

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

DIVISION OF MATHEMATICAL STATISTICS

University of Adelaide  
ADELAIDE, S.Aus.

23rd June 1959

Mr. Hino Osamu,  
YMCA, 137 Nishikubo,  
Musashino  
TOKYO, Japan

Dear Mr. Osamu,

The discussion you refer to is typical of the paradoxes and entanglements which arise when it is attempted to reinterpret the concept of tests of significance, as put forward by the pioneers Gauss and Student, in terms of Neyman and Pearson's "theory of tests of significance". The fact is that these latter writers did not understand the earlier work on which their own contribution is an incoherent exorcism.

For a test of significance one has to consider the simple logical disjunction EITHER the hypothesis is not true OR a remarkable coincidence has occurred.

If the data present the research worker with such a disjunction he may recognize that its weight in passing belief in the hypothesis depends on the rarity with which, had the hypothesis really been true, the observations could have occurred. Consequently the points B and C in your discussion do, in my view, provide successively stronger evidence against the truth of the hypothesis.

The notion of fixing a percentile like 1% in advance is to confuse tests of significance, which are means of learning, with acceptance procedures, which are effectively means of sifting.

These logical points are more fully discussed in my book "Statistical Methods and Scientific Inference" of which the 1st edition appeared in 1956 and the second, they tell me, is already available in England.

Sincerely yours,