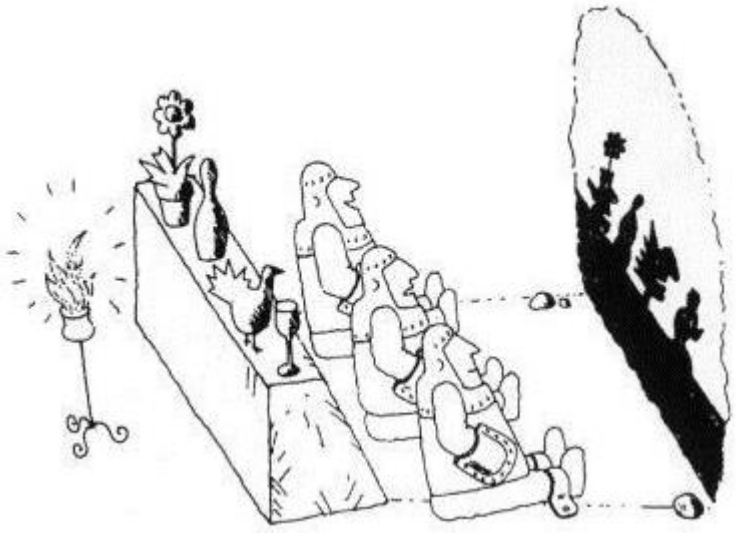
Gentlemen! The views of space and time which I want to present to you arose from the domain of experimental physics, and therein lies their strength. Their tendency is radical. From now onwards space by itself and time by itself, along with the entire physical world, will recede completely to become physicalized 4D shadows of their Platonic source.



About Space and Time

Video lecture, 21 September 2018, 10:00 GMT

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Abstract

Ensuing from Plato's proposal and the ideas put forward by Heraclitus and Aristotle, I present the Platonic theory of spacetime: the atom of geometry (dubbed "point") is treated as complex object endowed with topology, kinematics, and dynamics. It is suggested that what we call 'spacetime' is not some inert geometric object, but a holistic bootstrapping phenomenon which holds the entire physical world together, as the latter evolves along the so-called Arrow of Space. Hence 'space' and 'time' are interpreted as *emergent* phenomena pertaining solely to the "wall" in Plato's cave, while their Platonic source, dubbed 'potential reality' or *Res potentia*, does **not** live anywhere on the light cone (Plato's 'wall' called 'local mode of spacetime') and remains perfectly hidden by the "speed" of light. What physicists nowadays call 'spacetime' is treated as *local mode* of spacetime relevant only to the *physicalized* explications of the Universe — nothing but 4D "shadows" of *Res potentia*, as Plato suggested many centuries ago. In summary, a new quantum-gravitational spacetime, equipped with local and global modes, is proposed for quantum gravity and cosmology: every *physicalized* system is endowed with both 4D local mode of spacetime determined by the local properties of matter and fields, and global mode of spacetime determined by the properties the entire Universe as ONE. It's a bundle.

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NOTE

On 2 June 2008, commemorating the one-hundredth anniversary of Hermann Minkowski's lecture 'Space and Time' on 21 September 1908, I invited many theoretical physicists and mathematicians to attend my talk in Munich on 21 September 2008: read my invitation at this http URL. Now I offer a video lecture, which will be available at my YouTube channel on 21 September 2018 after 10:00 AM GMT. Feel free to subscribe by email (see above) with subject "About Space and Time, 21 September 2018". You will receive password to watch the lecture (app. 20 min) and will be able to download it until 10 AM GMT on 30 September 2018. The main idea was explained in my first talk on 21 September 2008: every finite (in size) spacetime region has both *local* properties (local mode of spacetime) and *global* properties (global mode of spacetime); the latter are determined by the properties the entire Universe as ONE, most notably by the **self-acting** faculty of Aristotle's Unmoved Mover. Thus, we arrive at the proposal by Heraclitus 'you cannot look twice at the same river', and suggest that the irreversible *flow* of 4D events 'here and now', constituting the local mode of spacetime, cannot be observed in principle due to the "speed" of light. We only have *physicalized* remnants from the **self-action** of the Universe as ONE (global mode of spacetime), which some (otherwise smart) people consider "dark". Simple, isn't it?

To give you a glimpse of the introduction to the forthcoming second lecture, check out (**i**) Slide **7** and **A2** in Slide **19** in Quantum Spacetime, (**ii**) my comments on the alleged temporal and spatial orientability of spacetime at this http URL, and (**iii**) pp. **21-26** in Hyperimaginary Numbers. Instead of mimicking Nature by postulating the global mode of spacetime 'by hand', we must get professional and uncover the proper mathematical formalism and tools. Perhaps we only need Mathematics.

Notice that the local 4D "shadows" on Plato's wall (local mode of spacetime) above are patches from the inflating balloon in Fig. **4** in Gravity-Matter Duality, p. **5**. If you follow all the links on this page *and* read the references, I believe you will easily grasp the Platonic theory of spacetime. The only thing you may not know is about its *practical* application: spacetime engineering (p. **9** in Gravity-Matter Duality). I will be happy to explain it to all who have subscribed by 10 AM GMT on 21 September 2018 (read above). Yes, we can tweak our common global mode of spacetime (Fig. **10** in CEN.pdf, p. **11**). No, it is not "magic": Any sufficiently advanced technology is indistinguishable from magic (Arthur C. Clarke).

You may wonder, why am I doing all these efforts to promote again the Platonic theory of spacetime? Because spacetime engineering is the future. We *absolutely* need it. If people again ignore my work, as it happened ten years ago — so be it. Matthew 7:6.

D. Chakalov

February 17, 2018
Last update: February 22, 2018, 13:56 GMT

FOR THE RECORD

As of today, 21 September 2018, (X) number of people have subscribed to my video lecture …

(TBC)

About Space and Time

Video lecture, 21 September 2018
D. Chakalov, chakalov.net

Commemorating 110 years of Hermann Minkowski's lecture RAUM UND ZEIT, given at the 80th Meeting of the Natural Scientists in Cologne on 21 September 1908 and based on the crucial contributions to the theory of Special Relativity by Hendrik Lorentz, Albert Einstein and Henri Poincaré[2], I am happy to offer my video lecture, entitled: 'About Space and Time'. It will be posted at my YouTube channel on Friday, 21 September 2018, at 10 GMT. Here is a brief introduction.

To understand 'space' and 'time', let me begin with their *origin*, e.g., Sergio Ulhoa *et al.*[3]:

> The modern observational cosmology inaugurated at the Mount Wilson Observatory gave a great impetus to understanding the Universe [1]. The Standard Cosmological Model, alongside the Cosmological Principle and field equations of GR, describes all knowledge about large structures with good approximation. The Hubble Law shows how fast galaxies move away from each other at a relatively small distances. Thus it could be used to test new cosmological theories. The Cosmological Principle states that the Universe is isotropic (above 100 Mpc) and homogeneous (there is no center) in addition its dynamics is given by the Einstein field equations, $R_{\mu\nu} - \frac{1}{2}g_{\mu\nu}R = 8\pi T_{\mu\nu}$. In such a way it is possible to trace a complete time evolution of the Universe. If the time is set backwards we see that everything started in a warm and dense state with domination of the radiation energy. The metric that admits the Cosmological Principle and the dynamics given by the GR is that of Friedman-Lemaître-Robertson-Walker (FLRW) [2-6]:
>
> $$ds^2 = -dt^2 + a^2(t)\left[\frac{dr^2}{1-\kappa r^2} + r^2 d\Omega^2\right], \qquad d\Omega^2 \equiv d\theta + \sin^2\theta\, d\phi^2 \qquad (1)$$
>
> where k assumes values of −1 (negative or closed spatial curvature), 0 (null or flat spatial curvature) or +1 (positive or open spatial curvature).

Here's the problem: once we introduce *metric* of spacetime, as Hermann Minkowski did at his famous talk on 21 September 1908, we face the "origin" of spacetime, which must have been existing even "before" the instant of creating spacetime endowed with metric. This logical paradox prompted Yakov Zel'dovich to suggest (private communication; translation mine – D.C.) that "long time ago, there was a brief period of time during which there was still no time at all." He was, of course, joking. Point is, the logical paradox remained unsolved, until the author of these lines found its unique, and non-trivial, solution dubbed Finite Infinity (**FI**). Do you remember the ancient Dragon chasing its tail? You need two *dual* states of the Dragon: one in which it has already caught its tail, and another one in which it is only approaching its tail, but can never actually catch it. The first state of the Dragon is called actual or completed infinity, while the second one is known as potential infinity. Blend the two states and you will obtain **FI**, plus the so-called *dual age* of the Universe.

Let's get started. Let me introduce, following my previous talk on 21 September 2008, two *modes* of the Universe viz. its spacetime: local mode (determined by actual or completed infinity) and global mode (determined by potential infinity). It's a bundle.

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[2] H. Poincaré, Sur la dynamique de l'électron, *Comptes Rendus Acad. Sci* Paris, 140, 1504-1508 (5 Juin 1905).
[3] Sergio Ulhoa *et al.*, arXiv:1802.08087v1 [gr-qc], 21 February 2018.