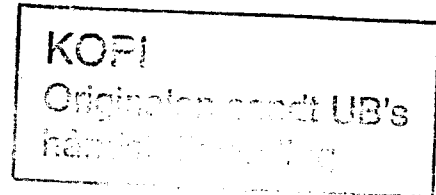


1 July 1960

RF/IQ

Professor John S. Chipman,
University of Minnesota,
Minnesota,
U.S.A.



Dear Professor Chipman,

I want you to know how deeply I appreciate your contribution to the April *Econometrica* issued in honour of me. I have only recently received the copy and have not yet been able to read the contributions, but I am looking eagerly forward to doing so.

In particular I will study your contribution because axiomatic problems have had a big appeal to me from my youngest days. I still have several pounds(.) of studies in the field that were never published and I still hope that I may some day be able to bring some of it in shape for publication. But it is so difficult to get the necessary leisure from my many other activities

One item was published in the appendix to my April 1959 *Econometrica* paper. Professor Strotz suggested that it might have been a separate paper, but I was stupid enough to let it go as an appendix. As such it may, I am afraid, pass too much unnoticed.

The essential point at issue is that even if a preference direction is given that satisfies the integrability condition, it does not follow that a function of the point exists that may be taken as an indicator of choice. A potential function will, of course, always exist in the case of an integrable directional field, and this potential function is unique up to a general monotonically increasing transformation, and thus have all the usual properties of an indicator of choice. But still this potential function which always exists in the integrability case, may not be an indicator of choice.

If we know apriori that an indicator does exist, the potential obtained by integrating the directional field is the indicator sought, but the additional information that an indicator exists is something enormous from the logical viewpoint. The crux of the matter is that from the mere existence of an integrable directional field we can not deduce the existence of an indicator of choice which is a function of the point. Much unclear - if not downright

If and when you should accidentally touch on this problem in your further work, I hope you will help bringing this point across to the economic brotherhood.

With all good wishes,

Cordially yours

Ragnar Frisch

Copies to

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