

## **Kant's classification of scientific judgments**

### 1. The distinction between a priori and a posteriori

[a priori:] '[...] knowledge that is [...] independent of experience and even of all impressions of the senses.'

### 2. The distinction between synthetic and analytic

[analytic:] '[...] the connection of the predicate with the subject is thought through identity.'

### 3. Synthetic a priori judgments are

- (1) arithmetic and geometric judgments,
- (2) the fundamental principles of natural science and
- (3) [the laws of 'metaphysics'.]

## Challenges to the Kantian conception

There are two important developments in science after Kant that shed new light on the Kantian classification.

1. The development of Einstein's theory of relativity.

If the Newtonian principles of Physics are scientific judgments a priori then the development of the theory of relativity shows that scientific judgments a priori are not *apodictic* at all.

2. The development of modern logic.

Formal logic provides a 'mathematization' for languages of any kind. Given such a formalized framework for languages, the Kantian definitions—in terms of 'subject' and 'predicate' and the like—appear to be pretty unclear.

## Carnap on Analyticity

### 1. The 'Logical Syntax' position (purely syntactic)

Analytic judgments are logical consequences of the so called L-rules of a language. But those L-rules are to be stipulated by means of 'material mode of speech (inhaltliche Redeweise)'. There is no definite *formal* criterion that allows to demarcate those L-Rules from other axioms (P-rules).

### 2. The 'Meaning and Necessity' position (**the narrow conception of analyticity**)

Analyticity is truth in every state-description of a language. Because a state-description is a fundamental notion and by no means arbitrary, this is a definite formal criterion for demarcation of analytic from synthetic judgments indeed.

### 3. Meaning postulates (**the wide conception of analyticity**)

But there could also be some analytic statements which are not true in *every* state-description. In order to enable ourselves to formulate that kind of judgments we have to stipulate some sentences of the language as 'meaning postulates' and define analyticity as in logical consequence of them.

## Quines 'first dogma'

The reason why Carnap introduced his wide conception of analyticity was the following argument out of 'Two dogmas of empiricism'. Quine objected that one can explicate in the narrow conception only *tautological* statements of the form

(T) Bachelors are married or not.

as analytic but not statements of the form

(A) Bachelors are unmarried.

where analyticity is the product of some kind of 'synonymy' between the 'subject' and the 'predicate'.

Carnap agreed with Quine and introduced meaning postulates as a solution of the problem.

## Why Carnap's reply to Quine's objection fails

The Quinean argument challenges the *formal sharpness* of the distinction between analytic and synthetic judgments.— A *sharp* distinction is only possible in the sense of Carnap's purely semantic conception in 'Meaning and Necessity'.

Meaning postulates, on the other hand, are completely arbitrary. There is definitely no criterion *inside* of the language that shows us why to stipulate a sentence *X* as a meaning postulate or not.

## **Both Carnapian proposals are unsatisfying ...**

The Carnapian approaches to analyticity are both unsatisfying. The narrow one because it excludes every meaningful statement, and the wide one because it appears to be completely arbitrary.

## **...but the Quinean 'solution' is even worse**

Quine tells us that there is absolutely no formal distinction between the truth of statements of arithmetics, the truth of the axioms of natural science and the truth of completely arbitrary things like 'The Eiffel-Tower is 300m high'.

## **How to deal with this?**

Is there really *no* possibility to make the distinction precise (and not only a question of 'degree') between statements which are *necessarily true* (but probably not L-true) and those which are true in a rather accidental way?

## Stegmüller on ‘synthetic a priori judgments’

In his less well-known paper ‘Der Begriff des synthetischen Urteils a priori und die moderne Logik’ (1954) Wolfgang Stegmüller proposes an interesting solution to that problem.

Stegmüller favors the narrow conception of analyticity but he claims that there is a particular category of judgments which are neither analytic (in the narrow sense) nor *empirical*. Those judgments (indeed very similar to the wider conception of analyticity) are true not in every state-description of a language but only *in some of them*; they are *necessarily* true, but not in the sense of a *logical* necessity:

„[...] die vorliegende Notwendigkeit [wird] einerseits von der rein logischen Notwendigkeit abgehoben und andererseits doch wieder als eine ‚Notwendigkeit‘ von der rein faktischen Zugehörigkeit unterschieden [...]. Was bedeutet diese notwendige, obzwar nicht rein logische Zugehörigkeit? Wenn wir [...] von den Leibnizschen ‚möglichen Welten‘ sprechen, so sind die synthetisch-apriorischen Sätze von den rein logischen dadurch unterschieden, dass sie nicht in ‚allen möglichen Welten‘ gelten, sondern nur in bestimmten.“ (Stegmüller, 1954, 555)

☞ No question: this is an informal version of what Saul Kripke presented a couple of years later as a semantic conception for the Lewisian modal system S5.

## **Kripkean semantics as a formalization for apriority**

Remember Kripkes semantic conception of modality.

☞ Given a particular language  $L$ , we have a set  $A$  of state-descriptions (also called structures or semantic interpretations) of  $L$ . This  $A$  not necessarily contains every member of the class  $\mathbb{A}$  of all formally possible state-descriptions of the language  $L$ .

☞ There is also defined a relation  $R$  over  $A$  which we can interpret as a relation of ‘accessibility’ or ‘comparability’ of possible worlds.

Then a particular sentence  $\phi$  out of  $L$  is necessarily true in a state-description  $\mathcal{A}$  if and only if  $\phi$  is true in every state-description  $\mathcal{A}'$  out of  $A$  for which it holds that  $R(\mathcal{A}, \mathcal{A}')$



## What is the *philosophical* difference between the Carnapian and the Kripkean conception of necessity?

In both cases we have *semantic* rules which define the notion of necessity.

☞ In the case of Carnap's these rules are *unique* and definite, i. e. if a sentence is necessarily true in the Carnapian sense then it is necessarily true in every possible semantic variation of the language.

☞ In Kripke's case a non-tautological sentence which is necessarily true in one Kripke-frame, i. e. in one particular 'setup' of possible worlds, can easily be false (and even necessarily false) in another setup.

And that *is* the key to a proper philosophical understanding of those two conceptions.

Carnap's conception of necessity provides a proper definition for  
**Analyticity**

Kripke's conception of necessity provides a proper definition for  
**Aprioricity**

**Final remark I:**  
**Kant's original conception has a serious flaw**

We can agree with Kant that mathematical judgments are synthetic a priori. We also can agree that the laws of natural science are at least possible candidates for synthetic aprioricism (provided that they are true in every possible world—whatever that is supposed to mean here). We can agree with Kant even that pure tautologies like ‘Snow is white or not’ are analytic.

☞ But the main problem in Kant's conception is that he claims such things like ‘Bachelors are unmarried’ and other statements which are based on ‘synonymy’ to be analytic.

*In our view such statements are formally of exactly the same character as mathematical judgments and other ‘synthetic a priori judgments’.*

The reason: in none of those cases we end up with truth because of the fundamental semantic laws of a language. *If* they are necessarily true, it is *only* in the sense of a ‘material necessity’ (Kripke).

**Final remark II:**  
**‘Synthetic judgments a priori’ for the first time have  
little to do with ‘transcendental philosophy’**

The idea of transcendental philosophy is the idea that there is a particular kind of solipsistic method—a method of ‘pure reasoning’—that allows us to catch the truth of every statement whose character is synthetic a priori.

This idea has nothing to do with the idea of synthetic a priori by itself. Synthetic judgments a priori are *epistemologically neutral*, for the first time. A judgment is synthetic a priori, if and only if it is neither tautological nor empirical.

The best examples for such statements are probably neither the often cited unmarried bachelor nor the laws of natural science but simply the judgments of arithmetics and other mathematical statements.

### **Final remark III: Logic without the dogma of ‘firstordericity’**

Carnap’s first dogma of empiricism is the crucial point where logical empiricism fails and especially, where its understanding of logic fails.

But the Quinean dogmatic use of first order logic is no less problematic and there are good reasons to suppose that the Quinean position is essentially no less logically-empiricist as Carnap’s.

Quine provides a kind of ‘negative empiricism’. What he really denies in Carnap’s philosophy is his *logicism*. But he fully agrees with Carnap when he says that *all* statements which are not plainly L-true are statements *of the same logical form*.

The only way out of this absurd situation where arithmetic judgments have the same logical status as statements about contingent empirical facts is the Kripkean conception of necessity which allows a formalization of *non-tautological aprioricity!*

To conclude:

There is a real and essential difference between **analyticity** and **aprioricity**.

This fact is not sufficiently appreciated yet, although we find hints in the early writings of **Wolfgang Stegmüller**.