Introduction to Focus Issue: Intrinsic and Designed Computation: Information Processing in
Dynamical Systems—Beyond the Digital Hegemony

CMOS scaling is hitting physical limits—clock speeds plateau, power and fabrication costs soar.
To push past Moore's Law, we need new substrates (e.g. chaotic lasers, memristors) that
natively compute in the physics of the device

-> Intrinsic vs. Designed Computation
        Intrinsic computation asks how a system stores historical information, architects that
storage, and transforms it to produce future behavior.
Designed computation adds utility, what we actually build to solve problems. There's a 'semiotic
gap' between raw physical processing and useful logic, leading to massive wasted potential
(e.g., idle memory vs. power-hungry CPUs).

-> Can "intelligence" emerge in non-biological media?
        The authors challenge the discrete-logic view of AI, suggesting we measure "abiotic
intelligence" in dynamical substrates—opening doors to novel neuromorphic or analog AI
hardware

To close the gap, we must more deeply apply communication theory (channels, codes,
rate-distortion) in analyzing dynamical devices, and revisit cybernetics with today's ML tools,
directly informing energy-efficient accelerator and systolic-array designs.