

**Will it take another 2300 years until we really know what 'computing' means?
By Herbert Jaeger**

Abstract:

For digital computing we possess a formal theory foundation which deeply roots in 2300 years of Western philosophical history, is mathematically transparent, has been worked out and stabilized and codified into a standard textbook format, and obviously has changed and shaped our modern world. For information processing in neuromorphic microchips, or in other new and to-be-found hardware substrates based on unconventional physical effects, or in biological brains or other natural systems, we do not have anything like a unifying formal theory foundation. But we need it, and it should not only be academically acceptable but really practically useful.

In my talk I will draw a quick overall picture of this situation, and then present my own approach toward formulating such a general formal theory for information processing in non-digital, non-symbolic, physical dynamical systems.