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Säätelä:
Introduction to Wittgenstein

Lecture 4b 10.9.2018:
Logic; The colour exclusion
problem

How can I find out
whether a sentence is
true?

How can I find out whether an *elementary proposition / atomic sentence* is true?

TLP 2.223:

- Um zu erkennen, ob das Bild wahr oder falsch ist, müssen wir es mit der Wirklichkeit vergleichen.
- In order to discover whether the picture is true or false we must compare it with reality.

TLP 4.024:

- Einen Satz verstehen, heißt, wissen was der Fall ist, wenn er wahr ist.
- To understand a proposition means to know what is the case, if it is true.

How can I find out whether a *molecular proposition* is true?

- Through logical connectives, a molecular sentence is built out of atomic sentences. Molecular sentences result from logical operations on atomic sentences.
- Logical connectives: \sim , $\&$, \vee , \rightarrow
- Examples of molecular sentences built with logical connectives:
 - "It rains and my cat is grey": $p \& q$
 - "It rains or my cat is grey": $p \vee q$
 - "If it rains, my cat is grey": $p \rightarrow q$

How can I find out whether a molecular proposition is true?

p	&	q
W	W	W
W	F	F
F	F	W
F	F	F
(1)	(3)	(2)

How can I find out whether a molecular proposition is true?

p	v	q
W	W	W
W	W	F
F	W	W
F	F	F
(1)	(3)	(2)

How can I find out whether a molecular proposition is true?

$p \rightarrow q$

W W W

W F F

F W W

F W F

(1) (3) (2)

Logical connectives: Summary

p	q	\sim	$\&$	\vee	\rightarrow
W	W	F	W	W	W
W	F	W	F	W	F
F	W	W	F	W	W
F	F	W	F	F	W

But, N.B.:

The truth table method for establishing the truth of a molecular proposition presupposes that the atomic sentences / elementary propositions which it is composed of, indeed are *elementary propositions in the sense of the TLP*: That they are logically independent of each other; that their truth values can be assigned independently of each other; that the truth value of a proposition can be True / False entirely independently of the truth value of another elementary proposition!

The colour exclusion problem

”Can you give me an example ...?”

- The *Tractatus* doesn't give a single example of a simple object.
- The *Tractatus* doesn't give a single example of an elementary proposition.
- Our everyday language sentences are not elementary propositions:
 - They contain hidden or explicit logical operators.
 - They contain complex expressions referring to complex objects.
 - They are mostly *not* logically independent of each other.
 - A great many of them are not truth value capable (not bipolar).
 - With some of them it is not at all clear what their structure is or whether they at all have a structure („Hi!“).

Colour statements: candidates for elementary propositions?

- Sense-data statements:
 - «Here red»
 - «There green»
 - «This heavy»
 - «Here pain»
 - ...
- Could it be that sense-data statements are elementary propositions?
 - «This is red», «This is green» ...

The colour exclusion problem and its consequences

- 1) The truth values of elementary propositions are independent of each other.
- 2) Since colour statements can stand in a relation of mutual exclusion to each other, they cannot be elementary propositions.
- 3) Since colour statements cannot be elementary propositions, they must be analysable into simpler propositions, and their analysis must eventually yield elementary propositions (that do not exclude each other).
- 4) If the analysis of colour statements into such elementary propositions (that do not exclude each other) cannot be successfully achieved, we may want to recognize the colour statements themselves as elementary propositions which would imply that we accept elementary propositions which *do* exclude each other.
- 5) Now, it seems indeed to be the case that colour statements cannot be analysed further into elementary propositions that do *not* exclude each other. Should we therefore just go for (4) and
 - a. conceive of the colour statements themselves as elementary propositions,
 - b. accept that there are elementary propositions that do exclude each other and thus are *not* independent of each other!?
- 6) If there are at least some elementary propositions that are not independent of each other, we may just as well through the whole concept of elementary proposition over board!?

If we no longer have elementary
propositions ...



A whole lot is being
thrown over board!

My whole task consists in explaining the nature of the proposition. (NB p. 39, 22.1.1915)

Language (Sprache)	Reality / World (Wirklichkeit / Welt)
molecular proposition (zusammengesetzter Satz)	a group of states of affairs (Sachlage?)
elementary proposition (Elementarsatz) [sense]	state of affairs (Sachverhalt)
true elementary proposition (wahrer Elementarsatz) [truth]	fact (Tatsache)
name (einfaches Zeichen, Name) [have reference only in the context of an elementary proposition]	simple object (einfacher Gegenstand)

The colour exclusion problem in more detail

The colour exclusion problem: Logical independence issue

- Elementary propositions are logically independent of each other; they cannot exclude each other.
- Therefore mutually exclusive color statements cannot be elementary propositions.
- If they cannot be elementary propositions, they must be further analyzable (TLP #4.211, #6.3751).
- **(1) In the end, the analysis of “a is red” and “a is green” must each yield elementary propositions.**

The colour exclusion problem: Logical necessity / impossibility only issue

- Some color statements are mutually exclusive: “a is red” excludes “a is green”.
- There is only *logical* necessity or impossibility; therefore the analysis must show that the mutual exclusion of “a is red” and “a is green” is of a logical kind.
- The logical product of color statements such as “a is red” and “a is green” must amount to a *logical contradiction*.
 - must be a logical contradiction.
- **(2) Logical analysis must show that the logical product of “a is red” and “a is green” – “a is red & a is green” – is something like “a is red and a is not red”, thus a logical contradiction.**

Colour exclusion as a case of logical impossibility

TLP 6.375

- Just as the only necessity that exists is *logical* necessity, so too the only impossibility that exists is *logical* impossibility.

TLP 6.3751

- For example, the simultaneous presence of two colours at the same place in the visual field is impossible, in fact logically impossible, since it is ruled out by the logical structure of colour.
- Let us think how this contradiction appears in physics: more or less as follows – a particle cannot have two velocities at the same time; that is to say, it cannot be in two places at the same time; that is to say, particles that are in different places at the same time cannot be identical.
- (It is clear that the logical product of two elementary propositions can neither be a tautology nor a contradiction. **The statement that a point in the visual field has two different colours at the same time is a contradiction.**)

Some Remarks on Logical Form and other writings from 1929-30

- Logical analysis shall show that
 - (1) “a is red” and “a is green” can each be analyzed into elementary propositions which no longer exclude each other
 - (2) “a is red & a is green” is a logical contradiction
- *Some Remarks on Logical Form* (SRLF) undertakes the logical analysis of color statements.
- But SRLF does not succeed in showing
 - (1) that color statements are composed of simpler statements (e.g. statements of degree) which would no longer exclude each other.
 - (2) that “a is red” and “a is green” are mutually exclusive on the basis of logical syntax alone, and thus, in showing that their logical product amounts to a logical contradiction.

Some Remarks on Logical Form and other writings from 1929-30

- If color statements cannot be analyzed further into statements that lead to elementary propositions which are logically independent of each other - are they maybe themselves elementary propositions? We may try to answer Yes. But ...
- ... if colour statements are elementary propositions, what about the *independency* view of elementary propositions?
 - Then at least some elementary propositions are mutually exclusive and not independent of each other!
- Three Tractatus views are at stake:
 - The *independency* view of elementary propositions
 - The view that elementary propositions are *simple*
 - The view that logic “must take care of itself” (TLP #5.473)
 - We seem to need more than logical necessity / possibility only! On the basis of logical syntax / logical analysis alone we cannot show how color statements can exclude each other!

Conclusions from the colour exclusion problem

- Wittgenstein concludes that color statements such as “a is red” and “a is green” should be regarded themselves elementary propositions, but then
 - elementary propositions can be mutually exclusive (“a is red” and “a is green” exclude each other for “phenomen(ologic)al” impossibility)
 - There is no longer only logical impossibility.
 - elementary propositions, states of affairs and facts are no longer independent of each other
 - elementary propositions are no longer *simple*
 - Colour statements can be analyzed further into statements of colour degree, and propositions ascribing degree are not simple.
- **The *Tractatus* conception of elementary propositions can just as well be given up!?**

Some other problems of the Tractatus

Some questions to the Tractatus

- Was nun Ihre eigene Schrift anbetrifft, so nehme ich gleich an dem ersten Satze Anstoss. Nicht, dass ich ihn für falsch hielte, sondern weil mir der Sinn unklar ist. "Die Welt **ist** alles, was der Fall ist". Das "ist" wird entweder als blosser Copula gebraucht, oder wie das Gleichheitszeichen in dem volleren Sinne von "ist dasselbe wie". Während das "ist" des Nebensatzes offenbar blosser Copula ist, kann ich das "ist" des Hauptsatzes nur in dem Sinne eines Gleichheitszeichens verstehen. Bis hier ist, glaube ich, kein Zweifel möglich. Aber ist die Gleichung als Definition zu verstehen? Das ist nicht so deutlich. Wollen sie sagen: "Ich will unter 'Welt' verstehen alles, was der Fall ist? Dann ist "die Welt" der erklärte Ausdruck, "alles was der Fall ist" der erklärende. In diesem Falle wird nichts damit behauptet von der Welt oder von dem, was der Fall ist, sondern, wenn etwas behauptet werden soll, so ist es etwas über den Sprachgebrauch des Schriftstellers. Ob und wieweit dieser etwa mit dem Sprachgebrauch des Lebens übereinstimme, ist eine Sache für sich, auf die aber für den Philosophen wenig ankommt, nachdem er seinen Sprachgebrauch einmal festgestellt hat. ... (Frege in a letter to Wittgenstein. In: Ludwig Wittgenstein: Gesamtbriefwechsel/ Complete Correspondence. Electronic Edition, 3.4.1920, IntelLex <http://pm.nlx.com>)

N. Malcolm, *Ludwig Wittgenstein* *A Memoir*, p.70

- "I asked Wittgenstein whether, when he wrote the *Tractatus*, he had ever decided upon anything as an *example* of a 'simple object'. His reply was that at that time his thought had been that he was a *logician*; and that it was not his business, as a logician, to try to decide whether this thing or that was a simple thing or a complex thing, that being a purely *empirical* matter! It was clear that he regarded his former opinion as absurd."

World vs. Reality

- TLP #2.04: The totality of existent atomic facts is the world.
- TLP #2.06: The existence and non-existence of atomic facts is the reality.
- From #2.04 and #2.06 one is tempted to conclude that "world" denotes a subset of "reality" – but this seems contradicted by #2.063:
- TLP #2.063: The total reality is the world.

Also see «Sachverhalt»

- Wittgenstein's letter to Russell, 19.8.1919: "What is the difference between Tatsache and Sachverhalt?" Sachverhalt is, what corresponds to an Elementarsatz if it is true. Tatsache is what corresponds to the logical product of elementary props when this product is true. The reason why I introduce Tatsache before introducing Sachverhalt would want a long explanation.
- «Sachverhalt is, what corresponds to an Elementarsatz if it is true.» - Yes, this is correct; but Sachverhalt is also, what corresponds to an Elementarsatz if it is *false*, isn't it? See TLP #2: Was der Fall ist, die Tatsache, ist das **Bestehen** von Sachverhalten. Thus, Sachverhalte can also „*nicht bestehen*“, *not* obtain! What corresponds to a Sachverhalt which does not obtain? An Elementarsatz which is false.

”Nonsense”

- TLP #4.124, #5.5351, #6.54: Attempts at describing the logic of our language – though important they may be – are condemned to fail to make sense since they attempt at *saying* what only can be shown: what *can* be shown of the ”Gerüst der Welt” is shown by every use of language.
 - The sentences of logic, mathematics, the foundations of the natural sciences, ethics and philosophy are all ”pseudo-propositions” (either senseless or nonsensical).
- Tautologies (and contradictions) are senseless (”sinnlos”).
- Sentences which contain formal concepts are nonsensical (”unsinnig”).
 - Examples for formal concepts include ”object”, ”complex”, ”number” (TLP #4.126ff)
 - TLP #4.1272: *So one cannot say, e.g. “There are objects ...”*
- Sentences which contain value concepts are nonsensical (”unsinnig”).
- A proposition is nonsensical if it contains a sign without meaning. (TLP #5.4733)

”Nonsense”

- Russell, in his preface to TLP: “... Mr Wittgenstein manages to say a good deal about what cannot be said ...”
- Is the context-principle part of the ladder to be thrown away? (TLP 3.3 a.o.)
- Is the sign-symbol distinction part of the ladder to be thrown away? (TLP 3.32 a.o.)
- ...

Simple objects

- "Real" (material particles of physics) or phenomenal (points in the visual field, objects of acquaintance)?
- "Things" only or also properties and relations? If elementary propositions of the form " $a \in P$ " are to be possible, then simple objects have to include also properties?!
 - See Ms-102,147r[3] (date: 19150616): [Auch Relation und Eigenschaften etc. sind Gegenstände](#).
- Realist or idealist (or quietist) interpretation?