One Dogma of Analyticism

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Introduction

Thesis: All adequate classical theories of analyticity are pragmatic.

Contents

The classical theory of analyticity

Quine's critique in a nutshell

One point of view regarding analyticity is this:

1. $\forall x(Bac(x) \rightarrow Bac(x))$ is logically valid.
2. $\forall x(Bac(x) \leftrightarrow Unm_{\male}(x))$ holds, because Bac and $Unm_{\male}$ are synonyms.
3. If a sentence is obtained by replacing synonyms for synonyms in a logically valid sentence, then the sentence is analytic.
4. Hence: $\forall x(Bac(x) \rightarrow Unm_{\male}(x))$ is analytic.

What's the problem?

It's 1, 2, 3 and therefore also 4:

- Logic is a question of appropriateness.
- There are no satisfying criteria for synonymy.
- So the basis and the construction method for this point of view regarding analyticity is not satisfying.

What is it good for?

- One may use it as a handy tool for structuring knowledge.
- One may try to distinguish absolute secure knowledge from weaker variants of knowledge.
- One may try to seperate discussable or testable consequences from indiscussable (not regarding terminology etc.) and untestable consequences of a theory.
- One may evaluate theories with the help of this seperation.
- Etc.

The classical point of view

Relative analyticity of sentences:

Definition

A sentence S is analytic with respect to a theory T iff (S is logically valid or) S is a consequence of the definitions of T. Otherwise S is synthetic w. r. t. T.

Relative analyticity of theories:

Definition

A theory T_2 is analytic with respect to a theory T_1 iff all sentences of T_2 are logically valid or T_2 is a definitional extension of T_1.
Otherwise it is synthetic w. r. t. T_1.

The classical point of view

Absolute analyticity of theories (abs. analyticity of sentences is redundant):

Definition

A theory T is analytic iff T is analytic with respect to $Cn(\emptyset)$. That is: T has only logical and definitional consequences. Otherwise it is synthetic.

The classical point of view

Main advantages of the theory:

- It is a (formal) semantic theory.
- It is compatible with alternative theories.
  E.g.: An argument step from P to C is analytic iff $\mathit{info}(C) \leq \mathit{info}(P)$.

The classical point of view

There are also some weaker theories of analyticity claiming only the relation from the right to the left: logical validity and definitional extension as a sufficient (but not necessary) condition of analyticity.

Some positions within the classical point of view differ also in the interpretation of the terms 'logically valid' and 'definitional extension':

- Is '$\in$' accepted as logical sign (are the axioms of ZF logically valid)?
- Are extensions by conditional definitions, extensions by recursive definitions and extensions by reduction sentences definitional extensions?

In the following we will discuss some of the weakest theories of analyticity:

- Logical validity in the sense of elementary logic (with identity)
- Definitional extensions in the sense of explicit (and conditional) definitions only
- Logical validity and definitional extension as sufficient (not necessary) for analyticity

The classical point of view

So, e.g., $\forall x(Bac(x) \rightarrow Unm(x))$ is not analytic, but analytic w. r. t. $T = Cn(\{\forall x(Bac(x) \leftrightarrow (Unm(x) \& Male(x)))\})$.

Let's extend the classical theory of analyticity in a classical way!

Definition

- A sentence S is *a posteriori* iff there is a *test* and there are two empirical bases B_1 and B_2 such that $test(S, B_1) \neq test(S, B_2)$.
- A sentence S is *a priori* iff S is not *a posteriori* – that is: If for all *tests* and all empirical bases B_1 and B_2 it holds that $test(S, B_1) = test(S, B_2)$.

'*test*' will be left quite vague here; just think of the classical methods of verification, falsification, confirmation, undermination etc.

Definition (Empirical Basis)

B is an empirical basis iff every $x \in B$ is an observational sentence.

The classical point of view

The usual relations in the extended theory of analyticity are the following ones (desideratum):

	analytic	*synthetic*
a priori	✓	–
a posteriori	x	✓

It is well known that the existence of synthetic *a priori* theories was much discussed in the past. The desideratum that no such sentences exist was often used in the evaluation of theories.

That there are no analytic *a posteriori* theories may be seen as a condition of adequacy for theories of analyticity.

In the following we will concentrate only on the second desideratum.

A problem for the classical theory

A problem

It can be shown that the second desideratum isn't fulfilled in the classical theory of analyticity: There are at least some analytic *a posteriori* theories.

But the problem is even worse. If one grasps the empirical basis of a theory with the help of the following definition:

Definition (Empirical Basis of a Theory)

B is the empirical basis of a theory T iff for all x it holds that $x \in B$ iff x is an observational sentence of T.

Then one can easily show the following proposition:

Proposition

If B ist the empirical basis of the theory T and the language of T contains only finitely many individual- and functional constants, then there is a Y such that Y is analytic and B and Y are logically equivalent.

A problem

So a smart but lazy scientist may follow a cheap strategy:
Assume that one tries to explain a special behaviour of some people with the help of the so-called *frustration aggression theory*.

Dr. Hardwork

- Construction:
  $T_1 = Cn(\{\forall x(Fru(x) \to Aggr(x)), Fru(c_2), \ldots, Fru(c_n), \neg Aggr(c_1)\})$
- Analytic-synthetic-distinction: $Cn(\emptyset) \mid T_1 \setminus Cn(\emptyset)$
- Testing the synthetic part of T_1: $Aggr(c_2), \ldots, Aggr(c_n), \neg Fru(c_1)$?

Dr. Cheap

- Construction: $T_2 = Cn(\{S_1, S_2\})$ (plus definitions for $c_1, \ldots, c_n$) with:
  $S_1 = \{\forall x((x = c_1 \vee \cdots \vee x = c_n) \to (Fru(x) \leftrightarrow ((x = c_2 \vee \ldots x_= c_n) \wedge x \neq c_1)))\}$
  $S_2 = \{\forall x((x = c_1 \vee \cdots \vee x = c_n) \to (Aggr(x) \leftrightarrow ((x = c_2 \vee \ldots x_= c_n) \wedge x \neq c_1)))\}$
- Analytic-synthetic-distinction: $T_2 \mid \emptyset$.
- Testing the synthetic part of T_2: Trivial

A problem

Obviously, the problem is to be found in the fact that one postulates definitions of observational terms (*Fru*, *Aggr* are interpreted operationally).

In order to avoid this problem, one has to forbid such definitions explicitely – either in the underlying theory of definitions or in the theory of analyticity:

Definition

A theory T_2 is analytic with respect to a theory T_1 iff all sentences of T_2 are logically valid or T_2 is an extension of T_1 by definitions of non-observational terms. Otherwise it is synthetic w. r. t. T_1.

One may give a syntactical definition of observational terms (e.g.: one may characterize all descriptive (vs. logical) symbols with an even index as observational).

A problem

But such a definition wouldn't be of much interesst for an application of the theory.

It would remain the same problem as one has or – more optimistically speaking – had with a demarcation of logical constants:

> *"It has, for example, been suggested that we simply give an enumeration of the logical constants. [...] In any case, for every list one has to offer, some argument is necessary to defend that the list contains all and only logical constants." (cf. Wang 1958, pp.493f)*

Regarding logical constants there are more or less adequate syntactic and semantic definitions.

A problem

For observational terms there are no similar solutions. On the contrary, many philosophers consider the distinction between theoretical and observational language as misleading (critique of the received view).

All heuristically accepted characterizations of observational terms are pragmatic. But since such a characterization seems to be necessary for classical theories of analyticity, such theories are also pragmatic.

Summary

Summary

1. That there are no sentences or theories that are analytic and *a posteriori* is a desideratum for a theory of analyticity.
2. To fulfill this desideratum one has to extend the classical theories of analyticity by a demarcation of observational terms and theoretical terms.
3. If such a demarcation is possible at all, then it is a pragmatic one.
4. Hence, all (adequate) classical theories of analyticity are pragmatic.

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