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SUMMARY

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MONOGRAPHIC SECTION

Marc ARTIGA (University of Valencia) and Javier GONZÁLEZ DE PRADO (UNED, Spain), «Editors' introduction», *Theoria*, 2022, vol. 37/1, 5-6.

James WOODWARD (University of Pittsburgh), «Flagpoles anyone? Causal and explanatory asymmetries», *Theoria*, 2022, vol. 37/1, 7-52.

This paper discusses some procedures developed in recent work in machine learning for inferring causal direction from observational data. The role of independence and invariance assumptions is emphasized. Several familiar examples, including Hempel's flagpole, problem are explored in the light of these ideas. The framework is then applied to problems having to do with explanatory direction in non-causal explanation.

Katrina ELLIOTT (University of California) and Marc LANGE (University of North Carolina), «Running it up the flagpole to see if anyone salutes: A response to Woodward on causal and explanatory asymmetries», *Theoria*, 2022, vol. 37/1, 53-62.

We challenge James Woodward's recent claim that statistical independence relations are the worldly basis of causal and explanatory direction. While statistical independence relations might be an excellent source of evidence about causal and explanatory direction, we doubt that these same independence relations *make it the case that* causal and explanatory relations have their (familiar) directions.

Jiji ZHANG (Hong Kong Baptist University), «On the unity between observational and experimental causal discovery», *Theoria*, 2022, vol. 37/1, 63-74.

I articulate a thesis on the unity between observational and experimental causal discovery, drawing on insights from James Woodward and Richard Scheines. Like experimental inference, causal discovery from observational data also relies on interventions that are actually present in the data generating process, which are not carried out by investigators but are nonetheless interventions by the standard interventionist definition.

Kun ZHANG (Carnegie Mellon University), «Computational causal discovery: Advantages and assumptions», *Theoria*, 2022, vol. 37/1, 75-86.

Woodward (2022) relies on the interventionist theory of causality (Woodward, 2003) and further makes a big step towards empirical inference of causal relations from non-experimental data. This paper attempts to complement Woodward's contribution with discussions on the connection between certain emerging methods for inferring causal direction and the interventionist theory of causality as well as the underlying assumptions.

Porter WILLIAMS (University of Southern California), «The fate of causal structure under time reversal», *Theoria*, 2022, vol. 37/1, 87-102.

What happens to the causal structure of a world when time is reversed? I argue that we should either deny that time-reversed worlds have causal relations at all, or deny that causal concepts developed in the actual world are reliable guides to the causal structure of time-reversed worlds.

Fernanda SAMANIEGO (SUAYED, UNAM), «Bi-directionality in causal relationships», *Theoria*, 2022, vol. 37/1, 103-128.

This paper aims to provide an answer to James Woodward's article "Flagpoles anyone? Causal and explanatory asymmetries". It will be conjectured that, when causal directionality depends on the experimental design, it is because the variables involved are capable of producing changes in each other. This will be exemplified using the case of ideal gases as opposed to the flagpole-shadow scenario.

James WOODWARD (University of Pittsburgh), «Responses», *Theoria*, 2022, vol. 37/1, 111-129.