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WHY THINK ABOUT TIME-SPACE, NOT SPACE-TIME??

Fig.1 The stunning Century Clock (built 2000) in Tianjin, NW China, showing the giant clock, with a standard clock face, encircled by carved signs of the Zodiac, plus below the working machinery, and, out-stretched, two giant arms, one holding the Sun the other the Moon.

Why think about Time-Space, instead of Space-Time? This BLOG, the second in my 2025 Time series, presents my answer.[1]

The first significant point to note is that rethinking Space-Time as Time-Space does NOT entail refuting Einstein's theory of relativity, formulated and

elaborated in the years 1905-17.[2] Einstein himself did not use the term 'Space-Time'. But in September 1908 his close intellectual ally (and former tutor), the mathematician Hermann Minkowski, highlighted the implications in justly famous terms:[3]

> *Henceforth Space by itself, and Time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality.*

This striking declaration did not mean that there are no absolutes anywhere throughout the great cosmos. But the real absolute reality is nothing less than the integral union of Time and Space.

Following Minkowski, this reality then became known as the Space-Time continuum. And it is commonly abbreviated as Space-Time. Furthermore, given that Space is known to have three dimensions, it has encouraged the usage that specifies Time as 'the fourth dimension'.[4]

Yet ... a minority of philosophers, scientists, geographers and historians are unhappy with that version of the core terminology. They fully accept the union of Time and Space. But they consider that all-encompassing, uni-directional, and unfolding Time is a much mightier phenomenon than simply one dimension of Space, such as height, width or depth. Therefore they use the alternative formulation of 'Time-Space' as a more accurate rendering of the partnership.[5]

It gives priority to Time, which is the dynamic component within the continuum. And it leaves Space fully in the integral partnership - but not as the lead phenomenon. Instead, Space, with its three dimensions, is the splendid physical manifestation of Time.

Moreover, the mighty phenomenon of Time, which embraces the entire cosmos, has its own highly complex characteristics.[6] It is not in any way simply a one-dimensional adjunct of Space.

In one way, Time-Space as a concept is hard to visualise. (In another way, it is not hard at all. Just look at the world around you: that's Time-Space in integrated action).

However, illustrating the conceptual linkages is somewhat trickier. In that context, it's good to look again at the stunning Century Clock (2000), located in the port city of Tianjin in NW China (see Fig.1, above). It was not built specifically to show the links between Time and Space. But, imaginatively, it does. The centrepiece is the gigantic clock, marking Time. Its mechanical works, including a large swinging pendulum, are visible below. And outstretched are two huge metalwork arms - one holding the Sun, the other the Moon. Thus Time appears as the dynamo, while its power in action holds together the unsleepingly 'restless universe'.[7]

And, for those who like to think poetically, here are the evocative words of the seventeenth-century Welsh metaphysical poet Henry Vaughan:[8]

I saw Eternity the other night,
Like a great ring of pure and endless light,
All calm, as it was bright;
And round beneath it, Time in hours, days, years,
Driv'n by the spheres
Like a vast shadow mov'd; in which the world
And all her train were hurl'd.

Beautiful! With more to follow in next month's BLOG, on why all this matters ...!

ENDNOTES:

1 For further discussion, see PJC, *Time-Space: We Are All in It Together* (published by Austin Macauley: London, forthcoming 21 Feb. 2025), pp. 98-102.

2 See A. Einstein (1879-1p55), *Relativity: The Special and General Theory*, transl. R.W. Lawson (New York, 2005). For context, see too R. Stannard, *Relativity: A Very Short Introduction* (Oxford, 2008).

[3] H. Minkowski (1864-1909), Address on 'Space and Time', given to 80th Assembly of German Natural Scientists and Physicians (21Sept. 1908), cited in https://en.wikipedia.org/wiki/Hermann_Minkowski (viewed 1 Feb. 2025)

[4] There are numerous literary and cultural references to Time as the 'fourth dimension', such as N. Calder, *Timescale: An Atlas of the Fourth Dimension* (New York, 1983); R. Rucker, *The Fourth Dimension: Towards a Geometry of Higher Reality* (1st pub. 1984; republished with this title, Garden City, NY, 2014); and D. Roy, *The Fourth Dimension: Enigma of Time* (Irvine, Calif., 2021).

[5] See e.g. N. Thrift and J. May (eds), *Timespace: Geographies of Temporality* (London 2001); T.R.. Schatzki, *The Timespace of Human Activity: On Performance, Society and History as Indeterminate Teleology* (Lanham, MD, 2010).

[6] For more on this theme, see PJC, *Time and the Shape of History* (London, 2007); and summary in PJC, *Time-Space*, pp. 93-162.

[7] M. Born, *The Restless Universe* (Glasgow & London, 1936); also N. Henbest and H. Couper, *The Restless Universe* (Frome & London, 1982).

[8] H. Vaughan (1621-95), *The World* (1650), opening lines: in L.C. Martin (ed.), *The Works of Henry Vaughan* (Oxford, 1957)l and also available on-line: https://www.poetryfoundation.org/poems/45434/the-world (viewed 2 Feb. 2025).