January 26, 1940

Dear Professor Fréchet,

Many thanks for your letter on Inverse and Fiducial probability, which is so clearly expressed that there is no difficulty in specifying exactly the point where our thought diverges. You say, in your third paragraph: "In the second case T is fixed   is a random variable, etc." If this were so, then the probability statement under consideration would be precisely a statement of inverse probability and, as such, as we both agree, probably not true, and certainly not known to be true.

I tried to make clear the difference in logical content between statements of inverse probability and statements of fiducial probability in my last paragraph, in which I specify: "Whereas, however, the fiducial values are expected to be different in every case, and our probability statements are relative to such variability, the inverse probability statement is absolute in form, etc".   From this it is, I hope, quite clear, that in the fiducial statement we are not considering T to be fixed. If, on the contrary, we remember that T will vary from sample to sample, and with it the corresponding fiducial 5% value of   then it will be

true that the true value of will be less than the fiducial 5%
value in exactly five trials in 100.

Some people prefer to make the same statement in the form of a
disjunction, namely, either something has occurred which is known
to occur in only 5% of trials, or Θ exceeds $\Theta_{5\%}(T)$ The important
point, however, is that statements of fiducial probability have a
logical content different from the more familiar statements of
inverse probability, and are not intended to be equivalent to such
statements. They refer, as you clearly perceive, to a different
conceptual population. I have done my best, though perhaps not
very successfully, to make this clear from my first references to
the subject.

When in England I hope you may find time to visit me here in
Harpenden, where my home is, and where I should be happy to have
an opportunity of introducing you to my family.

Yours sincerely

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