Structured Language Meanings
and
Structured Possible Worlds

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Abstract
The present paper sketches the essentials of a proposal which is very Tractarian in its spirit for it exposes some kind of structural isomorphism between (declarative) sentences and (possible) facts (state of affairs). The proposal employs a hyperintensional (procedural) explication of language meanings as suggested by Pavel Tichý. The same logical system is used for explication of facts and possible worlds. Possible worlds are structured, since they contain structured facts.

1 World of facts
An excellent but neglected paper by Clarence Irving Lewis (1923) opens by an important question: Is our world a sum of individuals or a sum of facts? My answer is in some refinement of that of Lewis. The material world is nothing but a “chunk of matter”. Within our system of explication, it (or rather its parts) is reasonably explicated by a collection of individuals (the universe of discourse). But there is also a strong pre-theoretical intuition that the world is not exhausted by individuals, but that it consists of facts. Thus the world as conceptually grasped involves facts (state of affairs). Indeed, what counts as a fact (actual or merely possible) depends on our conceptual construal of the material world. Unfortunately, we are not omniscient beings and thus we do not know all facts that obtain. Rather, we face a plenitude of possible facts, only some of them actually obtaining. Maximal collections of mutually non-exclusive facts which can obtain are known as possible worlds. The set of all possible worlds is known as logical space and it is natural to consider it as homogenous. One of the possible worlds happens to be the actual world and the ultimate aim of empirical investigations is to determine it.

2 Language and facts
When investigating the material world a human subject recognizes some basic items, individuals, and realizes (discovers) that they happen to feature
various traits. The range of basic attributes on the part of a subject, the
fundamental core of his conceptual equipment, forms an intensional basis.
There are sundry possibilities how the attributes can be distributed through
the universe of discourse. The collections of these possibilities are (pre-
theoretical) possible worlds.¹ It is natural to consider language as a tool en-
abling us the remarkable service to communicate actual facts (“messages”),
i.e. which individual instantiates which attribute (etc.). It seems very prob-
able that this is the main purpose of language, since it is capable to name
individuals as well as attributes and combine names with predicates into
sentences whereby declarative sentences can be aptly viewed as records of
facts. To give an example, by a sentence ‘A is an F’ one records that the
individual A possesses the attribute F. A human subject can capture in
this way that the empirically executed test on A’s being an F comes out
positively. To verify a sentence thus amounts to carrying out the procedure
prescribed by it; for example, to test A on its being an F.² Of course, one has
to understand the sentence first, i.e. to find out which procedure is coded
by it in a particular language. A language is fundamentally a vehicle coding
extra-linguistic items which are often called meanings (and we know that
distinct languages are capable to code the same entities-meanings because
translation is in principle possible). (Some ideas presented in this paragraph
are adapted from Tichý 1969.)

3 Language and concepts

As pointed out by many (most notably by Alonzo Church), expressions ex-
press concepts (in the objective sense; but not all of them are “predicative”
in Frege’s sense). The concepts expressed by sentences are sometimes called
thoughts (or “propositions”). Many concepts are structured – they are com-
plexes built from other, more basic concepts. The ultimately simplest con-
cepts will be called simple concepts, all other compound concepts. Let us add
that rational thinking (in the objective sense) proceeds within frames of par-
ticular conceptual systems involving simple and compound concepts. Our
pre-theoretical intuition that concepts are structured (as no set-theoretic en-

¹As Tichý remarked (1988, § 36), only some of combinatorially possible distributions
of attributes count as possible worlds, for attributes are often not mutually independent.
For instance, the distribution of “white” and “black” having overlapping extensions is not
reasonably a possible world (it is “impossible”).
²Let us add that not all sentences of some language are records of ascertained facts.
Many sentences are hypotheses. Collections of hypotheses as regards to some matter are
known as scientific theories. By means of extrapolation we can view possible worlds as the
contents of the largest theories. In other words, there is an important connection of the
discussed topic with the problem of verisimilitude, i.e. the likeness of theories to so-called
“truth”. Cf. e.g., (Oddie 1987).
tity can be) leads us to the adoption of *procedural conception of concepts*.\(^3\)

Note also that concepts determine objects other than themselves (the most single concepts determine objects in a quite trivial, immediate manner). Concepts determining the same object are *equivalent*. By the addition of *deduction rules* – enabling us to go from some concept to another concept – to a particular conceptual system we get *derivation system*.

## 4 Structured meanings

The enterprise of logical explication of meanings of natural language expressions is often provided within some *intensional logic*. Intensional logics distinguish extensions and intensions; *intensions* are functions from possible worlds. Following Pavel Tichý (e.g., 1988), one can suggest that each “*non-empirical*” expression denotes an extension while each “*empirical*” expression (always) denotes an intension (an empirical expression is such that its reference thinkably varies dependently on logically conceivable circumstances, i.e. possible worlds). For instance, the denotation of a sentence is a proposition, i.e. an intension having truth-values as values; the denotation of monadic predicate applicable to individuals is a property of individuals, i.e. an intension having classes of individuals as values. Unfortunately, intensions are too coarse-grained to be proper explications of meanings. Consider the only proposition true in all possible worlds; this single proposition is denoted by infinitely many analytic sentences which, however, speak about various distinct items – yet that proposition embodies no hints to these items. The same problem from another side: when one believes that two is two we cannot correctly infer that they believe Fermat’s Last Theorem. Thus to adequately explicate language meanings one needs *hyper-intensional entities*. They have to be different from set-theoretical objects such as sets (or \(n\)-tuples, or even ordered sets), since set-theoretical entities lack a genuine procedural character. Presumably, *Tichý’s constructions* are the desired entities. Constructions are akin to algorithmic computations and one can imagine them as objectual counterparts of lambda terms. Constructions are entities as sufficiently fine-grained as expressions are; yet constructions are not expressions (of some formal language). Clearly, structures of (disambiguated) expressions are faithfully reflected by the structure of a construction, each subexpression of a compound expression has thus its meaning correlate (we are in fact speaking about *structural isomorphism* here). For one known example, so-called “structured propositions” are perhaps best modelled as Tichý’s propositional constructions. As for the pro-

\(^3\)It was convincingly stressed by Pavel Materna (1998). Though I diverge from his conception of conceptual systems, I fully accept his modelling of concepts by means of Tichý’s logic. Certain differences between meanings and concepts, both explicat ed in a procedural way, will be omitted.
cedural character of propositional constructions, the construction expressed by ‘A is an F’ is a procedure consisting in taking F and applying it to w (possible world) to obtain a class of individuals which is applied to A, getting thus T or F. For more related details and also arguments in favour of his theory of “structured meanings” see (Tichý 1988).

5 Facts as propositions

According to our pre-theoretical intuition, a fact is something that obtains or not. This feature is shared also by propositions in the sense that they are true or not (in this or that possible world). Thus a proposition can be the explicans of fact as many theoreticians explicitly suggested. There is, however, a problem arising from the definitions of a possible world as a set of propositions and a proposition as a set of worlds. To avoid the explanatory circle one has to take one of the two entities as more primitive. Tichý (1988, §38) proposed to treat possible worlds as primitive; let me explain. When explicating pre-theoretical notions by some theoretical notions (functions, etc.) it is inevitable to link some of the latter entities to the former ones. For instance, the theoretical object T is linked with our “Yes”, the affirmative quality. Analogously for worlds: W₁, W₂, ..., Wₙ are trivial explications of our pre-theoretical possible worlds. Within this system of explication these “proto-worlds” (Oddie’s term) W₁, W₂, ..., Wₙ serve as a modal index. Within the system of explication there is, of course, also non-trivial explication of the pre-theoretical possible world as a collection of propositions (those functions from proto-worlds).

6 Double aRb fact

The individual A is taller than B. B is shorter than A. Do we have here two facts or one fact of a comparative height? Some theoreticians, in particular Tichý, incline to the opinion that this is a case of one and the same fact. This squares with the explication of facts as propositions because propositions entirely lack any structure. Propositions are flat mappings – they bear no trace of the way how they are constructible. Note that this intensional theory of facts is endowed with the following indirect correspondence: a sentence depicts a structured propositional construction which constructs a structureless proposition-fact. The sentence is not a picture of the fact; it corresponds to the fact only indirectly (via that construction). I am not satisfied with this theory and I have several arguments against it. The first important argument concerns mathematical facts: we do have, intuitively, more than one mathematical fact. However, the intensional theory of facts implies a collapse of all mathematical facts into one Big Mathematical Fact (remember the slingshot argument). A dualistic account offers a separate
treatment of empirical and non-empirical (mathematical) sentences; the former sentences are about facts *qua* propositions, the latter ones are about facts *qua* propositional constructions. Nevertheless, this does not help for ‘It rains in London’ and ‘It rains in London and FLT’ (FLT being some wording of Fermat’s Last Theorem) are intuitively about two distinct facts, not one (to ascertain whether these facts obtain one has to execute two distinct investigations). My second main argument against the intensional theory of facts deploys an appeal to our pre-theoretic intuition that facts are *structured*. For instance, the fact that A is an F consists of (the concepts of) A and F which are somehow related to each other. Indeed, it is also natural to think about single or general facts (“all individuals are F’s”), conjunctive facts, etc. Propositional constructions are conveniently structured entities and as such they are capable to satisfy our intuitions; hence I suggest them as explicans for facts.

7 Procedural conception of facts and possible worlds

First notice that we reach a remarkable congruence with the opinions of Gottlob Frege (1959; a fact is a thought which is true; Frege’s thought can be conveniently explicated as propositional construction), George Edward Moore (1899; a fact is a proposition which is true; a proposition consists of concepts; analogously for C.I. Lewis) and many other theoreticians (e.g., Plantinga 1970) who view propositions as structured. But let us return to the puzzling aRb fact. When accepting that there is only one fact there we were led to put facts into real world. Yet the material world was reasonably explicated as a collection of individuals, not of facts (or individuals plus facts). The material world is a chunk of mass upon which we recognize, by means of our *conceptual prism*, facts. Though our conceptual division of the world corresponds somehow to the furrows of the continuous matter, this correspondence is essentially indirect. “Being taller” and “being shorter” are two concepts which are, and that is very important, *interdefinable*. Conceptual systems – or more precisely, derivation systems – differ as to which concepts are basic and which are derived in them. Derived concepts are introduced by definitions, i.e. a certain kind of derivation rules which guarantees the equivalence of concepts, their being “the same”. Thus “A is not a non-philosopher” is a *fact derived* from the *basic fact* “A is a philosopher” due to easily graspable definitions. Analogously for conjunctive, ..., general facts. As for “being taller” and “being shorter”, there are in principle two different derivation systems – one has the former concept as basic, but the latter is based on a converse relationship between the two. Therefore, a possible world (as non-trivially explicated) with respect to derivation system is uniquely determined by a maximal collection of mutually compatible basic facts (i.e. mutually non-contradictory propositional constructions), basic
with respect to particular derivation system. The consequences for foundations issues of truthlikeness (cf., e.g., Oddie 1987) or theories of truth are postponed to another occasion.

References


