

## Two-Dimensional Modal Semantics, Conceivability, and Modal Epistemology

The purpose of this paper is to demonstrate that the Chalmers-Jackson type two-dimensional modal semantics combined with conceivability is unable to distinguish between trivial and substantial a priori truths and hence fails to give a full account of modal epistemology. To be able to distinguish conceptual and metaphysical modality one must be able to recognize the distinction between trivial and substantial a priori truths, such as those arising from the essential properties of entities.

The problem concerns the apparent and important difference between the following types of sentences:

- (1) All water is water.
- (2) Water has its actual molecular structure in all possible worlds.

Both of these sentences are supposedly a priori and necessary. However, the former is a trivial conceptual truth, whereas the latter is a substantial modal truth; it concerns the essential properties of water. Two-dimensionalists are unable to accommodate this important difference because the two-dimensional framework takes both (1) and (2) as necessarily having the same primary and secondary intension.

Consider how statements concerning the nature of chemical substances like water come out in the two-dimensional framework, for instance: 'Water has its actual molecular structure in all possible worlds'. This statement is true (if it is true) in all possible worlds regardless of whether the world is considered as actual or counterfactual. It states something about the nature of a substance regardless of what the molecular structure of that substance in fact is. Compare that with 'All water is water', which is also true in all possible worlds regardless of whether the world is considered as actual or counterfactual. What has happened here is that we have avoided the complications introduced by empirical defeasibility (i.e. the fact that water might turn out to be XYZ) altogether: 'Water has its actual molecular structure in all possible worlds' is supposed to be a priori. Yet, without empirical defeasibility there is nothing in the two-dimensional framework that distinguishes trivialities like 'All water is water' from substantial metaphysical statements like the one at hand. Both of these statements come out as true in all possible worlds considered as actual and counterfactual.

Conceivability as Chalmers defines it is of no help here either: conceptual or semantic information cannot rule out counterexamples to 'Water has its actual molecular structure in all possible worlds', but these counterexamples would have to be ruled out if we wish to establish the necessity of 'Water = H<sub>2</sub>O'. This part of modal epistemology is distinctly essentialist, not conceptualist.

We can now present a dilemma for the two-dimensionalist. On the one hand, if statements like 'Water has its actual molecular structure in all possible worlds' are indeed a priori, then the a priori content must have different grounds than the a priori content underlying statements like 'All water is water', and hence the two-dimensional framework will be unable to accommodate a crucial part of modal epistemology, as it classifies these statements in the same way. On the other hand, if the two-dimensionalist denies that there is a more substantial sense of the a priori (i.e. the a priori content underlying metaphysical modality), then she must deny the apriority of statements like 'Water has its actual molecular structure in all possible worlds' because they cannot be analysed in the same way as statements like 'All water is water'; yet, the difference between these statements will have to be accounted for in the framework. This would seem to render the two-dimensional framework inconsistent because both statements are nevertheless true in all possible worlds considered as actual and counterfactual.