

Take Your Time

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Third Draft. Critique Welcome.

Kant, the most influential modern philosopher, developed his systemic philosophy of transcendental idealism in his 50s and published the *Critique of Pure Reason* (*Kritik der reinen Vernunft*), his "Copernican Revolution", at age 57, in 1781. Darwin developed his thoughts about how species were formed in his late 30s and 40s; he published his *Origin of Species* in 1859 at age 50 – this book forever changed our understanding of our bodies and minds. Freud's *Interpretation of Dreams* (*Die Traumdeutung*) appeared when he was 43, in 1899. Contrast this with the "Prince of mathematics" Carl Friedrich Gauss, who published his magnum opus on number theory at age 21. Famously, Galois invented an influential new mathematical field, group theory, before he was shot in a duel (also) at age 21. In 1905, our favorite Einstein published four revolutionary papers ($E = mc^2$, special relativity, Brownian motion, and the photoelectric effect) during his *annus mirabilis*, at age 26. Six examples do not a trend make, and perhaps there is "confirmation bias" in my selection of greats. However, there does seem to be a broader pattern here, bolstered by conventional wisdom: philosophers, biologists, and psychologists often take decades longer to develop their thoughts than physicists and mathematicians. Why?

Of a number of possible explanations, consider that there might be two different kinds of knowledge – *deductive* and *synthetic*. Deductive knowledge and thinking is precise, mathematical, and constrained. It is practically definitional of mathematics, is frequent in theoretical physics, and exists across other *exact* sciences. In contrast, synthetic thinking is integrative, inductive, and creative. It is ubiquitous in the *complex* sciences and in the arts and sciences investigating human intentionality and consciousness. Both forms of knowledge are important for understanding our bodies, mind, and language and society, as well as the much colder physico-chemical universe world. Deductive and synthetic thinking are not mutually exclusive, and they depend on one another. But the former, the knowledge of Gauss, Galois, and Einstein is often considered the ideal of *all* knowledge while the latter, the knowledge of Kant, Darwin, and Freud is downplayed and considered soft and loose. Only the former is, after all, certain; it exists outside of time. The latter changes over historical time; it depends on, and concerns our, biocognitive being.

Obviously our problem can be exactly formulated in the following manner. What are the values x', y', z', t' of an event with respect to K' , when the magnitudes x, y, z, t , of the same event with respect to K are given? The relations must be so chosen that the law of the transmission of light *in vacuo* is satisfied for one and the same ray of light (and of course for every ray) with respect to K and K' . For the relative orientation in space of the co-ordinate systems indicated in the diagram (Fig. 2), this problem is solved by means of the equations:

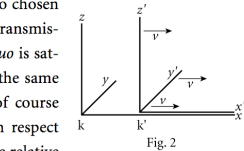


Fig. 2

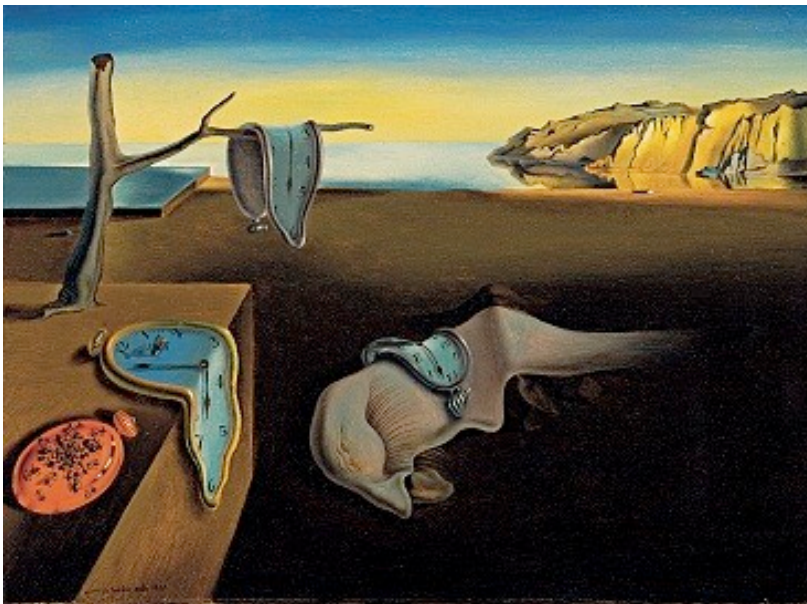
$$\begin{aligned}
 x' &= \frac{x - vt}{\sqrt{1 - \frac{v^2}{c^2}}} \\
 y' &= y \\
 z' &= z \\
 t' &= \frac{t - \frac{v}{c^2} \cdot x}{\sqrt{1 - \frac{v^2}{c^2}}}
 \end{aligned}$$

(Albert Einstein, 1916, *Relativity: The Special and the General Theory*)

Let me first be a little more precise in formulating the distinction by exploring the role of *history* in both types of knowledge. Deductive thinking requires great clarity of thinking and insight, but little time and process. It is practically ahistorical, in three senses. First, the problems and solutions themselves do not change with time – geometrical proofs are the same today as they were in the time of Euclid. Second, these well-defined problems require relatively little time to solve, and the solution itself is readily checked and understood, by those in the know. Third, the experience necessary to be proficient in the field can be gained in relatively little time – not much history is required. In short, in deductive thinking, the nature of the problem, finding/checking its solution, and gaining proficiency, are by and large ahistorical. Synthetic knowledge, in contrast, is steeped in history. Problems change with time and context – political and social events lead to particular economic or psychological theories, for instance. The “problems of philosophy” (Russell, Dewey) are contingent on the ongoing, complex, and changing concerns of distinct cultures, each struggling with matters of human existence and meaning. Moreover, developing/validating solutions [(2) above] and gaining life-expertise for problem-solving [(3) above] take much time. Thinkers, feelers, and doers engaged with the deep and challenging questions of philosophy, psychology, biology, and anthropology must gain knowledge from many different fields. They must reflect about their own existence, our place in the world, and the deep sources of meaning, empathy, and normativity. Synthetic thinking involves deeply historical processes.

What does any of this discussion have to do with you? The central points of this mini-essay are that synthetic thinking is as important in our personal lives as in the sciences and humanities, and that we must give these processes the chance to unfold. Take your time. And think about how you might learn from the reasoning forms and integration patterns present in the sciences and humanities.

Let us therefore move sideways from scientific and humanistic knowledge to personal lives. So many of us long for fast, precise, and correct answers for the questions and problems of our love, work, and family. Tinder and OKCupid, and the news and social media in general, encourage us to optimize decisions, and place decision-making in a game-theoretic or Bayesian updating rationalistic, almost computational framework. Is this the right partner for me, and how long should I continue giving it a try? How can I do a cost-benefit analysis, or a salary comparison, to determine which field I should go into, or which job I should choose? Faster and faster, more and more precise. In this *Age of Impatience*, many of us long for technical, simple, and infallible answers to our deepest existential quandaries. We have deified and imported (semi-)mathematical deductive thinking into our everyday lives.



(Salvador Dalí, 1931, *La persistència de la memòria*)

But what about real-time cognitive process, body, and imagination? Because questions&problems in our personal lives are embedded in history and place, and because there is continuity between personal projects and the self-reflective projects of the art world, and the academic world of philosophy and anthropology, we could learn very much from the comparative method and narrative analysis. Humanistic traditions such as hermeneutics, phenomenology, and post-colonialism have something to teach you (and you them). I invite you to move beyond the Age of Impatience, which demands quick and certain answers, so often motivated by fear and trembling in the face of complexity and historicity. Be more self-reflective about your love and your relationships by giving more credence and weight to historicity and process. Learn from the humanities, and from a whole other underappreciated way of thinking – synthetic thinking. You and I and Kant and Darwin and Freud can only unify after reflecting and experiencing. Love and empathy and understanding all take time. Take your time. It is in the margins of historicity that beauty occurs.