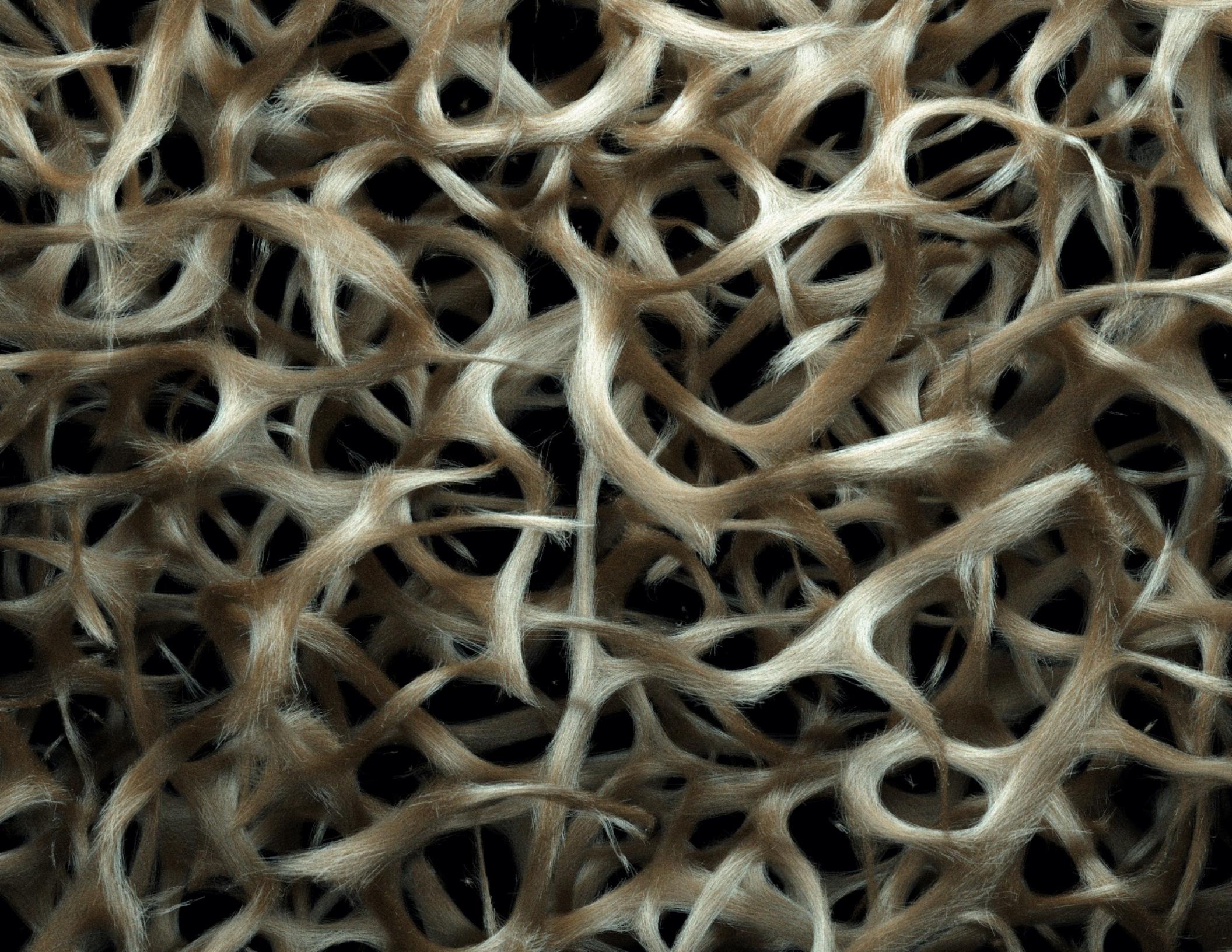
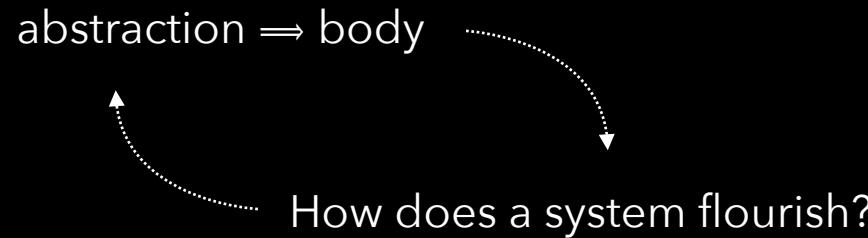


Sage Jenson
selected work (2021)



Motivation

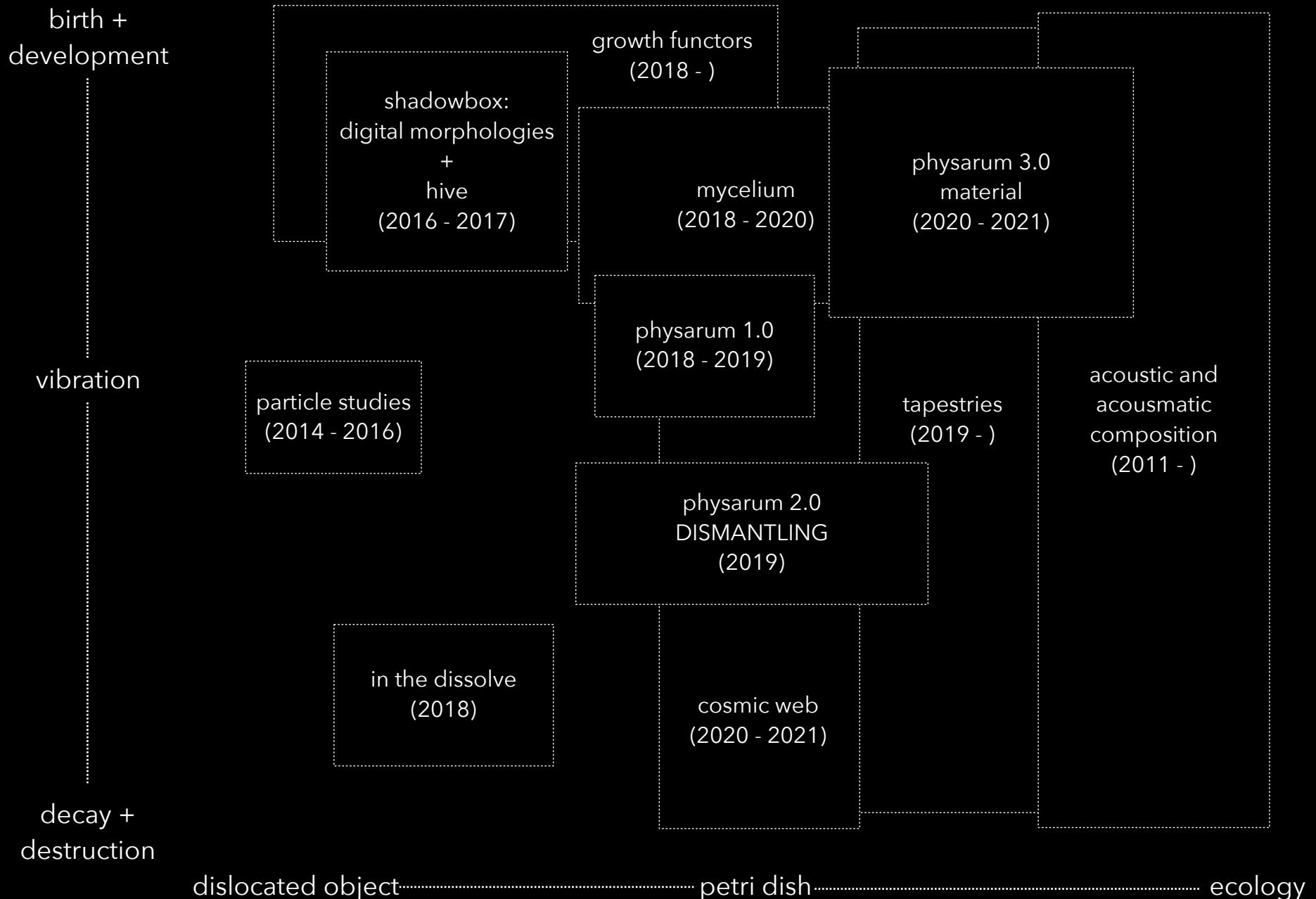


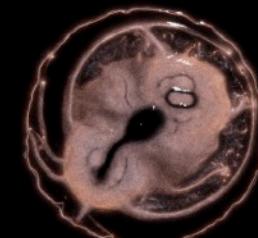
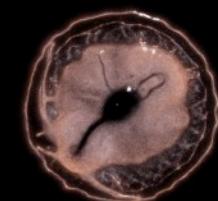
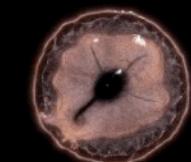
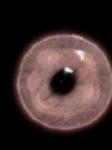
Entanglement (after Ligeti)

As a small child I had a dream that I could not get to my bed, to my safe haven, because the whole room was filled with a dense confused tangle of fine filaments.... Sometimes the different kinds of movement reinforced one another and the shaking became so hard that the web tore in places and a few insects suddenly found themselves free. But their freedom was short-lived, they were soon caught up again in the rocking tangle of filaments, and their buzzing, loud at first, grew weaker and weaker. The succession of these sudden, unexpected events gradually brought about a change in the internal structure, in the texture of the web. In places knots formed, thickening into an almost solid mass, caverns opened up where shreds of the original web were floating about like gossamer. All these changes seemed like an irreversible process, never returning to earlier states again.

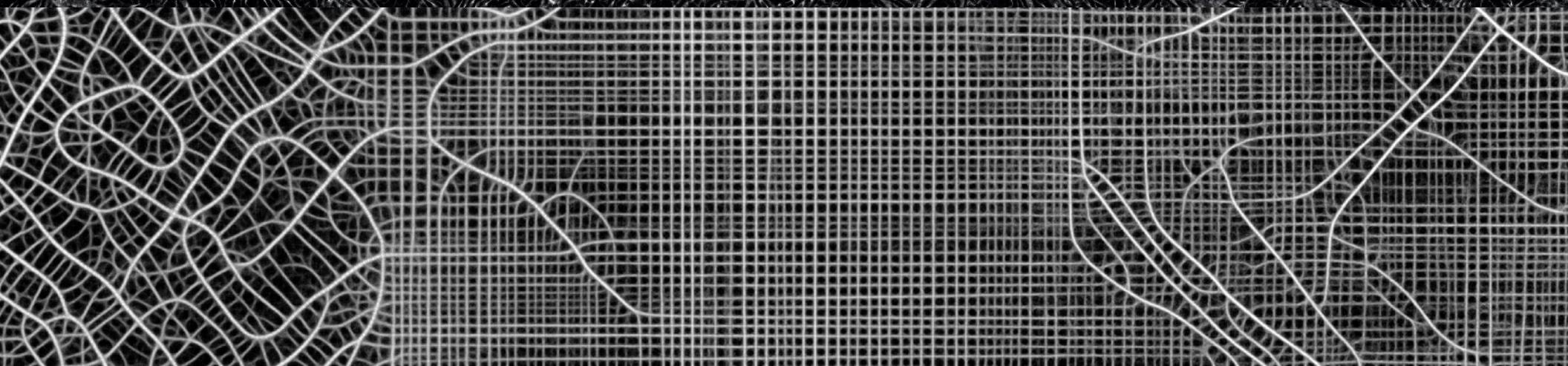
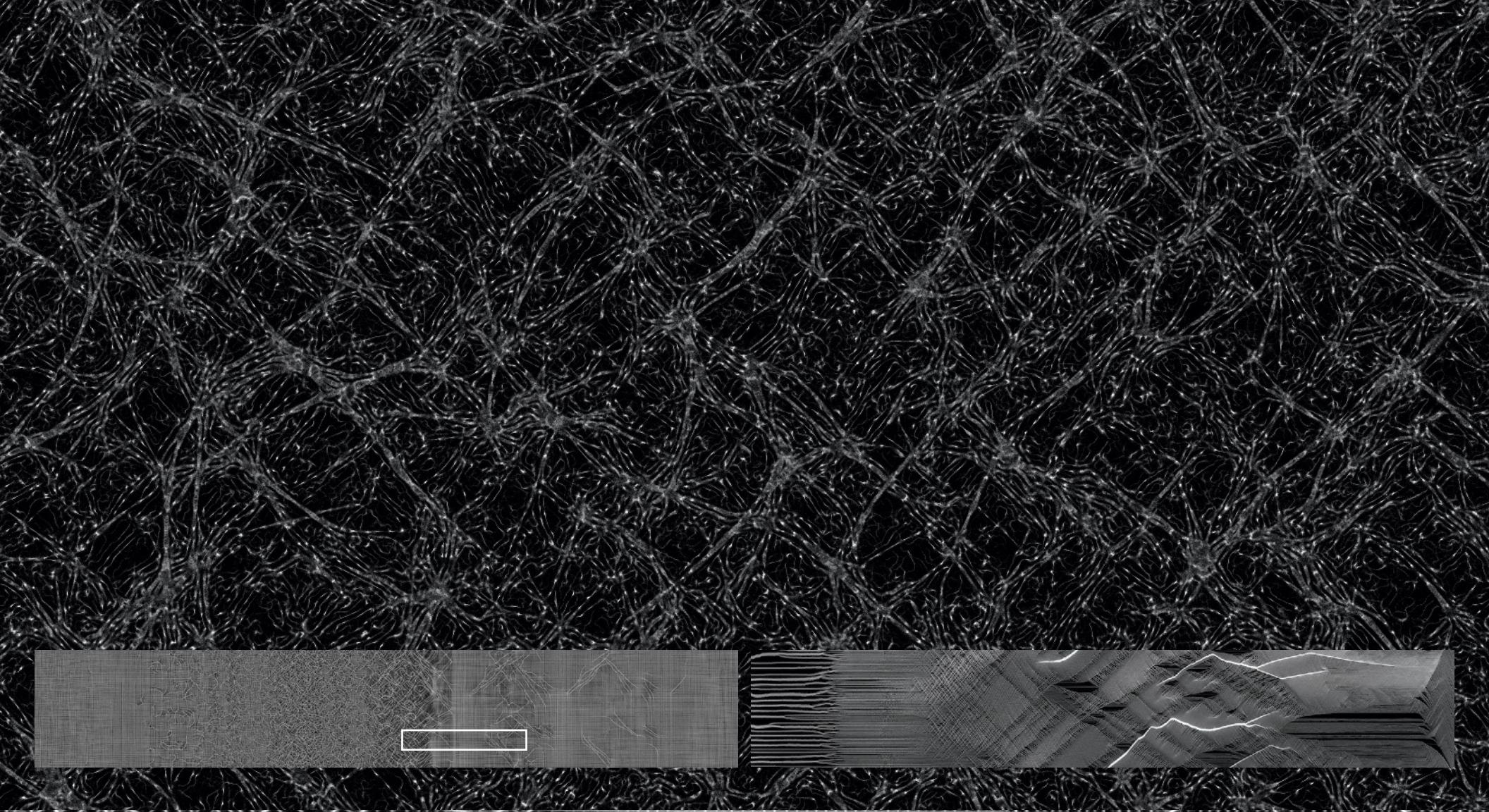
Emergent Engineering Axioms (after Krakauer)

- Design incentives and modify context
- Accept high failure rates, aggregate and average
- Predict and influence critical transitions
- Embrace adaptation, don't coerce

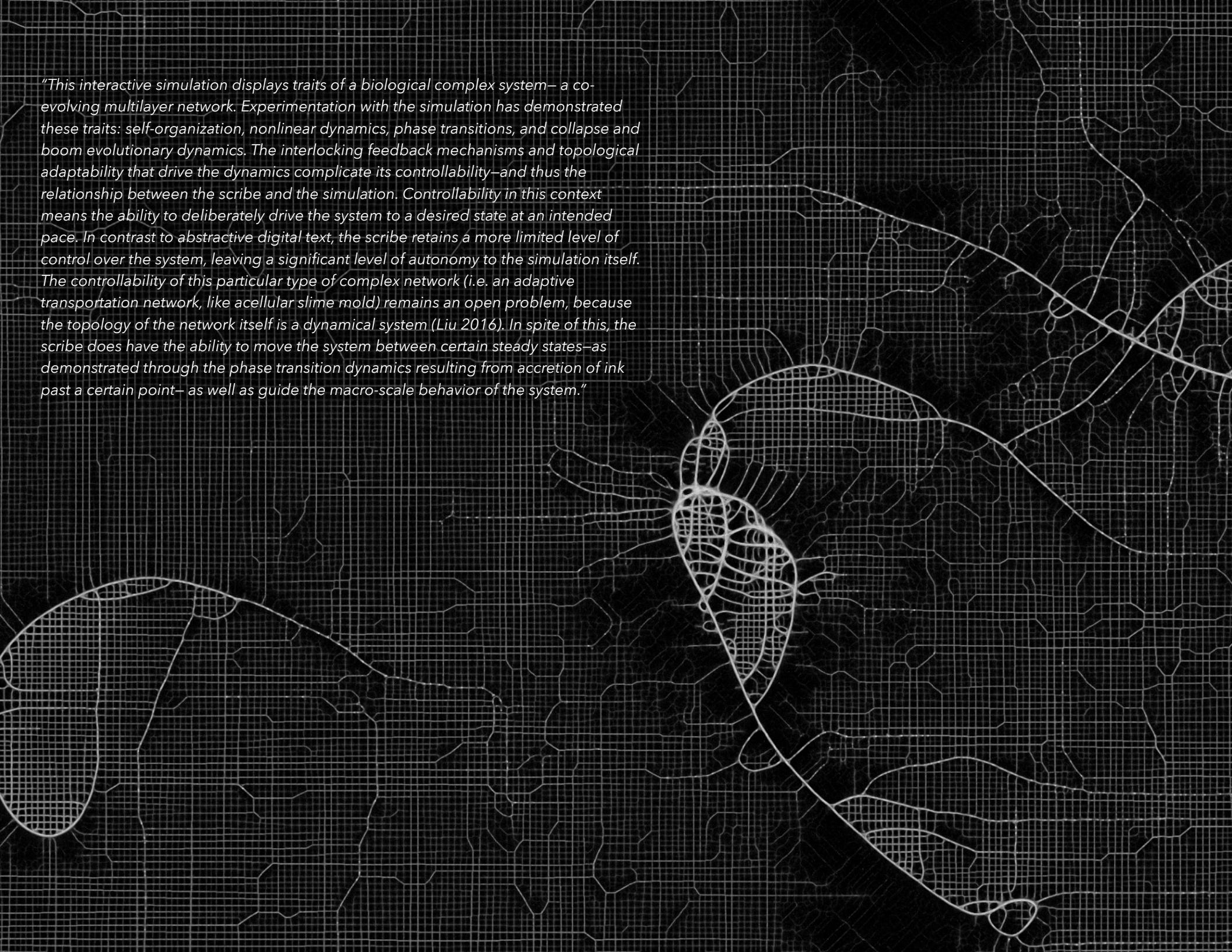


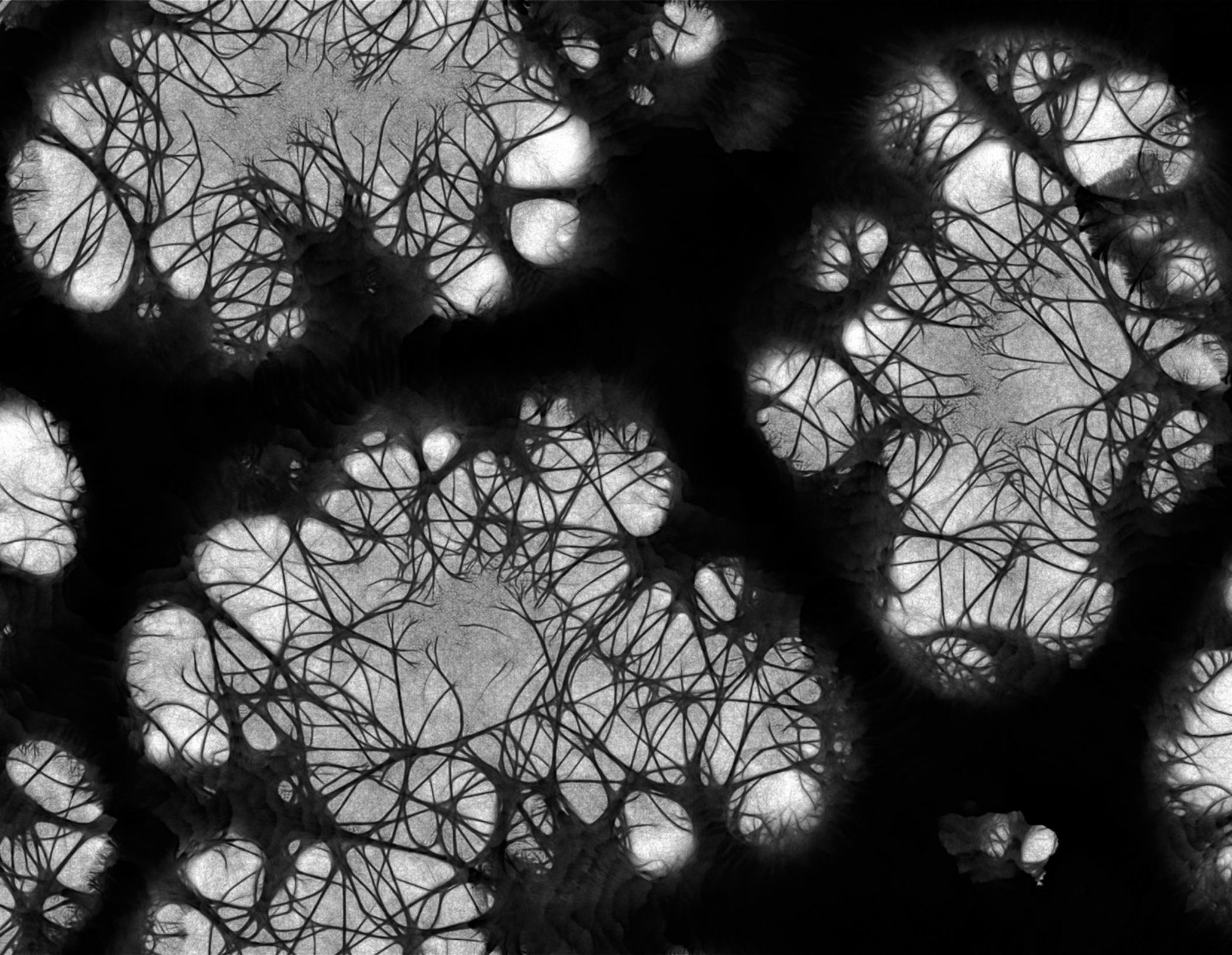




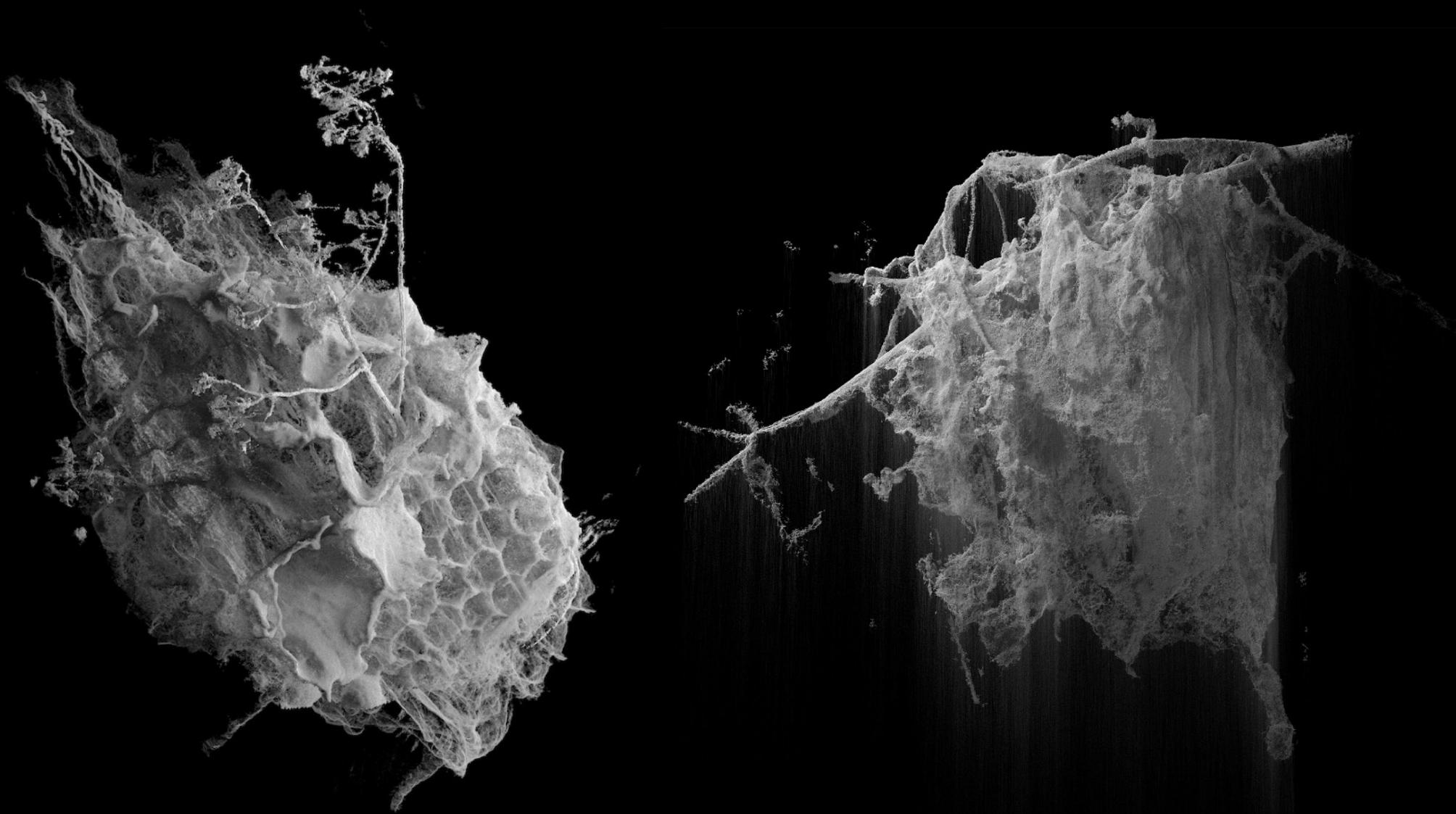


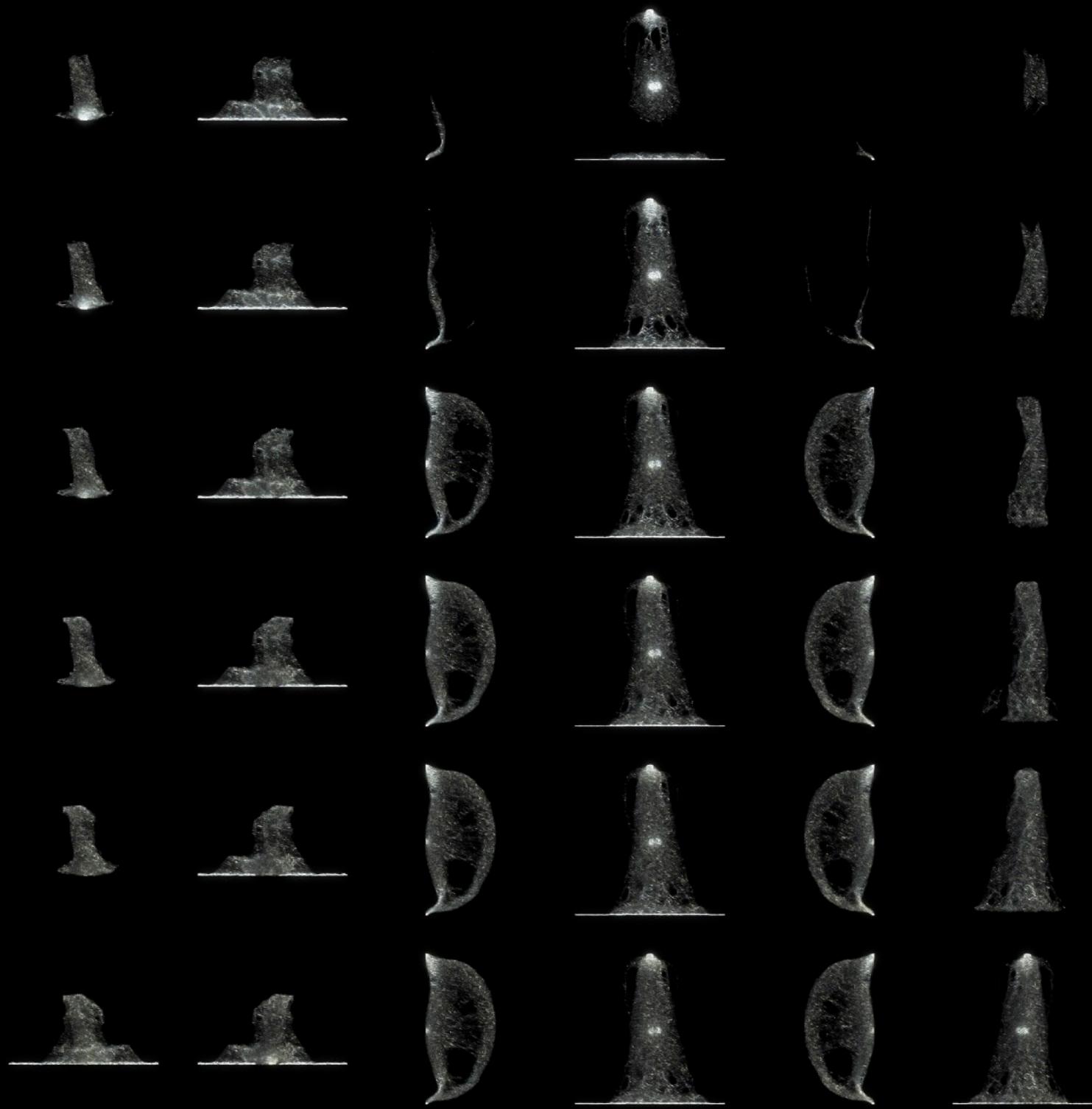
"This interactive simulation displays traits of a biological complex system – a co-evolving multilayer network. Experimentation with the simulation has demonstrated these traits: self-organization, nonlinear dynamics, phase transitions, and collapse and boom evolutionary dynamics. The interlocking feedback mechanisms and topological adaptability that drive the dynamics complicate its controllability—and thus the relationship between the scribe and the simulation. Controllability in this context means the ability to deliberately drive the system to a desired state at an intended pace. In contrast to abstractive digital text, the scribe retains a more limited level of control over the system, leaving a significant level of autonomy to the simulation itself. The controllability of this particular type of complex network (i.e. an adaptive transportation network, like acellular slime mold) remains an open problem, because the topology of the network itself is a dynamical system (Liu 2016). In spite of this, the scribe does have the ability to move the system between certain steady states—as demonstrated through the phase transition dynamics resulting from accretion of ink past a certain point— as well as guide the macro-scale behavior of the system."

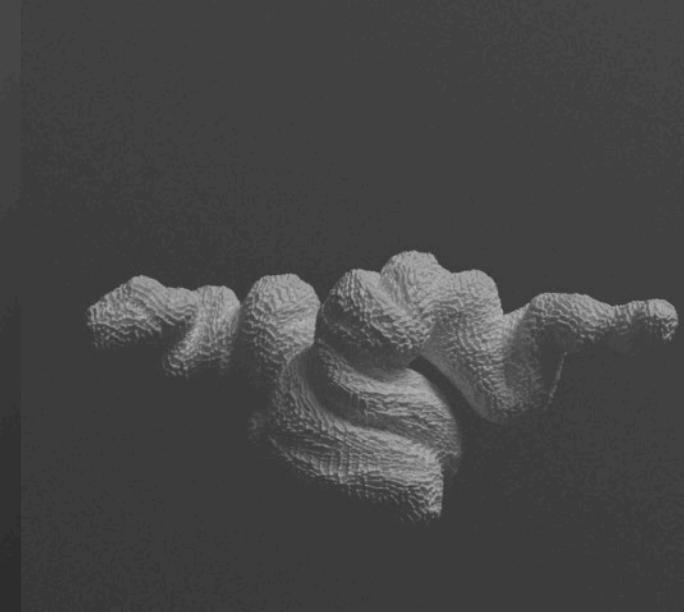
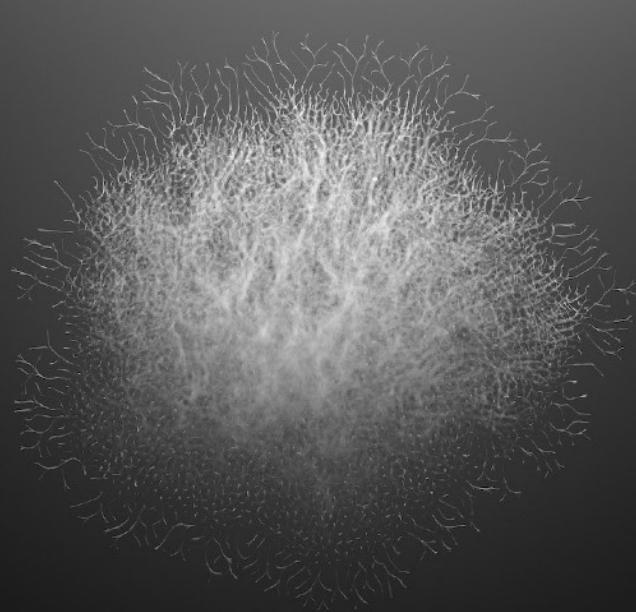
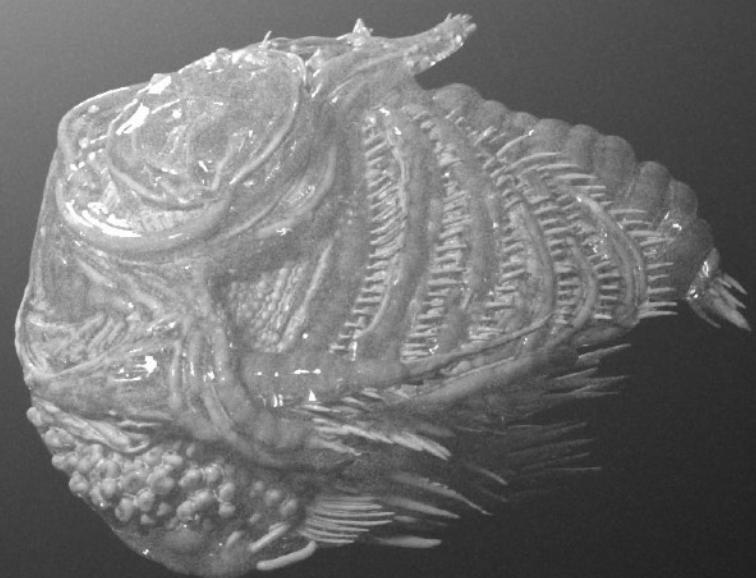
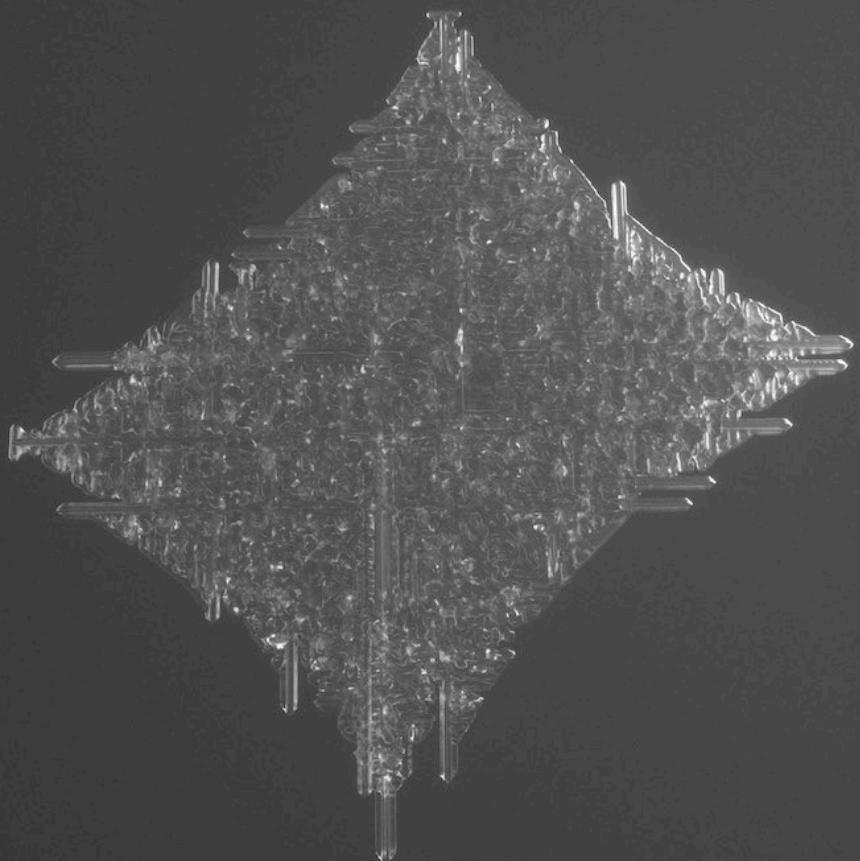


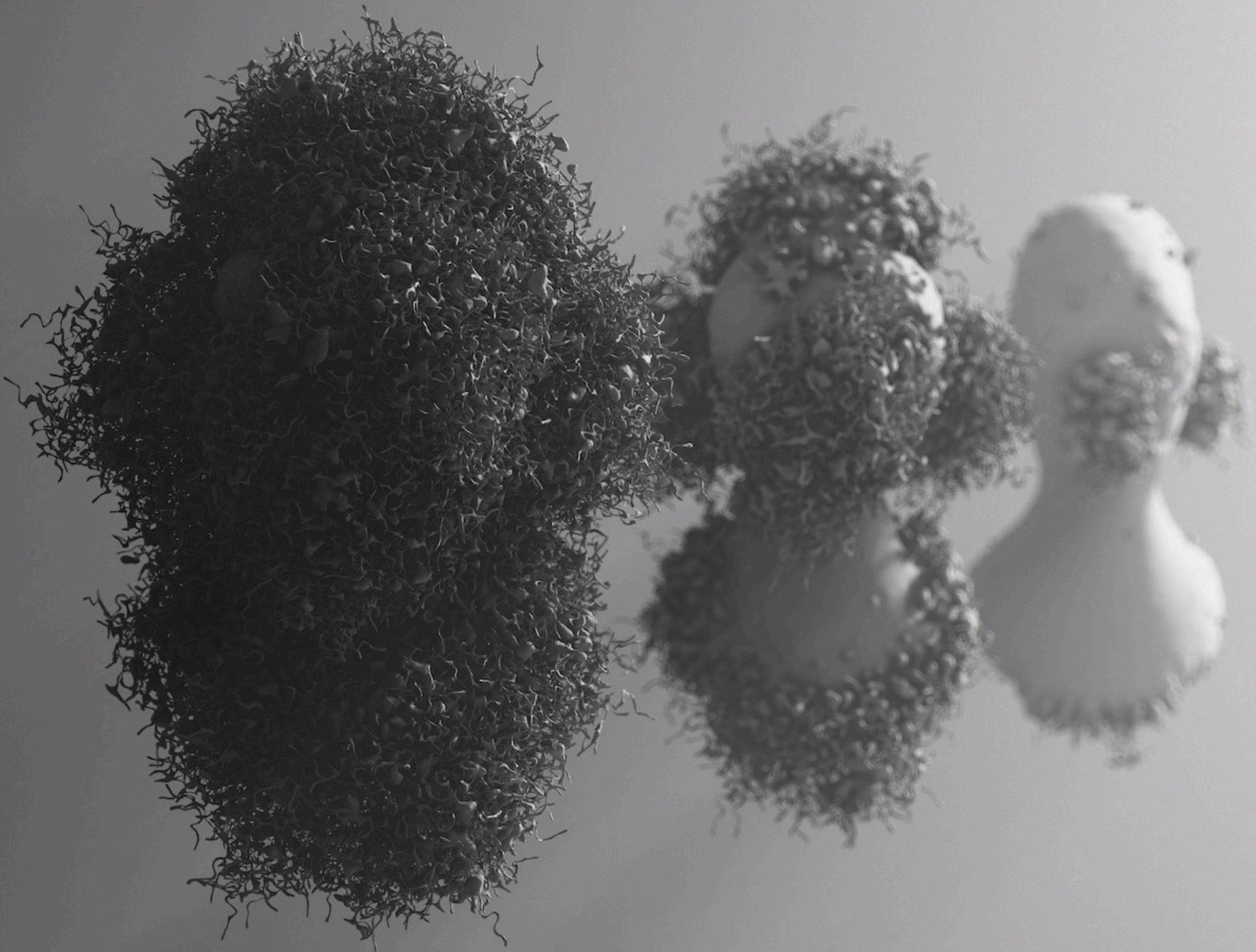


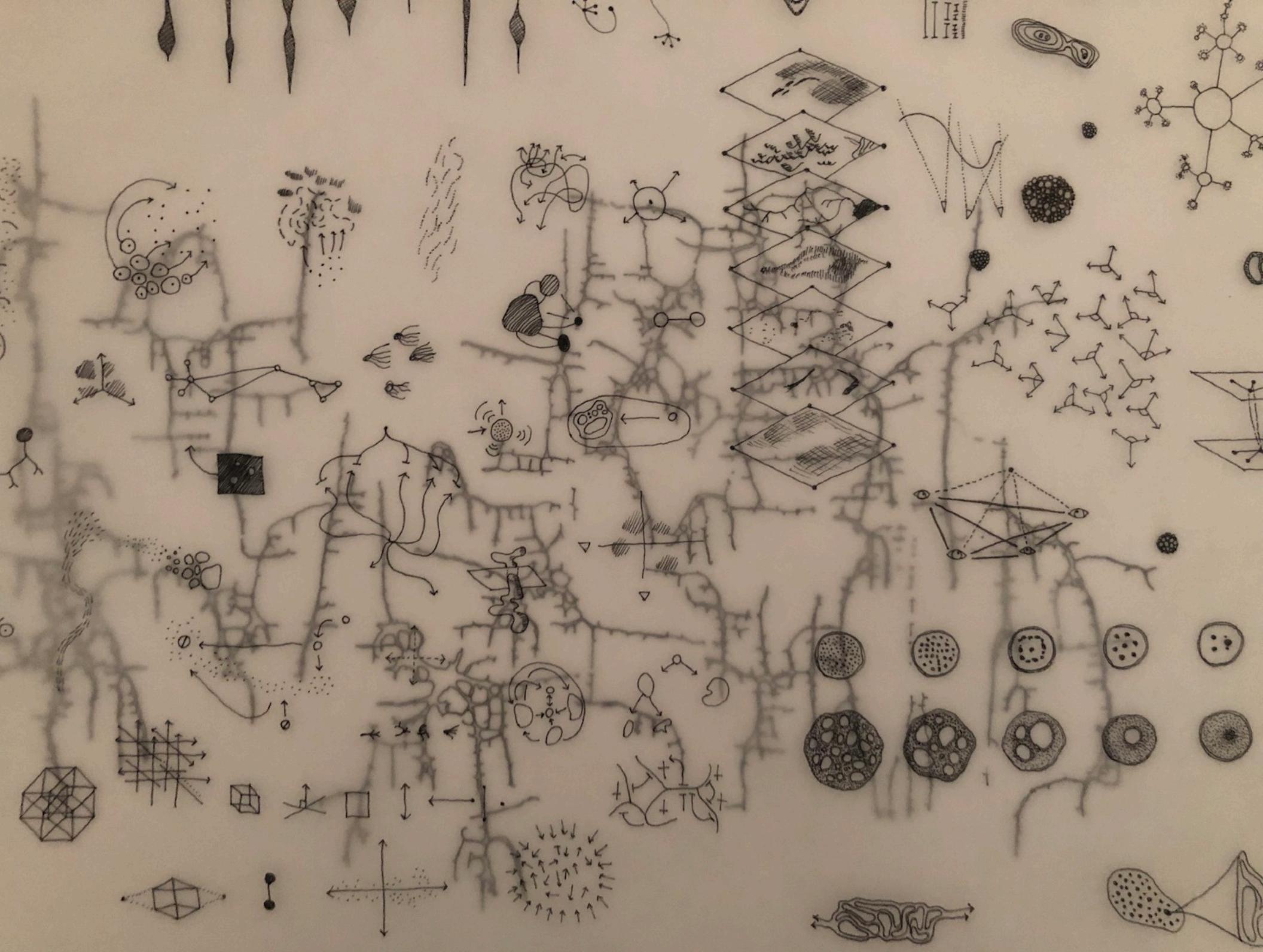












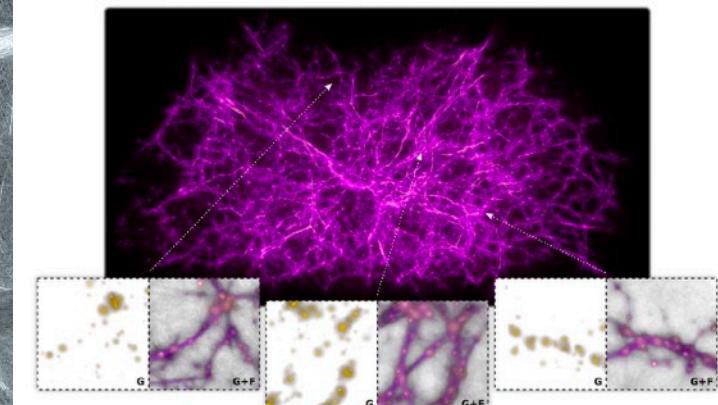
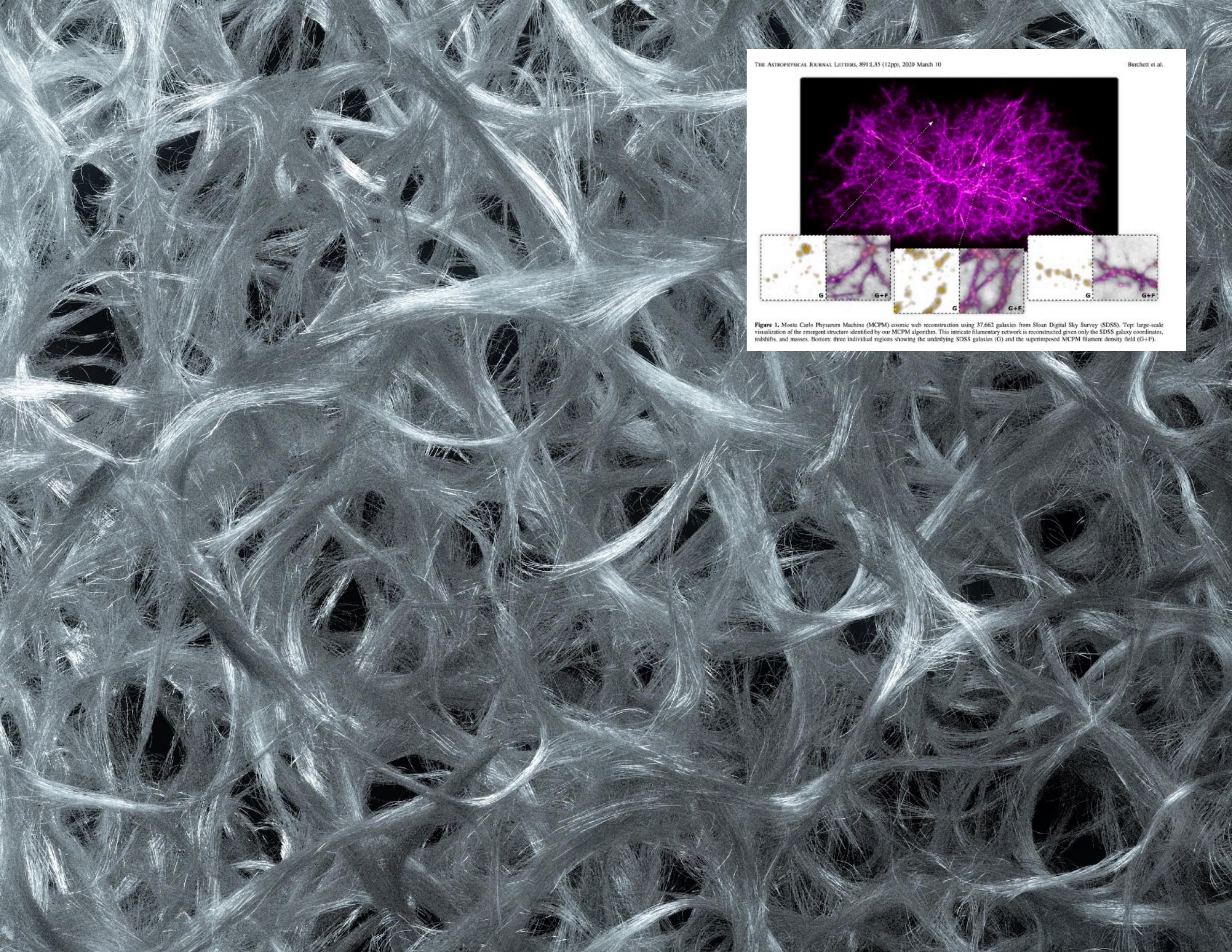
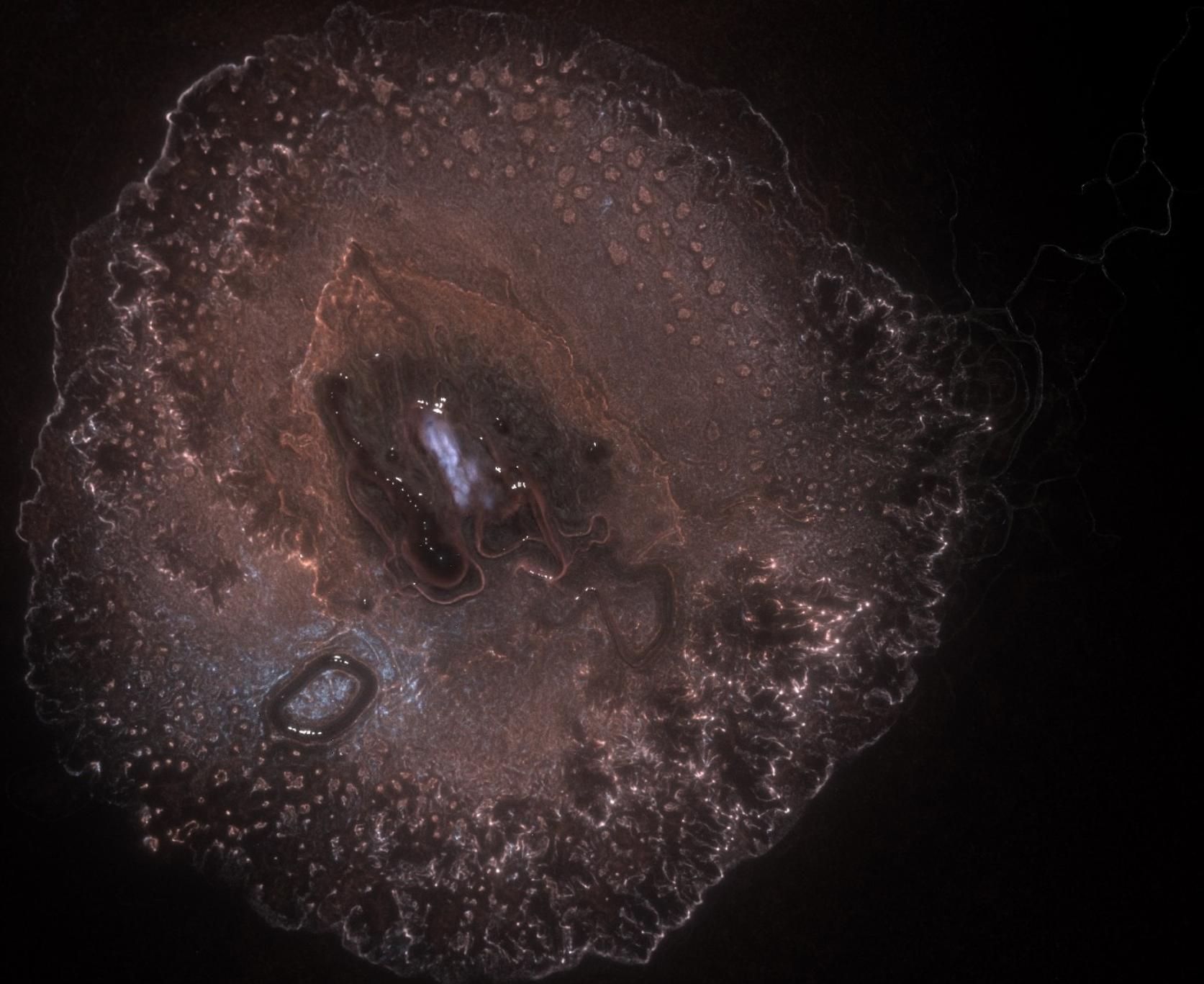


Figure 1. Monte Carlo Phasor Machine (MCPM) cosmic web reconstruction using 37,662 galaxies from Sloan Digital Sky Survey (SDSS). Top: large-scale visualization of the emergent structure identified by our MCPM algorithm. This intricate filamentary network is reconstructed given only the SDSS galaxy coordinates, redshifts, and masses. Bottom: three individual regions showing the underlying SDSS galaxies (G) and the superimposed MCPM filament density field (G+F).



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