5th February, 1959.

Dear Professor Friberg,

Thanks for your letter. You raise an important point in the use of the temporal sequence of observations for determining the direction of flow of causality. The method has had its successes but none the less requires some caution.

In the case of cancer of the lung, a pre-cancerous condition of considerable duration has been demonstrated and many workers think that for 15 or 20 years prior to the development of overt cancer there may be a pre-cancerous condition with some chronic inflammation.

In fact the causal roots of many observable phenomena go rather deep. Orchids may appear by the hundred in places where for 15 years no such orchid has been seen. The final efflorescence itself of course cannot be a cause of previous soil changes, but the subterranean growth from which it arises can easily be so. The only means we have of cutting the chain of causation off is by randomization. For, apart from those who believe in psychokinesis, no causal chain can pass through a competent randomization process.

Consequently, while identical twins are excellent material for a randomized experiment, they do not remove the fundamental difficulty of inferring causation from uncontrolled observations.

Sincerely yours,

[Signature]