CHAPTER 5

ANALYSIS OF THE CAUSAL PHILOSOPHY OF DAVID HUME

Sections

Hume presents two different arguments, both of which yield the same conclusion, namely that it is impossible to be certain that any two objects are related causally(H). This conclusion is considered by an amazingly large number of scholars to wield a death blow to the concept of causality(C).

The errors that these scholars make are potentially two. First, Hume's definition of "cause" is different from the common usage of the word. Therefore, conclusions drawn for "cause(H)" may not hold for "cause(C)". Second, Hume's conclusion is that it is impossible to be certain that two objects are connected causally. But this is not necessarily a fatal blow to the usefulness of the concept. What percentage of the "knowledge" employed daily is know with certainty and/or exactitude?

Epistemology recognizes relatively few items of certain knowledge and, in fact, there may be none.

The above two refutations notwithstanding, numerous scholars have made and are making futile attempts to maintain philosophical consistence in their specious rejection of the causal(C) concept. They try to avoid using the word "cause" or any of the words for which "cause" is a root.

But the causal(C) concept is fundamental to explanation and/or theory in all sciences. Therefore, they must employ synonyms for the word "cause"--like produce, give rise to, effectuate, generate, induce, force, etc. In this way they glean the advantages from using the concept of causality(C) and avoid the cognative dissidence which would result from employing the word "cause".*

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*Scriven, Michael: "Causes, Connections and Conditions in History" in Philosophical Analysis and History, William H. Dray ed., N.Y., Harper and Row, 1966.

Econometrics is a good example of the avoidance of "cause" rooted words (with a few notable exceptions like Wold and Basmann). This avoidance has resulted in a relative lack of consideration (compared to the amount of consideration which could and should have been given) of the relationships between causality and the assumptions, techniques, and inferences of econometrics. Specifically, it is not clear from the reading of

econometric texts how econometric techniques can be employed to make causal inferences and what implicit assumptions are involved.

Let's consider Hume's arguments and conclusions concerning cause(H) and investigate the logical impact (as opposed to the actual impact, resulting from over-reactions and misunderstandings on the part of the scholars) of these conclusions upon the epistemology of modern science.

5.1 Hume's Arguments and Conclusions

Hume's two identical conclusions concerning the concept of causality(H) are derived by the following two deductive arguments.

Argument (5-1):

Premise (1,1): All knowledge of causal(H) relationships "is not, in any instance, attained by reasonings a priori, but arises entirely from experience, when we find that any particular objects are constantly conjoined with each other"* In other words, causal

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*Hume, David: ENQUIRIES Concerning the Human Understanding, Second Edition, Oxford at the Clarendon Press, MDCCCCII, p. 27.

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conclusions are arrived at by way of an inductive argument, based on experience.

Premise (1,2)(Note: The 1 refers to the argument number and the 2 refers to the premise number.): In no case is the conclusion of an inductive argument (in this case, an induction from experience) certain.

Conclusion (1,1): Therefore, it is impossible to be certain that any two objects are related causally(H).

Or, as Hume puts the conclusion, "In vain do you pretend to have learned the nature of bodies from your past experience."*

*Ibid., p. 38.

Argument (5-2):

Premise (2,1): (Same as Premise (1,1)) All knowledge of causal(H) relationships "is not, in any instance, attained by reasonings a priori, but arises entirely from experience, when we find that any particular objects are constantly conjoined with each other." In other words, causal conclusions are arrived at by way of an inductive argument, based on experience.

Premise (2,2): "...all inferences from experience suppose, as their foundation, that the future will resemble the past..."**

**Ibid., p. 37.

Premise (2,3): It is not certain "that the future will resemble the past."*** (Hume argues that

***Ibid., p. 38.

natural laws may and do change.)

Conclusion (2,1): Therefore--even if we could determine that two objects were related causally(H) in the past--it would be impossible to be certain that these two objects would continue to be related causally(H) in the present or future.

5.2 Hume's Arguments and Conclusions are Valid for "Cause(P)"

The previous section presents Hume's major arguments and conclusions concerning his restrictive definition of "cause"; but are these arguments valid for cause(P)--

i.e., macrocausal(P) "laws"? Arguments (5-3) and (5-4) below show that the answer to this question is yes.

Argument (5-3):

Premise (3,1): An indispensable component of the knowledge of causal(P) relationships arises from experience (specifically, the observations of associations) via induction.

Premise (3,2): In no case is the conclusion of an inductive argument (in this case, an induction from experience) certain.

Conclusion (3,1): Therefore, it is impossible to be certain that any two variables (or types of objects) are related causally(P).

Argument (5-3) is analogous to Hume's argument (5-1). Therefore, we have shown that Hume's first argument and conclusion concerning causality(H) also holds for causality(P). Now we show, using Argument (5-4), that the same is true for Hume's second argument.

Argument (5-4):

Premise (4,1): An essential component of knowledge of causal(P) relationships arises for experience (specifically, observations of associations).

Premise (4,2): "...all inferences from experience suppose as their foundation, that the future will resemble the past..."

Premise (4,3): It is not certain "that the future will resemble the past."

Conclusion (4,1): Therefore--even if we could determine that two objects were related causally(P) in the past--it would be impossible to be certain that any two objects would continue to be related causally(P) in the present or future.

What we have shown is that Hume's arguments and conclusions about his concept of causality are also valid for cause(P) and therefore the common usage of

the term. But how damning are his conclusions to the concept and how detrimental are they to the pragmatic utilization of the concept? These questions will be answered in Section 5.4, after a discussion of the statistical interpretations of Hume's arguments.

5.3 Statistical Interpretations of Hume's Arguments

Arguments (5-1) and (5-3) could be presented in a form, different from the previous form, in order to bring out the statistical implications of the arguments. Arguments (5-1) and (5-3), rewritten for this purpose, follow: Experience of two variables gives us only sample information (data) about the world, because the population of all data on these two variables contains all possible past, present, and future experience of them. When we infer--based upon sample data (our experience)--that two variables are associated, our conclusion is subject to sampling error. Therefore, we cannot be certain that an association between two variables really exists for the population as a whole. Causal(H or P) relationships are a subset of all associational relationships.* Therefore, we cannot be certain that two

*Simon, Herbert: op.cit., p. 230

variables are causally(H or P) related because of the possibility of sampling error.

The implication for statistical analysis exhibited in Arguments (5-2) and (5-4) are equally clear. We cannot be certain that the laws of the universe will not change in the future. Thus, inferences based on past statistical data may lead to invalid conclusions about the present and future.

5.4 Logical Implications of Hume's Conclusions

Now, we answer the questions posed at the end of Section 5.2. How damning are Hume's conclusions to the concept of causality(H or P) and how detrimental are they to the pragmatic utilization of the concept? These questions seek to determine the logical impact of Hume's conclusions as opposed to the actual impact. The actual impact is the result of overreaction to and misunderstanding of Hume's position, on the part of many scholars.

Hume believes his conclusions to be absolutely damning to any certainty or proof of causal(H) connections, which is precisely what his conclusions state. In this belief, Hume is speaking as a philosopher who wants "to learn the foundations of this inference."* From

*Hume: op.cit., p. 38.

this point of view, I would agree with him and extend his belief to the common usage of the term and, therefore, to cause(P).

But, from a pragmatic point of view, Hume admits the usefulness of the concept of causality.

> "...it may still, perhaps, be rash to conclude positively that the subject, therefore, pass all human comprehension....It is certain that the most ignorant and stupid peasants--nay, infants; nay, even brate beasts--improve by experience, and learn the qualities of natural objects, by observing the effects which result from them. When a child has felt the sensation of pain from touching a flame of a candle, he will be careful not to put his hand near any candle; but will expect a similar effect from a cause which is similar in its sensible qualities and appearance."*

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*Ibid., p. 38-39.

This is the point at which many scholars misinterpret Hume. They see his conclusions that there can be no certainty of causal connections, but do not comprehend the distinction he draws between certainty and usefulness.

In statistical terms, we cannot prove causal connection, but we can be 99+% confident of the usefulness of the concept (see Section 4.6). And, as George Stigler**

**Stigler, George J.: The Theory of Price, 3rd ed., New York, Macmillan, 1966, p.6.

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would say, if no other theory with greater confidence (predictive ability) is available, then this theory is, at present, the most useful; so use it.

Hume explains the seeming conflict between the philosophic and the pragmatic points of view asserting that, based upon the experience of a constant conjunction between flame and heat, "the mind is carried by custom

to expect heat"* from a flame. "All inferences from

*Hume: op.cit., p.46

experience, therefore, are effect of custom, not of reasoning."** Hume asserts that the effect of custom

**Ibid., p.43

upon the mind, in overcoming reason is "an operation of the soul."***

***Ibid. p.46

This resolution of the apparent conflict approaches, if not duplicates, Kant's explanation of the belief in causal relationships. Kant states that the belief that two variables are related causally is a priori synthetic knowledge.**** The similarity seems even more reasonable

****Kant, Immanuel: Critique of Pure Reason, Translated by Norman Kemp Smith, N.Y., St. Martin's Press, 1965, pp. 44-45.

when we see that Hume describes the mental effects of "custom" as "a principle of human nature." *****

*****Hume: op.cit., p. 43

Not only are causal(P) "laws" uncertain, but associations (i.e., correlations) and specific causal(P) events are also uncertain. The reformulation of Arguments (5-1) and (5-3) in Section 5.3 states specifically that

we cannot be certain of observed association. The association could be due to sampling error. In fact both of Hume's arguments apply to associations.

Given that Hume's arguments can conclude that associations are uncertain, even stronger arguments than those of Hume could be formulated to reject the certainty of causality. This is due to the fact that even if we were certain of an association between two variables, we could not be certain that a causal(P) connection existed between them. But this potential strengthening of the argument against certainty of the causal(P) concept, does not harm the usefulness of the concept.

Neither can we be certain that a specific event causes(P) another specific event, even if we can experiment. Say we manipulate X and observe a change in Y. The change in Y may have been a "random" fluctuation in Y or a spurious variable could be causing(C) both our manipulation of X and the change in Y.

5.5 Summary

In summary, there are two errors to which all causal(H or P) inferences are subject.

First, the data upon which the inference is based may not be a representative sample of the population due to sampling error. In other words a sample correlation may occur due to sampling error even though there is no population correlation.

Second, even if a relationship between two objects or variables existed in the past, the natural laws of the universe may change, resulting in no or a different relationship between the variables in the present and/or future.

For these reasons it is impossible to be certain that any two variables are related causally(H or P) or even correlated. But from the pragmatic point of view, we (and Hume) accept the usefulness, indeed the necessity, of the concept of causality.