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SCIENCE – LOGIC – PHILOSOPHY
An old problem resuscitated

> *If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it to the flames: for it can contain nothing but sophistry and illusion.*
>
> The last paragraph of: David Hume, "Enquiry concerning human understanding"

Abstract. I argue that Hume's and Carnap's criticism of philosophy (metaphysic) contains a rational core and that this core can be much more sharply formulated as soon as a procedural theory of concepts is applied. Also, a possible solution to the problem can be suggested in a much more definite manner.

Keywords: concept, conceptual systems, constructions, Transparent Intensional Logic

1. "Scheinprobleme"

In his famous *Scheinprobleme in der Philosophie* Carnap presents a *Gedankenexperiment* and sends two geographers, one a realist, the other one an idealist, to an expedition where existence of an alleged hill should be confirmed or refuted. The point is that both scientists will agree as concerns empirical questions related to the hill. "*In allen empirischen*

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Fragen herrscht Einigkeit." The disagreement begins as soon as the geographers start to solve *philosophical* problems like "Does the hill *really* exist?" Carnap's conclusion is that the choice of a philosophical standpoint cannot contentually (*inhaltlich*) influence the (empirical) science.

Thus we have a *Realwissenschaft*, which contains the claims that are empirical and assert something, then of course mathematics and logic, so that it seems that the remaining — philosophical — writings really should be destroyed by the Humean flames. Because what other fate should they deserve?

Carnap (and Carnap's spirit in the Vienna Circle) knows the solution — it is expressed by the title of his [Carnap, 1932] paper in *Erkenntnis* (219–241):

> *Überwindung der Metaphysik durch logische Analyse der Sprache.*

From the viewpoint of non-positivist philosophy this recipe was a provocation. It was just the Vienna Circle philosophers and some sympathizers (like Bertrand Russell) who respected the role of (modern) logic in philosophy.

In the present article we do not follow the interesting history of the fate of neo-positivism after 1932, in particular of Carnap's recognition of the importance of the notion of meaning in his *Meaning and Necessity.* What is relevant for our purpose is that Carnap's notion of *logical analysis of language* was infected by nominalism[1] and his moving towards conventionalist conception of truth. The principle that the conventionalists did not recognize (against *Tractatus*) has been pregnantly formulated by Coffa (*ibidem*, 321) as follows:

> "There is no truth by convention; there is only meaning by convention and then truth in virtue of meaning."

Another point relevant for our rejection of Carnap's way is his well-known proposal of 'saving' philosophy from talking nonsense: the sentences that can be claimed by philosophy (*time is one-dimensional, every color is at a place, every process is univocally determined by its causes,...*) are 'pseudo-object-sentences'. They do not speak about time, numbers, causes etc., although it seems so because they are formulated

[1] Commenting on Carnap's ideas in *Logische Syntax der Sprache* [Coffa, 1991, 293] states: "By embedding his ideas in a Procrustean nominalist mold, he had deprived himself of the possibility of grasping their true nature... ".

in the *material mode*. This mode has to be replaced by the *formal mode*, which makes it explicit that such sentences ('propositions') speak about *forms of language*. Carnap's conception of *logical analysis of language* reduces philosophy to engaging in linguistic enterprise.

In my opinion, Carnap has elaborated the Humean skepticism concerning philosophical statements and has shown that this skepticism can be formulated with the support of more sophisticated means offered by modern logic. Carnap's diagnosis is however more interesting than his therapy. Reducing logical analysis of language to seeking linguistic reformulations of philosophical claims is rather an escape from solving genuine problems. In what follows I will try to offer a realist formulation of the problem and some thoughts concerning its possible solution.

2. A procedural theory of concepts

a. TIL, constructions

The term *concept* occurs frequently in philosophy as well as in science. Unfortunately, too often it seems that using the term the author does not know exactly what (s)he talks about. We will set aside the cognitivists' use of the term (Fodor *et alii*): concepts in the cognitivists' sense are some kind of mental representations, so that there arises the problem of sharing, which has not been solved (and cannot be solved *ex definitione*). We will follow the tradition, which in most cases conceived of concepts as of objective, logically relevant entities.

The need of using the category of concepts can be traced to Aristotle's theory of definitions (see [Materna, Petrželka 2008]). Aristotle's ᶜορισμος, i.e., *definiens* would most likely correspond to what we call *concept*. From the very beginning concepts are considered to be *structured*. Pavel Tichý, defending the structured character of *meaning* and its logical priority w.r.t. semantic notions like truth, analyticity etc. appreciated Aristotelian theory in his [Tichy, 1968]:

> True, the classical idea of sense being a simple family of features or qualities is inadequate as is the idea that all the simple sentences are of the form S–P. However, the opinion that the notion of intension[2] logically precedes the notions of truth, analyticity and synonymy, and not vice versa, is in our opinion quite justified,. . . [Tichy, 2004, 81]

[2] Here Tichý uses the term *intension* in the sense of *meaning* rather than in the sense of possible-world intensions.

Tichý's appreciation of Aristotle is understandable. Already at that time Tichý began to build up a theory of *structured meaning* (exploiting the notion of *abstract procedure* unlike Cresswell in his [Cresswell, 1975] and [Cresswell, 1985]. Tichý's first attempt [Tichy, 1968, Tichy, 1969] consisted in applying Turing machines. Later Tichý defined a theory of *constructions* working in the type-theoretically classified milieu and enabling us to deal with possible-word intensions extensionally, i.e., as with objects *sui generis*. This theory is known presently as *Transparent intensional logic* (TIL), see Tichý [Tichy, 1988], Duží, Jespersen, Materna [Duží *et al.*, 2010].

We will use TIL to define a *procedural theory of concepts*. We will however not try to define the key objects dealt with by TIL, referring to [Duží *et al.*, 2010] in this respect. Some general principles have to be articulated though. First of all, let a general characteristic of TIL be given by the following quotation from [Duží *et al.*, 2010, 1]:

> Transparent Intensional Logic is a logical theory developed with a view to logical analysis of sizeable fragments of primarily natural language. It is an unabashedly Platonist semantics that proceeds top-down from structured meanings to the entities that these meanings are modes of presentation of. It is a theory that, on the one hand, develops syntax and semantics in tandem while, on the other hand, keeping pragmatics and semantics strictly separate. It disowns *possibilia* and embraces a fixed domain of discourse. It rejects individual essentialism without quarter, yet subscribes wholeheartedly to intensional essentialism. It denies that the actual and present satisfiers of empirical conditions (possibleworld intensions) are ever semantically and logically relevant, and instead replaces the widespread semantic actualism (that the actual of all the possible worlds plays a privileged semantic role) by a thoroughgoing anti-actualism. And most importantly, it unifies unrestricted referential transparency, unrestricted compositionality of sense, and all-out hyperintensional individuation of senses and attitudes in one theory.

The word *transparent* in TIL means that TIL is *anti-contextualist*: Every expression of the given language expresses its *meaning* (Frege's *sense*) independently of any context. While other logics prefer to say that the expression, say, *soldier* denotes a class in the sentence *Charles is a soldier* and a property in *Charles wants to be a soldier*, so that its meaning is dependent on a context, for TIL (top-down approach) this expression expresses one and the same construction in both contexts and, moreover, this meaning can be itself denoted as in *Charles believes that Peter is a soldier*.

The key notion of TIL is thus *construction*. Due to this notion TIL becomes a *hyperintensional* theory: we can explain why (intuitively)

(a) the semantics of an expression A may differ from the semantics of an expression B although A is logically/analytically equivalent to B,
(b) there may be more analytically equivalent expressions that denote one and the same object.

Ad (a): Observe that, e.g., all mathematical claims that denote the same truth-value differ semantically (no 'Great Fact'!).

Ad (b): Consider the expressions

natural numbers greater than 1 *and divisible just by itself and* 1
natural numbers possessing just two factors.

Clearly, both expressions denote the set of primes. If their meanings were definable set-theoretically (as one interpretation of Frege's definition of *Begriff* has it[3]) then the semantic diversity of these expressions would be unexplainable. It is just the notion of *construction* what makes it possible to jump into hyperintensionality. An informal characteristic will now compensate for the fact that for the technical reasons the exact definitions cannot be reproduced. Let us begin with a most important warning:

> *Constructions are not formal expressions: they are abstract procedures and, therefore, extra-linguistic objective entities.*

This stipulation means that TIL is (logically) a Platonist and (semantically) a realist theory in the following sense of Platonism and realism:

> [p]latonism, the view that over and above material objects, there are also functions, concepts, truth-values, and thoughts.
> ... realism, the idea that thoughts are independent of their expression in any language and that each of them is true or false in its own right.
> [Tichy, 1988, vii]

Further: To deal with constructions we need, of course, some 'pseudo-language', which will mediate instructions to do particular (abstract) actions. The 'expressions' of this '*language of constructions*' (*LC*) are no formal expressions (as we have already stated) — they do not admit

[3] See [Duží, Materna, 2010], where more details can be found.

of various interpretations since they unambiguously determine the particular steps to be done.

The formal inspiration is here the typed λ-calculus due to the fact that its founder (Church) recognized that practically each operation can be reduced to either *creation of a function by abstraction* or *application of a function to its arguments*. Not by chance the essentially same philosophy has been accepted by Richard Montague, who has used the typed λ-calculus rather than the predicate logic as the logical tool. Thus the two constructions corresponding to creation of a function and, respectively, application of a function to its arguments are in TIL *closure* and *composition*, respectively.

Further constructions that we will deal with are *variables* (countably infinitely many for each type), where the usual letters like x, y, …, k, l, … are just names of them (because variables are special constructions that construct objects dependently on *valuations*: they v-construct, v a parameter of valuations, and are therefore also extra-linguistic entities), *Trivializations*, ^{0}X, which just *mention* the given object and return it without any change, *Double executions*, ^{2}X, which construct twice over (we will not need it here), *Compositions*, $[\mathrm{X}\mathrm{X}_1 \ldots \mathrm{X}_m]$, where the construction X (v-) constructs a function and the other constructions (v-construct) the arguments, the result being the value (if any) of that function at those arguments, and, finally, *Closures*, $\lambda x_1 \ldots x_m\mathrm{X}$, where the construction X is abstracted from so that an m-ary function arises.

A *simple hierarchy of types* is based on some atomic types, mostly

ι … the universe of *individuals*,
ο … the class $\{\mathbf{T}, \mathbf{F}\}$ of *truth-values*,
τ … the class of real numbers / time moments,
ω … the logical space (*possible worlds*),

in terms of which *functional types* are defined: $(\alpha\beta_1 \ldots \beta_m)$ are sets of partial functions, where α is the type of the value and β_1 through β_m are types of the arguments.

As far as constructions are just *used* the simple hierarchy is sufficient. As soon as constructions themselves are *mentioned* the *ramified hierarchy* is defined. Here *constructions of order n*[4] are defined and the set of constructions of order n, denoted as $*_n$, (as well as the types of order n) is a *type of order* $n+1$.

[4] Roughly: They construct objects whose types are of order n.

For $n \geqslant 1$ the types $*_n$ are sets of *hyperintensions*. To adduce some *examples*, consider the following expressions:

(a) $3 + 5 = 6 + 2$.

Supposing (as we must) that we already understand the expressions '=', '+', and the numerals we can write down a construction:

(a′) $[{}^0{=}\,[{}^0{+}\;{}^03\;{}^05][{}^0{+}\;{}^06\;{}^02]]$

Comment. This LC-expression is an instruction:
Let the function = (type: $(o\tau\tau)$) apply to the results of (i) applying the function + (type $(\tau\tau\tau)$) to the numbers 3, 5, (ii) applying the function + to the numbers 6, 2.

Observe.
- The construction (a′) is a *Composition* (see above).
- The result will be a truth-value (type o).
- The construction itself is *the abstract procedure* proceeding according to the instruction.
- As soon as we agree that this construction is the *meaning* of the expression (a) we have fulfilled the requirement that the meanings should be structured.
- The *denotation* of the expression (a) is the *result* of the construction (a′), so the respective truth-value (here **T**).
- Being an abstract procedure the construction (a′) *does not contain brackets*, which only encode the instruction connected with (a′). After all, a construction cannot contain any expression.
- No object is directly represented in a construction: Objects are only *mentioned*. Therefore, for example the function + is trivialized.

(b) *Charles calculates* $3 + 5$

This time we have to analyze an *empirical expression*. In TIL a thorough argumentation proves that empirical expressions always denote *non-trivial intensions*, i.e. such functions from possible worlds to chronologies of some type α (type schema of intensions: $((\alpha\tau)\omega)$, abbrev. $\alpha_{\tau\omega}$ for α any type) that there are at least two possible worlds for which their values differ. In (b) *calculate* is an empirical expression, therefore, (b) is an empirical expression as well. (*Ad therefore*: see however the example (c).)

Let t, w be variables ranging over τ, ω respectively. Then — supposing again that we know who Charles is and understand the expression *calculate* — we get the following construction:

(b′) $\lambda w \lambda t[^0\mathrm{Calculate}_{wt}$[5] $^0\mathrm{Charles}\,^0[^0{+}\,^03\,^05]]$

Observe.

– Calculating relates individuals to *constructions*: a calculating individual does not relate him/herself to numbers or expressions: what remains is just the respective construction. Therefore the construction (a′) is here *mentioned*, trivialized. This Trivialization absent Charles would have to 'calculate' the number 8.
– The construction (b′) is a *Closure* (see above). It constructs a function from possible worlds (λw) to chronologies (λt) of truth-values (results of the Composition [...]). Such functions (intensions) are called *propositions*.
– Applications to possible worlds and times (here $^0\mathrm{Calculate}_{wt}$) cannot be realized mathematically / logically: we have to "go into the world", i.e. to make an empirical step. The outcome of such an empirical step will hold for the actual world-time (in the positive case) but it will be a *contingent* value of the proposition: it is thinkable that Charles in some possible world does and in another possible world does not calculate $3 + 5$ at the given time.
– The type of Calculate is $(o\iota *_n)_{\tau\omega}$: a function from possible worlds (ω) to chronologies (τ) of the relation between individuals (ι) and constructions of order $n(*_n)$ (n is here 1).

Notice. Considering together (a′) and (b′) we could wrongly infer (Leibniz' rule of substitution of identicals) that their conjunction would imply that Charles calculated $6 + 2$. Fortunately, Leibniz holds but cannot be applied: In (a′) the identity holds between results of two constructions, which are *used* here. Charles is related to one of those constructions rather than to the number that is constructed. The numeric construction is here *mentioned*.

(c) *Every pianist is a musician.*[6]

To be a pianist as well as to be a musician is a *property of individuals*, type $(o\iota)_{\tau\omega}$, i.e. a function that associates every possible world and time with a class (maybe empty) of individuals. Let Every be a kind of

[5] This is an abbreviation for $[[^0\mathrm{Calculate}\ w]t]$.

[6] We assume, of course, as we have to, that analysis is applied to a disambiguated language. Even such a clear expression as *pianist* has not escaped an ambiguity as we are told by *Oxford Dictionary of Modern Slang*, where also radio operators are called *pianists*. . . .

quantifiers, type ((o(oι))(oι)): applied to a class A of individuals ((oι)) it returns the class ((o(oι))) of such classes **b** that A is a subclass of **b**. Then the meaning of (c) is a procedure that behaves according to the following instruction (construction):

(c′) $\lambda w \lambda t[[^0\text{Every}\ {}^0\text{pianist}_{wt}][^0\text{musician}_{wt}]]$

Observe.

– As we can easily check the construction (c′) constructs a proposition (similarly as (b′)). This time however we would not discover any world-times that would return distinct values: the linguistic convention determined a necessary semantic link between the properties *being a pianist* and *being a musician*: possessing the latter is a necessary condition of possessing the former. This link is independent of the state of the given world-time. The expression (c) thus denotes a *trivial intension*, a *trivial proposition*. The case (c) is the case of *nonempirical nonmathematical expressions*.

b. Concepts

We have argued that concepts cannot be set-theoretical objects. They should be structured, and one way how to fulfill this requirement is the hyperintensional system offered by TIL. The first idea which can cross our head after Section 2a has been read is probably: let *concepts be simply constructions*! The problem is however not that simple. Consider the following expressions:

(a) *The highest mountain*
(b) *a mountain higher than x*

In the case (a) we are most likely ready to say: This expression expresses a concept, the respective construction constructs an intension called 'individual role', i.e., a criterion, which — given a possible world W and time T — selects such an individual (if any) that is a mountain higher than every other mountain in W at T. This intension is the denotation of the expression (a).[7] Thus we could say that (a) *expresses a concept*.

We will see that our decision, being essentially right, needs some specification. On the other hand, if we hesitate to say something similar

[7] We have to distinguish (in TIL) the *denotation*, which is constructed by the meaning, and *reference*, which is the (contingent!) value (if any) of the denotation in the actual world-time. The reference of the expression (a) is indeed Mt Everest.

about (b) then we are absolutely right. The expression (b) contains an 'indexical element', represented by the individual variable x. The expression will denote a *property of individuals*, but if x stands for Eiffel tower then the resulting property will differ from the property that would result if x were, say, Mont Blanc. Thus (b) does not denote anything, and to claim that it expresses a concept would not correspond to our intuitions.

Thus the first approximation of the definition of concepts is:

Concepts are closed constructions.

(Closed constructions do not contain any free variables.)

Yet neither this proposal is satisfactory. We will show why.

We would like to explicate the notion of concept in such a manner that we could claim that every expression expresses just one concept. Our last preliminary definition does not fulfill this requirement. For consider the following examples:

$$\textit{the (real) numbers greater than } 2 \tag{α}$$

We have Greater than, i.e. >, type $(o\tau\tau)$. The concepts that fulfill (α) are:

$$\lambda x_1[{}^0\!> x_1\, {}^0 2], \lambda x_2[{}^0\!> x_2{}^0 2], ..., \lambda x_{56}[{}^0\!> x_{56}{}^0 2], ..., \lambda x_{275}[{}^0\!> x_{275}{}^0 2], ...,$$

Thus there are countably infinitely many candidates for *the* concept expressed by (α). Which criterion could select the 'right one'?

Another example:

$$\textit{to believe} \tag{η}$$

The type of Believe can be[8] $(o\iota o_{\tau\omega})_{\tau\omega}$, i.e. it is an empirical relation.

$${}^0\textit{Believe}; \lambda w\, [{}^0\textit{Believe}\, w]; \lambda w \lambda t\, {}^0\textit{Believe}_{wt}; \lambda w \lambda t \lambda x y\, [{}^0\textit{Believe}_{wt}\, x\, y] \ldots$$

Again, there are infinitely many candidates. To solve our problem we need some auxiliary definitions.

DEFINITION 1. Any two equivalent constructions that differ just in the choice of bound variables are called α-*equivalent*.

DEFINITION 2. Any two equivalent constructions one of which is an η-reduction (η-expansion) of the other are called η-*equivalent*.

[8] Another relation of believing, denoted also by the English expression *believe*, is a relation between individuals and constructions. See [Duží *et al.*, 2010, Ch. 5].

Definition 3 (*procedural isomorphism*). Constructions C, C′ are *procedurally isomorphous* iff there are constructions C1,…, Cm such that C1 $= C$, C$m =$ C′, and for any constructions Ci, C$i+1$ it holds that they are α-equivalent or η-equivalent.[9] □

The relation defined in Definition 3 is provably reflexive, symmetric and transitive. Thus we can see that *to every concept there corresponds just one class of constructions that are procedurally isomorphous.*

Aleš Horák from Brno Masaryk University proposed an operation called *normalization*, which makes it possible to associate every (meaningful) expression with just one concept. (See [Horák, 2002].)

If this procedure is applied to a closed construction C, the result, $NF(C)$, is the *simplest* member of the equivalence class generated by C. The simplest member is defined as the alphabetically first, non-η-reducible construction. For every closed construction C it holds that $NF(C)$ is the *concept induced by* C, the other members of the same equivalence class *point to* this concept. In this manner Horák's solution makes it possible to define *concepts* as *normalized closed constructions.* (Their type is always $*_n$,$n \geqslant 1$.)

Remark. Practically, we need not to take care of normalizing a closed construction. Any closed construction at least *points to* a concept, and there is an algorithm that finds the concept proper when applied to any construction that points to it. ⊣

3. Three kinds of concepts

Returning to the three examples from Section 2a, viz. (a), (b), and (c), we can state that each construction exemplifying the meaning of the respective expression is a concept according to the definition in the preceding Chapter (but take into account *Remark*).

The example (a) exemplifies a *mathematical concept.*

> *Mathematical concepts* construct *logical objects* (truth functions, quantifiers, modalities etc.) or *objects studied by mathematical disciplines.* Concepts expressed by mathematical / logical sentences are concepts of *truth-values.* The respective sentences are

[9] Definition 3 from [Duží *et al.*, 2010] differs only slightly from Church's definition of Alternative 1 of 'synonymous isomorphism' in [Church, 1993].

either logically or analytically true[10].
(While the sentence 2 *is a prime or* 2 *is not a prime* is logically true the sentence 2 *is a prime* is analytically true.)
NB Mathematical concepts do not contain variables for possible world as their constituents. They never construct intensions.

The example (b) exemplifies an *empirical concept*.

Empirical concepts construct *non-trivial intensions*. This means that the concepts expressed by empirical sentences are concepts of (non-trivial) *propositions*.
One consequence of our definitions is that *every empirical expression denotes something*. Empirical concepts construct functions; they simply cannot construct nothing (unlike mathematical concepts, which can construct nothing, like the concept expressed by the expression *the greatest prime*). Empirical expressions can indeed miss reference[11]. For example, take the expression (*to be*) *a man taller than Eiffel tower*: here the denotation is simply the constructed property while there is no reference.

The example (c) exemplifies a *nonmathematical nonempirical concept*.

Non-mathematical non-empirical concepts construct *trivial intensions*. This means that the concepts expressed by sentences are concepts of *trivial propositions*. The respective sentences, if true, are *analytic* or *analytically true* sentences.[12]

Combining criteria *empirical* and *mathematical* we get 4 options:

empirical + *mathematical*
empirical + *nonmathematical*
nonempirical + *mathematical*
nonempirical + *nonmathematical*

Since the first combination is impossible (empirical concepts construct intensions, mathematical concepts do it never, see **NB** above) and the

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[10] You can say: well, is Continuum Hypothesis (or Goldbach's conjecture) true? A realist answers: We don't know. An anti-realist is probably silent and waits for a proof.

[11] In TIL, reference is the contingent value (if any) of the denotation in the actual world-time.

[12] Also such concepts that are expressed by sentences like $3\ \textit{men} + 2 = 5\ \textit{men}$ belong to this kind.

three remaining options are covered by examples (b), (a), (c), respectively, we can see that our three kinds of concepts make up an *exhaustive classification of concepts.*

4. Science and logic/mathematics

(*Empirical*) *sciences* primarily use *empirical concepts.* As far as they use also logical / mathematical concepts they need them as tools for building up a consistent system of the given empirical concepts. The purpose of the use of empirical concepts is clear: to get such pieces of information that hold of the real ('actual') world. The empirical concepts provide *criteria* according to which scientists test the state of the world by means of experiment, observation and alike. (For example, to learn whether the velocity of light is limited the scientist has to know the empirical concept *velocity of*, which means that (s)he has defined (maybe in terms of some other empirical concepts) a function whose values are dependent on the state of the world and which will be the intended intension constructed by that concept. Some experiments show the probable *actual* course of the values of this function etc. The word *actual* is of key importance: empirical concepts construct *possible values* of the respective functions, while the *actual values* can be received just empirically: logic and mathematics hold for all possible worlds but to know which of them is the actual one equals to be omniscient.)

Logic and mathematics use logical/mathematical concepts. They cannot submit information concerning the actual world since the concepts they use construct just such abstract objects that cannot serve as criteria deciding about what is *real.* This does not mean, of course, that logic cannot study relations between empirical concepts. For example, logic can define relations called *requisites* and use concepts that define these relations. (We have adduced an example of such a relation, which holds between the intensions *pianist* and *musician.* Notice that we have not used the empirical concepts that construct these intensions in order to learn who the pianists / musicians are in the actual world. This would be a task for empirical science.)

Summarizing.

– Empirical sciences use empirical concepts to get some knowledge of reality (actual world).
– Logic and mathematics study concepts themselves.

5. Philosophy

Now we can see that the problem that has been tackled by Hume and Vienna Circle (especially Carnap and, of course, the *Tractatus*), viz. what philosophy does talk about, can be formulated in a much more definite manner:

Which kind of concepts does (or: can) philosophy use? **(Ph)**

In Section 3 we have stated that our classification of concepts as

(i) empirical
(ii) nonempirical mathematical
(iii) nonempirical nonmathematical

is exhaustive. So let us try to answer the question (**Ph**) in terms of this classification.

(i′) *Does philosophy use empirical concepts?*

If so, philosophy would somehow double Science.

Some attempts: "ecophilosophy", which tries to argue using some *facts*. The well visible danger consists in more or less critical repeating what a real science (ecology or some particular ecological discipline) claims. But in general: in which way would a philosopher verify her/his claims if the concepts (s)he uses were empirical? Would (s)he organize some experiment? Would (s)he argue referring to the results of some observation? And would there be no Science which would be able to do the same verification? And: Should philosophical claims characterize *reality*? This is the *Scylla* of the philosophical dilemma.

(ii′) *Does philosophy use (only) logical/mathematical concepts?*

This is, of course the *Charybdis.*

Let us admit that philosophical claims use always nonempirical concepts. Then two options are eligible:

(iia) *logical/mathematical concepts* or
(iib) *nonmathematical concepts.*

Answering (iia) we will answer (ii′). Let us first react to the option (iib): Implicitly, we have considered *mathematical concepts* to be *mathematical or logical concepts.* Thus *nonmathematical concepts* are *concepts that are neither logical nor mathematical concepts.* To be such a concept and, at the same time, to be a nonempirical concept means to contain some empirical subconcepts.

If philosophy were engaged in using this kind of concepts it would be a collection of banal claims like *All bachelors are man*, *If XY is left from Z then Z is right of XY*, *If A is stronger than B then B is weaker than A*, *All mammals are vertebrates* etc. etc.

Evidently, such claims are not what we expect to be a philosophical claim. Thus let us reject the option (iib).

What remains is the option (iia).

Here the situation is not hopeless.

True, Kant's categorical imperative, when analyzed, contains empirical concepts (*act, handeln*) but (*Encyclopaedia Britannica*):

> "Act only according to that maxim by which you can at the same time will that it should become a UNIVERSAL LAW" is a purely formal or logical statement.

Indeed, the concept of *acting* is surely either (a) just *mentioned*, and if an empirical concept X is mentioned then the result, i.e. ^{0}X is no more an empirical concept or (b) used but the constructed intension (*acting*) is in the *de dicto* supposition so that its value in the given world is not required.

Besides, the categorical imperative is a *norm*, and the concepts that are analyzes of norms are not empirical concepts: they do not help getting a piece of information about reality.

Nonetheless, the concepts participating in the concept that is expressed by the Categorical imperative are Trivializations of empirical concepts or even empirical concepts in the *de dicto* supposition. So what does justify the use of such concepts in philosophy?

Well, one can say that *any* concept can occur in a philosophical discourse as soon as it is a Trivialization or constructs an intension in *de dicto* supposition. Then the banalities from (iib) will no more be the subject matter of philosophy but their following counterparts can become the part of this subject matter:

To be a man is a requisite of the property being a bachelor.
X being left of Y is the same as Y being right of X.
X being stronger than Y is equivalent to Y being weaker than X.
Being a vertebrate is a requisite of being a mammal.

But then do not forget that *a philosophy that articulates such claims does what logical analysis of (natural) language does*.

More examples of this kind can be given. There are however examples of another kind.

Consider philosophical claims in the spirit of Anselm's ontological proof, Saint Thomas Aquinas' Five ways "all of which end with some claim about how the term 'god' is used"[13]. Here the situation differs from the cases like *bachelorhood implies manhood* and alike, where the linguistic convention is stated. There is no simple linguistic convention connected with the terms like *god*. Similarly no such linguistic convention can justify philosophical claims concerning determinism, causes, free will etc.: linguistic dictionaries may mention such terms but such a reference is not comparable with a philosophical treatise. So what can be called a *philosophical concept* (or, more cautiously, *notion*)? There is a phenomenon of vague or homonymous expressions whose semantics consists in expressing *preconceptual guesses*. No definite unambiguous construction can be associated with such expressions. We would like however to *get a concept* because we guess that there can be some interesting connections between such 'guesses', e.g., between causes and freedom, mind and matter, etc. etc. The transition from such a 'guess' to a concept has already got a name: it is an *explication*.[14]

It seems that we have found a 'therapy' for Humean skepticism: *Philosophy explicates interesting preconceptual guesses*.

One can object:

(1) What do you mean by *interesting*?
(2) Are there not interesting preconceptual guesses that we should not call 'philosophical'?

Ad (1): A difficult question, indeed. Consider however history of philosophy: you will get a list of problems that have been considered to be interesting. History of philosophy can be construed as history of attempts to explicate preconceptual guesses connected with these problems.

Ad (2): There is a 'filter' that can distinguish, e.g., physical, astronomical and suchlike guesses from those which we should classify with philosophical tasks: If the guess concerns concepts rather than 'things

[13] Saint Thomas Aqionas, *Stanford Encyclopedia of Philosophy*, 10.1.

[14] See [Carnap, 1962, 3].

themselves' (like properties, relations of objects) then a philosophical (but maybe a logical) problem starts a process of explication.

Some concluding remarks are however necessary.

First: We went from Carnap to Carnap. No wonder, Carnap has changed some his views. To save philosophy *via* reformulations of its claims, viz. translating them from the 'material mode' to 'formal mode' essentially differs from explicating preconceptual guesses: in the latter case philosophy is no more engaged in linguistic.

Second: Explicating can be more or less *successful*. Some pseudo-problems may arise in the process of explicating. Hence our solution is compatible with a critical attitude to a philosophical explication. Thus it can be shown that explicating *concept* as a kind of mental entity is incompatible with the requirement that concepts have to be shared.[15]

Third: According to our solution philosophy is not a(n empirical) science and, therefore, philosophical claims do not concern *reality*. This means however that philosophy is a kind of *theory of concepts*. But mathematics and logic are theories of concepts as well. Claims of any theory of concepts are necessarily *a priori*. This statement is not at all surprising in the case of logic and mathematics. I am convinced that nearly everybody is surprised in the case of philosophy. Why?

In my opinion, the reason is clear: When we inspect the *a priori* claims in logic/mathematics we have to state that such claims are *a priori true* or *a priori false* (at least when we do not share Dummett's anti-realism). Nothing like that can be stated in the case of philosophy. Why?

This is not an easy, a simple problem. No very simple answer can be given. Let us try to formulate something like a hypothesis: The way we talk about (the) philosophy is misleading. We know indeed that *philosophical schools* are legion; each of them represents some attempts to explicate those preconceptual guesses which the given school appraises as being philosophically interesting. Evidently there are always more schools that try to explicate the same guesses. In virtue of the essential indeterminacy of guesses the explications offered by a school A may be (and mostly are) distinct from the explications given by a school B. Naturally, no such arguments can be adduced by the adherents of any school that would use empirical concepts: philosophy is not an empirical

[15] See Hans-Johann Glock [Glock, 2009].

science. Thus the only way how to argue that some philosophical claim is true consists in proving that it is compatible with other claims of the same school. This is indeed a very unsatisfactory result. Solipsists easily prove that their claims make up a coherent system.

Does it mean that it is impossible to find philosophical claims that are surely true?

First, don't forget that many philosophical schools produce *norms* rather than claims. This is a specific problem of any axiological theory but in any case the question of *truth* does not arise in such systems.

Second, we need not be too pessimistic. Some development of philosophy can be stated, sometimes some claims proved to be true due to analyses made by philosophical logic, in particular when the respective guesses are not too much indefinite. Indirect proofs are favorite methods of arguing. (See for example Tichý's proof that "alternative possible worlds are alternative states of affairs *as regards the same domain of objects*". [Tichy, 1988, 180–182])

But of course, we would appreciate if some philosophical theses that seem to be very absurd could be shown to be false (see solipsism), which seems to be hopeless. Yes, Carnap from the thirties would have a simple solution: such theses are just "pseudo-sentences", which are *sinnlos*. A thorough analysis of the solipsist claims from the viewpoint of procedural theory of concepts leads to the same result. Thus we can hope that similar cases of 'unsympathetic' philosophical claims will prove to be cases of meaningless or truthless sentences.

Remark. From the viewpoint of TIL there is an essential difference between being meaningless and being denotationless (in the case of sentences truthless). Since meaning is a construction (in the case of non-indexicals a concept) to be meaningless means that there is no construction that would be derivable from the grammatical structure of the respective expression. Having no denotation means that the expression is meaningful so hat we understand it but the construction does not construct anything. Examples:

– *The number* 3 *is green.*[16]

[16] We understand the expression *number* so as it should be understood. People use to apply expressions in a way that goes against the way the given expression has been introduced into the language. Thus *number* can be certainly used in the sense of *being a numeric label*. Such cases of deformed application of semantic rules are, of

– This is a meaningless expression: it is impossible to associate this sentence with a concept of a truth-value (and we can see that we do not understand the sentence).
– *The greatest prime is odd.*
– This is a truthless sentence. We can find a concept that is expressed by it, viz.

$$[{}^0\mathrm{Odd}\,[{}^0\mathrm{Gr}\,{}^0\mathrm{Prime}]]$$

and we indeed understand the claim but no truth-value is constructed. ⊣

Thus we can after all admit that the Humean skepticism concerning philosophical claims, as well as the more elaborated skepticism formulated by Vienna Circle, in particular by Carnap, is partly justified but that Carnap's 'therapy' can be rightly criticized. A procedural theory of concepts based on TIL offers a more sophisticated realist solution of the problem. Philosophy *is* a specific kind of a theory of concepts and its claims are, therefore, *a priori*. An essential part of philosophy is *Logical* analysis of language, which cannot be reduced to linguistics.

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course, frequent but this is an empirical, pragmatic problem, and if logical analysis should take into account such cases then it would never begin to work.

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