Yanai presented me his preliminary manuscript entitled "Canonical correlations associated with symmetric reflexive generalized inverses of the dispersion matrix". The topic was very demanding and were lucky to have Professor Jerzy K. Baksalary (who, unfortunately, passed away in March 2005) as a coauthor. It took a while to get the paper completed and it was published in *Linear Algebra and Its Applications* in 1992. In 1993, in a paper by Yanai and Puntanen, we were considering the corresponding partial canonical correlations.

Later, in early 1990ies, I had an opportunity to meet Professor and Mrs Yanai in Tampere, and to my great pleasure, in summer 1994 I and my wife had an opportunity to visit the National Center for University Entrance Examinations, NCUEE, for several weeks. The hospitality of Professor and Mrs Yanai was remarkable and made our visit most successful. I have warm memories, both from social part of life (like a joint trip to Hakone) and from the academic atmosphere in the NCUEE as well as visits to other institutes in Japan, arranged by Professor Yanai.

Over the years I have appreciated Professor Yanai's never-ending enthusiasm on new problems. One of the recent papers by him, published in 2003 and entitled "Vectors and matrices in psychometrics with special emphasis on generalized inverse and projection matrices", is of particular interest to me. In this paper, among other things, Professor Yanai considers a 3×3 symmetric matrix R, with diagonal elements r_{ii} being 1 and other elements having absolute values ≤ 1. Then one can ask condition for R to be a correlation matrix. This is an example of the nice problems that Professor Yanai has great skills to develop.

Even now when retiring from the NCUEE, I am sure the statistical society is looking forward to further valuable contributions from Professor Yanai.

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