

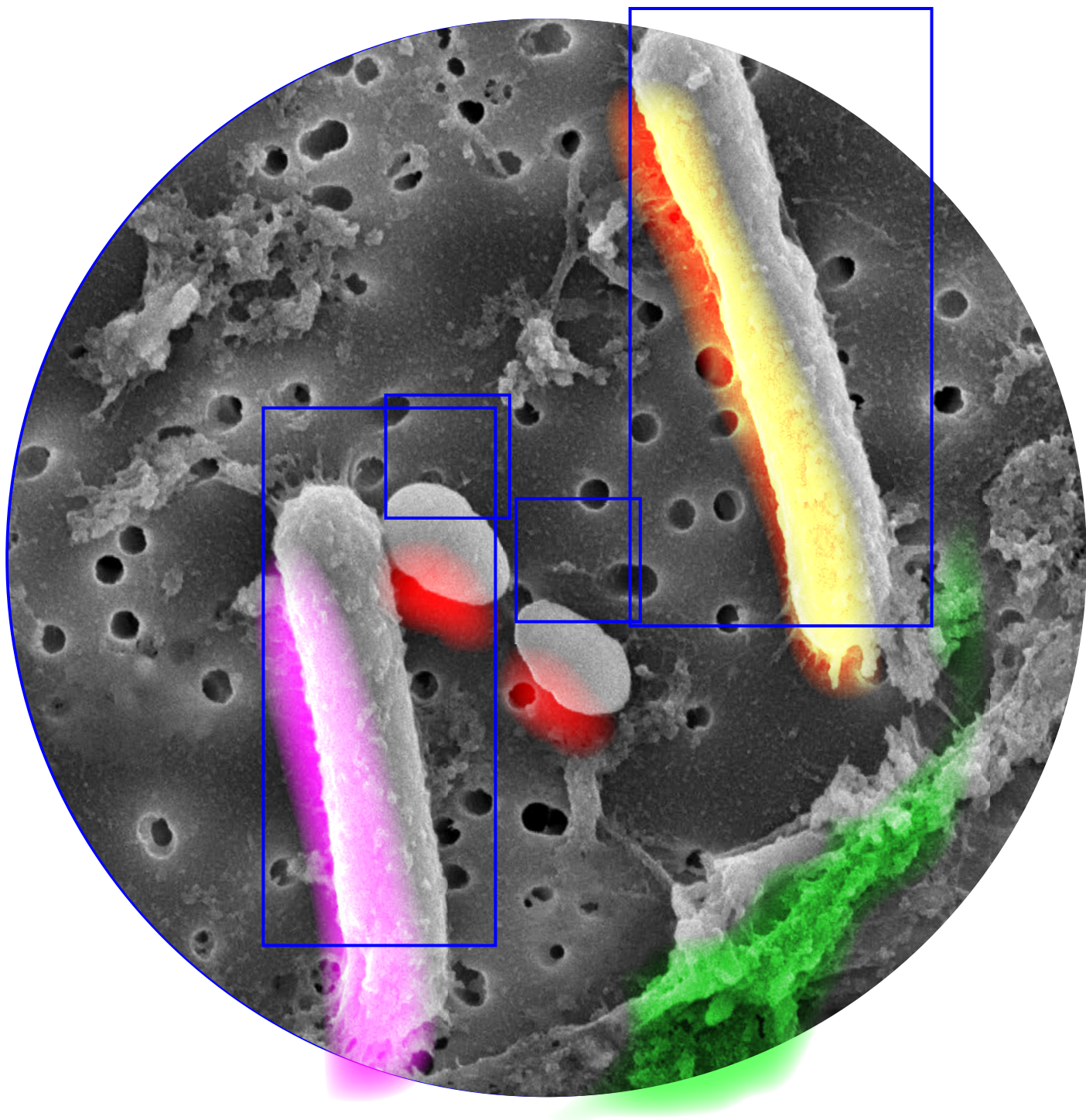
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 $\mu\text{m}$

In the 1950s, cybernetician Stafford Beer proposed replacing factory managers with a pond ecosystem. Beer believed that the socioeconomic landscape was producing managerial problems beyond human cognitive capacities, and that biological systems would be better suited to solve them. “They *can* adapt to unforeseeable fluctuations and changes. The pond survives.”<sup>1</sup>

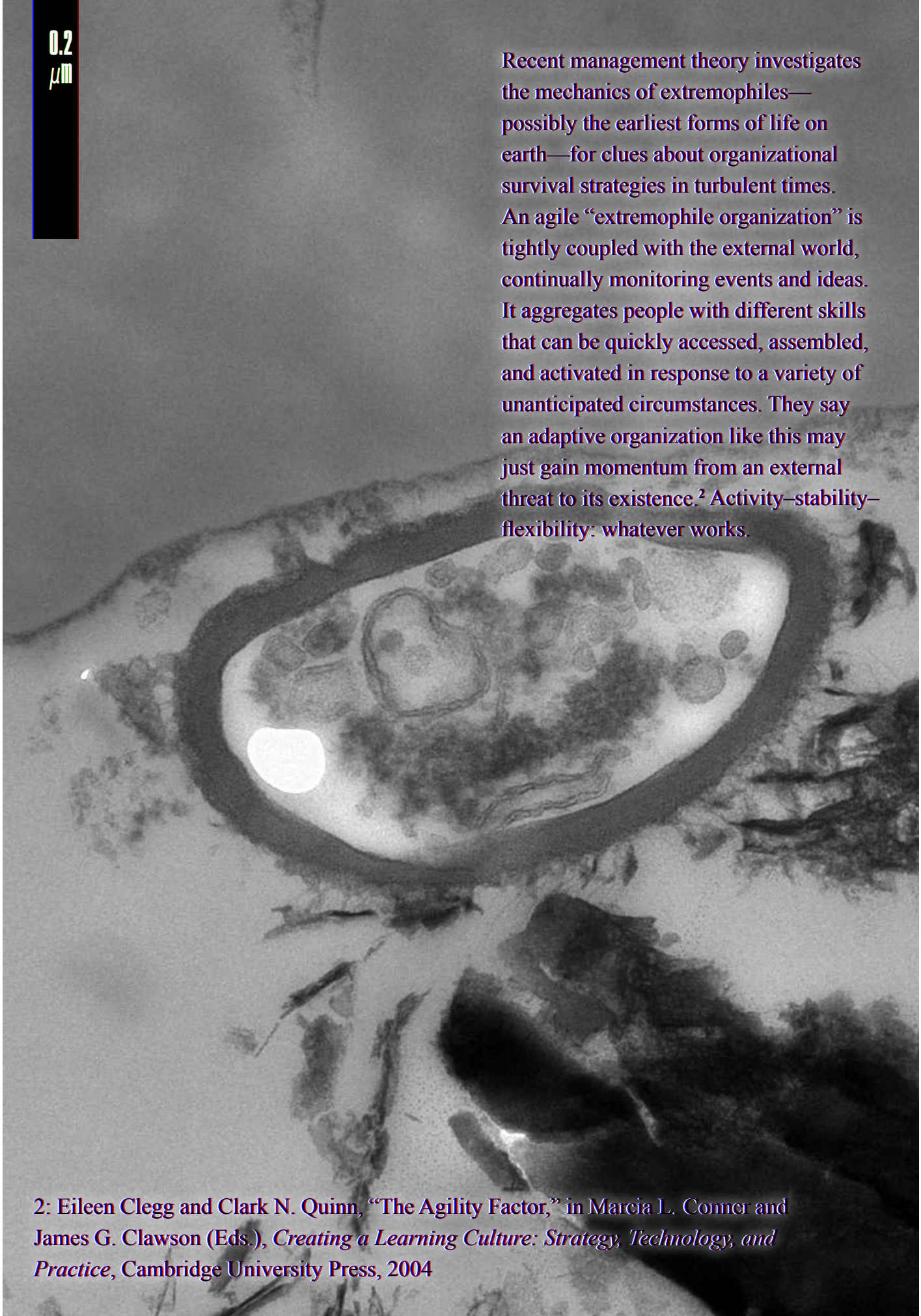
The cybernetic factory never evolved beyond the simulation stage. Instead of the pond brain, we have planetary-scale computing and an ocean of data on the internet. Semi-autonomous cloud workers spread themselves as thin as humanly possible—always on, interacting with the “smart” environment.

1: Andrew Pickering, *The Cybernetic Brain: Sketches of Another Future*, University of Chicago Press, 2010





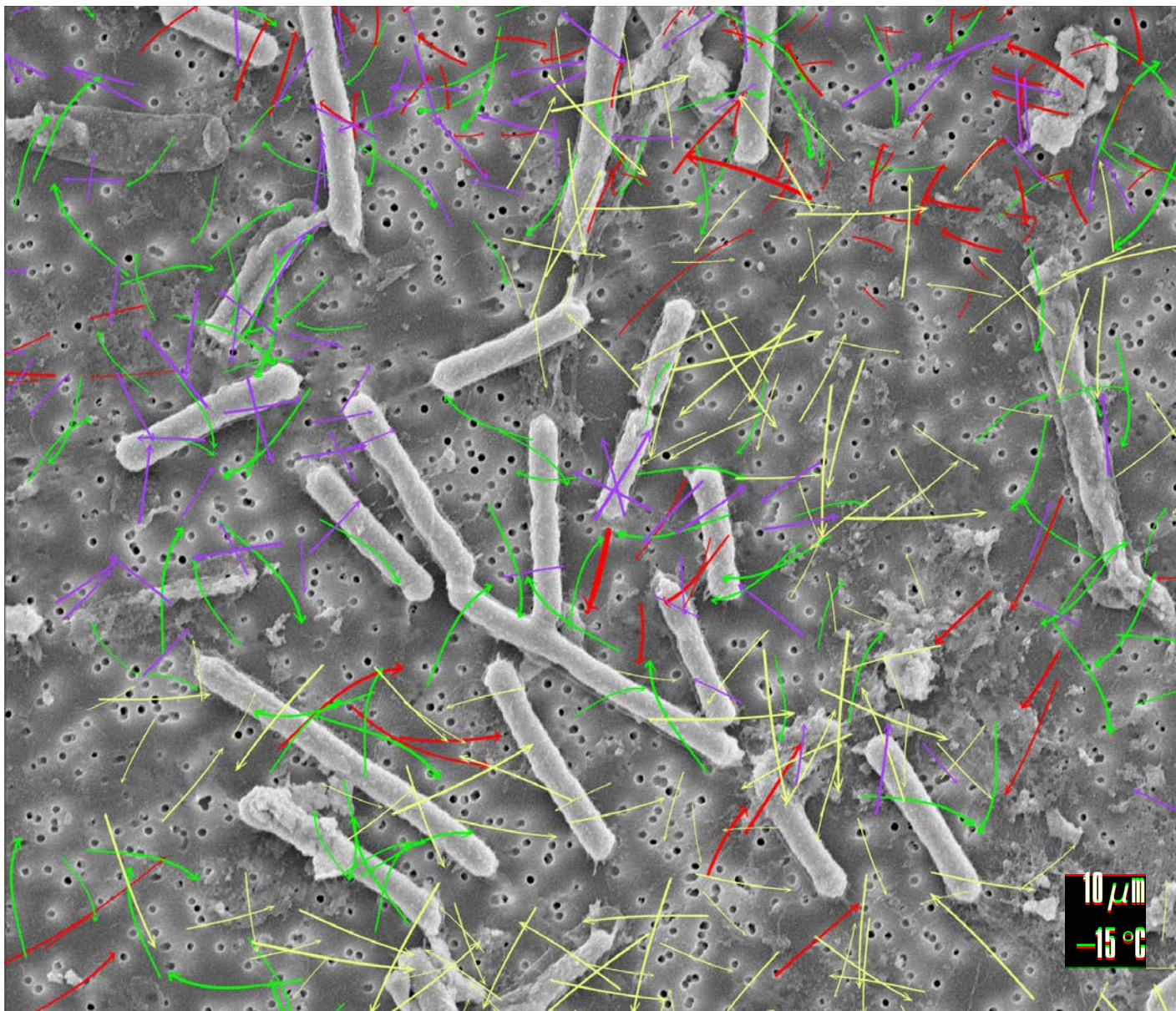
*fig. 1:* THE PETRI DISH AS A PLATFORM

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μmA grayscale electron micrograph showing a large, irregularly shaped cell. The cell has a thick, dark outer boundary. Inside, there are various internal structures, including a large, bright, circular area on the left side, possibly a nucleus or a large organelle. The background is a textured, light gray.

Recent management theory investigates the mechanics of extremophiles—possibly the earliest forms of life on earth—for clues about organizational survival strategies in turbulent times. An agile “extremophile organization” is tightly coupled with the external world, continually monitoring events and ideas. It aggregates people with different skills that can be quickly accessed, assembled, and activated in response to a variety of unanticipated circumstances. They say an adaptive organization like this may just gain momentum from an external threat to its existence.<sup>2</sup> Activity–stability–flexibility: whatever works.

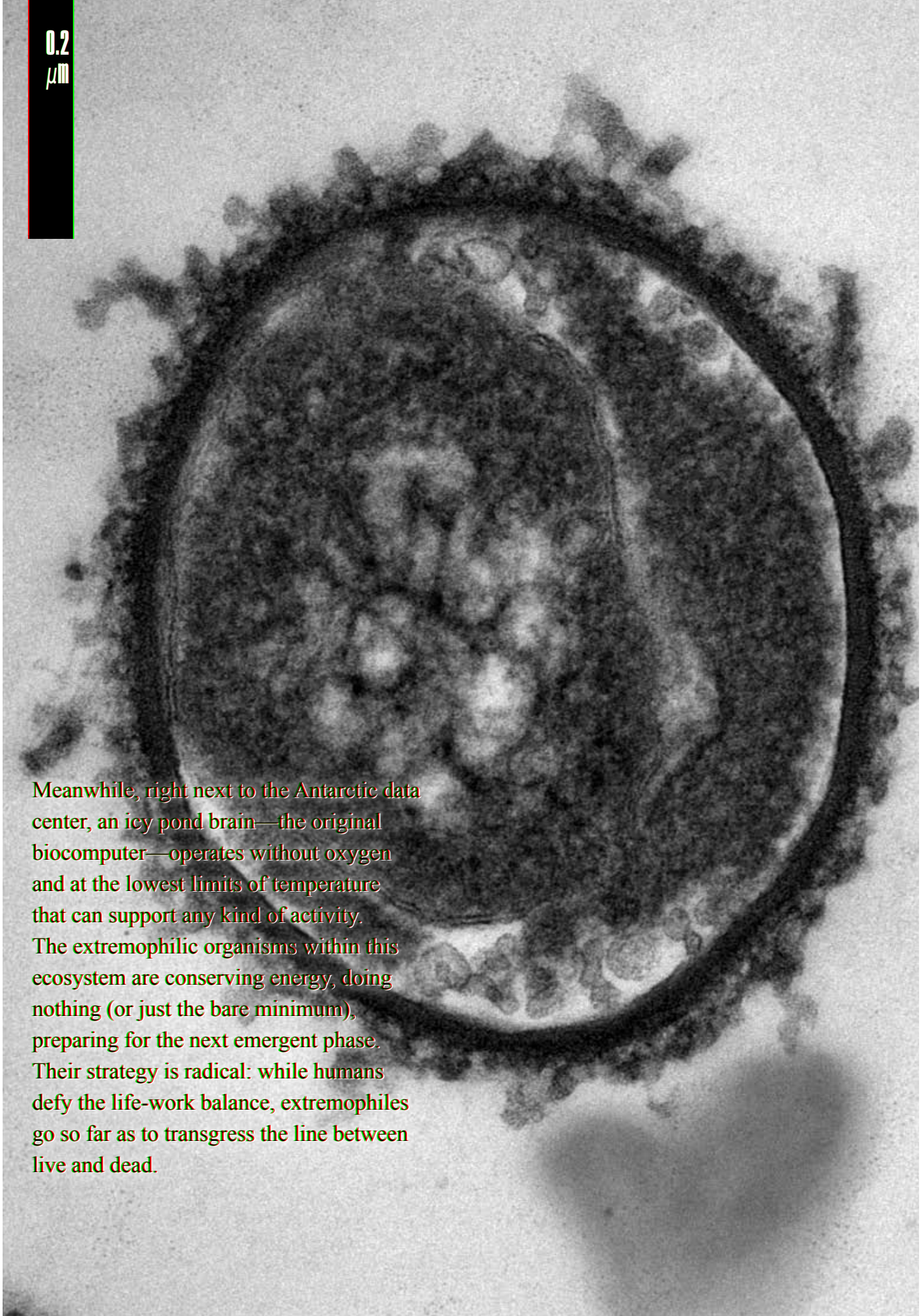
2: Eileen Clegg and Clark N. Quinn, “The Agility Factor,” in Marcia L. Conner and James G. Clawson (Eds.), *Creating a Learning Culture: Strategy, Technology, and Practice*, Cambridge University Press, 2004



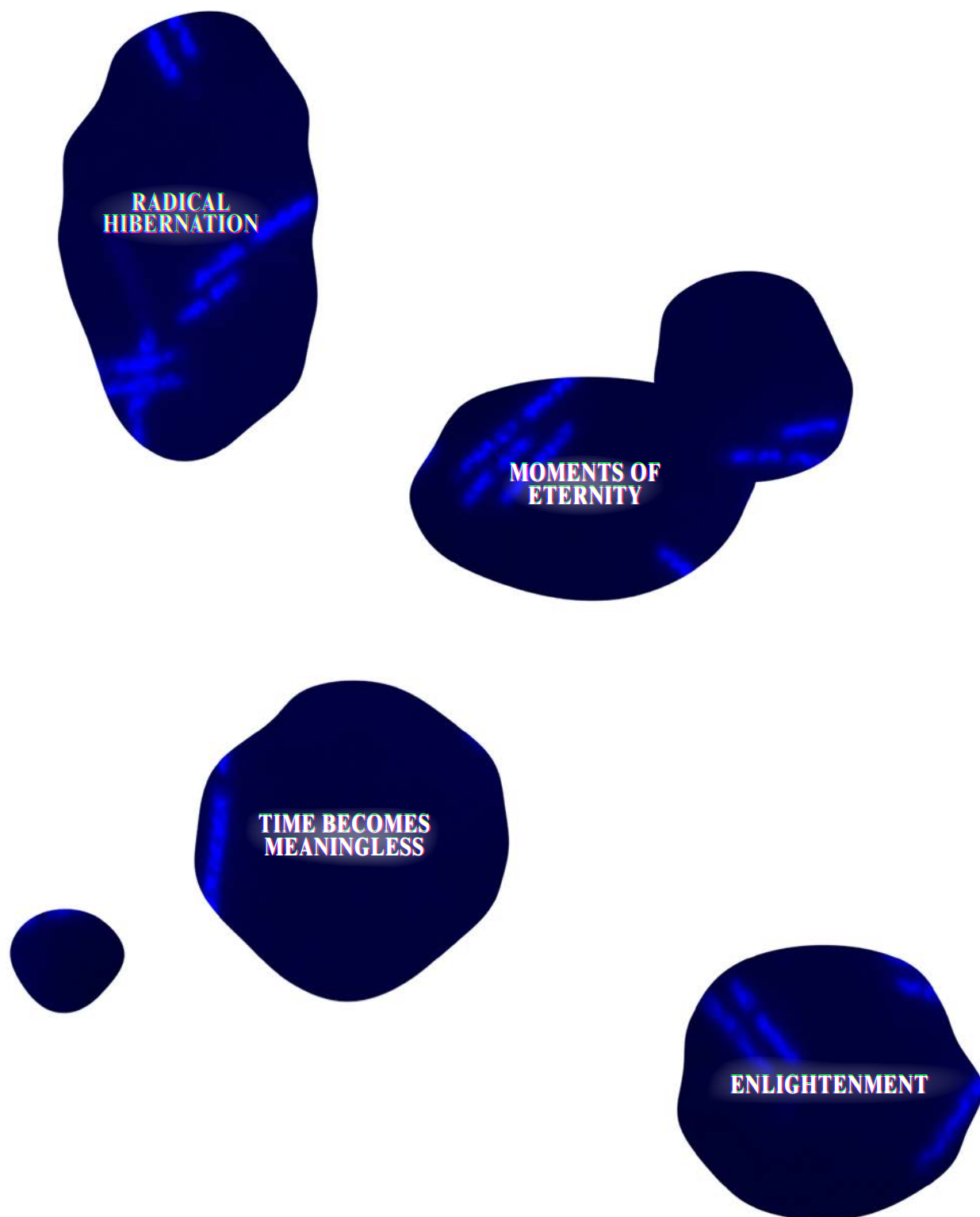


*fig. 2:*  
*fig. 2:* **FINDING BIOCOMPUTERS ...**



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Meanwhile, right next to the Antarctic data center, an icy pond brain—the original biocomputer—operates without oxygen and at the lowest limits of temperature that can support any kind of activity. The extremophilic organisms within this ecosystem are conserving energy, doing nothing (or just the bare minimum), preparing for the next emergent phase. Their strategy is radical: while humans defy the life-work balance, extremophiles go so far as to transgress the line between live and dead.

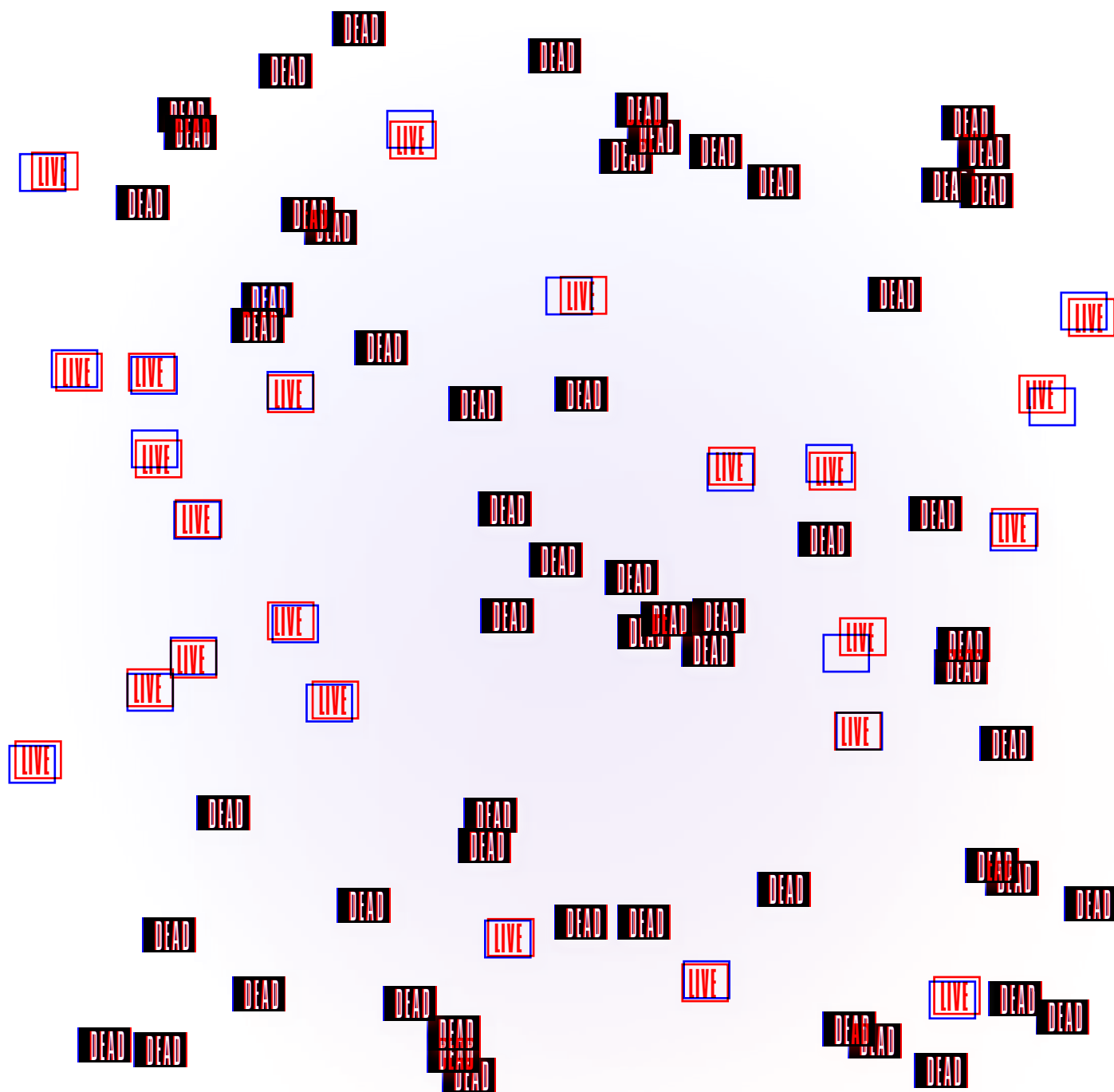


*fig. 3:* DREAMS AND PROTOCOLS



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nm

Astrobiologists consider extremophiles, such as the cold-loving *Clostridium psychrophilum*, representative of the sort of aliens we may expect to discover on the frozen planets of our solar system—and they are already here. While we exercise becoming an interplanetary species, perhaps our dormant extremophile teachers will become active extremophile masters, the principals of our destiny.



*fig. 4:* LIVE-DEAD BALANCE