

MULTICAUSALITY

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ABSTRACT

Many explanations of events treat them as uncausal. Most of the major issues of today are multicausal. Multicausal events raise issues of direct and indirect causality, and issues related to cognition. These, in turn, involve structural considerations that cannot be properly dealt with in limited mass media. By attempting to deal with such issues in mass media, congressional debates debase the debaters.

INTRODUCTION

The simplest proper and substantive explanation that one may offer in analysis can occur when it is possible to establish that some event is brought about by a single cause. The march of science can be thought to involve a collection of such events which, when thought of in total, can be called “uncausal”. In recognition of the possibility that not all events are uncausal, one can then speak of the possibility of “multicausal events”.

We may then speak of the *causal cardinality* of an event, by which we mean the number of factors that have sufficient presence in a situation to be detectable as a portion of the cause of the event. So if some event is found never to occur unless at least n factors are present, we can say that the event has a *causal cardinality* of n .

While practitioners are accustomed to deal with quantity in analyzing causality, operating frequently with statistics, factors in causality need not be measured in statistics as a first consideration; but rather only in terms of presence as; for example, if a driver happens to be on the wrong side of the road and crashes into another driver. This is not to play down the importance of quantity, but only to note that it should be seen as secondary in consideration to presence in assessing causal cardinality.

ISSUES OF MULTICAUSALITY

Once multicausality comes into prominence, certain issues arise. Two are particularly prominent. These are:

- **Direct and Indirect Causality.** While causal cardinality of the event E is specified by noting that the event E in question does not occur unless n factors are present; this does not assure that each of the n factors acts **directly** to produce E. On the contrary, it may be true that one or more factors act on other, intervening, events which, themselves occur before E occurs, and become **indirect** causal factors leading to the production of E. In other words, causal factors may be events acting on events. **There may be a causality structure which must be uncovered in order to understand properly the causality situation involving E.**

- **Cognition.** In view of situations involving multicausality, indirect causality, and causality structure; issues involving human cognition arise. These issues involve the following sub-issues:
 - *Construction* of the multicausality structure.
 - *Interpretation* of the multicausality structure
 - *Erroneous assumptions* by analysts or protagonists in which unicity is assumed, or in which multicausality is accepted but analysts overlook the

importance of non-quantifiable factors and issues related to the construction and interpretation of causality structures

THE NATURE OF POLITICAL DEBATE

Political debate, as seen on television in congressional dialogue and in hearings, is notable for argument in which protagonists seem to be adhering to uncausal arguments, particularly when it is sought to fix blame. The possibility that there is a causality structure underlying, e.g, the so-called sub-prime mortgage crisis, was seldom, if ever, enunciated in any detail in congressional debate. Even if such a possibility was entertained, there was no structure portrayed, nor is it likely that such a structure could have been portrayed for public viewing on television, because of the limitations of the medium.

The medium itself naturally limits high-quality discussion to those matters of low causal cardinality. If issues whose causal cardinality exceed the ability of the medium to portray the multicausality structure, and if the highest legislative body in the land persists in public discussion to attempt to describe the event at issue, it is natural that the debate will be the lower in quality, the higher the causal cardinality of the event.

One of the side effects of such discussion could be a lowering of the public's view of the members of the body, accompanied by a lack of faith in what the body proposes for resolution of the issue under investigation. If the legislative body cannot uncover and

interpret the multicausality structure, the public will sense a lack of understanding and will naturally presume that whatever is proposed will be ideology driven and unlikely to resolve the issue at stake.

UNDERLYING SCIENCE

Is there any recourse other than public debate from that one domain that historically has sought to bring enlightenment where understanding was deficient: science?

The answer to this question is in the affirmative. In 1847, Augustus De Morgan published in England a mathematical treatise on what was called the “theory of relations”. This subject, founded in logic, eventually morphed into a mathematical topic treated by a 20th century mathematician, Frank Harary and associates, called “the theory of digraphs”. Further to that there was developed by your present author a science called “systems science”, along with methods for analyzing and portraying precisely the kinds of multicausality structures required to portray and interpret multicausal issues (Warfield 2006). This science and these methods were designed to overcome the cognitive difficulties identified by 20th century psychologists as inherent in fallible human beings, and many structures of the type mentioned were presented and described in (Warfield, 2002).

There is little reason to doubt that the science and methods presented in the systems science could be applied successfully to describe and explain thoroughly the economic system that produced the sub-prime mortgage crisis. Unfortunately, those who produced

the crisis hold the reins of power, and most likely are not interested in applying science, because it is a direct threat to those who hold the power.

Moreover, those who hold that power largely gained it from the existing curricula in universities. The latter have studiously avoided teaching the materials in the long-developed countries. They have a strong stake in continuing to teach MBAs how to manage portfolios of large investment banks for their own accounts. On the other hand, faculty have been teaching and applying it in such nations as Mexico (Instituto Tecnológico y de Estudios Superiores de Monterrey) and Taiwan (National Sun-Yat Sen University). The latter is ranked among the top research universities in the world. Whether there has been a sufficient lesson learned by the recent debacle to cause reform in the big countries is the question that awaits an answer.

REFERENCES

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