Notes on “Images as Epistemic Tools”

Seminar session from August 23rd, 2017

The aim of this article is to contribute to answering one of these fundamental questions: *are geometrical diagrams representations? and if so, what sort of representation are they? symbols, depictions or other?*

My aim is to find a middle ground between representationalist and anti-representationalist theories of scientific images and visualization, in general, and Euclidean diagrams in particular.

Anti-representationalist theories of scientific visualization and diagrams tend to be constructivist and historicist as well, and claim to be (i) more complete and (ii) accurate (in so far as they account for the heterogeneity and evolution of our scientific images) while also (iii) getting the metaphysical priority relation right (since images are not mere windows into what they represent, but are actively engaged in the contrsuction of the states of affairs they are about).

Representationalist theorists, in contrast, claim that their accounts are (iv) simpler (even if they falsify and omit (historical) elements of the (admitedly, heterogenous) phenomenon of scientific visual representation), (v) by giving a homegenous (representational) account of words, symbols, formulas and diagrams, etc. better account for the fact that we seamlessly integrate all these elements in our practices (as Benacerraff, Barwise and others have insisted), (vi) respect the informal representational talk of users and producers of images and (vii) get the metaphysical priorities right since images most times do not affect what they represent. but instead are responsive to their features.

My aim is to show that anti-representationalist have overestimated the consequences of being faithful to the heterogenity of diagrammatical practices and that the hypothesis that diagrams are representations are compatible with their historicism and

even their constructivism. That once we place the different aspects of the practices of using diagrams in Euclidean geometry, we will find a central place for the thesis that diagrams are depictions. This thesis would help use see both how diagrams fix their referents and the subtsntial role contexts plays in this process.

Most times, we can explain why we use the representations we use for the (epistemic) goals that we use them for by appealing to ther informational content. Pauwels (2008) already told us that , for example, an important reason why we use microspoci images the way we use them is because they give us epistemic access to certain information that other sort of images do not, and there are interesting issues to solve here; the kind of issues many philosophers have tackled already; my interest lays elsewhere. I am interested in explainign why we use the representations we use, **in cases where there are other representations already available with the same content.** A naive representationalism might have special problem explaining this fact, since thedifference cannot be given in terms of semantic or logical differences (since they always boil down to differences in content), bu tneed to appeal to something else. By appealing to something else, the anti-representationalists claim, they stop being representationalists and recognized the limitations of the representationalist model. This argument, I claim, is not sound, because it misrepresents the representationalist stance. the representationalist stance is the claim that images of this sort are representations, i.e. that they have the function of representing. But representing is something we do with images and as such in order to explain why they are representations, it is not enough to explain that they have the content they have. Instead, it is also necessary to explain the features that allows them to be used to represent by **people like us** (at least in the circunstances and contexts in which they are actually used). In other words, we need to account for their eegonomic features. Thus just as it is improtant to recognize that images with different contents are appropriate

for different uses, it is just as important to recognize that images with different ergonomic profiles will be appropriate for different uses (even if they have the same content).

That is why the example of sign language and spoken language is key, as well a sthe example between graphs and tables. The same information is there in both cases, yet we use them for different purposes. Thus, we can not explain this difference in terms of content and we need to appeal to something else. This is why I introduced the notion of ergonomic dimension of representation. (2016) The idea is pretty obvious: even if the same information is equally contained in both representations, that is, even if both images represent the same information, some of this information is more easily extracted out of one than out of the other. This explains why, when this information has to be easily available and/or salient, we prefer this representations over the other.