

Two-Dimensionalism, Epistemic Possibility and Metaphysical Possibility

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To reject skepticism and lay the foundation for the certainty of knowledge, Kant raised the question of how synthetic *a priori* proposition is possible. In his solution, the new content of knowledge comes from the syntheses of experience *a posteriori*, and the universal necessity of knowledge is guaranteed by its a priority. Under the influence of Kant, the concept of *a priori* and necessity has long been regarded as co-extensive. But Saul Kripke believes that this will confuse different philosophical fields: *a priori* is an epistemological concept, which involves the way or means of acquiring knowledge, and necessity is a metaphysical concept, which involves the possible ways or states of the world. The key point is that, on Kripke, there is no necessary connection between these two fields. He raised some famous examples of the necessary *a posteriori*. More remarkably, in his explanation of necessary *a posteriori*, although he did not clearly propose the distinction between epistemic possibility and metaphysical possibility, he had laid the foundation for this distinction. Furthermore, on Manuel Garcia-Carpintero and Josep Macia, when Kripke talks about necessary *a posteriori* by appealing to two relevant ex-

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pressions, what he proposed can be taken as kind of ‘blueprint for 2-D accounts’. (Manuel Garcia-Carpintero and Josep Macia, 2006, p.2)

There are different forms of two-dimensionalism in semantics. I will focus on David Chalmers’ epistemic version and Scott Soames’ criticism. With the framework of possible world semantics established by Kripke and others, David Chalmers’ epistemic two-dimensionalism deals with the relationship between epistemic and metaphysical modalities from a quite different perspective, and then gives an elegant definition to necessary *a posteriori* and other modal concepts. Scott Soames criticized two-dimensionalism based on Kripke's modal realism and essentialism, and developed Kripke's account of necessary *a posteriori*. But according to Chalmers, Soames also uses a two-dimensional system himself to analyze cases of the necessary *a posteriori*.

In the first two part of this paper I will briefly introduce the epistemic two-dimensionalism and specify the similarities between Kripke-Soames and Chalmers when they interpret necessary *a posteriori*. In the third part I turn to their difference by the analysis of relationship between epistemic possibility and metaphysical possibility which is the key issue for illuminating necessary *a posteriori*.

1. The core theses of epistemic two-dimensionalism

Two-dimensionalism in semantics normally can be seen as a combination of possible-worlds semantics and intentional semantics. In possible-world semantics, linguistic expressions and/or their utterances, with which an extension is firstly associated, should be evaluated in terms of modalities. In intentional semantics, a sentence will be assigned only one single intension carried with cognitive significance which is taken to be an important aspect of the meaning. The core idea of two-dimensional semantics is that our evaluation of any linguistic expression is associated with the situation of the possible world-state in which the expression is uttered, precisely to say, there are two different ways in which the extension of an expression depends on possible states of the world. The result is that every expression token has two sorts of intensional semantic values relative to two different

kinds of possibility which constitute two “dimensions” of meaning.

Although there are different interpretations on these dimensions relative to different approaches, generally speaking, the second dimension is familiar as the metaphysically possible worlds or the worlds considered as counterfactual, it is the circumstance we evaluate any certain proposition or expression token. The first dimension is possible context of utterance or epistemically possible worlds or worlds considered as actual. In the second dimension, terms necessarily (such as ‘Hesperus’ and ‘Phosphorus’ or ‘water’ and ‘H₂O’) have the same extension also have the same semantic value. In the first dimension, the necessarily coextensive terms may have different semantic values. For current purposes we concentrate on Chalmers’ epistemic two-dimensionalism. I distinguish Chalmers’ main thesis of 2D into three parts: the preliminary theses, the core theses, and the inferential theses. (Chalmers, 2006a, pp.59-62; 2010b, p.546)

The preliminary theses can be simplified into the following one:

(PT) Every expression token (of the sort that is a candidate to have an extension) is associated with a primary intension, a secondary intension, and a two-dimensional intension. A primary intension is a function from scenarios to extensions. A secondary intension is a function from possible worlds to extensions. A two-dimensional intension is a function from (scenario, world) pairs to extensions.

The core theses:

(CT1) A sentence token *S* is a priori (epistemically necessary) iff the primary intension of *S* is true at all scenarios.

(CT2) A sentence token *S* is metaphysically necessary iff the secondary intension of *S* is true at all worlds.

The inferential theses are results of using the theses to explain the puzzles of necessary a posteriori and contingent a priori:

(IT1) A sentence token *S* is necessary a posteriori iff the secondary intension of *S* is true at all worlds but the primary intension of *S* is false at some scenario.

(IT2) A sentence token *S* is contingent a priori iff the primary intension of *S* is true at all scenarios but the secondary intension of *S* is false at some world.

Now we can see that the concept such as *a priori*, *a posteriori*, necessity and possibility can be defined by the evaluation of two intensions of certain expression

token in relative possible world. (CT1) is the distinctive thesis of epistemic two-dimensionalism. ‘*This thesis generalizes the restricted connection between apriority and first-dimensional evaluation found in other two-dimensional frameworks to a general connection, applying to any truth-evaluable sentence.*’ (Chalmers 2006c). So, the key point, on Chalmers’ view, is to understand the primary intension epistemically. In this understanding, the first dimension of 2D framework is not the context in which a certain expression uttered, but the epistemically possible world-states we cannot rule out *a priori*. And if one of such kind of world-state obtained or turns out to be true, then evaluation of the expression token in such world considered as actual may be different from the evaluation in the actual world where we live.

For example, the terms ‘water’ and ‘H₂O’ have the same Kripkean intension such that the proposition ‘water is H₂O’ will be true in all the metaphysically possible world-states including the twin-earth where the dominant clear, drinkable liquid stuff in the rivers, lakes and ocean is XYZ. But the coextension of water and H₂O is an empirical discover, so that we cannot rationally rule out the scenarios in which the water turns out to be other stuff. Therefore, it is plausible that if the XYZ-world had obtained or turned out to be actual, ‘water’ and ‘H₂O’ would have had different intensions and extension such that the proposition ‘water is H₂O’ will be false and the ‘water is XYZ’ will be true in the obtained XYZ-world, because ‘water’ would have had an intension that picked out XYZ in all worlds, while ‘H₂O’ still would have had an intension that picked out H₂O in all worlds. So, as to the proposition like ‘water is H₂O’, it’s necessary because of having a necessary second intension, it’s posteriori because of having a contingent first intension. The same approach can be used to explain the contingent *a priori*.

2. Kripke and Soames : the intimation of 2D in necessary *a posteriori* ?

Scott Soames hold that one motivation of 2D is to explain *a posteriori* necessity. Roughly speaking, the strategy is to associate the expression with two relative propositions: at the time a certain sentence of necessary *a posteriori* express a necessary proposition, it also relative to a contingent proposition. This strategy obvi-

ously stems from Kripke's explanation on necessary *a posteriori*:

'Any necessary truth, whether *a priori* or *a posteriori*, could not have turned out otherwise. In the case of some necessary *a posteriori* truths, however, we can say that under appropriate qualitatively identical evidential situations, an appropriate corresponding qualitative statement might have been false.' (Kripke, p.142)

Let ' R_1 ' and ' R_2 ' be the two rigid designators which flank the identity sign. Then ' $R_1 = R_2$ ' is necessary if true. The references of ' R_1 ' and ' R_2 ', respectively, may well be fixed by nonrigid designators ' D_1 ' and ' D_2 ', in the Hesperus and Phosphorus cases these have the form 'the heavenly body in such-and-such position in the sky in the evening (morning)'. Then although ' $R_1 = R_2$ ' is necessary. ' $D_1 = D_2$ ' may well be contingent, and this is often what leads to the erroneous view that ' $R_1 = R_2$ ' might have turned out otherwise. (Kripke, p.143-144)

'Necessary *a posteriori*' sounds like an incoherent conception: given a necessary *a posteriori* proposition S , $\sim S$ is conceivable as S is *a posteriori*, and if there is no empirical evidence to rule out $\sim S$, or more precisely, we cannot rule out $\sim S$ *a priori*, then S could be false, that is, S is not necessary to be true. How could a proposition to be necessary and *a posteriori* meanwhile? On David Chalmers, Kripke's explanation can be seen as an intimation for two dimensionalism. The core idea is that we confuse the necessary statement, e.g. ' $R_1 = R_2$ ' with 'an appropriate corresponding qualitative statement', e.g. $D_1 = D_2$. The former will be true in all the metaphysical possible world-states while the later won't, because 'if the world could have turned out otherwise, it could have been otherwise. To deny this fact is to deny the self-evident modal principle that what is entailed by a possibility must itself be possible.' (Kripke, p.141). The situations of contingent *a priori* statement are similar. Now if we skip Kripke's essentialism while recognize his 'self-evident modal principle' as confessing that one can take a certain epistemic possible world-state as actual when he evaluate any expression token uttered in that

state, then one can easily transfer Kripke's explanation to a 2D version in which ' $R_1 = R_2$ ' is evaluated in the second dimension such that to be true in all the metaphysically possible world-state and ' $D_1 = D_2$ ' is evaluated in the first dimension such that may be false in certain scenarios.

Soames criticized that Chalmers and Jackson falsely tried to view Kripke's explanation as kind of support to 2D while Chalmers argued that he just wanted to show the coherence between his epistemic 2D and Kripke's argument against descriptivism. Furthermore, Chalmers also found a quasi-2D version in Soames' analysis on instances of the necessary *a posteriori*. For example, 'This paperweight is made of wood'. On Soames, we can conceive several world-states in which the paperweight is respectively made of wood, or metal, or plastic etc. Each of these states can be conceived to be obtained or instantiated. Accompanying with every such kind of obtained or instantiated world-state, there are a set of related states which are genuine metaphysically possible.

So we have a set of epistemically possible world-states, each of which can be conceived as being instantiated. Along with each such state W_1 , we have a set of (epistemically possible) world-states W_2 , which we recognize to be metaphysically possible, if the initial, designated "actual" state W_1 is instantiated — i.e. if we recognize that if W_1 were instantiated, then W_2 would be a property that the universe could have had. Moreover, for each such state W_2 , there is a set of (epistemically possible) world-states W_3 which we recognize to be metaphysically possible, if W_2 is instantiated. This reflects the fact that we recognize that if W_1 were instantiated, then W_3 would be (metaphysically) possibly possible. Repeating this process indefinitely, we end up with a conceivable — epistemically possible — system of metaphysical possibility. Collecting all such systems together, we have a set of epistemically possible systems of metaphysical possibility. Roughly speaking, for a world-state to be genuinely metaphysically possible is for it to be a metaphysically possible member of some epistemically possible system of metaphysical possibility, the designated world-state of which is the state that the world really is in. (So-

ames, 2005, pp. 207–8)

Since each world–state is epistemically possible, it can coherently be conceived to be instantiated. For each such state w_1 , there is a set of states w_2 that would be metaphysically possible, if w_1 were instantiated. These are properties the universe could have had, if it had had w_1 . For each such w_2 there is a set of states w_3 that would be metaphysically possible, if w_2 were instantiated. These are properties that it could have been the case that the universe could have had. (Soames, 2007b)

Chalmers said that ‘these remarks have a strikingly two-dimensional flavor’. (2006c) Because one can view the maximally complete set of epistemically possible world-states, each of which can be conceived as being instantiated, as the first dimension in 2D framework. And the second dimension can be the maximally complete set of metaphysically possible world-states relative to each epistemically possible world-states considered as being obtained or instantiated. Soames’ saying that ‘the propositions expressed by instances of the necessary *a posteriori* are true in all metaphysically possible world-states, but false in certain epistemically possible states’ strongly remind us Chalmers’ (IT1).

3. Epistemic Possibility and Metaphysical Possibility

Although Kripke’s analysis on necessary *a posteriori* suggests the 2D frameworks, and Soames’s development based on Kripke, according to Chalmers, can be translated into kind of framework similar to his epistemic two-dimensionalism, one can find the fundamental differences between epistemic two-dimensional semantics and Kripkean one dimensional semantics. On my opinion, in those differences one of the most important is relative to the understanding of the relationship between epistemic possibility and metaphysical possibility.

Kripke holds that the propositions like ‘water is H_2O ’ and ‘this desk is made of ice’ are known *a posteriori*, but they are necessary. And the strength of such kind of necessity comes from the essential properties of the objects predicated by those

propositions. The modal conceptions such as possibility and necessity can only be understood and specified relative to the properties of objects in the actual world where we live. For a certain object, the lack of non-essential property is metaphysically possible while the lack of essential property is metaphysically impossible. Accepting these views, Soames claims that the actual world-state is the maximal world describing property that the world instantiates, any other world-states, involving the metaphysically possible (those could have been instantiated) and/or epistemically possible (those cannot know *a priori* not to be instantiated), can only be specified by the stipulation of those actual properties, that is, all our knowledge on possibility stem from the individuals and properties in the actual world.

Consider the ‘paperweight’ again. On Kripke, ‘If a material object has its origin from a certain hunk of matter, it could not have had its origin in any other matter.’ (Kripke, p.114) For example, if there is a paperweight made of wood, it’s impossible for this paperweight to be made of metal, plastic, or any other materials. This means that the proposition ‘This paperweight is made of wood’ will be true in all the metaphysical world-states if it is true in the actual world. Kripke emphasizes that when we conceive that the paperweight in question is made of metal or plastic, we are not conceiving this paperweight is made of materials other than wood, but conceiving a different paperweight, with the same appearance, which is made of metal or plastic. It follows that conceive the way in which things might turn out to be otherwise does not imply ‘the way it finally turns out isn't necessary’ (Kripke, p.103).

On Soames, firstly we have varied conceivable world-states in which the paperweight is made of wood, metal, or plastic etc. When any world-state of such kind is instantiated, there will be a set of metaphysically possible world-states. For example if the world-state in which the paperweight is made of wood is instantiated, there will be a set of metaphysically possible world-states in which the paperweight in question is white, red, or have different size. In this situation, however, there are no possible world-states in which the paperweight in question is made of metal or plastic, because, for the paperweight, the color and size is nonessential while the material is essential. That is, for the paperweight made of wood, the world-states in which it is made of metal or plastic is only epistemically possible

while metaphysically impossible.

But on Chalmers, there is no obvious evident supporting the inaccessibility from the epistemic possibility to metaphysical possibility, and there is no feasible reason which can prevent us from considering the epistemically possible scenarios which cannot be ruled out a priori as actual. Soames also confesses that there are various epistemically possible world-states in which, for example, the paperweight made of other materials other than wood (e.g. metal or plastic). And since these are scenarios we cannot rule out a priori, the following claim will be plausible: when one such world-state obtains or turns out to be actual, the truth value of relative proposition, for example 'this paperweight is made of wood', may be different. That is to say, if we consider different world-state as actual, the given expression token may have different extension and such that different intension. For example, if the twin earth has obtained or turned out to be actual, the term 'water' will refer to XYZ such that the proposition 'water is H₂O' will be false relative to the obtained twin earth. Therefore, Chalmers claims that all the proposition necessary *a posteriori* have a contingent primary intension and a necessary secondary intension. Or as Stalnaker put it: There are no necessary *a posteriori* or contingent *a priori* propositions: rather, contingent a priori and necessary *a posteriori* statements are statements that are necessary when evaluated one way, and contingent when evaluated the other way. (Stalnaker, p.141)

Now the key point here is whether we have appropriate reasons to consider a certain coherently conceived counterfactual world-state as actual. Soames and Kripke clearly distinguish the domain of cognition and metaphysics. We can find that the purely epistemic possibility plays a minor role in their discussion. On Kripke, the epistemic possibility 'merely expresses our present state of ignorance, or uncertainty' (Kripke, p.103), therefore he would rather talk about logical possibility in NN. According to Soames, two-dimensionalists ignore our cognitive limitations when they evaluate the expression token uttered in a certain epistemic conceived world-state, or in Chalmers' term, centered world or scenario which is taken to be actual, in that some epistemically possible world-states are not metaphysically possible. Soames holds that we have no needs to discuss the world-state which is only epistemically possible while metaphysically impossible, because

‘we want to know what propositions are semantically expressed in different genuinely possible situations -- rather than what propositions might mistakenly be taken to be expressed’ (Soames, 2006.). This suggests that the circumstance in which a certain utterance is evaluated cannot be metaphysically impossible. For example, since it’s metaphysically impossible for a paperweight actually made of wood to be made of metal, we cannot evaluate the proposition ‘this paperweight is made of wood’ in the epistemically possible world-state in which the paperweight in question is made of metal, because such kind of world-state is metaphysically impossible relative to the world-state in which the proposition is uttered, namely the world-state in which the paperweight in question is made of wood. So Soames point out that the key point to clarify the puzzle on necessary *a posteriori* is to recognize the metaphysical impossibility of some epistemically possible states.

Actually it very difficult to identify whether a given coherently conceived world-state is metaphysical possible, sometimes we even can hardly determine whether a situation is conceivable. And Chalmers himself never gives a positive argument on such kind of accessibility. In his zombie argument against physicalism, the positive steps end up with the epistemic conceivability entail the epistemic possibility. In the following step from epistemic possibility to metaphysical possibility he appeals to Kripke’s idea that for phenomenal concept, there seems no strong dissociation between appearance and reality, because, for example, pain and the sensation of pain is the same thing.

For current purposes I will not discuss Chalmers’ argument in detail. However, I am readily to point out an interesting consequence of the debate. If Soames’ criticism, i.e. epistemic 2D confuse epistemic possibility with metaphysical possibility, is plausible, there will be an obvious circle in Chalmers’ argument. Firstly, Chalmers’ 2D hold that one can consider a given coherently conceived scenario as actual, which means, as Soames viewed, that the EPWs and the MPWs are coextensive in 2D. Therefore the 2D has already entailed the accessibility from EPW to MPW. However, he uses this kind of two-dimensional framework to argue the metaphysical possibility of zombie from its epistemic possibility. This is a circle, it seems that Chalmers do not has to bore himself with arguing that there is a certain way by which conceivability may access to possibility, because the 2D itself seems

supporting a metaphysical maxim formulated by David Hume: that whatever the mind clearly conceives includes the idea of possible existence, or, in other words, that nothing we imagine is absolutely impossible. (Hume, p.53)

One plausible response for Chalmers is to argue that considering a world-state as actual is one thing, and that a given world-state may turn out to be actual is another. That is, considering a given world-state as actual does not mean the world-state in question is metaphysically possible itself. If this is sound, EPWs and MPWs will not have the same extension. The benefits in doing so are obvious. Firstly, the advocates of 2D need not revise their core theses. Secondly, to some extent they can avoid Soames' relative attack. They do not mean to confuse these two kind of possibilities. When they considering a given coherently conceived scenario as actual, they just expect to evaluate the relative expression token to see what will happen to the meaning. So Chalmers adopt this strategy without hesitation: I outline a version of the view on which scenarios are understood as maximal epistemic possibilities, with no presumption as to whether such entities are metaphysically possible. On this version of the view, the framework cannot be used to make straightforward inferences from conceivability to possibility... (Chalmers, 2006c.) It seems that this claim will weaken Chalmers' epistemic 2D, although there are almost no changes in the form of two-dimensional framework except that he first dimension falls into a situation almost completely presumed.

However, this strategy still cannot avoid Soames' criticism when one slightly changes the way he asks: if a given coherently conceived world-state is metaphysically impossible, why we have to pretend it as actual? Are we expressing our ignorance or uncertainty? Or, are we trying to find out how a given expression token or an utterance can express a wrong proposition? So, the problem seems even more intractable than before if one confesses that there are epistemically possible while metaphysically impossible word-states. And Chalmers may again have to appeal to semantic pluralism by which try to keep the cognitive significance in the realm of meaning. But this is a different topic.

A more fundamental difference here lies in their understanding of possible world and proposition. Chalmers agrees with Soames about the following basic ideas: Actual world-state is the way the world actually is. Metaphysically possible

states are ways the world could have been. Epistemically possible states are ways the world can coherently be conceived to be. But in the detail treatment the differences arise: Soames' world-states are maximally complete properties while Chalmers' world-states are maximally complete sentences; Soames associate epistemic properties with Russellian propositions while Chalmers with purely linguistic items. Chalmers himself also said that 'The deepest differences between Soames' system and the sort of epistemic two-dimensionalism I favor all stem from his Russellian commitments: in particular, from the commitment that epistemic properties associated with sentences are derived from properties of the associated Russellian propositions.' (Chalmers, 2006c) He pointed out that it is this kind of commitment result a strange **conclusion**: Hesperus is Phosphorus (if they exist) is a priori.

As to the relationship between epistemic possibility and metaphysical possibility, Kripke and Soames hold that modality is relative to the properties and objects in the actual world. But it's highly problematic when this idea combined with essentialism according to which for a certain object the lack of non-essential property is metaphysically possible while the lack of essential property is metaphysically impossible. That is, the change of essential properties is just epistemically possible and the change of non-essential properties is metaphysically possible. There are several problems with this idea. Firstly, in some cases we can hardly determine which properties are essential and which are not. Secondly, does the difference between essential and non-essential properties make sense in the modal intuition 'things may turn out to be otherwise'? For example, the paperweight again, which is in a certain actual state: on the desk, made of wood, yellow, carved or patterned, with a certain size and weight and maybe some other properties. According to Kripke and Soames, except being a paperweight, the origin and substantial makeup are essential. That is, 'made of wood' is essential while colors, size, weight and pattern are not. Such that, it is ordinarily impossible to conceive the paperweight in question is made of any substance other than wood. However, why the makeup and origin prior to other properties in the modal intuition? Obviously Kripke will argue that if one conceives the paperweight is made of other substance he is conceiving a different paperweight. But the problem is whatever substance the paperweight is made of it will always be a paperweight. This situation is quite different from the instance of water. If the consist or structure of molecule were

changed, it won't be water any more.

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