ELECTRONIC NEWSLETTER ON
REASONING ABOUT ACTIONS AND CHANGE

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Today

The discussion between Camilla Schwind and Judea Pearl on the nature of causality has continued with a series of short interactions. Today we publish the whole suite since the previous newsletter.

ETAI Publications

Discussion about received articles

Causality in Action Theories

by **Camilla Schwind**

Comment from: **Judea Pearl**

Dear Camilla,

Perhaps, we can better study the problem with Right-Weakening if we replace C by any tautology, say C = "2+1 = 3". C is true in all worlds, hence it logically follows from B = smoke, which is caused by A=fire. We do not wish to conclude that fire causes the equality 2+1 = 3.

Comment from: **Camilla Schwind**

Dear Judea,

"2+1 = 3" is not a tautology neither. "+" is a function and its semantics in natural number arithmetic is such that it is true in this particular world! We can of course find a world and a meaning for "+" (and for the 0-ary finction symbols "2", "3" and "1") such that "2+1 = 3" is not true.

But take the tautology "C = it rains or it does not rain". C follows from B = smoke which is caused by A = fire. Hence we conclude that fire causes the tautology "it rains or it does not rain". For me this is ok.

More generally, every sentence can cause every tautology!

Comment from: **Judea Pearl**

Dear Camilla,

You wrote

> *More generally, every sentence can cause every tautology!*

Glad this discussion has led to such crisp summary of the difference between the postulate-based and the semantical approaches to causation.

To students of the latter, only propositions that can be false (in at least some imaginable worlds) can be **caused** by other things (events or actions).

Comment from: **Camilla Schwind**

> More generaly, every sentence can cause every tautology!

> *Glad this discussion has led to such crisp summary of the difference between the postulate-based and the semantical approaches to causation.*

This has nothing to do with the "difference between the postulate-based and the semantical approaches to causation". It is of course possible to have a postulate-based approach to causation which does not have the above property!

(For my postulates, it would be sufficient to skip or to weaken RW).

But I want to point out that therre is an enormous misunderstanding. The focus of my paper is **not** to present postulates for causation, neither to present a particular approach to causation. I have used **criteria** in order to compare and to study different approaches to action and causation!

Comment from: **Judea Pearl**

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Agree. But I still think it has something to do with the approach: It is often too easy for us to inspect a list of postulates and conclude "Yes, these

sound reasonable". I have seen this happening many times in postulate-based approaches to beliefs and probability. (Recall, it took over a decade for people to discover that the celebrated AGM postulates are inadequate for belief update or even for belief revision).

> *But I want to point out that therre is an enormous misunderstanding. The focus of my paper is* **not** *to present postulates for causation, neither to present a particular approach to causation. I have used* **criteria** *in order to compare and to study different approaches to action and causation!*

I understand the goal, but the question remains: Do we have a set of postulates that is suffiently refined for discriminating among the different approaches to action and causation! Suppose (taking an extreme case) that only one of your postulates truly characterizes causation, would it be instructive then to use this one postulate as a comparison gauge? What if all approaches comply with that one postulate, are they equivalent? Or should we use the entire list, regardless of whether it applies to causation? What I am questioning is whether the language of postulates is suffienctly rich to characterize things, and various approaches to things.

I believe Hector Geffner expressed the same kind of concerns.

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