

3.24pt

Scientific representation in an interaction-based setting

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Broadly, two kinds of approaches

Recent work in philosophy of science on scientific representation give priority either to *representation-as-relation* or to *representing-as-activity*

- ▶ First kind of perspective: representation as an object which stands *in some relation* with its target.
- ▶ Second kind: challenging views of the first kind, insisting on the importance of the purposes of representations, i.e. the aims of agents building and using them (intentionality).
- ▶ In both cases: scientific representation is meant to have an informative dimension

Agency and Purposes

Basic idea of the second type of view:
to move the focus from

Object O represents target T

to

Agent A uses O to represent T, with purpose P

Purposes

- ▶ Prove
- ▶ Interpret
- ▶ Explain/Teach
- ▶ ...

Suárez (2004) on the surrogate function: Scientific representation must *allow[s] competent and informed agents to draw specific inferences regarding [T]*

⇒ Scientific representation is an activity intended to **addressees**

Brief presentation of the dialogical framework

- ▶ Introduced in the 50s/60s by P. Lorenzen y K. Lorenz as a new approach to mathematical logic.
- ▶ Inspired by Wittgenstein's *meaning as use* and mathematical game-theory.
- ▶ 2 players games where one player (Proponent, **P**) brings forward a thesis that the other (Opponent, **O**) challenges.

Logic and argumentation: assertions and requests

- ▶ By means of different rules, an game of argumentation between the players is defined.
- ▶ The game is built upon two types of speech acts — asserting and requesting:
*By making an **assertion**, a player licences the adversary to challenge it by **requesting** justification(s) for the assertion*
- ▶ The meaning of the logical vocabulary (the logical constants: connectives, quantifiers,...) is then given in terms of assertion and request.

Logic and argumentation: assertions and requests

Take conjunction for example:

- ▶ When a player asserts a conjunction $A \wedge B$,
- ▶ The adversary can request him to assert either conjunct (he can request him to assert A , or he can request him to assert B)
- ▶ The first player then can defend his assertion by making the requested assertion

Assertion	Challenge	Defence
$X !A \wedge B$	$Y ?[!A]$ or $Y ?[!B]$	$X !A$ $X !B$

Basic ideas for an interaction-based setting on scientific representation

- ▶ Games in which the agent using O is, in some sense, committed to it (may be with respect to target, may be with respect to the particular purpose of O , etc.)
- ▶ Various types of games, depending on the initial purpose of the agent
- ▶ (something about construction/creation of models?)

Advantages

- ▶ Interactional / communicational aspect as constitutive of the approach
- ▶ Fine-grained analysis, with multiple levels: moves, rules, plays, strategies...
- ▶ Good grip on the topic of game as conceptual / formal tool.

Challenges

- ▶ Details?
- ▶ Language?
- ▶ Scope?