

Fabien Schang¹

TLP – 2.02 = TMLP

Abstract. Wittgenstein (1929) took the *Tractatus Logico-Philosophicus* to be invalidated by logical atomism. I propose to revalidate TLP by subtracting the thesis 2.02 (“The object is simple”) from it: atomic facts are not made of simple objects but, rather, of bits of information the objects are made of.

Keywords: bit, color statements, internal relation, logical atomism, mereology.

Для цитирования: Schang F. TLP – 2.02 = TMLP // Логико-философские штудии. 2021. Т. 19, № 2. С. 127–130. DOI: 10.52119/LPHS.2021.16.44.011.

1 The problem with logical atomism is to the effect that there shouldn’t be internal relations between atomic propositions. But there are.

2 Logical independence means that the truth value of an atomic proposition does not depend on the truth value of any other proposition (5.135 “In no way can an inference be made from the existence of one state of affairs to the existence of another entirely different from it”).

3 However, this is not the case with the two propositions p : ‘ x is green’, and q : ‘ x is red’. This is the so-called ‘color-exclusion problem’.

4 Wittgenstein (1929) shows the logical difficulty with the logical product of two propositions, RPT: ‘ x is red in the place P at the time T’, and BPT: ‘ x is blue in the place P at the time T’.

5 The following truth table contains a first truncated line, where the supposedly external relation between the truth of p and the truth of q is prohibited or excluded by their internal relation.

p	q	$p \wedge q$	RPT	BPT	$RPT \wedge BPT$
T	T	T	–	–	–
T	F	F	T	F	F
F	T	F	F	T	F
F	F	F	F	F	F

6 The failure of logical atomism can be avoided, provided one of its main features is corrected.

7 This requires the rejection of one of TLP’s theses: the simplicity thesis (2.01 “The object is simple”).

8 If the objects that constitute atomic facts are not simple, then they are compound.

¹Fabien Schang, Federal University of Goiás.
schangfabien@gmail.com

9 An application case is the set of colored objects.

10 According to a number of psychophysical theories (including spectrometry and colorimetry), any sensation of color can be obtained by adding three elementary (or monochromatic) colors: red, blue, and green.

11 Each of the primary colors is a bit characterizing any colored object.

12 The logical form of color statements is $\pm Rx \cap \pm Gx \cap \pm Bx$, x being any colored object that satisfies either of the three primary properties Red, Green, Blue.

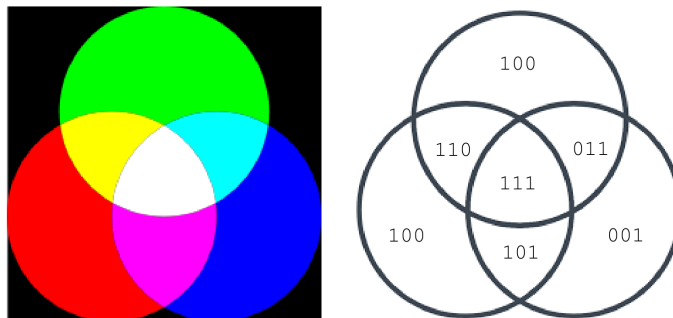
13 The set of $2^3 = 8$ colors exhausts the logical space of primary and secondary colors. This can be listed in a generalized table of colored objects, by analogy with the usual truth-tables of propositions.

$$\beta(XPT) = \langle \pm Ra \cap \pm Ga \cap \pm Ba \rangle$$

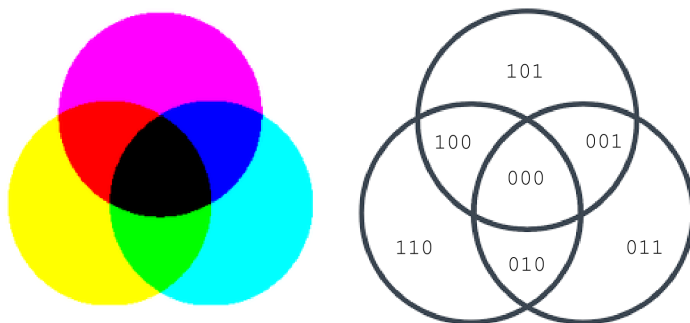
XPT	<i>black</i>	<i>red</i>	<i>green</i>	<i>blue</i>	<i>cyan</i>	<i>yellow</i>	<i>magenta</i>	<i>white</i>
$Ra \cap \bar{G}a \cap \bar{B}a$	0	1	0	0	0	1	1	1
$\bar{R}a \cap Ga \cap \bar{B}a$	0	0	1	0	1	1	0	1
$\bar{R}a \cap \bar{G}a \cap Ba$	0	0	0	1	1	0	1	1

14 What do ‘validity’ and ‘invalidity’ mean with respect to a so-called ‘logic of colors’? The color system is a ‘logic’ once reinterpreted in the sense of a mereology, that is: a logic of the parthood relation.

15 Mereological sum \oplus corresponds to additive synthesis: rays of light overlap by composing a color in adding basic colors.



16 Mereological product \otimes corresponds to subtractive synthesis: light is absorbed by superposing colored filters.



17 The above syntheses settle the controversy about how many primary colors there are: there are three additive primary colors (red, blue, green) and three subtractive primary colors (yellow, cyan, magenta).

18 ‘Impossible’ colors are counterparts of incompatible propositions. They are those whose subtractive synthesis results in a ‘no-color’ case, i.e. blackness (the chromatic counterpart of antilogy, \perp).

19 ‘Complementary’ colors are counterparts of contradictories. They are those whose additive synthesis results in an ‘all-color’ case, i.e. whiteness (the chromatic counterpart of tautology, \top).

20 Which kind of truth-statement is Wittgenstein’s puzzle proposition:

(1) If x is red, then x is not green?

21 Color-statements seem to depart from logic if they are synthetic. And they seem to depart from physics if they are analytic.

22 So we do not know whether color-statements are logical truths or not.

23 A tentative conclusion is that the so-called ‘logic of colors’ is a logic by relying on Boolean operations (invariance condition), whereas it is not a logic by being dependent on ontology (topic-neutrality condition).

24 The ‘logic of colors’ is both a formal logic and ontology, actually. It includes two distinctive ontologies: material ontology, at the (variant) level of bits; formal ontology, at the (invariant) level of operations on bits.

25 Hence $TLP - 2.02 = TMLP$ (*Tractatus Mereologicus-Philosophicus*).

References

- Aldrich 1968 — *Aldrich V. C.* Analytic A Posteriori Propositions // *Analysis*. 1968. Vol. 28, no. 6. P. 200–202.
- Dragalina-Chernaya 2013 — *Dragalina-Chernaya E.* The Logic of Forbidden colors // *Epistemologia i Filosofia Nauki*. 2013. Vol. 38, no. 4. P. 136–149.
- Höfler 1897 — *Höfler A.* *Psychologie*. Vienna: F. Tempsky, Vienna, 1897.

- Humberstone 2020 — *Humberstone L.* Explicating Logical Independence // *Journal of Philosophical Logic*. 2020. Vol. 49. P. 135–218.
- Jaspers 2012 — *Jaspers D.* Logic and Color // *Logica Universalis*. 2012. Vol. 6. P. 227–248.
- Kripke 1980 — *Kripke S.* Naming and Necessity. MA: Harvard University Press, 1980.
- Mach 1890 — *Mach E.* The Analysis of the Sensations. *Antimetaphysical // The Monist*. 1890. Vol. 1. P. 48–68.
- Monk 1991 — *Monk R.* Ludwig Wittgenstein, the Duty of Genius. London: Vintage, 1991.
- Putnam 1956 — *Putnam H.* Reds, Greens, and Logical Analysis // *Philosophical Review*. 1956. Vol. 65, no. 2. P. 206–217.
- Ramsey 1923 — *Ramsey P.* Tractatus Logico-Philosophicus // *Mind*. 1923. Vol. 32, no. 128. P. 465–478.
- Wittgenstein 1929 — *Wittgenstein L.* Some Remarks on Logical Form // *Proceedings of the Aristotelian Society*. 1929. Vol. 9. P. 162–171.
- Wittgenstein 1977 — *Wittgenstein L.* Remarks on Color. Oxford: Blackwell, 1977.
- Young 2004 — *Young R.A.* Wittgenstein's Tractatus Project as Philosophy of Information // *Minds and Machines*. 2004. Vol. 14. P. 119–132.
- Wittgenstein 2001 — *Wittgenstein L.* Tractatus Logico-Philosophicus. London: Routledge, 2001.