

# Tabla de Contenidos

#CauSciBook

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# #CauSciBook

Esta sección trata sobre el libro que aparecerá en 2018 [Causation in Science – On the Methods of Scientific Discovery](#) de Rani Lill Anjum y Stephen Mumford.

En el hashtag [#CauSciBook](#) de Twitter se puede encontrar información sobre el libro y la investigación de Anjum y Mumford.

La coescritora del libro explica en diciembre de 2017 en una cadena de tuits los rasgos principales del libro. Enlazo el primer tuit y, por cuestiones de formato, prefiero copiar el contenido del resto de tuits para que la secuencia se siga con mayor nitidez.

Here is the structure of my book with [@SDMumford](#): Causation in Science and the Methods of Scientific Discovery. [#CauSciBook](#). [pic.twitter.com/30hyeq9JYy](https://pic.twitter.com/30hyeq9JYy)

— Rani Lill Anjum (@ranilillanjum) [11 de diciembre de 2017](#)

In 2016 [@SDMumford](#) & I prepared the [#CauSciBook](#) by teaching PHI302/403 at [@UniNMBU](#) with exactly this structure. 28 lectures!

It worked so well I kept the plan as the default, with possibility for minor changes. 2017 we had a day of risk with [@ElenaRoccaPD](#).

## Part I

Ch 1 [#CauSciBook](#): There's philosophy in science whether we like it or not. Science rests on philosophical assumptions, incl metaphysical.

Being pro-philosophy doesn't mean one is anti-science or vice versa. [#CauSciBook](#)

There are 2 types of scientists: those who are aware of the philosophical underpinnings of science and those who are not. [#CauSciBook](#) ch 1

All methods reflect conceptual & ontological commitments about causation. These must be made explicit and critically examined. [#CauSciBook](#)

Science, unaided by philosophy, cannot decide what it is for one thing to cause something else. This goes beyond the scope of science. [#CauSciBook](#)

Our tacit, philosophical view of the nature of causation shapes the norms that we adopt for causal science, hence practice.

We should not abandon causation in science. Causation is vital for science: a precondition for its very existence.

Merely looking at physics, without its interpretation, is inconclusive about whether there is causation in science. [#CauSciBook](#)

Science and experimentation are worthy activities precisely because they involve causal interventions in the world. #CauSciBook #CausalRealism

Data requires observation, which requires causation. To count as a measurement is to be causally affected by the thing measured. #CauSciBook

Qualification: not every measurement requires such causal affectation – holding a ruler against something doesn't – but many cases do.

By 1948 even Russell came to think of causation as one of the fundamental postulates of science: part of its foundations. #CauSciBook

Nothing counts as experience of the world unless it has been caused by it. There would be no data without causation. #Empiricism #CauSciBook

We search for causation with a tacit preconception of what we are looking for, which will influence what we can find. #CauSciBook

If we are wrong about the real nature of causation, we might be looking in the wrong places or even for the wrong type of thing. #CauSciBook

A problem is that there is no general agreement over what causation is, in philosophy or in science. #CauSciBook #Ontology

What counts as evidence of causation depends on which methods are available, accepted & promoted by the scientific community. #CauSciBook

Different methods provide different types of evidence. Evidence is shaped and restricted by our choice of methods. #CauSciBook #causation

Evidence is not an ontologically neutral matter. Each method is developed to latch on to a certain purported feature of causation. #CauSciBook

Only if a method matches a correct understanding of causation can we say that the evidence generated is evidence of causation. #CauSciBook

Evidence of causation is not constitutive of causation. That would be to collapse ontology into epistemology. #CauSciBook

A consequence of having plural methods is that they might pick out different things: difference-makers, regularities, powers... #CauSciBook

If we have evidence from different methods, we might end up with conflicting evidence. Then which should we trust more? #CauSciBook

This concludes Part I of the #CauSciBook. Ontology (nature of causation) must inform epistemology (choice of method of discovery).

## Part II

Part II discusses an orthodox view that causation is conceptually and epistemologically linked to perfect correlations. #CauSciBook

Ch 4 What's in a Correlation? concerns how we separate causal from accidental correlations, while neo-Humeanism cannot. #CauSciBook

Ch 5 Same Cause, Same Effect questions that causation should be robust across all contexts, which is not supported empirically. #CauSciBook

Ch 6 Under Ideal Conditions shows how causal necessitation is philosophically salvaged by stipulating ideal conditions. #CauSciBook

Ch 7 One Effect, One Cause? warns against simplifying causes. Treating causes in isolation misses the importance of interaction. #CauSciBook

Reading through the manuscript for the #CauSciBook, I'm happy to see that it turned out exactly as I hoped it would. @SDMumford

Regularity, robustness & repeatability are thought to be integral to causation because we expect 'same cause gives same effect'. #CauSciBook

Where does the expectation of same cause, same effect come from? Seems a philosophical assumption, empirically ungrounded. #CauSciBook

Unsurprisingly, also this idea about causation comes from Hume. #CauSciBook  
#SameCauseSameEffect

The same cause always produce the same effect, and the same effect never arises but from the same cause. This principle we derive from experience, and is the source of most of our philosophical reasoning

Scientists have strategies to deal with less-than-perfect-regularities: exception, noise, interferer, non-respondent, outlier. #CauSciBook

The need to somehow deal with data that don't fit the general model, suggests that a perfect model should account for all data. #CauSciBook

If same cause gives same effect, then any difference in effect must mean that there was a difference in the cause. #CauSciBook

Assumption: understanding causes is enlightening & empowering & the more generally they apply, the more they enlighten & empower. #CauSciBook

Laws of physics seem exceptionless. While reality is messy and irregular, laws of physics deal largely with ideal conditions. #CauSciBook

There are many strategies to help retain the ideal of perfect laws, also outside theoretical physics, in practice or theory. #CauSciBook

Strategies for keeping perfect laws: Probabilistic laws, nomological machines, ideal conditions or ceteris paribus clauses. #CauSciBook

None of these strategies are useful for making reliable and certain predictions in the case of

application. #CauSciBook

It might be useful to single out of a factor as the cause of an effect, but causation is typically complex.  
#CauSciBook

## Part III

Part III of the #CauSciBook is on causal interference and prevention, presenting an alternative to the Humean orthodoxy. #CauSciBook

Ch 8 Have Your Cause and Beat it explains why causation is sensitive to context by introducing additive interference. #CauSciBook

Ch 9 From Regularities to Tendencies argues that we should understand causes as tendencies rather than perfect regularity. #CauSciBook

Ch 10 The Modality of Causation: causation involves a primitive modality less than necessity & more than pure contingency. #CauSciBook

If one is really interested in ch 9 and 10 on tendencies and the dispositional modality in #CauSciBook, read also [#WhatTendsToBe](#).

Ch 8 #CauSciBook: Perfect regularity was never a worthy goal of a theory of causation.

A cause could be in place and start producing its effect. But that process can be interfered with so the cause need not occur. #CauSciBook

Since causes typically interact and produce different outcomes in different contexts, it is possible for us to intervene. #CauSciBook

The experimental method exploits this feature of causation. By manipulation, we produce effects that wouldn't otherwise occur. #CauSciBook

We have 2 kinds of causal interference: subtractive (removing the cause) & additive (adding something more to the cause). #CauSciBook

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