Crash course
The reliability of defective information in the sciences

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1 Brief description

For a variety of causes, scientific information is often inaccurate, poorly empirically supported, and not as relevant as it should be. And although there are good reasons for still aiming for accurate, empirically supported and relevant information in the sciences, the defective character of scientific data is not only ubiquitous, but inevitable. However, while the presence of defective information in science tends to be naturally seen as part of the dynamics of scientific development, it is a fact that the larger the defectiveness of the information that scientists work with, the less justified they are in trusting such information.

This course aims at addressing the different ways in which defective data is used in the sciences as well as the epistemic benefits and dangers associated with such toleration.

Three specific objectives of the course are:

- To provide a systematic overview of the different views in which defective data is tolerated, explained and understood in the sciences.
- To explain under which circumstances defective data could be considered reliable in scientific contexts.
- To discuss some case studies (from different scientific disciplines) that illustrate the above.

In order to do so, the course addresses three main questions: what is to tolerate defective data? Can we understand defective data? When is defective data reliable in scientific contexts?

The course is divided into four sessions of two hours and a half each.

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2 Sessions

Session 1: What is to tolerate defective data?

1. Generalities of defective data
2. Unreliability of defective data
3. Toleration of defective data
4. Case studies: Anomaly in the perihelion of Mercury // Stagflation

Readings("*" obligatory)**:**

Bueno, O. (2017): "Scientific pluralism, consistency preservation, and inconsistency toleration", *HUMANA. MENTE Journal of Philosophical Studies*, 10(32), 229–245.

*Martinez-Ordaz, M. del R. (2020): "The ignorance behind inconsistency toleration" in S.I. Knowing the Unknown *Synthese*.

Session 2: Can we understand defective data?

1. Brief recap
2. Scientific understanding
3. Understanding of defective data.
4. Case studies: Standard Solar Model // Dictator game.

Readings("*" obligatory)**:**

*De Regt, H. W. and C. Baumberger (2019): "What Is Scientific Understanding and How Can It Be Achieved?" in *What Is Scientific Knowledge?*: 66-81.

Elgin, C. Z. (2017): "Exemplification in Understanding", in Explaining *Understanding: New Perspectives from Epistemology and Philosophy of Science*, Routledge: 76—91.

2.1 Session 3: The reliability of defective data

- Recap.
- Trust and reliability.
- The uses of defective data: abstractions, idealizations, fictions.

Readings("*" obligatory)**:**

* Martinez-Ordaz, M. del R. (forthcoming): "Is there anything special about the ignorance involved in Big Data practices?", in Lundgren, B. L. and N. Nuñez-Hernández (Eds.) *Philosophy of Computing*, Philosophical Studies Series, Vol. 143.

2.2 Session 4: The reliability of defective data

- Recap.
- Trust and reliability.
- New technologies and their defective data.
- Case study: Big data implementation in observational cosmology.

Readings("*" obligatory)**:**

* Martinez-Ordaz, M. del R. (forthcoming): "Is there anything special about the ignorance involved in Big Data practices?", in Lundgren, B. L. and N. Nuñez-Hernández (Eds.) *Philosophy of Computing*, Philosophical Studies Series, Vol. 143.