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How The Reflection On Space And Time Gave Rise Not Only To Physics But Also To Psychology

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Abstract: This article explores how reflection on space and time gave rise not only to physics but also to psychology. As early as antiquity, philosophers grappled with the concept of space as infinite and infinitely divisible, and with time as inherently connected to space.

Keywords: Philosophy, reflection, psychology, reaction, space, time.

Introduction: In his famous paradoxes, Zeno divided the space between Achilles and the tortoise infinitely, presenting space as a kind of pudding that could be endlessly divided and stretched. Aristotle resolved this problem by arguing that space is whole and unified—it can only be divided mentally, not in reality. Thus, we merely draw imaginary marks on continuous space—point A, point B, and so on. By solving this conceptual issue, Aristotle laid the foundation for modern physics, and his treatment of space and time enabled further reflection not only in physics, but also in psychology.

At first glance, it may seem that psychologists have little scientific interest in physics—why should they care? However, our perception of time and space has profoundly shaped worldviews, and with them, conceptions of the human being. Each historical epoch developed its own anthropology based on its understanding of the world.

For example, Newtonian physics offers a view of the universe from the perspective of God: the observer stands motionless at the center while all other points move either toward or away from them. This worldview is echoed in psychoanalytic therapy, where the therapist remains a stationary observer, analyzing but not actively

participating in the experience.

In contrast, Einstein's physics aligns more closely with humanistic paradigms in psychotherapy. Its core idea is that the observer (therapist) moves together with the observed (client). Their frames of reference may or may not align, but it is impossible to conceptualize their personal "spaces" without motion—these spaces merge within the shared therapeutic environment.

Let us trace the evolution of the concepts of space and time, from an objective framework toward one rooted in subjective experience.

Even Aristotle associated time with the motion of the sun and moon, i.e., the movement of the cosmos. For him, the boundary of time is the moment of "now." This singular boundary gives time its infinity—stretching into both the past and the future. For Plato, time was a sequence of moments, yet still a movement from the past toward the future through the present [2].

From the very beginning of philosophical inquiry into time and space, thinkers have gradually come to understand them as inseparable and absolute conditions of our experience. As Immanuel Kant stated: "We cannot contemplate time outside ourselves, just as we cannot contemplate space within ourselves." To clarify: by "contemplate" he meant to become aware of.

There is also a reverse side to the time-space dyad—one cannot exist without the other. Moreover, each category generates the other, whether we are aware of it or not. Thus, there is no time without space, and no space without time. A second important conclusion follows: every space has its own time, and every time has its own space.

Let us move from the Middle Ages to the modern era. According to René Descartes, time does not exist in reality, but only in the mind of the subject. Baruch Spinoza described time as a subjective means of measuring objective duration. The English philosopher John Locke defined time as a sequence of ideas within the soul—in other words, we seem to generate time through ideas that fill our inner time-space.

In contrast, Immanuel Kant argued that we do not generate time through ideas, but rather discover time and space through our internal mental content. He likened this process to entering a dark room, the boundaries of which are unknown and potentially dangerous to explore. In this metaphor, our ideas are like furniture that we place into the room, gradually allowing us to navigate and structure our inner space.

Kant emphasized that we cannot comprehend ourselves or our experiences outside the categories of space and time. These categories are embedded into our cognitive apparatus prior to any empirical experience. That is, space and time are a priori forms of intuition, without which no experience is possible. After all, any experience we have must answer two fundamental questions:

Where? (space) and When? (time). Isaac Newton, in turn, differentiated between relative and absolute time and space. He proposed a mathematical model that assumes the existence of absolute time and space as reference points for our relative measurements. According to this model, in order for us to perceive or experience time and space, there must be external movement; without it, we would be unable to segment or measure them meaningfully [6].

However, even these so-called absolute intervals of time and space are inconsistent in the real world. Even solar days are not truly equal, which is why specialists at Greenwich Observatory are constantly adjusting clocks to account for the accumulated surplus or deficit of minutes and seconds that result from astronomical and geographical irregularities.

Gradually, the conclusion emerged that time is movement—but movement of what, and relative to what? The answer was ultimately given in psychological terms: the movement necessary for the perception of time and space is that of our inner psychological experience. It is through this internal motion that we perceive and structure our sense of time and space.

We may compare this subjective time with external time (as measured by clocks) and our inner space with external space (such as the cosmos), but these comparisons only matter if something is happening within us. Without internal motion, without any psychological engagement, there is no meaningful sense of time or space for the individual.

It is also worth mentioning a philosopher who ultimately united the measurement of time and space with personal, subjective experience—a representative of the "philosophy of life", Henri Bergson. He did not view time merely as an instrument of cognition, but as the very essence of life—that is, time is life. Bergson distinguished between relative time (as measured by clocks) and real time, which he defined as the duration of psychic processes. According to him, time is immediately given to us only through experience, as a phenomenon of human consciousness. In this framework, memory, which binds the past and present together, is a psychological reality that is inconceivable outside of consciousness.

V.A. Petrovsky identified three fundamental spaces of personal existence:

"Within me"

"Outside me"

"Between us"

All experiences of a human being, he argues, unfold within these three existential domains. These spaces constantly interact and overlap, and the personality exists within them, constructing meaning and structuring the events of one's life [1].

Based on this model, Petrovsky defines seven core personal spaces (or spheres):

"Within me — with me" – the sphere of extrasensory, potential experience

"Within me — by me" – the sphere of pre-reflective sensibility

"Within me — in me" – the sphere of self-knowledge

"By me and for me" – the sphere of action

"Outside me — at me" – the event sphere

"Outside me — from me" – the sphere of introjects

"Outside me — because of me" – the personosphere

According to Petrovsky, these seven personality spaces form the mega-space of personality—a comprehensive psychological framework through which the individual experiences, reflects upon, and engages with the world.

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