Why Have We Built Such a Fragile World?

Evolvability, and overcoming the formal meta-crisis

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Adapt Research
As we build our world we build our minds

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ŌTĀKOU WHAKAIHU WAKA

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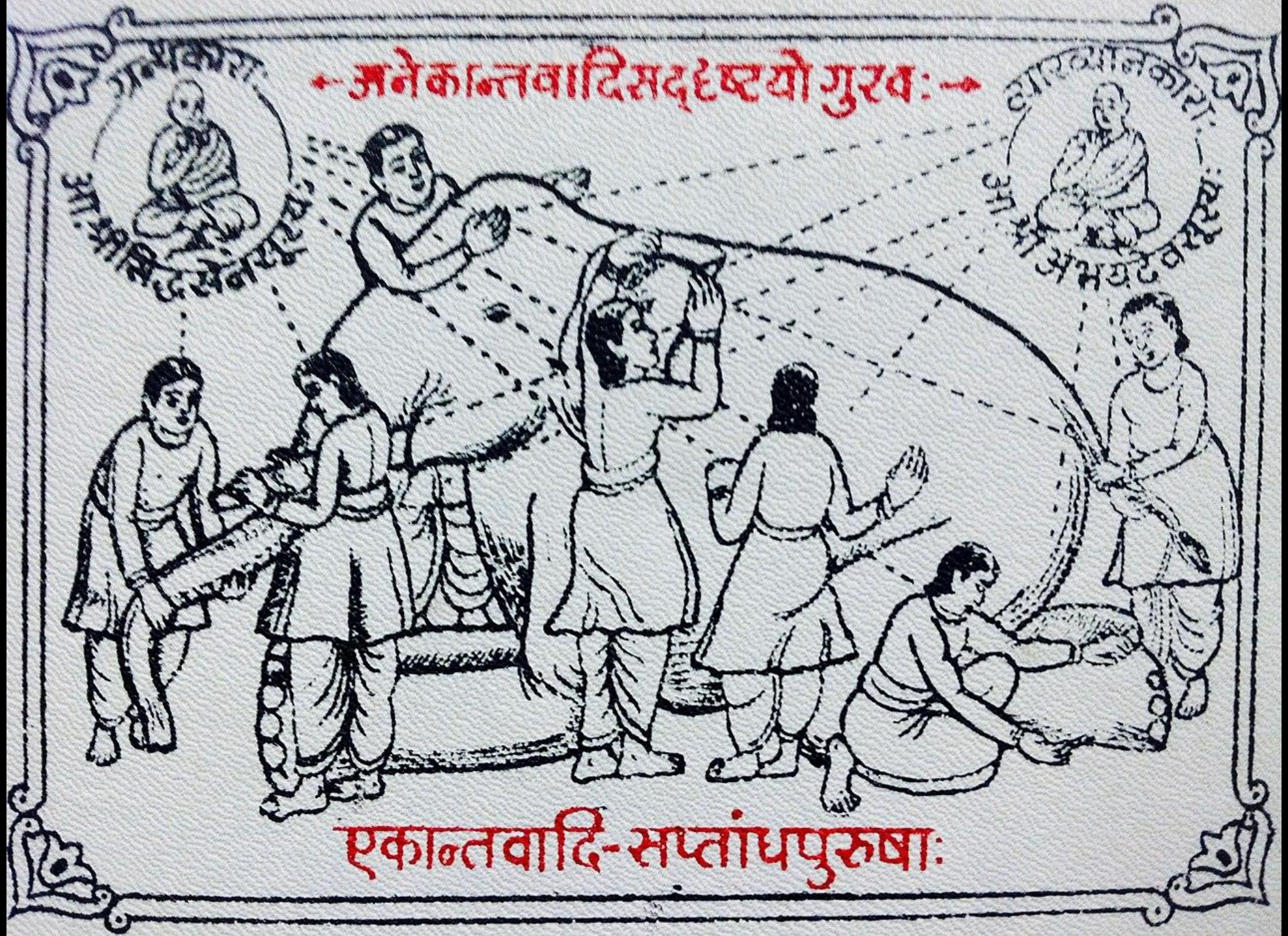
“The real problem of humanity is… we have Paleolithic emotions, medieval institutions, and godlike technology”

E.O. Wilson (evolutionary biologist)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आ. श्रीसिद्धसेनसूरयः
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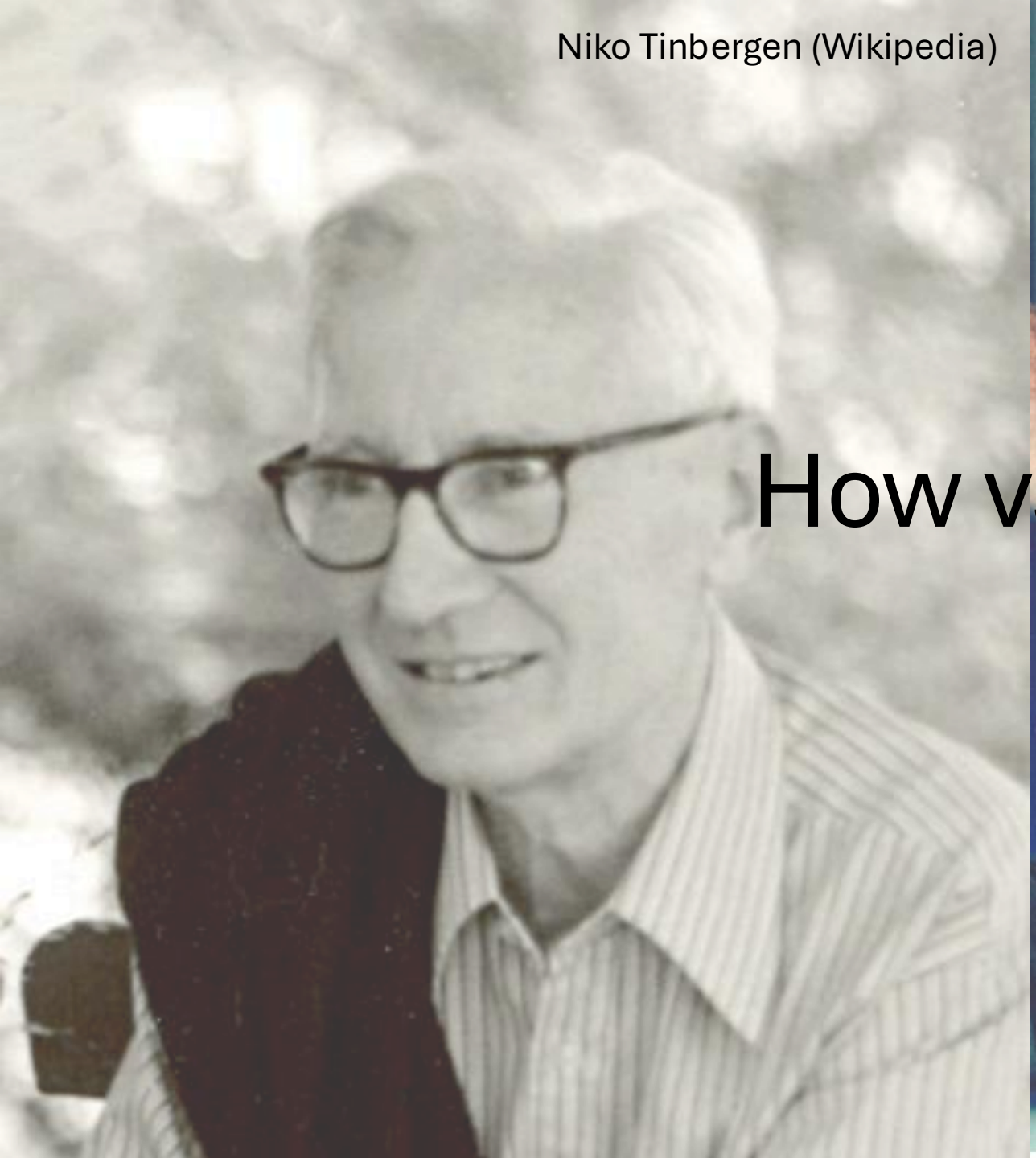


Niko Tinbergen (Wikipedia)

Ernst Mayr (Wikipedia)

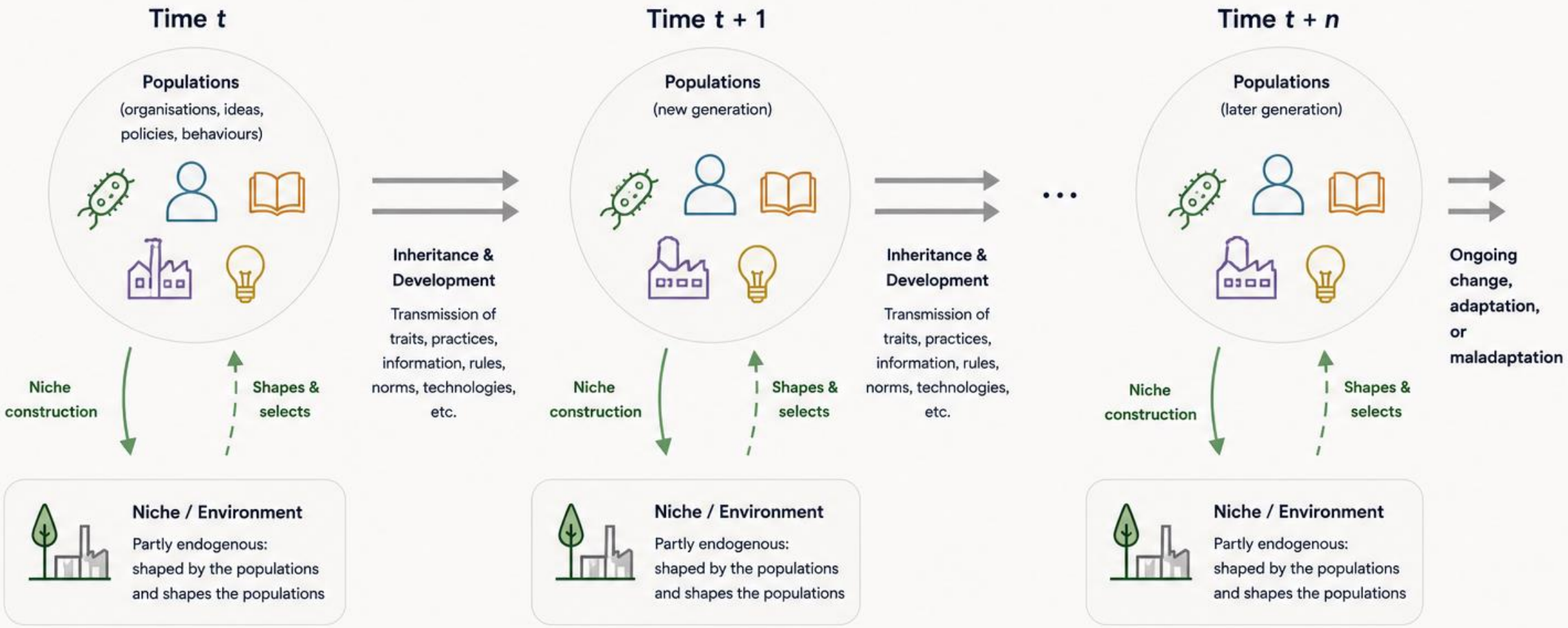
How vs Why

Literature linking global risk and evolution studies, eg:

- Hoyer et al. (2023) ‘Navigating polycrisis’
- Waring et al. (2023) ‘Characteristic processes of human evolution caused the Anthropocene’
- Jørgensen et al. (2023) ‘Evolution of the polycrisis’
- Hämäläinen (2025) ‘Polycrisis root causes’

The Extended Evolutionary Paradigm

Entities generate variation, construct and are shaped by their niches,
are selected, and transmit (inherit) across generations—
producing change, adaptation, or maladaptation.



Literature on the evolutionary synthesis: Godfrey-Smith (2009) Darwinian Populations and Natural Selection; West-Eberhard (2003) Developmental Plasticity and Evolution; Odling-Smee et al. (2003) Niche Construction: The Neglected Process in Evolution; Jablonka & Lamb (2005) Evolution in Four Dimensions; Boyd & Richerson (1985) Culture and the Evolutionary Process

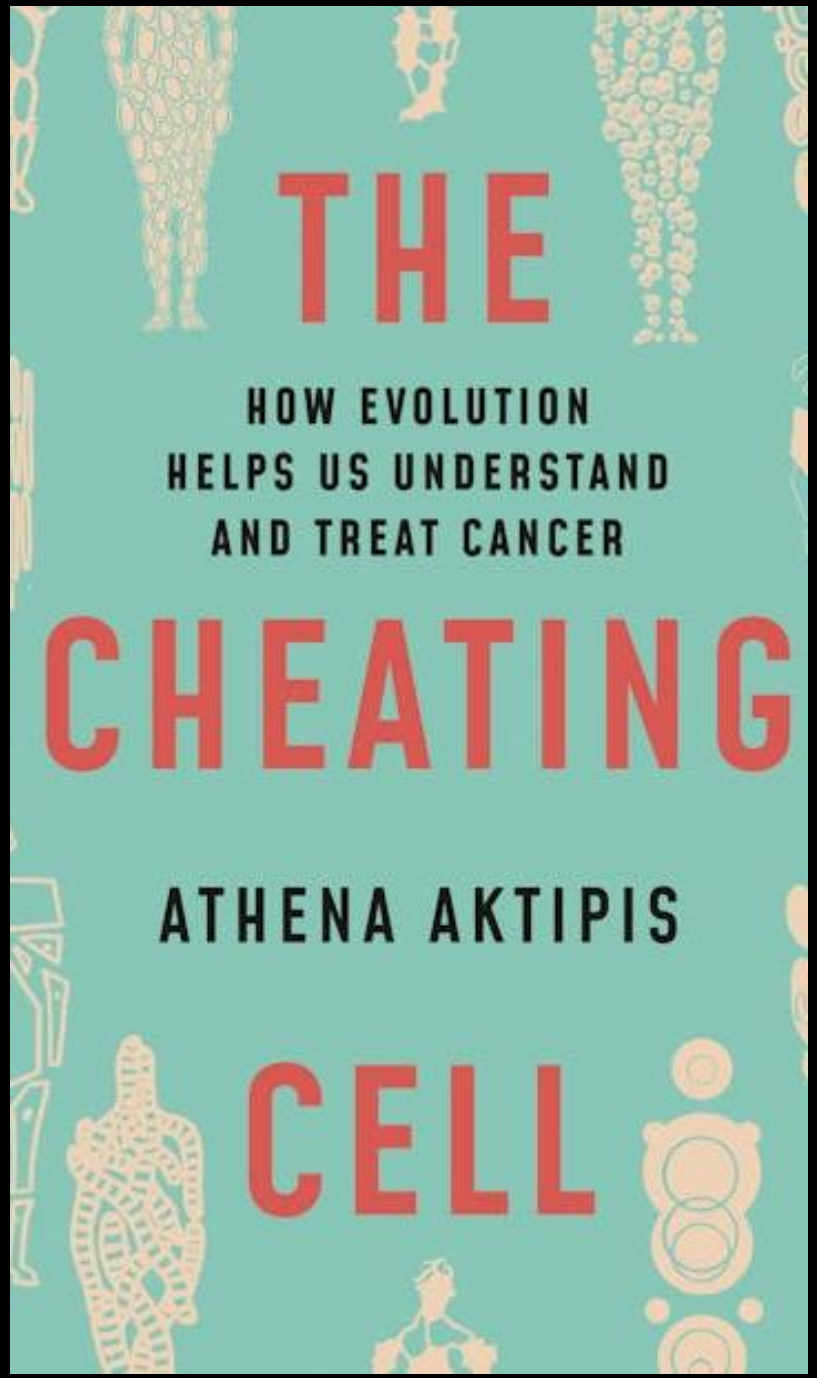
Multi-level selection traps, defector strategies, arms races, path-dependence, niche destruction = Potentially maladaptive evolutionary dynamics

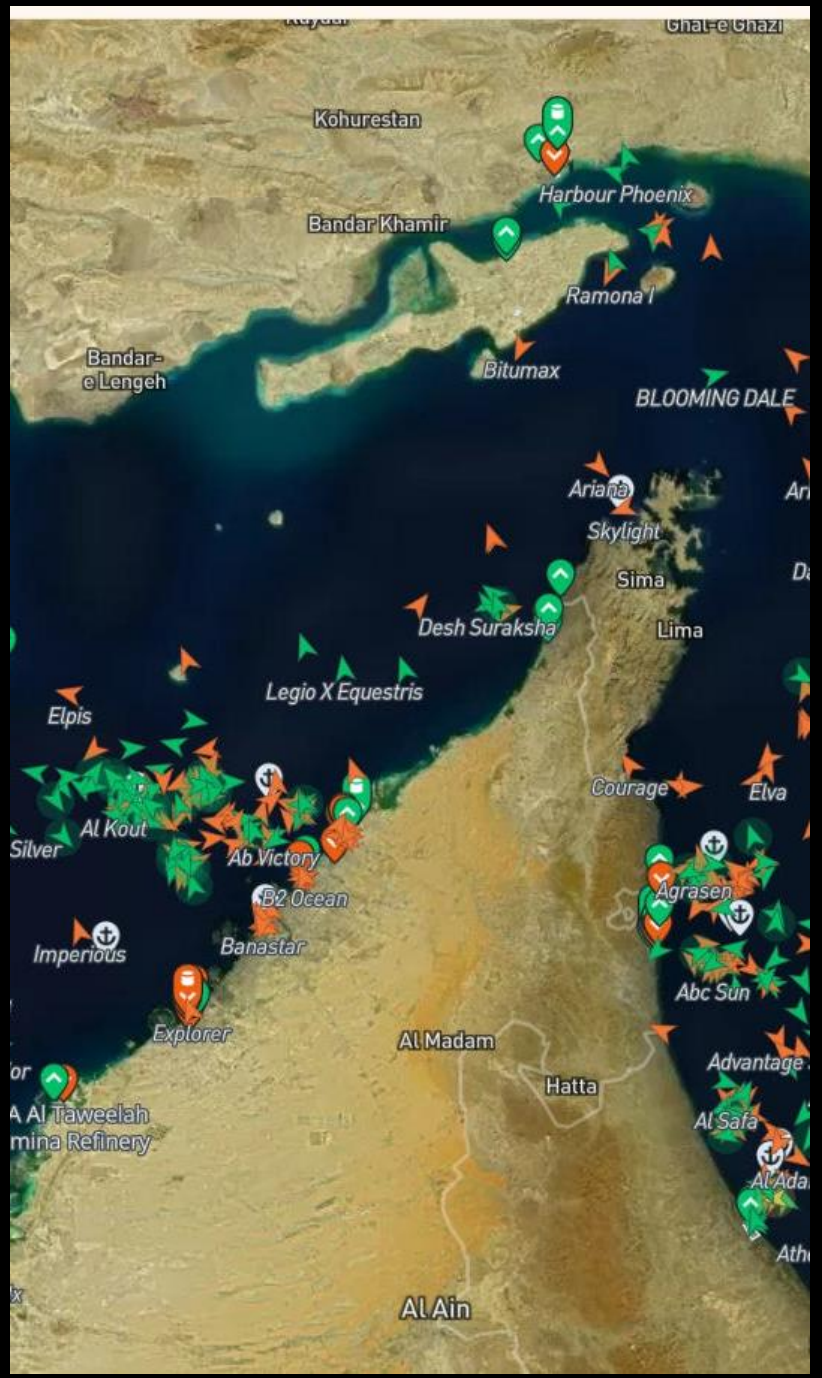
A Formal Meta-crisis

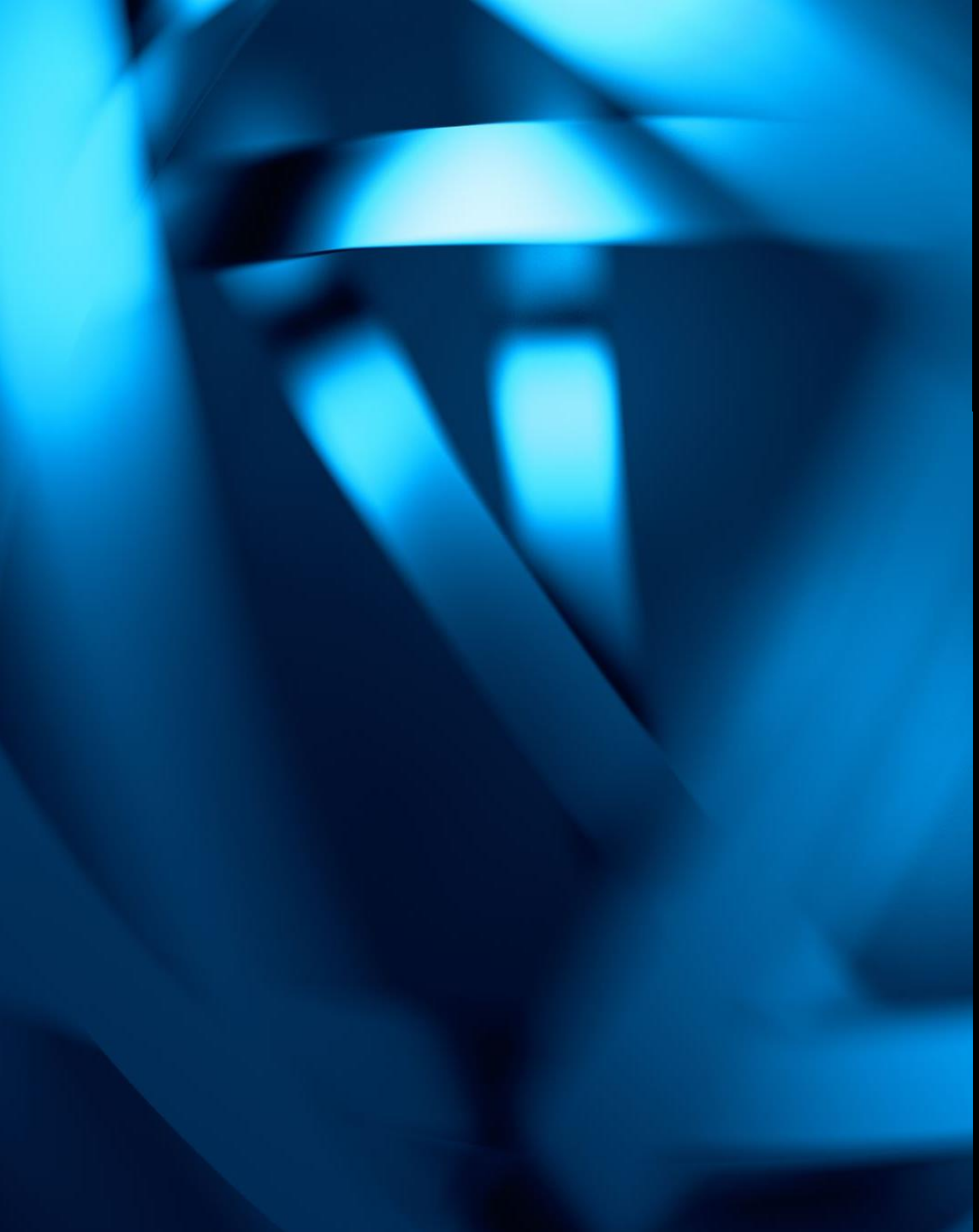
The Conditions for Evolvability — and Their Degradation

EVOLVABILITY REQUIRES	WE HAVE INSTEAD
Variation Diversity of forms, strategies, and structures	**Homogenisation** Financial architectures, food systems, regulatory & information environments converging
Modularity Loosely coupled, redundant, independent components	**Tight Coupling** Just-in-time supply chains; single points of failure — the Strait of Hormuz, Taiwan semiconductors
Transmission Fidelity Stable, accurate transfer of complex adaptive knowledge	**Institutional Churn** Fragmented epistemic commons, mis/disinformation, erosion of professional norms — genetic errors accumulating
Stable Selection Consistent adaptive pressure; time for incremental response	**Policy Instability** Policy ping-pong; exponential technological change outpacing incremental institutional adaptation
Outlaw Suppression Checks, balances, enforcement against defectors and free-riders	**Regulatory Capture** Jurisdictional arbitrage; active suppression of the suppression mechanisms themselves

Literature on evolvability, eg: Kirschner & Gerhart (1998) Evolvability; Sterelny, K. (2004) Symbiosis, evolvability and modularity


THE
HOW EVOLUTION
HELPS US UNDERSTAND
AND TREAT CANCER
CHEATING
ATHENA AKTIPIS
CELL


Kohurestan
Harbour Phoenix
Bandar Khamir
Ramona I
Bandar-
e Lengeh
Bitumax
BLOOMING DALE
Ariana
Skylight
Sima
Lima
Desh Suraksha
Legio X Equestris
Elpis
Courage
Elva
Al Kout
Silver
Ab Victory
B2 Ocean
Agrasen
Imperious
Banastar
Abc Sun
Explorer
Al Madam
Hatta
Advantage
Al Safa
Al Ain



Global risk mitigation by evolutionary governance

- Not biological determinism or Social Darwinism (almost the opposite)
- Complements systems science and social science
- Explains *why* fragile systems repeatedly emerge
- Selection pressures shape institutions and incentives
- Awareness alone does not remove evolutionary dynamics
- Governance must promote evolvability and redesign selective environments for resilience