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ESSAYS

RESEARCH ESSAY | COMPLETE EDITION

MASTER CIVILISATIONAL SYSTEMS MAP

How human systems coordinate, extract and are held to account, from forager societies to 2026.

An ontology audit, historical timeline, 44-case master matrix, thematic maps, adversarial test, final model and eleven figures.



Master Civilisational Systems Map: Overview of Findings

Prepared for Ray Mancini | September 2026 | Summary of the complete edition that follows

What the project tested

The study began with one proposition: that human civilisation has progressively turned more and more of life (land, labour, bodies, time, attention, data and nature) into objects of extraction, control and commodification. To test it fairly, the original "Cost of Progress" grid was rebuilt into a neutral 23-layer framework that records benefits as well as costs, separates deliberate design from unintended consequence, and rates every claim by strength of evidence. It was then applied to **44 historical cases** spanning forager societies to 2026 across every inhabited continent, and deliberately attacked with counterexamples.

Key findings

- 1. The original thesis does not survive as stated.** All 14 core mechanisms of extraction (force, tribute, debt, rent, measurement, persuasion and others) already existed by the end of the Bronze Age. The share of wealth taken by elites fell sharply after industrialisation, and the human person was removed from markets: slavery, sale of wives, votes, public offices and organs were all abolished. Labour itself is still bought and sold, though, and without a safety net the pressure to earn can be its own form of coercion.
- 2. The frontier of extraction has moved.** It shifted away from persons and toward two new frontiers: the **biosphere** (seven of nine planetary boundaries are now breached) and the **individual mind**, through attention, behavioural data and biological signals. The genuinely new capability is **closed-loop measurement**: systems that watch behaviour and adjust what people see in real time.
- 3. Extraction is usually a side effect of coordination.** Successful systems concentrate flows through a single point, such as a water channel, a bank, a platform. These "chokepoints" become extractable when switching away is costly, whoever controls them profits from extracting, and no counterweight exists at the same scale. Open chokepoints such as internet protocols and public libraries show the outcome is a matter of governance, not destiny.
- 4. Harm does not require conspiracy.** Competition, collective traps, diffused responsibility and chasing the wrong metric produce exploitative outcomes with no one designing them.
- 5. Progress is real.** Child deaths fell from about half of all children to around 4 per cent, life expectancy more than doubled, and literacy rose from 12 to over 85 per cent, largely through the institutions the original grid criticised.
- 6. Counterweights are as old as extraction.** Debt cancellation in ancient Babylon, state granaries in China, commons governance, abolition, labour law and the ozone treaty all worked. They succeed when they match the scale of what they check, and fade unless renewed.

The central answer

Civilisation has become far better at cooperation among strangers, and measurement is the medium of that cooperation. Whether measurement serves people or extracts from them depends on **who governs it**. A system has turned from tool into master when three signs appear: its own survival becomes the real goal, the people it serves can neither leave nor change it, and a metric replaces the need it was meant to track. Complex societies can avoid this, but only by deliberately maintaining accountable governance and counterweights at matching scale.

Limits of the study

Cases were chosen for coverage, not at random. Several contemporary claims remain contested, notably the mental-health effects of social media and the true power of targeted advertising. References should be verified before publication, and the work was produced with an AI system, itself one of the cases studied.

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READER'S GUIDE

This edition brings together the five stages in which the work was built. Each part corresponds to one stage, and **section numbers restart within each part**, following the numbering of the brief's deliverable list. Cross-references in the text such as "Stage 1, section 3.7" point to Part I, section 3.7.

The work was built iteratively, so earlier parts contain provisional positions that later parts revise. Where that happens, the later part governs. The most important revisions are summarised in the final executive synthesis and in Part V, section 17.5.

Where each deliverable section is found

Brief's deliverable	Location
1. Executive synthesis	Front matter (final). Provisional version in Part I, section 1 (superseded).
2. Ontology audit	Part I, section 2
3. Revised Master Civilisational Systems Map	Part I, section 3 (first version); Part V, section 17 (final)
4. Historical timeline	Part II, sections 2 and 3
5. Master structural matrix	Part II, section 4, findings in section 5
6 to 12. Thematic maps	Part III, sections 6 to 12
13 to 16. Counterexamples, arguments, evidence, blind spots	Part IV, sections 13 to 16
17 to 20. Final model, implications, research agenda	Part V, sections 17 to 20
Deepest questions, quality control, visuals	Part V
Closing epilogue: is humanity heading toward a better future?	After Part V
Closing essay: The Chains Came Off. The Pressure Didn't.	After the epilogue
Consolidated bibliography (101 works)	End of document

0. PROJECT STATUS AND VERIFICATION REPORT

Stage	Deliverable sections	Status
1	Executive synthesis (provisional), ontology audit, revised framework	Complete
2	Historical timeline, master structural matrix (44 cases)	Complete
3	Recurring mechanisms, wellbeing, environment, body to data, progress paradox, power, feedback loops	Complete
4	Counterexamples, strongest argument against, surviving evidence, blind spots	Complete
5	Final synthesis, final model, implications, research agenda, deepest questions, quality control, visuals	Complete

Verification: what was and was not done

Earlier stages promised a verification pass. An honest account of what it covered:

- **Checked against current sources during the project:** the Planetary Health Check 2026 findings (seven of nine boundaries transgressed, four in the high-risk zone); historical and current child mortality (Our World in Data, drawing on Volk and Atkinson 2013 and UN estimates); and the Milanovic, Lindert and Williamson (2011) study, confirmed as Economic Journal 121(551), pages 255 to 272, covering 28 pre-industrial societies.
- **Not done:** a reference-by-reference check of every edition, publisher and page number against library catalogues. All 101 works in the consolidated bibliography are real, widely cited scholarship, and none was invented, but details such as publisher names and exact years for older works were written from knowledge.
- **Recommendation:** before publishing any part of this work, run the bibliography through a library catalogue or a reference manager, and check any figure you intend to quote against its primary source. Figures most worth rechecking are flagged "Contested" in the text.

Relationship to existing research

This project is a synthesis of existing scholarship. It does not generate new primary data, and it is not the first attempt to map these questions across history. Two large research programmes in particular cover important parts of the same ground, with far deeper data:

- **Seshat: Global History Databank** (founded 2011) codes the social and political organisation of past societies from the Neolithic to the Industrial Revolution, to test theories about how complex societies rose and fell (Turchin et al. 2015).
- **The Commodity Frontiers Initiative**, a network of scholars and civil society organisations with more than 25 partner institutes, catalogues and studies commodity frontiers over roughly the past 500 to 600 years (Beckert, Bosma, Schneider and Vanhaute 2021).

What this map adds is breadth of scope in a single framework: land, labour, bodies, time, attention, wellbeing, ownership and the biosphere are coded with one architecture, every claim carries a confidence tier, and the framework is deliberately tested against its own hypotheses. Readers seeking quantitative depth on any one domain should consult the programmes above and the works in the bibliography.

1. EXECUTIVE SYNTHESIS (FINAL)

What the evidence actually shows, after five stages and an adversarial test of every hypothesis.

- 1. The original thesis, as stated, does not survive.** Civilisation has not progressively converted more and more of existence into objects of extraction in a single directional movement. Every major extraction mechanism was present by the end of the Bronze Age; the share of output taken by coercive elites fell sharply after industrialisation; and the human person was removed from markets across the 19th and 20th centuries. Labour, however, remains a commodity: where no safety floor exists, the need to earn can itself be coercive (Part IV, section 13.6).
- 2. A narrower thesis survives, and it is more useful.** The **frontier** of extraction has moved: away from persons, toward the biosphere and toward the attention, behaviour and biological signals of individuals. At both frontiers, new capabilities (planetary scale and closed-loop legibility) have outrun the balancing institutions that historically contained extraction.
- 3. Extraction is usually a side effect of coordination, not its purpose.** Successful coordination concentrates flows; concentrated flows become chokepoints; chokepoints are extractable. Whether extraction actually occurs depends on switching costs, the incentives of whoever controls the chokepoint, and whether a balancing force exists at matching scale.
- 4. Exploitation does not require conspiracy.** Selection, competitive traps, diffused responsibility and proxy optimisation produce extractive outcomes with no designer. Intent is often the wrong place to look for causes; incentive structures are the right one.
- 5. Balancing mechanisms are as old as extraction.** Debt cancellation, granaries, commons governance, abolition, labour law and the Montreal Protocol all worked, under identifiable conditions. The central question for the present is whether such mechanisms can be built at the scale of platforms, AI and the biosphere.
- 6. The system becomes the master through three observable conditions:** goal displacement, loss of voice and exit, and proxy capture. These are measurable in specific institutions. Whether civilisation as a whole has inverted is a philosophical interpretation, not an empirical finding.

P A R T



FOUNDATIONS: ONTOLOGY AUDIT AND FRAMEWORK

The audit of the original "Cost of Progress" grid and the construction of the neutral, evidence-tiered architecture used throughout.

0. HOW TO READ THIS DOCUMENT

This is the first of five stages. It does two things only: it audits the original grid, and it builds the analytical architecture that every later stage will use. It deliberately does not yet run the full historical investigation, because an audit that finds the instrument biased must fix the instrument before taking measurements with it.

Confidence tiers used throughout

Tier	Meaning
High	Broad scholarly consensus supported by multiple independent lines of evidence (archaeological, documentary, quantitative).
Moderate	Well supported but with regional variation, measurement problems, or live methodological debate.
Contested	Serious scholars disagree on the evidence itself, not just its interpretation.
Speculative	A reasonable hypothesis or philosophical interpretation not yet testable or not yet tested.

The five stages

Stage	Deliverable sections	Purpose
1 (this document)	1 (provisional), 2, 3	Fix the instrument: audit, taxonomy, criteria, layered map.
2	4, 5	Historical timeline to 2026 and the master structural matrix, populated case by case.
3	6 to 12	Thematic maps: mechanisms, wellbeing, environment, body to data, progress paradox, power, feedback loops.
4	13 to 16	The adversarial stage: counterexamples, falsification, surviving evidence, blind spots.
5	17 to 20 and visuals	Revised final model, implications, research agenda, and the eleven visual architectures.

Evidence note: works cited here are standard, widely known scholarship referenced from existing knowledge. No citation has been invented. A formal bibliographic verification pass (editions, page references) is scheduled for Stage 5, and any claim resting on a single source is flagged where it appears.

1. PROVISIONAL EXECUTIVE SYNTHESIS

Five findings emerge from the audit alone. They are provisional and will be tested against the historical record in Stages 2 to 4.

- 1. The original grid cannot test its own thesis.** Every column records harm or its cover story; none records function, benefit, resistance, reform, or evidence strength. Any case entered will come out as exploitation. The grid is a well-organised argument, not yet an analytical instrument.
- 2. The strong thesis is not yet defensible; a weaker one probably is.** The strong claim, that civilisation progressively moves extraction inward from land to mind, faces early counterexamples: bodies, reproduction and belief were extracted from in Bronze Age states. The more defensible claim is that **the range of things that can be measured, made legible, and transferred has expanded**, and that extraction capacity tracks legibility capacity. That claim draws on Scott (legibility), Polanyi (fictitious commodities) and Zuboff (behavioural surplus) and survives first contact. Confidence: moderate.
- 3. Protective capacity expanded alongside extractive capacity.** Global life expectancy roughly doubled across the twentieth century and child mortality fell by an order of magnitude from historical levels. The same states, sciences and markets that the grid indicts produced much of this. A framework that cannot see both is not describing the record. Confidence: high.
- 4. The decisive variable appears to be accountability, not progress.** Across the early evidence, what separates coordination from extraction is less the technology or institution than whether those who bear a system's costs can exit it, change its rules, or see how it works. This is the working hypothesis the revised map is built to test.
- 5. "Tool or master" can be made empirical.** The prompt's deepest question, whether life comes to serve the system, can be operationalised through three observable conditions: goal displacement, loss of voice and exit, and proxy capture (optimising a measure in place of the need it was meant to track). Section 3.7 sets this out.

2. ONTOLOGY AUDIT OF THE ORIGINAL GRID

2.1 Structural defects

Seven design problems sit beneath the content. They matter more than any single missing row because they determine what the grid is capable of finding.

Defect	What it causes	Correction in the revised map
Presupposed conclusion. Title and columns ("toxicity", "damage", "justification" in scare quotes) assume extraction.	Confirmation bias is built into the data structure. Benign or mixed cases cannot be recorded.	Neutral layers: need, function, benefit and cost recorded symmetrically.
Mixed axes. Rows 1 to 3 are eras; rows 4 to 7 are industries.	Industries lose their history; eras lose their sectors. Cases cannot be compared.	Era, society and system become separate, crossable dimensions.
No benefit column.	The progress paradox (Part XIX) is invisible by construction.	Layer I (Distribution) records gains to all parties, not only elites.
No evidence strength.	Robust findings (opioid marketing) sit beside contested ones (universal mental-health decline) with equal weight.	Every cell carries a confidence tier.
No resistance or reform.	History appears as one-directional accumulation; balancing forces vanish.	Layers O (Resistance) and P (Adaptation), plus balancing-loop coding.
No intent coding.	Design, incentive, emergence and accident are merged, contradicting Part XVIII.	Mandatory intent code on every case (Section 3.3).
Western and modern scope.	No Chinese, Andean, Islamic, African or Aboriginal Australian cases, which include the strongest counterexamples.	Geography becomes a required dimension; Stage 2 samples all 19 regions listed in Part XXVII.

2.2 Missing categories

Domains of power and extraction absent from the grid, assessed for genuine distinctness rather than added because they sound relevant.

Missing domain	Why it is distinct	Anchor example and confidence
Debt and credit	A claim on future labour and output; operates through time rather than force. Arguably the oldest scalable extraction mechanism.	Mesopotamian debt bondage and royal debt-cancellation edicts (Hudson 2018; Graeber 2011). High that both existed; moderate on how effective the cancellations were.
Kinship, marriage and reproduction	Control of who reproduces with whom, inheritance, and women's labour and fertility. Not reducible to "the body".	Bridewealth, dowry, patrilineal inheritance. Origins of patriarchy (Lerner 1986) are contested.

Missing domain	Why it is distinct	Anchor example and confidence
Water and hydraulic systems	Irrigation creates chokepoints over life itself.	Wittfogel's "hydraulic despotism" (1957) is largely rejected as a general law, but water control as a power source is well supported (moderate).
Law and legal personhood	Deciding who or what counts as a person or as property: slaves as property, corporations as persons, rivers as persons (New Zealand, 2017).	High. Legal classification precedes and enables most extraction.
Classification and measurement	Census, cadastral maps, standard weights, surnames, IDs. Legibility is the precondition for taxation and surveillance.	Scott, Seeing Like a State (1998). High for the mechanism; moderate for his broader claims.
Care and domestic labour	The unpaid work that reproduces workers. Invisible to GDP.	Fraser (2016); Federici (2004, contested on the witch-hunt thesis); Hochschild (1983) on emotional labour. Moderate.
Borders, citizenship and migration	Rights and wage levels attached to birthplace. A major modern determinant of life outcomes.	High. Missing entirely from the grid.
Housing and urban land rent	Returns from location scarcity rather than production.	Classical economics (Ricardo, George). High as a mechanism.
Energy	Every extraction regime is also an energy regime: human and animal muscle, biomass, coal, oil, electricity.	Smil, Energy and Civilization (2017). High.
Animals as subjects	Domestication and industrial animal farming are not only "environmental impact"; they are the largest system of controlled bodies on Earth by number.	High on scale; the moral framing is philosophical, not empirical.
Death and the afterlife	Tomb economies, sacrificial offerings, indulgences, funeral industries: extraction from fear of death and duty to the dead.	Moderate; varies greatly by society.
Commons governance	The grid has enclosure implicitly but no category for commons that endured.	Ostrom, Governing the Commons (1990). High. Essential as a counterweight.
Information infrastructure	Writing, postal systems, telegraph, internet. Control of channels is distinct from control of content.	High.

2.3 Overlapping categories to merge or re-cut

- **"Modern Industrial & Financial Capitalism" overlaps every sector row.** Food, pharmaceutical, media and military rows are all instances of it. It should be dissolved into its distinct regimes (see 2.4) and the sectors kept as systems within them.
- **"Agricultural Revolution" and "Food, Agriculture & Chemical Sector"** describe one continuous system, the organisation of human metabolism, at two points in time. They merge into a single domain traced longitudinally.

- **"Externalisation of cost" and "Regulatory dependence"** partly describe the same thing: the state absorbing costs produced elsewhere. They should be separated by level (mechanism versus feedback loop), as in 2.8.

2.4 Categories that are too broad

Current category	Distinct mechanisms hidden inside	Proposed split
Modern Industrial & Financial Capitalism	Industrial production; finance; consumer demand creation; welfare-state compromise; neoliberal restructuring. These have different winners, losers and justifications.	Five regimes: industrial, financial, consumer, social-democratic, neoliberal. Soviet and Chinese state-industrial regimes added as comparators.
Media, Technology & Digital Attention Economy	Attention capture; data extraction; platform intermediation rents; content moderation power; adult-content and gambling markets.	Attention, data, platform rent, and vice markets as separate systems.
State Governance & Military-Industrial Complex	State fiscal dependence on vices; war and conquest; lobbying and regulatory capture; state violence against citizens.	Fiscal state; military system; capture; coercive state.

2.5 Categories that are too narrow

- **"Pharmaceutical & Health Industries" should become "The body and biological life"**, covering medicine, reproduction, genetics, sport, beauty, fitness, longevity and biohacking (Part IX).
- **"Food, Agriculture & Chemical" should become "Metabolism and food systems"**, from domestication to ultra-processed food and precision nutrition.
- **"Media, Technology" should become "Information, attention and cognition"**, traced from oral culture and writing (Part XII), not beginning with the internet.
- **Religion appears only as justification ("divine right")**. It needs its own domain covering cohesion, charity, resistance and legitimacy (Part XIII).

2.6 Hidden assumptions

Concept	Assumption embedded in the grid	Why it is problematic	Correction
Progress	Progress is a cover story (scare quotes in the title).	Material gains in survival, literacy and violence reduction are among the best-documented facts in history (Deaton 2013). Contested: Pinker's violence thesis.	Record benefit and cost symmetrically; treat progress as a mixed empirical variable.
Civilisation	Begins with agriculture; foragers are the egalitarian baseline.	Pre-agricultural monuments and seasonal hierarchies (Göbekli Tepe, c. 9500 BCE) complicate this (Graeber and Wengrow 2021). Contested.	Start the map with forager variability, not a single baseline.
Evolution	Linear stages: agriculture to colonialism to capitalism to digital.	Many societies cycled between scales, abandoned states, or avoided them (Scott 2017).	Trajectories coded as branching, with reversals.

Concept	Assumption embedded in the grid	Why it is problematic	Correction
Capitalism	The modern source of harm.	Soviet planning produced comparable ecological disasters (Aral Sea). Slavery, debt bondage and tribute predate capitalism by millennia.	Capitalism as one regime among many; comparator regimes required.
Markets	Exchange is implicitly exploitative.	Markets existed in most complex societies, often embedded in social obligations (Polanyi 1944; Mauss 1925).	Separate exchange from extraction using the criteria in 3.5.
Governments	Appear only as captured or complicit.	States also abolished slavery, built sanitation, regulated child labour.	The state coded as both extractor and balancing loop.
Religion	Legitimation device only.	Religion also drove abolition, charity, sanctuary and resistance movements.	Full spectrum per Part XIII.
Science and technology	Appear only through their harms.	Vaccination, germ theory and the Green Revolution sit on the benefit side of the ledger.	Dual coding under the progress paradox.
Human nature	People are passive recipients of systems.	Removes agency, resistance and complicity; ignores that populations often choose systems for real benefits.	Agency recorded in Layers K and O.
Power	Held by identifiable elites who design outcomes.	Much extraction emerges from distributed incentives with no designer (Merton 1936).	Intent coding (3.3).
Hierarchy	Hierarchy equals domination.	Many hierarchies are functional, consented to and reversible.	Criteria in 3.5 distinguish them.
Morality	Moral language is rationalisation.	Some moral language is sincere and constraining; the grid cannot distinguish.	Stated purpose, structural consequence and later reinterpretation coded separately.
Wellbeing	Measured mainly through disease, addiction and mental ill-health.	Omits autonomy, meaning, belonging and play, and also omits improvements.	Separate wellbeing map with 30 domains (Stage 3).

2.7 Claim-by-claim evidence audit

A sample of specific claims in the original grid, tested against the literature. The full audit continues in Stage 2 as each row is populated.

Claim in grid	Verdict	Tier	Notes
Transition from egalitarian foraging to rigid class stratification	Qualify	Contested	Foragers varied widely; some early farming towns (Çatalhöyük) remained relatively egalitarian for over a millennium.

Claim in grid	Verdict	Tier	Notes
Chronic malnutrition and disease with early agriculture	Largely supported	Moderate to high	Skeletal evidence of reduced stature, dental disease and infection (Cohen and Armelagos 1984). Varies by region.
Early deforestation and soil erosion	Supported locally	Moderate	Well documented regionally (Mesopotamian salinisation). Global early-anthropogenic hypotheses (Ruddiman) contested.
Genocide and displacement in colonial expansion	Supported, needs precision	High	Deliberate violence documented in many cases; demographic collapse in the Americas was driven largely by disease, compounded by violence, forced labour and dispossession.
14-hour workdays and child labour in early factories	Supported	High	Parliamentary inquiries in Britain are primary sources.
Fractional reserve banking as mechanism	Revise	High	Modern central banks describe money as created by commercial lending (McLeay, Radia and Thomas, Bank of England 2014). The textbook model is outdated.
Fast food "designed purely" for hyper-palatability	Qualify intent claim	Moderate	Effect is supported: a controlled trial found ultra-processed diets increased intake by about 500 kcal a day (Hall et al. 2019). "Purely" is an unprovable intent claim.
Opioid crisis driven by pharmaceutical marketing	Supported	High	Purdue Pharma pleaded guilty to federal charges in 2007 and 2020. Later waves driven by heroin and illicit fentanyl.
Pharmaceutical waste in water supplies	Qualify	Moderate	Trace residues widely detected; human health effects at those concentrations uncertain. Ecological effects better supported.
Antibiotic resistance from livestock use	Supported as contributor	High	One of several drivers alongside clinical overuse.
Marine dead zones from runoff	Supported	High	Gulf of Mexico hypoxic zone is the canonical case.
Microplastics across food chains	Split the claim	High / Contested	Presence: high. Health effects: contested and actively researched.
Universal mental health decline from digital media	Reclassify	Contested	Haidt (2024) argues strong causation; Orben and Przybylski (2019) and Odgers find small average effects. "Universal" is not supported.
Data-centre energy consumption	Supported, add scale	High	Roughly 1.5 per cent of global electricity in 2024 (IEA), growing with AI.
Complete loss of trust in democratic institutions	Overstated	Moderate	Trust varies sharply by country and institution; decline is real in some democracies, not universal.

2.8 Mechanism audit

The prompt lists 37 candidate mechanisms. Tested for distinctness, they resolve into three kinds: **primitive mechanisms** (irreducible ways value moves), **composite regimes** (historical bundles of primitives), and **neutral coordination processes** that become extractive only under certain conditions. This distinction is one of the most important corrections in the audit.

Primitive mechanisms (14)

Primitive	Definition	Absorbs from the list
1. Force	Direct violence or credible threat.	coercion, militarisation
2. Enclosure	Converting shared or unowned access into exclusive control.	dispossession, territorialisation, privatisation (in part)
3. Tribute	Compulsory transfer of surplus to authority.	taxation, tithe, corvée labour
4. Bound labour	Control over the person as a working body.	slavery, serfdom, forced labour
5. Future claims	Claims on labour or output not yet produced.	debt, credit, financialisation (in part)
6. Rent	Income from controlling a bottleneck rather than producing.	ownership rents, monopolisation, IP, platform fees
7. Legibility	Making people, land or behaviour measurable and classifiable.	measurement, standardisation, surveillance, data extraction
8. Gatekeeping	Controlling access to status, roles or rights.	credentialisation, professionalisation, citizenship
9. Scarcity management	Controlling supply to raise value.	artificial scarcity, scarcity creation
10. Externalisation	Shifting costs onto parties outside the decision.	risk transfer, pollution
11. Dependency	Removing alternatives so exit becomes costly.	lock-in, dependency
12. Discipline	Shaping behaviour and time to fit a system's rhythm.	labour discipline, time discipline
13. Steering	Shaping desire, attention and choice.	behavioural manipulation, attention capture, status competition
14. Legitimation	Producing belief that an arrangement is right or inevitable.	moral and ideological legitimisation

Composite regimes

Colonisation (force + enclosure + tribute + bound labour + legitimation). **Financialisation** (future claims + rent + risk transfer). **Surveillance capitalism** (legibility + steering + rent). **Algorithmic control** (legibility + steering + discipline, automated). **Biological optimisation** is best treated as a domain, not a mechanism: it applies legibility and discipline to biology. These are analysed as bundles so the map can show which primitives are genuinely new in each era and which are old mechanisms with new reach.

Neutral coordination processes

Institutionalisation, bureaucratisation, standardisation, technological mediation and professionalisation are coordination tools. Weights and measures protect buyers; professional licensing protects patients; bureaucracy replaces patronage. They become extractive when combined with the absence of accountability (Section 3.5). Treating them as extraction by default was a flaw in the original list.

Mechanisms missing from the list

- **Redistribution and jubilee:** debt cancellation, poor relief, granaries, welfare. The main balancing mechanisms in history.
- **Patronage and clientelism:** exchange of protection for loyalty; dominant in most pre-modern societies.
- **Gift and obligation:** reciprocity that binds without markets (Mauss 1925); can be generous or coercive.
- **Exit:** flight, migration, withdrawal to hills or frontiers (Scott 2009). The most underrated constraint on extraction.
- **Sumptuary control:** rules on who may consume what; status enforcement through consumption.

2.9 Re-examining the four connecting patterns

Original pattern	Level of analysis	Assessment	Revision
Externalisation of cost	Mechanism	Robust across eras. High confidence.	Keep as primitive 10.
Monetisation of vulnerability	Mechanism	Robust but needs precision: vulnerability can be served (medicine) or exploited (predatory lending). The pattern alone cannot tell which.	Recast as steering plus dependency, tested against criteria in 3.5.
Moral rationalisation	Legitimation	Partly true but unfalsifiable as stated: it treats every moral claim as cover.	Split into sincere purpose, structural consequence and later reinterpretation.
Regulatory dependence	Feedback loop	Well supported for sin taxes and some defence procurement; "addicted" overstates it.	Model as a reinforcing loop with measurable fiscal share.
(missing)	Balancing loop	The grid has no pattern for systems that constrained themselves.	Add: commons governance, jubilee, reform, exit.
(missing)	Structural dynamic	Scale produces effects no participant intends.	Add: complexity and emergence (Tainter 1988; Merton 1936).

3. REVISED MASTER CIVILISATIONAL SYSTEMS MAP

3.1 Design principles

- 1. Neutral before critical.** The map records function and benefit before extraction and cost, so it can find exploitation without presupposing it.
- 2. The unit of analysis is a system-case:** a specific institution, in a specific society and period, governing a specific resource. "Capitalism" is not a case; "British cotton mills, 1800 to 1850" is.
- 3. Every cell carries a confidence tier** and every case an intent code.
- 4. Benefits and costs are recorded for the same parties,** so distribution rather than aggregate is visible.
- 5. Balancing forces are first-class.** Resistance, exit, reform and commons governance are layers, not footnotes.
- 6. Concepts are dated.** Where a modern term is applied to a past society, the case records the period's own terms and whether the analogy holds (Part XXVI).

3.2 The layered architecture

Your seventeen layers (A to Q) are retained and grouped into five tiers. Six new layers are added and one is modified. The tiers read as a causal sequence: conditions create needs, coordination structures meet them, value flows, the system sustains itself, and it changes over time.

Tier	Layer	Core question	Diagnostic sub-questions
I. Conditions	A. Environment	What physical and ecological conditions exist?	Climate, soils, water, disease load, energy sources.
	B. Human needs	What fundamental needs are involved?	Survival, security, belonging, meaning, status, autonomy.
	C. Resources	What is scarce or valuable?	Is scarcity natural, produced, or enforced?
II. Coordination	D. Institutions	What structures coordinate access?	Formal, informal, sacred, commercial, kinship.
	E. Rules	What rules govern behaviour?	Who wrote them; can they be changed; by whom?
	F. Incentives	What is rewarded or punished?	For each party separately.
	G. Power	Who can influence or enforce the rules?	Coded by power source (3.4).
	R. Legibility (new)	What is measured, counted or classified?	What becomes visible to authority, and what the measure replaces.
III. Flows	H. Extraction	What value is extracted, by which primitives?	Scored against criteria in 3.5.
	I. Distribution (modified)	Who receives benefits, including non-elites?	Gains and losses per party, not only elites.
	J. Externalities	Who or what absorbs the costs?	Environment, future generations, distant peoples, non-humans.

Tier	Layer	Core question	Diagnostic sub-questions
	S. Energy and material basis (new)	What energy and materials does the system run on?	Muscle, slave, animal, biomass, fossil, electric.
IV. Sustaining	K. Psychology	What human tendencies are leveraged?	Fear, status, belonging, loss aversion, habit.
	L. Technology	What technologies amplify it?	Does technology change the primitives or only their reach?
	M. Ideology	How is it justified?	Stated purpose, structural consequence and later reinterpretation coded separately.
	N. Feedback	How does it reproduce itself?	Reinforcing and balancing loops; lock-in; path dependence.
	T. Accountability (new)	Can cost-bearers see, exit or change the system?	Voice, exit, transparency (Hirschman 1970).
V. Dynamics	O. Resistance	What forces challenge it?	Revolt, flight, sabotage, reform movements, law.
	P. Adaptation	How does it respond?	Concession, repression, co-optation, rebranding.
	Q. Long-term consequence	What does it ultimately produce?	Legacy institutions, modern analogues.
	U. Scale and time horizon (new)	What changes as it scales or persists?	Behaviour at 10, 10,000 and 10 million participants; generational effects.
Meta	V. Intent code (new)	Designed, incentive-driven, emergent, unintended, or reinterpreted?	See 3.3.
	W. Evidence and dispute (new)	How strong is the evidence; what do scholars dispute?	Tier plus competing interpretations; alternatives that existed at the time.

3.3 Intent coding

Part XVIII requires that design, incentive and emergence never be conflated. Every case receives one primary code and, where relevant, secondary codes.

Code	Definition	Evidence required	Example
D. Designed	Actors consciously built the system to extract.	Documentary evidence of intent.	Slave codes; Purdue's marketing strategy (court records).
I. Incentive-driven	No design, but actors knowingly follow incentives that produce extraction.	Evidence actors understood consequences.	Tobacco firms after internal research on harm.

Code	Definition	Evidence required	Example
E. Emergent	Outcome arises from many actors' independent choices.	Outcome present without coordinating actor.	Urban land-rent inflation; engagement-driven polarisation (contested).
U. Unintended	Outcome contrary to actors' aims.	Evidence of the original aim.	Antibiotic resistance; early agricultural disease burden.
R. Reinterpreted	Present-day framing imposed on a past system.	Gap between period sources and modern reading.	Calling Roman grain distribution "welfare".

3.4 Power taxonomy

The base is Michael Mann's IEMP model (ideological, economic, military, political), extended with the domains in your prompt. The audit question is whether each is a distinct **source** of power or a **channel** through which other power operates.

Power type	Source of leverage	Verdict
Material	Control of land, water, energy, food, infrastructure.	Distinct source. Often the root of economic power.
Economic	Control of capital, credit, prices, wages, rents.	Distinct source.
Political	Control of law, taxation, borders, citizenship.	Distinct source.
Military	Organised force.	Distinct source.
Social	Status, kinship, caste, gender, reputation.	Distinct source; arguably the oldest.
Religious	Sacred authority, ritual, salvation.	Subtype of ideological, but historically distinct enough to keep separate.
Epistemic	Control of knowledge, classification, acceptable truth.	Distinct source; grows sharply with literacy and science.
Psychological	Fear, desire, shame, belonging.	Channel, not source. Every other power works through psychology.
Technological	Infrastructure, platforms, algorithms.	Amplifier. Multiplies other sources; ownership of infrastructure becomes material power.
Biological	Control of reproduction, medicine, genetics.	Distinct domain (Foucault's biopower); mechanisms overlap with political and epistemic.
Attentional	Capture and direction of attention and cognition.	Speculative as a new source; possibly psychological channel plus technological amplifier at unprecedented scale. A central test for Stage 3.

3.5 Criteria: coordination versus extraction

This is the instrument that decides Layer H. Eight tests, each scored 0 (fails), 1 (partial) or 2 (passes). No single test is decisive; the profile is what matters.

Test	Question	Passes when
1. Consent	Did participants agree, with realistic alternatives?	Participation is voluntary and refusal is survivable.
2. Exit	Can participants leave at tolerable cost?	Switching or leaving is feasible.
3. Voice	Can cost-bearers change the rules?	Those affected have influence over governance.
4. Reciprocity	Is value returned proportionate to value taken?	Protection, services or goods flow back.
5. Transparency	Do participants understand the terms?	Information asymmetry is low.
6. Internalisation	Does the decision-maker bear the costs?	Costs are not shifted to outsiders or the future.
7. Reversibility	Can the arrangement be undone?	Lock-in is weak.
8. Proportion	Is the gap between gains and costs bounded?	Distribution is not extreme relative to contribution.

The spectrum

Band	Typical profile	Illustration
Coordination / cooperation	High on all eight.	Ostrom-type irrigation commons; mutual aid societies.
Exchange / specialisation	High consent, exit, reciprocity; transparency may vary.	Competitive local markets.
Regulation / stewardship	Low consent individually but high voice collectively.	Democratic food safety law.
Extraction	Low reciprocity or high externalisation; exit possible but costly.	Monopoly pricing; pollution.
Exploitation	Low reciprocity, low voice, high asymmetry, exploiting need.	Debt bondage; predatory lending.
Coercion / domination	Fails consent, exit and voice.	Chattel slavery; forced labour regimes.

Commodification and **financialisation** are not on this spectrum. They describe what happens to a thing (it becomes priced, or becomes a claim that is traded), and can occur in any band. A priced vaccine may be coordination; a priced human is domination.

3.6 The universal diagnostic

The questions from your "Standard", reorganised by tier so they can be applied in sequence to any institution, technology or business model.

Tier	Questions
Conditions	What need does this serve? What resource does it organise? Is the scarcity natural, produced or enforced?
Coordination	Who controls it? Who wrote the rules? What behaviour does it reward? What does it make measurable?
Flows	Who benefits? Who bears the cost? What is extracted, commodified, externalised? What does it run on?
Sustaining	What beliefs legitimise it? What psychological mechanisms sustain it? What loops reproduce it? Can cost-bearers see, leave or change it?
Dynamics	What resists it and how does it adapt? What happens at scale? What happens when technology amplifies it? What happens when it depends on its own continuation?
Meta	Was this designed, incentivised, emergent, or unintended? How strong is the evidence? What alternatives existed?

3.7 Operationalising "tool or master"

Your closing question, whether a system still serves life or life has come to serve the system, can be turned from a philosophical intuition into three observable conditions. A system shows **inversion** to the degree all three hold.

Condition	Observable signs	Scholarly anchor
1. Goal displacement	Preserving the institution becomes the operative goal; the original purpose becomes rhetorical.	Merton (1940) on bureaucratic ritualism; Michels' iron law of oligarchy (1911).
2. Loss of voice and exit	Those the system claims to serve can neither leave it nor change it.	Hirschman (1970).
3. Proxy capture	A measure replaces the need it tracked and is optimised directly: test scores for learning, engagement for connection, GDP for welfare, steps for health.	Goodhart (1975); Campbell (1979).

Framed this way, the question stops being rhetorical. Each condition can be observed and dated in specific cases, and cases where inversion was reversed, through reform, exit or collapse, become some of the most important data in the whole project. Confidence in the framework itself: moderate. Whether inversion is increasing across history is the central empirical question for Stage 4.

4. WORKED EXAMPLES: THE MAP IN USE

Two deliberately distant cases, compressed, to show that one architecture handles both and produces non-obvious findings.

4.1 Old Babylonian debt and royal cancellation edicts (c. 1900 to 1600 BCE)

Layer	Coding
Need / resource	Survival through bad harvests; grain, silver, land, labour.
Institutions / rules	Temple and palace lending, private creditors; interest customarily around 20 per cent on silver and higher on grain.
Extraction primitives	Future claims leading to bound labour: defaulting debtors pledged family members or themselves.
Balancing loop	Periodic royal edicts (mīšarum), such as that attributed to Ammi-saduqa, cancelled certain consumer debts and freed debt servants.
Ideology	Kingship as guardian of justice; restoring order.
Intent code	Extraction: incentive-driven. Cancellation: designed, with mixed motives (protecting the free peasant base that supplied soldiers and taxes).
Evidence	High that edicts existed; moderate on enforcement; contested on how broadly they applied (Hudson 2018 is a strong advocate).
Finding	Debt-driven dispossession was recognised as a systemic threat four thousand years ago, and a balancing mechanism was institutionalised . The original grid could not record this.

4.2 Engagement-optimised social platforms (c. 2010 to 2026)

Layer	Coding
Need / resource	Connection, information, status, belonging; attention and behavioural data.
Legibility (R)	Clicks, dwell time, social graphs, inferred traits.
Extraction primitives	Legibility + steering + rent (advertising and data intermediation).
Benefits (I)	Free communication, diaspora connection, organising capacity, small-business reach. Real and large.
Accountability (T)	Exit is costly because of network effects; voice minimal; algorithmic terms opaque.
Criteria score (3.5)	Consent high, exit low, voice low, reciprocity moderate, transparency low, internalisation low (costs of polarisation borne publicly).
Intent code	Engagement targets: designed. Harms such as polarisation: emergent or incentive-driven, contested.
Inversion test (3.7)	Proxy capture present (engagement substituting for connection); goal displacement partial; loss of exit present.
Evidence	Business model: high. Mental-health effects: contested. Polarisation effects: contested and vary by country.

Layer	Coding
Finding	Structurally similar to 4.1 in one respect: a system meeting a genuine need creates dependency and low exit. Unlike 4.1, no institutionalised balancing loop yet exists at comparable scale. Regulatory efforts (for example the EU's Digital Services Act) are the attempt to build one.

5. HANDOVER TO STAGE 2

Stage 2 builds the historical timeline and populates the master matrix, using the architecture above for every case. Planned approach:

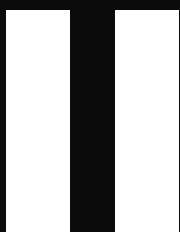
- Approximately 40 to 60 system-cases spanning forager societies to 2026, sampled across all 19 regions listed in Part XXVII, with at least a third from outside Europe and North America.
- Deliberate inclusion of counter-cases: Qing state granaries (Will and Wong 1991), Andean vertical exchange (Murra), Islamic waqf endowments (Kuran 2011, who is critical), Aboriginal Australian land management (Gammage 2011; the Dark Emu debate treated as contested, Sutton and Walshe 2021), and Ostrom's long-lived commons.
- Web-verified sourcing for figures and dates, with the confidence tier stated on each.

Decisions for you before Stage 2

Update: these decisions were resolved with working defaults in Part II, section 1.

1. **Matrix format.** The master matrix will have 25+ columns. Would you prefer it as a companion Excel workbook (sortable, filterable) alongside the Word document, or condensed into Word tables?
2. **Weighting.** Should the case sample be weighted evenly across history, or deliberately heavier on the last 250 years where your contemporary interest lies?
3. **Your own framework.** Should the final model (Stage 5) be placed in explicit dialogue with the Symbiotic Shift and Fractal Harmony, or kept independent so it can later be tested against them?

P A R T



HISTORICAL TIMELINE AND MASTER MATRIX

Eleven phases from forager societies to 2026, the first appearance of each extraction mechanism, and 44 system-cases coded through the framework.

1. WORKING DEFAULTS FOR THIS STAGE

Stage 1 ended with three open decisions. Rather than pause, this stage proceeds on the following defaults. Any of them can be changed and the affected sections rebuilt.

Decision	Default adopted	Reason
Matrix format	Word, in landscape tables split into two linked halves (Flows and Dynamics) with a shared case number.	Keeps a single deliverable in your chosen format. An Excel export can be produced from the same data at any point.
Case weighting	44 cases: 20 before 1500 CE, 24 after. Roughly 45 per cent from outside Europe and North America.	Even historical weighting would starve the contemporary analysis; heavy modern weighting would make the "inward movement" thesis untestable, since it needs a deep baseline.
Relation to your own framework	Kept independent.	The map can then be used to test the Symbiotic Shift and Fractal Harmony later, rather than being shaped by them in advance.

How to read the matrix codes

Code	Meaning (from Stage 1)
Primitives 1 to 14	1 Force, 2 Enclosure, 3 Tribute, 4 Bound labour, 5 Future claims, 6 Rent, 7 Legibility, 8 Gatekeeping, 9 Scarcity management, 10 Externalisation, 11 Dependency, 12 Discipline, 13 Steering, 14 Legitimation.
Band	Position on the Stage 1 spectrum: Coordination, Exchange, Regulation, Extraction, Exploitation, Domination. Mixed cases show two bands (for example "Coordination / Extraction") where different parties experienced the system differently.
Intent	D Designed, I Incentive-driven, E Emergent, U Unintended, R Reinterpreted.
Loops	R = reinforcing loop, B = balancing loop.
Tier	High, Moderate, Contested, Speculative. Where one case contains claims of different strength, the tier is split.

Evidence note: dates and figures are drawn from standard scholarship and datasets (for example SlaveVoyages for the Atlantic trade). Wherever estimates are disputed, ranges are given rather than single figures. The bibliographic verification pass remains scheduled for Stage 5.

2. HISTORICAL TIMELINE: ELEVEN PHASES

The timeline is organised as overlapping phases rather than a single sequence. Dates mark when a pattern becomes well attested somewhere, not when it became universal; many societies never passed through some phases at all, and several passed through them in reverse.

Phase 0. Forager worlds

Span: c. 300,000 years ago to the present, as a continuous tradition

Date	Region	Development	Significance for the map
From c. 65,000 to 50,000 BP	Australia	Human arrival; the longest continuous cultural tradition on Earth develops.	A deep baseline of land management without states (Phase 0 is not "before history").
Ethnographic present	East and southern Africa	Immediate-return foragers (Hadza, Ju/'hoansi): demand sharing, mockery of boasting, easy exit between camps.	Active levelling mechanisms suppress accumulation (Woodburn 1982; Boehm 1999). Equality is maintained, not merely default.
c. 9500 BCE	Anatolia	Göbekli Tepe: monumental enclosures built by people without farming.	Large-scale coordination and ritual precede agriculture.
At least 6,600 years ago	Victoria, Australia	Budj Bim eel aquaculture: channels, weirs and stone dwellings (UNESCO World Heritage, 2019).	Engineered food systems without state or grain.
Last 5,000 years	Pacific Northwest Coast	Complex foragers with ranked lineages, hereditary slavery, and the potlatch.	Bound labour and hierarchy without agriculture: breaks the "agriculture caused inequality" link.

Reading: foragers span the full range from fiercely egalitarian to slave-holding. The relevant variable appears to be storable, defensible surplus (such as smoked salmon) rather than farming as such. Confidence: moderate.

Phase 1. Domestication and villages

Span: c. 10,000 to 4000 BCE

Date	Region	Development	Significance for the map
c. 9500 to 8500 BCE	Fertile Crescent	Wheat, barley, lentils, goats, sheep domesticated.	Beginning of the long, slow agricultural transition.
c. 7000 BCE onward	China, New Guinea, Mesoamerica, Andes, Sahel	Independent domestications: millet and rice, taro and banana (Kuk), maize, potato, sorghum.	Agriculture was invented several times; it was not a single event diffusing from one origin.
c. 7100 to 5950 BCE	Anatolia	Çatalhöyük: thousands of residents, no evident palaces, similar houses.	Dense farming towns can remain relatively egalitarian for over a millennium (Hodder). Moderate.

Date	Region	Development	Significance for the map
Throughout	Multiple	Skeletal evidence of declining stature, dental caries, infection in many early farming populations.	Early farming often worsened individual health while increasing population (Cohen and Armelagos 1984).

Reading: some 4,000 years separate first domestication from the first states (Scott 2017). Agriculture was necessary for most states but did not produce them automatically.

Phase 2. Early states

Span: c. 3500 to 1000 BCE

Date	Region	Development	Significance for the map
c. 3300 to 3100 BCE	Mesopotamia (Uruk)	Proto-cuneiform: the earliest writing is overwhelmingly accounting of grain, livestock, labour and rations.	Writing begins as a legibility technology. High.
c. 3100 BCE	Egypt	Unification; divine kingship; later rotating labour crews build pyramids and are fed by the state.	Tribute in labour, legitimated through cosmology.
c. 2600 to 1900 BCE	Indus Valley	Planned cities, standard weights and bricks, drainage; no clear palaces or royal tombs.	Sophisticated standardisation without obvious monarchy. Governance form contested.
c. 1754 BCE	Babylonia	Laws of Hammurabi: prices, wages, debt servitude limited to three years for pledged family members.	Codified limits on debt bondage.
c. 1646 BCE	Babylonia	Edict attributed to Ammi-saduqa cancels specified debts.	Institutionalised balancing loop.
c. 1600 to 1046 BCE	China (Shang)	Oracle-bone divination; human sacrifice at royal tombs at Anyang.	Sacred authority and control over bodies fused.
c. 1200 to 1150 BCE	Eastern Mediterranean	Late Bronze Age collapse of palace economies.	Complex systems can fail rapidly; writing disappears from Greece for centuries.

Phase 3. Axial age and classical empires

Span: c. 800 BCE to 600 CE

Date	Region	Development	Significance for the map
c. 600 BCE	Lydia; separately China and India	Coinage: portable, standardised value.	Makes taxes, soldiers' pay and markets easier to scale.
594 BCE	Athens	Solon's reforms cancel debts and ban enslavement for debt of citizens.	Balancing loop; debt slavery of outsiders continues.

Date	Region	Development	Significance for the map
c. 800 to 200 BCE	Eurasia broadly	Prophetic Judaism, Buddhism, Jainism, Confucianism, Greek philosophy: ethical critiques of power and wealth.	Ideas that can both restrain and later legitimate power. "Axial age" as a category is contested.
c. 260 BCE	India (Maurya)	Ashoka's edicts after the Kalinga war promote restraint and welfare.	State morality as both sincere reform and legitimization.
221 BCE	China (Qin)	Unification: standardised script, weights, measures, coinage, axle widths; Legalist statecraft.	The most thorough early legibility project.
117 and 81 BCE	China (Han)	State monopolies on salt and iron; recorded court debate on their merits.	Explicit early argument about state rent versus merchant rent.
c. 200 BCE to 200 CE	Rome	Slave-worked estates; grain distribution to Roman citizens; revolts including Spartacus (73 to 71 BCE).	Bound labour at imperial scale alongside citizen provisioning.
c. 100 BCE to 550 CE	Mesoamerica	Teotihuacan: vast city of standardised apartment compounds, few monuments to individual rulers.	Possible collective governance. Contested.

Phase 4. Post-classical worlds

Span: c. 600 to 1450

Date	Region	Development	Significance for the map
From 7th century	Islamic world	Zakat, market inspectors (hisba), and waqf endowments funding mosques, schools, water, hospitals.	Religious law structures both obligation and public goods.
605 onward, expanded under Song	China	Civil-service examinations become a principal route to office.	Credentialisation: meritocratic and restrictive at once.
1023	China (Song)	State issue of paper money.	Claims on value detached from metal; later overissue causes inflation.
9th to 14th century	Europe	Manorial serfdom; tithes; Church and lord as dual extractors.	Bound labour through legal status rather than purchase.
1324	West Africa (Mali)	Mansa Musa's pilgrimage displays gold from trans-Saharan trade.	Trade empire built on controlling routes (rent).
1347 to 1351	Afro-Eurasia	Black Death kills a large share of the population; labour scarcity raises wages; English Statute of Labourers (1351) tries to cap them; Peasants' Revolt (1381).	Demographic shock shifts bargaining power; elites respond with law.
c. 1428 to 1521	Central Mexico	Aztec Triple Alliance tribute system, recorded in the Codex Mendoza.	Tribute empire with detailed legibility.

Date	Region	Development	Significance for the map
c. 1438 to 1533	Andes (Inca)	Labour tax (mit'a), state storehouses, khipu records, limited market exchange.	Large-scale state economy largely without money or markets.

Phase 5. Early modern and colonial

Span: c. 1450 to 1780

Date	Region	Development	Significance for the map
From 1492	Americas	Conquest; Indigenous population collapses by a very large proportion, driven largely by epidemic disease compounded by violence, enslavement and dispossession.	The largest demographic catastrophe in the record. Magnitude estimates vary widely.
1545; 1570s	Andes (Spanish)	Silver discovered at Potosí; Viceroy Toledo repurposes the Inca mit'a as forced mine labour.	An existing institution converted to extraction. Effects persist today (Dell 2010).
1501 to 1866	Atlantic	About 12.5 million Africans embarked in the slave trade; about 10.7 million survived the crossing (SlaveVoyages).	Humans as commodity at industrial scale; plantation complex.
1600; 1602	England; Netherlands	East India Company; VOC, the first joint-stock company with permanently tradable shares.	Chartered corporations combining trade, finance and military force.
1621	Banda Islands	VOC conquest and depopulation to monopolise nutmeg.	Scarcity management through force.
c. 1560 to 1650 peak	Europe	Witch trials and executions (estimates commonly around 40,000 to 60,000).	Causes contested; Federici's economic reading is one interpretation among several.
1603 to 1868	Japan (Tokugawa)	Controlled foreign trade; state and village forest regulation reverses deforestation (Totman 1989).	Authoritarian stewardship: extraction constrained without democratic voice.
18th century	China (Qing)	State civilian granaries stabilise grain prices and famine relief (Will and Wong 1991).	A balancing institution at continental scale.
1604 to 1914, peak 1750 to 1850	England	Around 5,000 parliamentary enclosure acts.	Enclosure by legislation. Productivity and welfare effects debated (Allen 1992).

Phase 6. Industrial and imperial

Span: c. 1780 to 1914

Date	Region	Development	Significance for the map
From c. 1780	Britain	Mechanised cotton, steam power, factory system; clock-time labour discipline (Thompson 1967).	Time becomes a directly measured input.
1833; 1847	Britain	Factory Act with paid inspectors; Ten Hours Act.	Balancing loop via regulation and organised labour.
1833; 1865; 1888	British Empire; USA; Brazil	Abolition of slavery. Britain compensates slaveholders, not the enslaved.	Moral movement succeeds; distribution of the settlement reveals whose losses counted.
1845 to 1852	Ireland	Famine: about one million deaths, mass emigration, food exports continue.	Market ideology and imperial policy compound a natural shock.
1844	Britain	Rochdale Pioneers cooperative.	Counter-system inside industrial capitalism.
1883 to 1889	Germany	Bismarck's health, accident and old-age insurance.	Welfare as protection and as a strategy to undercut socialism.
1884 to 1885	Africa	Berlin Conference formalises partition.	Territorialisation by treaty among outsiders.
1885 to 1908	Congo Free State	Rubber quotas enforced by violence under Leopold II; international reform campaign.	Near-pure extraction; also an early transnational human-rights campaign.
1788 onward	Australia	Dispossession under the doctrine later called terra nullius; frontier violence; child removal policies developing from the late 19th century.	Settler colonialism: enclosure of an entire continent.

Phase 7. Mass society and total war

Span: 1914 to 1945

Date	Region	Development	Significance for the map
1911; 1913 to 1914	USA	Taylor's scientific management; Ford's moving assembly line and five-dollar day.	Discipline of the body in motion, paid for with higher wages.
1914 to 1918; 1939 to 1945	Global	Total war: conscription, rationing, propaganda, state planning.	Mobilisation of entire populations; welfare states partly grow out of it.
1920s	USA	Public relations and mass advertising (Bernays, Propaganda, 1928).	Systematic steering of desire becomes an industry.
1907 onward	USA, Europe	Eugenic sterilisation laws; culminating in Nazi racial policy and genocide.	Science and state converge on control of reproduction.

Date	Region	Development	Significance for the map
1929 to 1933	USSR	Forced collectivisation; famine in Ukraine (1932 to 1933) and Kazakhstan with millions of deaths.	Non-capitalist extraction from peasants for industrialisation. Genocide classification debated.
1933 to 1939	USA	New Deal: social security, labour law, financial regulation.	Balancing loop after systemic crisis.

Phase 8. Postwar settlement and the Great Acceleration

Span: 1945 to 1979

Date	Region	Development	Significance for the map
1944 to 1948	Global	Bretton Woods; UN; Universal Declaration of Human Rights.	Rules-based order with rights language.
1945 to 1975	Asia, Africa	Decolonisation of most colonial territories.	Formal political control reversed; economic dependency often persists.
1950s onward	Nordic countries	Social-democratic model: universal services, strong unions, high trust.	Markets combined with extensive decommodification.
1959 to 1961	China	Great Leap Forward famine; estimates range roughly from 15 to 45 million deaths.	Planning ideology plus falsified legibility (inflated reports).
1960s	Mexico, South Asia	Green Revolution high-yield grains.	Large yield gains; debated ecological and distributional costs.
1962; 1970	USA	Silent Spring; Environmental Protection Agency.	Environmental balancing loops institutionalised.
1950 onward	Global	The "Great Acceleration" in resource use, emissions and population (Steffen et al. 2015).	Extraction scales faster than any earlier period.

Phase 9. Neoliberal globalisation

Span: 1979 to 2007

Date	Region	Development	Significance for the map
1970; 1976	USA	Friedman's shareholder-profit essay; agency theory (Jensen and Meckling).	Firm purpose redefined around shareholder returns.
1978	China	Market reforms begin.	Largest poverty reduction in history.
1979 to 1990s	UK, USA, then global	Privatisation, deregulation, financial liberalisation, weakened unions.	Financialisation; rising inequality in many rich countries.
1994 to 1995	Global	WTO; TRIPS agreement globalises intellectual property rules.	Knowledge enclosure through treaty.

Date	Region	Development	Significance for the map
1981 to 2019	Global	Share of humanity under the World Bank extreme-poverty line falls from over 40 per cent to under 10 per cent.	Genuine gains; the choice of poverty line is disputed (Hickel versus Roser).
1996; 1998	USA	OxyContin launched; tobacco Master Settlement Agreement.	Harm from marketing, and legal balancing, in parallel.
2000 to 2004	Global	Search advertising matures; behavioural data found to predict clicks (Zuboff's "behavioural surplus").	Behaviour becomes a direct raw material.

Phase 10. Platform and algorithmic era

Span: 2008 to 2026

Date	Region	Development	Significance for the map
2007 to 2008	Global	Smartphones; global financial crisis.	Continuous connectivity; public absorption of private financial risk.
2009 onward	Global	Social feeds ranked by engagement; like buttons; infinite scroll.	Attention optimised in real time at population scale.
2010s	Global	Gig platforms; algorithmic management; UK Supreme Court holds Uber drivers are workers (2021).	Discipline through software; legal pushback.
2015	Global	Paris Agreement; growth of carbon and biodiversity markets.	Environmental protection itself becomes a market.
2018	EU; global	GDPR; Cambridge Analytica revelations.	Data governance emerges as a balancing loop.
2020 to 2022	Global	COVID-19 pandemic; remote work; accelerated digital dependence.	Shock reveals both state capacity and dependency.
2022 onward	Global	Generative AI adopted at mass scale; EU AI Act (2024); disputes over training data and labour; rising data-centre energy use.	Cognition and creative output become inputs to new systems. Effects largely undetermined.
2020s	Rich countries mainly	Wearables, continuous biomarker tracking, GLP-1 drugs, consumer longevity markets.	The body becomes continuously legible.

Scope note: events after mid-2026 are outside this draft. Contemporary entries record developments and their contested status, not settled judgements.

3. WHEN EACH MECHANISM FIRST APPEARS

Tracing each of the 14 primitives to its earliest well-attested appearance is the timeline's most important output. It tests the Stage 1 hypothesis that extraction has moved progressively "inward".

Primitive	Earliest well attested	Major intensifications	What is new in the 21st century
1 Force	Before states (forager raiding, warfare).	Standing armies; gunpowder empires; industrial war.	Drones and autonomous systems; cyber operations.
2 Enclosure	Defended foraging territories; early village storage.	Colonial land seizure; parliamentary enclosure.	Enclosure of data, genetic sequences, orbital slots.
3 Tribute	Early states (c. 3300 BCE).	Imperial taxation; fiscal-military states.	Platform "taxes" on transactions within private markets.
4 Bound labour	Pre-agricultural (Pacific Northwest slavery).	Roman estates; Atlantic plantations; gulags.	Debt-bonded migrant labour; forced labour in supply chains.
5 Future claims	Mesopotamian interest-bearing loans (3rd millennium BCE).	Sovereign debt; mortgages; derivatives.	Buy-now-pay-later; income-share agreements.
6 Rent	Control of trade routes and water.	Chartered monopolies; landlordism; IP.	Platform intermediation; app-store fees.
7 Legibility	Uruk accounting tablets (c. 3300 BCE).	Qin standardisation; census; statistics.	Continuous, granular and automatic measurement of behaviour and biology.
8 Gatekeeping	Ritual and lineage office.	Chinese exams; professional licensing; citizenship.	Algorithmic credit and hiring scores.
9 Scarcity management	Palace control of prestige goods.	VOC spice monopolies; cartels.	Digital scarcity (limited editions, NFTs); software licensing.
10 Externalisation	Early salinisation and deforestation.	Industrial pollution; global emissions.	Externalities to attention, mental states and democratic discourse (contested).
11 Dependency	Farmers tied to grain and state irrigation.	Colonial monocultures; company towns.	Network effects and ecosystem lock-in.
12 Discipline	Monastic hours; corvée schedules.	Factory time; Taylorism.	Real-time algorithmic management.
13 Steering	Ritual, rhetoric, display.	Mass advertising and propaganda (1920s).	Individually personalised, adaptive persuasion at population scale.
14 Legitimation	Divine kingship.	Civilising mission; national interest; growth.	Convenience, personalisation, optimisation.

Finding

All 14 primitives were present, somewhere, by the end of the Bronze Age. Bodies, reproduction, belief, labour-time and fear of death were all objects of extraction in the earliest states. The strong "inward

movement" thesis, that extraction progressed from external resources toward the intimate, does not survive this test in its sequential form. Confidence: high.

What does change is visible in the right-hand column. Three properties intensify sharply: **granularity** (from counting households to measuring individual keystrokes and heartbeats), **continuity** (from periodic census to real-time streams), and **adaptivity** (from mass messages to persuasion that adjusts to each person). A defensible restatement: the intimate was always extractable, but it has only recently become **continuously legible and adaptively steerable at scale**. Confidence: moderate. This is the version Stage 3 will test in the body-to-data analysis.

4. MASTER STRUCTURAL MATRIX

Each case appears twice: once in the **Flows** half (what the system is and who gains or pays) and once in the **Dynamics** half (how it is sustained, challenged and remembered). Case numbers link the halves. Cells are compressed; each will expand to the full 23-layer coding as cases are used in Stages 3 and 4.

4A. Flows: what the system is and who gains or pays

#	Case	Need / original function	Resource and object	Primitives	Beneficiaries	Cost-bearers
1	Immediate-return foragers (Hadza, Ju/'hoansi; ethnographic)	Survival, sharing risk	Game, plants; social esteem	Minimal; levelling suppresses 8 and 13	Group as a whole	Would-be accumulators (constrained)
2	Pacific Northwest complex foragers (last c. 2,000+ yrs)	Managing seasonal abundance	Salmon stores, prestige goods, captives	1, 4, 8, 14	Chiefly lineages	Slaves; commoners
3	Aboriginal Australian land management incl. Budj Bim	Food, law, country	Land, fire regimes, eels, water	Minimal extraction; 7 via song and law	Kin groups across generations	Low; enforced through law and obligation
4	Çatalhöyük (c. 7100 to 5950 BCE)	Settled life, ritual	Houses, grain, cattle	Weak 2 (household storage)	Households broadly	Unclear
5	Uruk temple-palace economy (c. 3300 to 3000 BCE)	Coordinate irrigation, store surplus	Grain, labour, livestock	3, 7, 12, 14	Temple and palace elites	Rationed labourers, dependants
6	Old Babylonian debt and edicts (c. 1900 to 1600 BCE)	Credit through bad harvests	Grain, silver, land, people	5, 4, 14; plus balancing	Creditors; palace (stability)	Debtors and pledged family
7	Old Kingdom Egypt pyramid labour (c. 2600 to 2500 BCE)	Royal afterlife, cosmic order	Seasonal labour, grain, stone	3, 12, 14	King, priesthood, administrators	Conscripted crews (fed and housed)
8	Indus Valley cities (c. 2600 to 1900 BCE)	Urban life, trade	Water, standardised goods	7 (weights, bricks)	Broad urban population (apparently)	Unclear

#	Case	Need / original function	Resource and object	Primitives	Beneficiaries	Cost-bearers
9	Shang ritual state (c. 1600 to 1046 BCE)	Divination, ancestor favour, war	Bodies, bronze, grain	1, 3, 4, 14	King and lineage	Captives sacrificed; peasants
10	Athenian democracy and Laurion mines (5th c. BCE)	Self-government; revenue	Silver, slave labour	4, 3, 1	Citizens (male)	Enslaved miners; women; metics excluded
11	Roman slave estates and grain dole (c. 200 BCE to 200 CE)	Feed city, enrich elite	Land, captives, grain	1, 2, 3, 4	Senatorial landowners; citizens of Rome	Slaves; provincials
12	Qin to Han standardisation and salt/iron monopolies	Unify, fund state and armies	Measures, script, salt, iron	3, 6, 7, 12	State	Merchants; households paying higher prices
13	Maurya state and Ashoka (c. 322 to 185 BCE)	Govern vast realm	Land tax, trade, labour	3, 7, 14	Crown	Cultivators; conquered (Kalinga)
14	Teotihuacan (c. 100 BCE to 550 CE)	Urban cooperation	Housing, craft, trade	Unclear; limited 14 around rulers	Broad resident population (possibly)	Unclear
15	Islamic waqf endowments (from c. 8th c.)	Charity, public goods in perpetuity	Property income	Minimal; some 6	Recipients of services; founders' families	Later generations (rigidity)
16	Song China exams and paper money (10th to 13th c.)	Merit in office; ease trade	Office, credentials; currency	5, 7, 8	Educated gentry; state	Excluded classes; savers during overissue
17	European manorial serfdom (9th to 14th c.)	Security, cultivation	Land, labour days, fees	3, 4, 8, 14	Lords and Church	Serfs
18	Inca mit'a and storehouses (c. 1438 to 1533)	Provisioning, insurance, empire	Labour time, crops, textiles	3, 7, 12	State and elites; also recipients of stores	Conscripted labourers; resettled groups
19	Aztec Triple Alliance tribute (c. 1428 to 1521)	Imperial income; war captives	Goods, captives	1, 3, 7, 14	Tenochtitlan elites	Subject city-states; sacrificial victims
20	Mali and trans-Saharan trade (13th to 14th c.)	Trade in gold, salt	Routes, gold fields	6, 3	Rulers, merchants	Enslaved people traded on routes

#	Case	Need / original function	Resource and object	Primitives	Beneficiaries	Cost-bearers
21	Potosí mining mita (1570s to 1812)	Silver for empire	Silver; Indigenous labour	1, 3, 4, 14	Spanish crown, mine owners, Europe and China trade	Andean conscripts and communities
22	Atlantic slave trade and plantations (1501 to 1888)	Labour for export crops	Human beings; land; sugar, cotton	1, 2, 4, 6, 14	Traders, planters, European consumers, some African states	c. 12.5m embarked; c. 10.7m arrived; descendants
23	Dutch VOC (1602 to 1799)	Trade, returns to investors	Spices, routes, shares	1, 6, 9, 5	Shareholders; Dutch state	Bandanese; Javanese; enslaved people
24	English parliamentary enclosure (peak 1750 to 1850)	Agricultural improvement	Common land, access rights	2, 14	Landowners; possibly aggregate productivity	Cottagers; commoners
25	Tokugawa forest regulation (17th to 19th c.)	Timber, flood control	Forests, water	7, 8 (permits)	State, villages, future generations	Restricted users
26	Qing civilian granaries (18th c.)	Famine prevention	Grain, prices	7; B via redistribution	Rural poor; state stability	Taxpayers; corrupt diversion
27	British factory system (1780 to 1850)	Production, profit	Labour time, children's bodies, energy	10, 12, 6	Mill owners; consumers of cheap cloth	Workers, children, urban poor
28	Congo Free State (1885 to 1908)	Rubber, ivory revenue	Congolese bodies and labour	1, 3, 4, 14	Leopold II; concession firms	Congolese population
29	Settler colonialism in Australia (1788 onward)	Land for settlement and pastoralism	Land, water, children, culture	1, 2, 7, 14	Settlers; Crown; pastoral industry	Aboriginal and Torres Strait Islander peoples
30	Bismarckian social insurance (1883 to 1889)	Security against illness, accident, age	Contributions, public funds	7; B	Workers; state stability	Contributors; socialists undercut
31	Taylorism and Fordism (1911 onward)	Mass production	Motion, time, wages	12, 7	Firms; consumers; higher-paid workers	Workers' autonomy and craft skill

#	Case	Need / original function	Resource and object	Primitives	Beneficiaries	Cost-bearers
32	Soviet collectivisation (1929 to 1933)	Industrialisation, grain for cities	Peasant grain and land	1, 2, 3, 7	State; urban industry	Peasants; famine victims
33	Green Revolution (1960s onward)	Food security	Seeds, fertiliser, water	11, 10	Consumers; larger farmers; seed firms	Some smallholders; aquifers; soils
34	Mass advertising and PR (1920s onward)	Sell goods, shape opinion	Desire, attention	13, 14	Firms; media	Consumers; public discourse
35	Nordic social democracy (1950s onward)	Security, equality with markets	Taxes, labour, services	3, 7; strong B	Broad population	Higher earners; some firms
36	Shareholder primacy and financialisation (1970s onward)	Discipline managers; efficient capital	Corporate cash flow, debt	5, 6, 10	Shareholders; executives	Workers; long-term investment (contested)
37	Tobacco industry (20th c.)	Pleasure, habit	Nicotine dependence	11, 13, 10, 14	Firms; states (excise)	Smokers; health systems
38	Ultra-processed food system (1980s onward)	Cheap, convenient calories	Metabolism, appetite, attention	13, 10, 11	Firms; consumers (price, convenience)	Consumers' health; health systems
39	OxyContin marketing (1996 onward)	Pain relief	Pain, dependence	13, 11, 14	Manufacturer; owners	Patients; communities
40	Engagement-ranked social platforms (2009 onward)	Connection, information	Attention, behavioural data	6, 7, 11, 13	Platforms; advertisers; users (free service)	Public discourse; some users (contested)
41	Gig platforms (2010s onward)	Flexible work and service	Labour time, ratings	6, 7, 12	Platforms; customers; some workers (flexibility)	Workers bearing risk
42	Carbon offset markets (2000s onward)	Fund mitigation	Atmospheric sink claims	6, 7, 14	Brokers; buyers (reputation); some projects	Climate (if credits overstated); forest communities
43	Wearables, biomarkers and consumer longevity (2010s onward)	Health, performance, longevity	Biological data, bodies, anxiety	7, 13, 6	Firms; users gaining insight	Users (privacy); unclear

#	Case	Need / original function	Resource and object	Primitives	Beneficiaries	Cost-bearers
44	Generative AI foundation models (2020s)	Knowledge work, assistance	Text, images, code, labour, energy	6, 7, 13, 10	Developers; users; firms	Creators (training data, contested); data workers; grid

4B. Dynamics: how it is sustained, challenged and remembered

#	Case	Legitimation	Feedback loops	Band	Resistance and reform	Intent	Legacy / modern analogue	Evidence tier
1	Immediate-return foragers	Sharing ethic; ridicule of boasting	B: demand sharing; exit between camps	Coordination	Built in: exit and mockery	E	Mutual-aid norms; commons	High (description); Contested (as model of prehistory)
2	Pacific Northwest complex foragers	Rank, inheritance, potlatch prestige	R: surplus to feasting to rank; B: potlatch redistribution	Exchange / Domination	Colonial bans on potlatch (1884 to 1951) later reversed	E	Shows hierarchy without agriculture	High
3	Aboriginal Australian land management incl. Budj Bim	Law (the Dreaming) binds people to country	B: obligation to country; long time horizon	Coordination	Survived until colonisation	D (as stewardship)	Cultural burning revived in fire policy	High (fire, Budj Bim); Contested (scale of agriculture: Dark Emu debate)
4	Çatalhöyük	Ancestor and house ritual	B: apparent levelling	Coordination	Not applicable	E	Counter to farming-equals-hierarchy	Moderate
5	Uruk temple-palace economy	Gods own the land	R: records enable more tribute	Regulation / Extraction	Unknown	I	Writing as accounting; bureaucracy	High (texts); Contested (degree of coercion)
6	Old Babylonian debt and edicts	Royal justice	R: debt to bondage; B: mišarum cancellations	Exploitation (checked)	Flight; royal edicts	I (debt); D (edicts)	Jubilee tradition; bankruptcy law	High (existence); Moderate (enforcement)
7	Old Kingdom Egypt pyramid labour	Divine kingship; maat	R: monuments reinforce royal legitimacy	Regulation / Extraction	Not recorded	D	Correction: not chattel slaves	High (worker settlement evidence)

#	Case	Legitimation	Feedback loops	Band	Resistance and reform	Intent	Legacy / modern analogue	Evidence tier
8	Indus Valley cities	Unknown (script undeciphered)	B: unclear	Coordination (provisional)	Not applicable	E	Standardisation without visible monarchy	Contested
9	Shang ritual state	Ancestral and divine sanction	R: ritual legitimates war which supplies captives	Domination	Overthrown by Zhou	D	Mandate of Heaven idea (from successors)	High
10	Athenian democracy and Laurion mines	Freedom of citizens	R: silver funds navy funds empire	Coordination (citizens) / Domination (slaves)	Slave flight (e.g. 413 BCE)	D	Democracy built on exclusion	High
11	Roman slave estates and grain dole	Conquest as order; patronage	R: war to slaves to estates to wealth	Domination / Regulation	Revolts incl. Spartacus	D	Latifundia pattern; bread-and-circuses critique	High (institution); Contested (slave share of population)
12	Qin to Han standardisation and salt/iron monopolies	Order, harmony, frontier defence	R: legibility increases revenue	Regulation / Extraction	Recorded court debate (81 BCE)	D	State monopolies; standard units	High
13	Maurya state and Ashoka	Dharma; welfare works	B: moral self-restraint (claimed)	Regulation	Not recorded	D	Model of ethical kingship	Moderate (dating of Arthashastra contested)
14	Teotihuacan	Cosmic order	B: collective governance (hypothesised)	Coordination (provisional)	Late burning of elite district (c. 550)	E	Alternative urbanism	Contested
15	Islamic waqf endowments	Piety; charity	B: perpetual public funding; R: tax shelter	Coordination / Rent	Reformed and nationalised (19th to 20th c.)	D	Modern endowments and trusts	Moderate (Kuran critical)

#	Case	Legitimation	Feedback loops	Band	Resistance and reform	Intent	Legacy / modern analogue	Evidence tier
16	Song China exams and paper money	Confucian merit	R: exam success to wealth to tutors to exam success	Regulation / Gatekeeping	Critiques of exam formalism	D	Credential societies; fiat money	High
17	European manorial serfdom	Three orders; divine hierarchy	R: legal status passed by birth; B: custom limits dues	Exploitation	Peasant revolts; post-1348 bargaining	E / D	Tenancy law; "second serfdom" in east	High
18	Inca mit'a and storehouses	Reciprocity with the Sapa Inca	R: labour to stores to army; B: redistribution	Regulation / Extraction	Rebellions of subject groups	D	Converted by Spain into forced mining	Moderate
19	Aztec Triple Alliance tribute	Cosmic debt to gods	R: tribute funds war funds tribute	Domination	Alliance with Spanish (Tlaxcala)	D	Tribute records (Codex Mendoza)	High
20	Mali and trans-Saharan trade	Islamic and royal legitimacy	R: route control to wealth	Exchange / Rent	Not recorded	E	Route rent; commodity dependence	Moderate
21	Potosí mining mita	Evangelisation; royal right	R: silver to empire to enforcement	Domination	Flight; commutation payments; later abolition	D	Lower living standards persist in former mita districts (Dell 2010)	High
22	Atlantic slave trade and plantations	Race theory; commerce; Christianisation	R: profit to capital to more voyages	Domination	Revolts (Haiti 1791 to 1804); abolitionism	D	Racial inequality; reparations debate	High
23	Dutch VOC	Commerce; charter from state	R: monopoly profits fund force	Domination / Rent	Local resistance; eventual bankruptcy	D	Corporation with sovereign powers; shareholder form	High
24	English parliamentary enclosure	Improvement; efficiency	R: land to Parliament to enclosure acts	Extraction (contested)	Riots, petitions, poetry (Clare)	I	Template for enclosure debates	Moderate (process); Contested (welfare effects)

#	Case	Legitimation	Feedback loops	Band	Resistance and reform	Intent	Legacy / modern analogue	Evidence tier
25	Tokugawa forest regulation	Stewardship; order	B: long elite time horizon; village management	Regulation (authoritarian)	Not central	D	Case of stewardship without democracy	Moderate
26	Qing civilian granaries	Nourish the people (Confucian duty)	B: price stabilisation; eroded 19th c.	Coordination / Regulation	Decline with fiscal crisis	D	Public buffer stocks	Moderate to High
27	British factory system	Progress; political economy	R: profit to mechanisation; B: Factory Acts	Exploitation / Exchange	Luddites, Chartism, unions, inspectors	I	Labour law; working hours	High
28	Congo Free State	Civilising mission; anti-slavery rhetoric	R: quota to violence	Domination	Casement report; Congo Reform Association	D	Transnational human-rights campaigning	High (atrocities); Contested (death toll)
29	Settler colonialism in Australia	Terra nullius; protection; assimilation	R: land to wealth to settlement	Domination	Resistance wars; Mabo (1992); Bringing Them Home (1997); Apology (2008)	D	Native title; ongoing inequality	High
30	Bismarckian social insurance	Social peace	B: protection against market risk	Regulation	Adopted by opponents later	D	Welfare state template	High
31	Taylorism and Fordism	Efficiency; prosperity	R: productivity to wages to consumption	Exchange / Discipline	Strikes; unionisation (1930s)	D	Performance measurement; warehouse metrics	High
32	Soviet collectivisation	Socialism; historical necessity	R: quotas to requisition	Domination	Peasant resistance; later reforms	D	Shows extraction under non-capitalist regimes	High (famine); Contested (genocide classification)
33	Green Revolution	Feeding the world	R: yields to input dependence	Coordination / Dependency	Farmer movements; agroecology	U (costs)	Food abundance plus input dependence	Moderate (distribution debated)

#	Case	Legitimation	Feedback loops	Band	Resistance and reform	Intent	Legacy / modern analogue	Evidence tier
34	Mass advertising and PR	Consumer choice; prosperity	R: ad revenue to media reach	Exchange / Steering	Consumer protection; ad standards	D	Attention economy precursor	High
35	Nordic social democracy	Solidarity; equality	B: universal services; bargaining	Coordination / Regulation	Periodic reform; populist challenges	D	Counterexample to scale-equals-extraction	High (outcomes); Contested (transferability)
36	Shareholder primacy and financialisation	Efficiency; returns to owners	R: stock pay to buybacks to stock price	Extraction (contested)	Stakeholder and ESG movements	I	Buyback-driven firms	Moderate (effects contested)
37	Tobacco industry	Freedom, glamour	R: dependence to revenue to marketing; tax dependence	Exploitation	Litigation; 1998 settlement; WHO FCTC (2005)	I / D (internal documents)	Template for vice-industry regulation	High
38	Ultra-processed food system	Convenience; choice	R: palatability to sales to formulation	Exchange / Extraction	Taxes on sugar; labelling; school rules	I	Metabolic disease debate	Moderate
39	OxyContin marketing	Undertreated pain	R: sales to prescribing	Exploitation	Litigation; guilty pleas (2007, 2020)	D (per court record)	Pharmaceutical marketing reform	High
40	Engagement-ranked social platforms	Connection; free expression	R: attention to data to prediction to attention	Exchange / Extraction	GDPR; DSA; lawsuits	D (engagement); E (harms)	Platform governance	High (model); Contested (harms)
41	Gig platforms	Flexibility; independence	R: network effects to market power	Exchange / Extraction	Worker-status litigation; unions	D	Algorithmic management everywhere	High

#	Case	Legitimation	Feedback loops	Band	Resistance and reform	Intent	Legacy / modern analogue	Evidence tier
42	Carbon offset markets	Net zero; markets for good	R: demand for cheap offsets	Coordination / Extraction	Investigations; integrity standards	E / I	Environmental financialisation	Moderate (West et al. 2023 found many forest credits overstated)
43	Wearables, biomarkers and consumer longevity	Optimisation; self-care	R: data to personalisation to engagement	Coordination / Extraction	Health-data law	E	Continuous bodily legibility	Contested
44	Generative AI foundation models	Productivity; progress	R: users to data to capability to users	Undetermined	Copyright suits; AI Act	E / I	Undetermined	Speculative to Contested

5. WHAT THE MATRIX REVEALS

Reading down the columns rather than across the rows produces seven findings. Each is provisional until Stage 4 tries to break it.

5.1 Band distribution

Band present in coding	Pre-1500 cases (of 20)	Post-1500 cases (of 24)	Observation
Coordination or Regulation	14	7	Common in both periods; the pre-1500 figure is inflated by deliberately chosen counter-cases.
Exchange	2	6	Exchange-based systems become more common as markets spread.
Exploitation or Domination	7	9	Severe cases occur in every era and under every regime type.
Extraction, rent, dependency or undetermined	7	12	The clearest shift: modern cases more often sit in the ambiguous middle, mixing real benefit with diffuse cost.

Mixed cases are counted in every band they contain, so columns do not sum to the case totals. The sample was chosen for coverage, not randomly, so these are not frequencies in history.

5.2 Seven findings

- Domination does not track "progress".** The most extreme cases (Shang sacrifice, Atlantic slavery, the Congo Free State, Soviet collectivisation) are spread across 3,500 years and four different economic systems. What they share is the combination of force, legitimating ideology, and victims with no voice or exit. Confidence: high.
- Hierarchy and bound labour predate agriculture.** The Pacific Northwest case shows slavery among foragers with storable surplus. Agriculture is better understood as an amplifier than as an origin. Confidence: high.
- Existing institutions are repeatedly converted.** The Inca mit'a became the Potosí mita; Aboriginal fire management became "wasteland" in colonial law; the waqf became a tax shelter. Conversion of an institution built for one purpose into an extractive one is a more common pattern than invention from scratch. This matches your prompt's core question closely. Confidence: moderate to high.
- Balancing mechanisms are as old as extraction.** Debt cancellation (Babylon, Solon), granaries (Qing), potlatch redistribution, Factory Acts and welfare states recur across the record. The original grid's one-directional narrative omits roughly half of the historical dynamic. Confidence: high.
- The accountability hypothesis needs revision.** Stage 1 proposed that voice and exit for cost-bearers are decisive. Tokugawa forestry and Qing granaries show autocratic states constraining extraction effectively, because rulers with long time horizons internalised the costs (Olson's "stationary bandit", 1993). There are therefore at least two routes to restraint: **accountability to cost-bearers** and **internalisation by long-horizon controllers**. The second is fragile, since it depends on rulers' horizons and fails when fiscal pressure rises, as Qing granaries did in the 19th century. Confidence: moderate.

- 6. Legitimation shifts from sacred to secular to technical.** Divine order gives way to civilisation and national interest, then to growth and efficiency, then to convenience and optimisation. The newest justifications are the hardest to contest because they present themselves as neutral facts rather than values. Confidence: moderate. This is an interpretation, but it is well supported by the cases.
- 7. Contemporary cases are more ambiguous, not more benign.** Cases 40 to 44 all deliver real benefits to users while externalising costs that are hard to measure: attention, discourse, privacy, creative livelihoods. The evidence tier is lowest exactly where the stakes are newest. That is partly inevitable (less time has passed) and partly structural (the harms are diffuse and hard to see).

5.3 Anachronism checks triggered by the matrix

Modern term	Case where applied	Does the analogy hold?
Corporation	VOC (23)	Largely yes: permanent capital, tradable shares, limited liability. But it also held sovereign powers of war and treaty that modern firms lack.
Welfare	Roman grain dole (11); Qing granaries (26)	Partially. Roman distribution was a privilege of citizenship in one city, not a right based on need. Qing granaries were closer to modern public buffer stocks.
Meritocracy	Song exams (16)	Partially. Merit tested mastery of a canon, and preparation required wealth. The analogy to modern credentialism is strong.
Genocide	Collectivisation (32); colonial cases	A legal term from 1944 applied retrospectively. Scholars dispute its application case by case; the matrix records both the events and the dispute.
Capitalism	Song China; VOC	Commercialisation without wage-labour industrial production. Most historians reserve the term for later developments.

6. REVISED HYPOTHESES CARRIED INTO STAGE 3

The evidence has changed the framework in four places. These are the working hypotheses Stage 3 will test in the thematic maps.

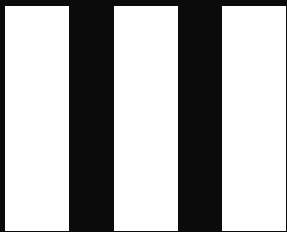
#	Stage 1 version	Stage 2 revision	Status
H1	Extraction has moved progressively inward, from land toward mind.	The intimate was always extractable. What is new is continuous, granular and adaptive legibility and steering of it at scale.	Strong version abandoned; weak version retained. Moderate.
H2	Accountability to cost-bearers is the decisive constraint.	Two routes to restraint: accountability, or internalisation by long-horizon controllers. The second is fragile.	Revised. Moderate.
H3	Systems built for legitimate purposes develop extractive incentives.	Confirmed, and specified: conversion of existing institutions is the most common route.	Strengthened. Moderate to high.
H4	Justification systems legitimate extraction.	Legitimation drifts from sacred to secular to technical; technical legitimation is hardest to contest.	New. Moderate (interpretive).
H5	(none)	Balancing loops are as old as extraction; the key variable is whether a balancing loop exists at the same scale as the extractive loop.	New. Moderate.

H5 matters most for the contemporary analysis. In the cases in this matrix where a balancing mechanism contained extraction, it operated at roughly the same scale as the extractive system: imperial debt edicts for an imperial debt system, national factory law for national industry. (Part IV adds a second route to restraint, long-horizon rulers who bear future costs themselves, which does not depend on scale matching.) The central structural question for platform, data and AI systems is whether their balancing mechanisms operate at a matching scale. On current evidence they mostly do not, though the EU's regulatory framework is an attempt at one.

What Stage 3 will do

Stage 3 (sections 6 to 12) builds the thematic maps on top of this matrix: recurring mechanisms, human wellbeing across 30 domains, environmental transformation, the body-to-data analysis testing H1, the progress paradox, the power architecture, and the feedback-loop architecture. Each draws its cases from the 44 above and adds new ones where a theme needs them.

P A R T



THEMATIC MAPS

Recurring mechanisms, wellbeing, environment, the body-to-data hypothesis, the progress paradox, power architecture and feedback loops.

6. RECURRING MECHANISMS OF EXTRACTION AND CONTROL

Stage 2 identified the 14 primitives. This section asks which **sequences** of primitives recur, since a pattern that appears across unrelated civilisations is stronger evidence of structure than any single case. Eight cycles are substantiated by at least three cases from different regions and periods.

Cycle	Sequence	Cases (Stage 2 numbers and others)	Tier
1. Enclosure cycle	Shared access, then exclusive claim, then rent, then concentration, then resistance, then partial restitution or entrenchment.	Parliamentary enclosure (24); Australian dispossession (29) and native title; TRIPS and knowledge; data and genetic sequences.	High
2. Institutional conversion	An institution built for one purpose is captured and redirected to extraction while keeping its name and form.	Inca mit'a into Potosí mita (18, 21); waqf into tax shelter (15); Roman annona into patronage; shareholder value (36).	Moderate to high
3. Debt cycle	Credit meets real need, then default, then dependency or bondage, then land concentration, then unrest, then cancellation or reform.	Babylon (6); Solon; Roman debt crises; 2008 and mortgage relief; sovereign debt relief (HIPC).	High
4. Legibility spiral	Measurement enables taxation or control, subjects evade or falsify, authority measures more finely.	Uruk (5); Qin (12); Great Leap false grain reports; modern tax-data matching; engagement metrics gamed by content farms.	High
5. Vice-revenue loop	A harmful good produces revenue, the state or firm becomes dependent on that revenue, regulation weakens.	British opium trade and Opium Wars (1839 to 1842; 1856 to 1860); tobacco (37); gambling and alcohol excise.	High for cases; Moderate for generality
6. Protection conversion	An authority offering protection from threats becomes a source of extraction in its own right (Tilly: state making as organised crime).	Early states; feudal lords (17); chartered companies (23); platforms protecting users from spam and fraud while taxing access.	Moderate (interpretive)
7. Stimulus escalation	Competition for scarce attention or appetite raises stimulus intensity; habituation raises the threshold; intensity rises again.	Advertising (34); ultra-processed food (38); engagement platforms (40).	Moderate; Contested at the level of harm
8. Reform decay	Crisis produces a balancing institution; memory of crisis fades; the institution is weakened, captured or dismantled; crisis recurs.	Qing granaries (26); New Deal financial rules and later deregulation; Factory Act enforcement cycles.	Moderate

The meta-pattern: the chokepoint cycle

The eight cycles share a deeper structure. Stated as a single proposition, and rated moderate confidence:

Every coordination solution creates a chokepoint. Chokepoints attract those who can extract from them. Extraction persists until a balancing force of matching scale emerges. Balancing forces decay as the crisis that produced them is forgotten.

Revision note: Part IV (sections 13.3 and 17) tests this proposition against open chokepoints such as internet protocols and public libraries and revises it. Concentration of flow is necessary but not sufficient; extraction also depends on switching costs, the incentives of whoever controls the chokepoint, and the scale of balancing forces.

Irrigation creates a water chokepoint; writing creates a records chokepoint; money creates a credit chokepoint; the platform creates an access chokepoint. None of these were built to extract. Each became extractable because coordination concentrates flows in one place. This is why the brief's central question, how legitimate systems develop extractive incentives, has a structural answer that does not require assuming bad intent: **concentration of flow is a side effect of successful coordination, and concentrated flows are extractable.**

The meta-pattern also predicts where to look for trouble in any new system: find the point through which flows now concentrate, ask who controls it, and ask whether any balancing force operates at the same scale.

7. HUMAN WELLBEING TRANSFORMATION

Wellbeing is treated here as its own system, not as healthcare. The brief proposes a sequence through which domains of life pass: **protected, regulated, institutionalised, monetised, commodified, optimised, measured, surveilled, commercialised**. The first task is to test whether that sequence holds.

7.1 The robust gains

Any honest wellbeing map begins with the largest documented changes in human history, which run strongly in the positive direction.

Indicator	Historical baseline	Recent level	Tier
Children dying before age 15	Around half, across historical societies (Volk and Atkinson 2013)	About 4.3 per cent globally by 2020 (Our World in Data)	High (baseline uncertain but consistently high)
Children dying before age 5	More than one third until at least 1800	About 3.8 per cent in 2019	High
Global life expectancy at birth	Around 32 in 1900	Around 73 in the early 2020s	High
Adult literacy	Around 12 per cent of the world in 1820	Over 85 per cent	High
Extreme poverty (World Bank line)	Over 40 per cent in early 1980s	Under 10 per cent before COVID-19	High on trend; Contested on the line

These gains came largely from the same systems the original grid indicts: states (sanitation, vaccination), science (germ theory, antibiotics), markets (food trade, falling prices) and mass education. **This is the single strongest piece of evidence against any reading of history as net degradation of human life.**

7.2 The domain map

Thirty domains are grouped into six clusters. For each, the table records how far along the brief's sequence the domain has moved in contemporary high-income societies, and the evidence on net direction.

Cluster	Domains	Furthest stage reached	Net evidence on direction
Body	Physical health, sleep, movement, nutrition, sexuality, reproduction	Measured and commercialised (wearables, fertility markets, diet industry)	Health and longevity strongly up; obesity nearly tripled worldwide since 1975 (WHO); physical activity down with sedentary work. Sleep: long-run decline often claimed, but a major review found little change in adult sleep duration since the 1960s (Youngstedt et al. 2016). Moderate.
Mind	Mental health, emotional wellbeing, attention, contemplation, creativity	Surveilled and optimised (engagement metrics; mood tracking; attention markets)	Contested. Rising reported adolescent distress in several countries since about 2012; causation disputed. Measurement changes (more diagnosis, less stigma) complicate trends.

Cluster	Domains	Furthest stage reached	Net evidence on direction
Relationship	Social connection, community, family, belonging, childhood	Monetised and mediated (dating platforms; social media; paid care)	Mixed. Time spent with friends declined in some surveys; "loneliness epidemic" framing is contested on long-run data. Childhood: far safer, far less unsupervised play. Moderate.
Meaning	Meaning, purpose, spirituality, identity	Commercialised (wellness, self-help, identity branding)	Religious affiliation declining in many rich countries; effect on meaning is not directly measured. Speculative to Contested.
Agency	Autonomy, agency, work, status, security	Measured and surveilled (performance metrics; algorithmic management; credit scoring)	Formal freedoms far wider than historical norms; felt control at work contested; status competition intensified by visibility (moderate).
Renewal	Rest, play, leisure, nature, education	Commodified (leisure industries, paid access to nature, credentials)	Working hours in rich countries roughly halved since the late 19th century; leisure increasingly screen-based; contact with nature declining in urban populations. Moderate.

7.3 Does the sequence hold?

Partially. Three corrections are needed.

- 1. The sequence is not linear.** Many domains were regulated long before they were protected in any modern sense (sexuality and reproduction under kinship and religious law), and some were commodified early and later decommodified (healthcare and education under welfare states). The brief's sequence is better read as a set of possible states than a path.
- 2. Measurement often precedes and enables protection.** Child mortality fell partly because it was counted. Workplace deaths fell partly because they were reported. Legibility is not only a precursor to extraction; it is equally a precursor to rescue. The Stage 1 criteria (who holds the measure, and who can act on it) decide which.
- 3. The genuinely new stage is optimisation.** Previous systems mostly regulated or priced wellbeing. The newest systems set targets for it (steps, sleep scores, productivity, engagement) and adjust behaviour in real time. This is where proxy capture (Stage 1, section 3.7) becomes a direct wellbeing risk: the measure can be optimised while the need it tracks is not met.

7.4 The wellbeing paradox

Systems intended to improve wellbeing produce dependency, stress or extraction through five identifiable routes. Each route has well-attested cases.

Route	Mechanism	Illustrations	Tier
Medicalisation	Ordinary life difficulties redefined as conditions requiring professional or pharmaceutical management.	Illich (1976) as the classic critique; debates over diagnostic expansion.	Contested
Proxy capture	A measure replaces the goal.	Step counts for fitness; test scores for learning; engagement for connection.	Moderate

Route	Mechanism	Illustrations	Tier
Positional escalation	Improvements that confer status are competed away, leaving everyone running harder.	Credential inflation; cosmetic and performance enhancement.	Moderate
Dependency transfer	Capacities once held by individuals or communities are moved into paid services.	Care, cooking, childcare, conflict resolution, navigation.	Moderate (interpretive where called loss)
Selective benefit	Gains accrue to those already advantaged; costs fall on others.	US "deaths of despair" among less-educated adults (Case and Deaton 2020).	High for US; Contested elsewhere

7.5 Education and human development (Part X)

Education is the clearest dual system in the whole map: simultaneously the largest liberating institution in history and a principal mechanism of social sorting.

Function	Evidence	Tier
Liberation	Literacy from about 12 to over 85 per cent of adults since 1820; literacy is strongly associated with health, income and political participation.	High
Social reproduction	Schooling outcomes track parental class strongly (Bowles and Gintis 1976; later mobility research).	High for correlation; Contested on mechanism
Credentialisation	Qualifications required for jobs rise faster than skill requirements (Collins 1979). Song China exams (Stage 2, case 16) show the pattern is ancient.	Moderate
Debt financing	US student debt exceeds US\$1.6 trillion; similar income-contingent systems in Australia and the UK spread cost across working life.	High
Behavioural standardisation	The popular "factory model school designed to produce workers" narrative is historically oversimplified; mass schooling had religious, nationalist and civic motives as much as industrial ones.	Contested (the popular narrative is weaker than often claimed)

When human potential becomes an industry, the pattern that follows is positional escalation: once credentials are required for entry, their value lies partly in scarcity, so the system rewards accumulation of credentials rather than development of capacity. AI-mediated education sharpens the question, since it can either personalise learning for everyone or collapse the link between credentials and demonstrated skill. Its trajectory is undetermined.

7.6 Time as a commodity (Part XI)

The brief's sequence (natural rhythms, seasonal labour, religious time, mechanical clocks, factory time, wage labour, productivity measurement, digital availability) is well supported in its broad outline for Europe (Thompson 1967), with two important corrections.

- **Time was sold long before clocks.** Corvée labour in Egypt and the Inca mit'a were measured in days of service. What the clock added was **precision and synchronisation**, not the principle.
- **Measured working time fell.** Annual working hours in rich countries roughly halved from the late 19th century to today. The modern experience of time pressure (Rosa 2013) comes less from longer paid hours than from **availability**: work, commerce and social obligation extending into every waking hour through connected devices (Crary 2013).

The relationship the brief asks about, **time, productivity, income, status, identity, wellbeing**, holds as a chain in contemporary high-income economies, and its tightest link is between time and identity: when paid output becomes the main measure of personal worth, unmeasured time (rest, play, contemplation) is felt as waste. That is an interpretive claim, rated speculative to moderate, but it connects directly to the proxy-capture mechanism.

8. ENVIRONMENTAL TRANSFORMATION

The brief proposes a sequence of environmental frontiers: land, forests, rivers, oceans, animals, agriculture, minerals, fossil fuels, atmosphere, biodiversity, ecosystems, climate, genetic resources. The sequence holds better here than anywhere else in the map, because each frontier was genuinely inaccessible until a technology opened it.

Frontier	Opened by	Enclosure or commodification	Balancing response	Status
Land and soil	Farming; ploughs; irrigation	Property; enclosure; colonial seizure	Soil conservation; land reform; native title	Degradation widespread
Forests	Iron tools; later chainsaws	Timber concessions; clearing for farming	Tokugawa regulation; protected areas	Tropical loss continues
Rivers and freshwater	Dams; pumps; canals	Water rights; water markets (Australia's Murray-Darling)	Environmental flows	Boundary transgressed
Oceans and fish	Steam trawlers; sonar	Quotas, exclusive economic zones	Marine reserves; fishery management	Mixed: some stocks recover
Animals	Domestication; industrial farming	Livestock as commodity; wildlife trade	Welfare law; CITES	Wild vertebrate populations declining
Minerals and fossil fuels	Mining; steam; drilling	Concessions; state oil companies	Royalties; resource funds (Norway)	Transition under way, incomplete
Atmosphere	Combustion at scale	Free dumping, then emissions permits	Montreal Protocol; carbon pricing	Ozone recovering; climate transgressed
Biodiversity and ecosystems	Global trade; land conversion	Biodiversity credits; ecosystem-service payments	Protected areas; Kunming-Montreal framework (2022)	Boundary transgressed
Genetic resources	Sequencing; bioprospecting	Patents on sequences and traits; digital sequence data	Nagoya Protocol (benefit sharing)	Governance contested

8.1 Where the planet stands in 2026

The **Planetary Health Check 2026** (Potsdam Institute for Climate Impact Research) assesses seven of nine planetary boundaries as transgressed: climate change, biosphere integrity, biogeochemical flows, novel entities, land system change, freshwater change and ocean acidification. The first four sit in the high-risk zone. Ocean acidification was first assessed as transgressed in the 2025 check. Only aerosol loading and stratospheric ozone remain within safe limits. Confidence: high on the measurements; the boundary positions themselves involve expert judgement and are debated at the margins.

The two boundaries still within safe limits are both cases of **successful balancing loops at matching scale**: the Montreal Protocol (1987) for ozone, and air-quality regulation for aerosols in many regions. They are the best direct evidence for Stage 2's hypothesis H5.

8.2 The paradox: protection as an economic activity

Environmental destruction and environmental protection can both become markets. Four patterns are documented.

1. **Offset leakage.** Credits sold for avoided deforestation have often overstated their impact (West et al. 2023). Protection becomes a tradable claim whose value depends on counterfactuals that are hard to verify. Moderate.
2. **Fortress conservation.** National parks from Yellowstone (1872) onward frequently removed Indigenous and local residents (Dowie 2009). Protection itself became an enclosure. High for many cases.
3. **Cleanup economies.** Pollution creates remediation industries whose revenue depends on continued pollution. Moderate as a structural incentive; weak as evidence of deliberate perpetuation.
4. **Successful market design.** The US sulphur dioxide cap-and-trade programme (1990) cut acid rain emissions substantially at lower cost than expected. Markets can protect when the cap is real and enforced. High.

The dividing line, consistent with the Stage 1 criteria, is **whether the market sits inside a binding limit set by an accountable authority**. Markets under a real cap internalise costs; markets substituting for a cap tend to trade in claims.

8.3 Counterexamples to environmental extraction

- **Indigenous-managed lands:** the IPBES Global Assessment (2019) found nature is generally declining less rapidly on lands managed by Indigenous peoples and local communities. High.
- **Ostrom's commons:** Swiss alpine pastures, Japanese village forests and Spanish huerta irrigation sustained for centuries (Ostrom 1990). High.
- **Tokugawa forestry and Qing granaries** (Stage 2): authoritarian stewardship, effective while ruling time horizons stayed long. Moderate.
- **Montreal Protocol:** a global balancing loop that worked. High.

9. BODY, BEHAVIOUR, ATTENTION, DATA

This section tests hypothesis H1 directly. Stage 2 found that the strong version fails: bodies, reproduction, belief and fear of death were objects of extraction in the earliest states. The weak version proposed that the intimate has only recently become **continuously legible and adaptively steerable at scale**. That claim is tested here against four measurable properties.

9.1 Four properties of legibility

Property	Definition
Granularity	The smallest unit measured: household, individual, action, physiological signal.
Continuity	How often measurement happens: once a generation, annually, daily, constantly.
Adaptivity	Whether measurement feeds back to change what the subject experiences, and how quickly.
Prediction	Whether the record is used to forecast and trade on the subject's future behaviour.

9.2 The evidence across history

System	Object	Granularity	Continuity	Adaptivity	Prediction
Uruk ration lists (c. 3300 BCE)	Labour, grain	Worker group	Periodic	None	None
Roman and Han census	Households, land	Household	Years	None	Tax yield forecasts
Church confession (medieval Europe)	Conscience, sexuality	Individual inner life	Annual (after 1215)	Human, slow	None
Factory clock (c. 1800)	Labour time	Individual	Daily	Supervisor, slow	None
Taylorism (1911)	Movements	Motion	During study	Redesign, slow	Output forecasting
Credit scoring (from 1989 FICO)	Financial behaviour	Individual	Monthly	Terms change	Yes
Engagement platforms (2009 onward)	Attention, preference	Action (click, pause)	Continuous	Real time, automatic	Yes, traded
Wearables and biomarkers (2015 onward)	Physiology	Signal (heartbeat, glucose)	Continuous	Real time (nudges)	Emerging (insurance, health)

9.3 Findings

- Intimacy is not new; closed loops are.** Medieval confession reached further into inner life than any modern data system, at the level of individual conscience. What no earlier system had was **automatic, real-time feedback**: measurement that changes what the person sees next without any human

decision in between. Call this **closed-loop legibility**. It is the defensible core of H1. Confidence: moderate to high.

2. **Prediction markets in behaviour are new.** Selling forecasts of an individual's future behaviour to third parties began with credit scoring and became central with advertising platforms (Zuboff's behavioural futures). High for the existence of these markets.
3. **A falsifying complication: prediction may be weaker than it is sold as.** Several studies find that targeted advertising's incremental effect is modest, and Hwang (2020) argues much online advertising value rests on unverified claims. If so, part of what is "extracted" is advertisers' money on the strength of belief in prediction, rather than behaviour itself. This does not remove the attention and privacy costs, but it tempers claims about mind control. Contested.
4. **The body re-enters as data.** Earlier regimes extracted muscle (slavery, corvée, factory). The newest extract signal (sleep, heart rate, glucose). The body has not been left behind by the "inward movement"; it has become a data source.

9.4 The brief's question: mind and body

"If earlier economic systems extracted labour from the body, are contemporary systems increasingly capable of extracting behavioural value from the mind?" Answer from the evidence: yes in a qualified form. Contemporary systems can capture attention and convert it to revenue at unprecedented scale and with automatic feedback, which is new. Whether they reliably steer behaviour beyond what persuasion always achieved is contested. And earlier systems (religious, propaganda, advertising) already extracted from minds, so this is an intensification, not a first.

The conceptual shift is well captured by Deleuze (1992): from societies of **discipline**, which enclose bodies in institutions (factory, school, prison), toward societies of **control**, which modulate behaviour continuously in open space. The matrix supports the shift as a trend, not a replacement: discipline still operates in warehouses and gig work, now intensified by software.

9.5 The body as an economic system (Part IX)

The brief asks: **at what point does improving the human body become indistinguishable from optimising it for economic productivity?** There is no single threshold, but four tests identify where an improvement practice has crossed into optimisation for someone else's purposes.

Test	Improvement for the person	Optimisation for a system
Who sets the target?	The person, by their own values.	An employer, insurer or platform.
Who owns the data?	The person, with meaningful control.	A third party that can sell or act on it.
Can they stop?	Stopping carries no penalty.	Stopping costs pay, premiums or access.
Where do gains go?	To the person's health and life.	Mainly to output, premiums or engagement.

The same practice (a wearable, a stretching protocol, a nutrition plan) can sit on either side depending only on these four answers. That is the useful conclusion: the line is drawn by **control and destination of gains**, not by the technology or the practice itself.

10. THE PROGRESS PARADOX

Thirteen developments, each assessed for genuine benefit and for the new dependency or extraction it created. Neither column cancels the other.

Development	Genuine benefit	New dependency or extraction	Who bore costs	Balancing response
Agriculture	Population growth; storable food; cities	Disease; labour intensity; taxable surplus	Early farmers; later subjects of grain states	Flight; abandonment of states
Writing	Memory, law, science, literature	Records for tax and debt; literate elite	Illiterate majority	Mass literacy (much later)
Money	Exchange across strangers	Debt; monetised obligation	Debtors	Debt cancellation; bankruptcy law
Markets	Specialisation; falling prices	Monopoly; price shocks; commodified land and labour	Those without assets	Competition law; welfare states
Industrialisation	Escape from subsistence	Factory discipline; pollution; urban disease	Early workers; children; ecosystems	Labour law; public health
Electricity	Light, refrigeration, medicine, communication	Grid dependency; fossil emissions	Future generations; climate-exposed	Renewables; efficiency
Medicine	Longevity; child survival	Cost dependency; medicalisation; antibiotic resistance	Uninsured; future patients	Universal coverage; stewardship
Transportation	Mobility, trade, contact	Car dependence; sprawl; emissions	Non-drivers; urban poor; climate	Transit; urban planning
Mass education	Literacy; opportunity	Credential inflation; debt	Late entrants; indebted graduates	Free tuition models; income-contingent loans
Democracy	Accountability; rights	Campaign finance dependency; polarisation	Weakly organised interests	Finance rules; civic reform
Computing	Productivity; science	Automation of tasks; surveillance capacity	Displaced workers; the surveilled	Data protection
The internet	Access to knowledge; connection	Platform concentration; attention capture	Users' attention; journalism	GDPR; DSA; competition cases
Artificial intelligence	Assistance; discovery (undetermined scale)	Concentration; displacement; energy (undetermined)	Contested	AI Act; emerging governance

10.1 Five kinds of paradox

Reading down the table shows the paradoxes are not all of one kind. Distinguishing them matters because each calls for a different response.

Type	Structure	Example
Distributional	Aggregate gain, concentrated loss.	Enclosure: more output, dispossessed commoners.
Temporal	Gains now, costs later.	Fossil energy; antibiotics.
Dependency	Benefit removes the capacity to live without it.	Grids, cars, platforms.
Displacement	Cost moved in space or onto non-humans.	E-waste export; ecological sinks.
Proxy	The measure of benefit replaces the benefit.	GDP for welfare; engagement for connection.

Finding: benefits and costs of progress run on different clocks and land on different people. That is why the same development can be honestly described as liberating and as extractive: each description is accurate for a different party at a different time. Confidence: high for the pattern.

11. POWER ARCHITECTURE

How wealth, institutions, knowledge, technology and ideology reinforce one another. The key analytical tool is **conversion**: power held in one form is exchanged for power in another (Bourdieu 1986 on the conversion of capitals). Systems become entrenched when conversion is easy in both directions.

11.1 The conversion matrix

From \ To	Economic	Political	Epistemic	Ideological	Technological
Economic	(compounding, rent)	Lobbying; campaign finance; donations to rulers	Funding research; owning media	Advertising; philanthropy	Buying infrastructure
Political	Licences; monopolies; contracts	(incumbency)	Setting curricula; censorship	State ideology	Procurement; standards
Epistemic	Expertise fees; patents	Advisory roles; technocracy	(credentials)	Scientific authority as legitimacy	Invention
Ideological	Donations; tithes	Legitimacy; mobilisation	Defining acceptable truth	(orthodoxy)	Adoption or rejection
Technological	Platform rent	Surveillance capacity; campaign tools	Control of information channels	Algorithmic amplification	(network effects)

Historical shift: in agrarian empires the dominant conversion ran from military and religious power into land. In industrial societies it ran from economic power into political influence. In the platform era a new channel appears: **technological power converts directly into epistemic and ideological power**, because the same infrastructure carries commerce, news and political speech. Confidence: moderate.

11.2 The evolution of ownership (Part XIV)

The brief proposes a sequence from commons through private, colonial, corporate, intellectual, financial, data and platform ownership to biological information. Tested step by step:

Step	Holds?	Correction
Commons to communal ownership	Partly	Communal and private claims coexisted from the start; foragers had personal property and territorial rights.
Communal to household to private	Partly	Household ownership is very old; full alienable private land is recent and regionally specific (Roman law; English common law).
Feudal and colonial property	Yes	Layered rights (lord, tenant, Church) then colonial seizure by legal fiction.
Corporate ownership	Yes	VOC and later general incorporation laws (19th century).

Step	Holds?	Correction
Intellectual property	Yes, early	Venetian patent statute (1474); Statute of Anne copyright (1710); global via TRIPS (1994).
Financial ownership	Yes	Ownership of claims on assets rather than assets.
Data and platform ownership	Contested	Much data is not legally "owned" at all; control is exercised through access and contract, not property title.
Biological information	Partly	US Supreme Court (Myriad, 2013) held naturally occurring gene sequences cannot be patented; engineered sequences can.

Finding: the brief's philosophical progression (what belongs to the community, to the individual, what can be owned, monetised, financialised, predicted) is a valid description of expanding **possibilities**, not a historical sequence every society followed. Its most important correction is the last step: contemporary control increasingly works **without ownership**, through access, contract and infrastructure. That is why property law alone struggles to govern it.

11.3 How liberating ideas become institutions of control (Part XIII)

Weber's **routinisation of charisma** describes the recurring path: a movement founded on liberation or revelation must build institutions to survive its founders, and those institutions acquire their own interests.

Idea or movement	Liberating phase	Institutionalised phase	Tier
Early Christianity	Persecuted minority; care for the poor	State religion of Rome (380 CE); later landholding, tithes, inquisition	High
Buddhism in China	Renunciation; monastic community	Monasteries as major landholders; Tang suppression (845 CE) partly fiscal	High
Liberalism	Freedom from absolute rule	Also used to defend property in slaves and colonial "improvement"	High
Marxism	Emancipation of labour	Party-state control; forced collectivisation	High
Environmentalism	Protecting nature from extraction	Offset markets; fortress conservation	Moderate
The open internet	Decentralised, free exchange	Platform concentration	High
Religion as resistance	Abolitionism; civil rights; liberation theology	Often remained resistant; not all ideas routinise into control	High

The last row is essential. Religion, and ideas generally, are not only legitimation for power; they are also the most common source of the moral language used to resist it. The map therefore codes ideology as bidirectional.

12. FEEDBACK-LOOP ARCHITECTURE

12.1 Reinforcing loops

Loop	Structure	Historical and current examples
R1 Wealth to rules	Wealth, then influence, then favourable rules, then more wealth.	Roman senatorial estates; modern lobbying.
R2 Extraction capacity	Extraction, then wealth, then infrastructure, then more extraction.	VOC; oil states; mining.
R3 Attention	Attention, then data, then prediction, then better capture of attention.	Engagement platforms.
R4 Legitimacy	Power funds ideology; ideology secures consent; consent stabilises power.	Divine kingship; state media.
R5 Network effects	Users attract users; exit becomes costly.	Telephone networks; platforms; payment systems.
R6 Credentials	Advantage buys credentials, which confer advantage.	Song exams; elite universities.
R7 Debt	Debt service consumes surplus, requiring more debt.	Babylonian bondage; household and sovereign debt spirals.
R8 Fiscal dependence	Revenue from harm creates reluctance to regulate harm.	Opium; tobacco; gambling.

12.2 Balancing loops

Loop	Structure	Examples
B1 Exit	Extraction drives people away, reducing the base.	Flight from early states; migration; switching providers.
B2 Voice	Cost-bearers change the rules.	Unions; elections; Factory Acts.
B3 Jubilee	Periodic reset of accumulated claims.	Mišarum edicts; Solon; bankruptcy law.
B4 Competition	Rivals undercut excessive rents.	Where entry is open.
B5 Scarcity feedback	Depletion raises prices, reducing use.	Fisheries (sometimes too late).
B6 Moral backlash	Visible cruelty provokes reform movements.	Abolition; Congo reform; tobacco.
B7 Collapse	Overextension triggers breakdown and simplification (Tainter 1988).	Late Bronze Age; Western Roman Empire.
B8 Long-horizon stewardship	Controllers internalise future costs.	Tokugawa forests; Qing granaries; sovereign wealth funds.

12.3 Modifiers

Thresholds and tipping points (ecological collapse, bank runs); **lock-in** and **path dependence** (Arthur 1989; Pierson 2004), where early choices constrain later ones; **network effects**, which convert convenience into dependency; and **institutional inertia**, which preserves both harmful and protective arrangements long after their origins are forgotten. Balancing loops are typically slower than reinforcing ones and weaken over time (reform decay, section 6), which explains why extraction tends to reappear without anyone planning it.

12.4 Power without conspiracy (Part XVIII)

Can a system produce exploitative outcomes without anyone designing it to exploit? The evidence says yes, through four distinct routes, each well attested.

Route	How it works	Example	Tier
Selection	Organisations that externalise costs outcompete those that do not; the market selects for extraction without anyone choosing it.	Firms under weak pollution rules; engagement-maximising apps.	Moderate to high
Competitive traps	Each actor would prefer restraint but cannot afford it alone.	Arms races; fishing races; attention competition (Hardin 1968; Olson 1965).	High
Diffused responsibility	Harm emerges from many small, locally reasonable decisions.	Supply-chain forced labour; aggregate emissions.	High
Proxy optimisation	Actors optimise measurable targets that drift from real goals.	Engagement metrics; quarterly earnings (Goodhart; Campbell).	High

This finding matters for the whole project. It means the brief's question can be answered without conspiracy, and that **intent is often the wrong place to look for causes**. Designed extraction exists (Stage 2 codes 18 cases as D), but emergent and incentive-driven extraction is at least as common and harder to see, because no one is responsible for it. The corresponding policy lesson is structural: change the selection environment, not only the actors.

13. HYPOTHESIS LEDGER AFTER STAGE 3

#	Hypothesis	Status after Stage 3	Confidence
H1	Inward movement of extraction	Reformulated as closed-loop legibility : real-time, automatic feedback from measurement to experience is the genuinely new element. Intimacy itself is not new.	Moderate to high
H2	Routes to restraint	Confirmed two routes (accountability; long-horizon internalisation) and added an ecological example (Montreal Protocol) and a market one (SO ₂ cap-and-trade).	Moderate
H3	Institutional conversion	Confirmed across eight cycles; the chokepoint cycle provides the mechanism.	Moderate to high
H4	Legitimation drift toward the technical	Supported by ownership and ideas analysis; control increasingly works through infrastructure rather than property or doctrine.	Moderate
H5	Scale matching of balancing loops	Strongly supported by planetary boundaries: the two safe boundaries are the two with global balancing mechanisms.	Moderate to high
H6 (new)	The chokepoint cycle	Every coordination solution concentrates flows; concentrated flows are extractable. Candidate meta-pattern for the final model.	Moderate
H7 (new)	Selection for extraction	In competitive environments without binding limits, extraction is selected for without design.	Moderate to high

Handover to Stage 4

Stage 4 is the adversarial stage (sections 13 to 16 of the deliverable): counterexamples, the strongest case against the thesis, the evidence that survives, and at least 20 blind spots. Its job is to attack H1 to H7, including the chokepoint cycle, which is now the framework's most ambitious claim and therefore its most important target.

PART

IV

THE ADVERSARIAL STAGE

Counterexamples, the strongest argument against the thesis, the evidence that survives, blind spots, and an attack on the framework's own hypotheses.

0. THE THESIS UNDER ATTACK

The brief's central proposition, stated as precisely as possible so that it can be falsified:

"Human civilisation has progressively transformed more and more aspects of existence into objects of extraction, control, commodification and optimisation."

The proposition contains four separable claims. They can fail independently, and the adversarial work is sharper when they are kept apart.

Claim	Content	What would falsify it
C1 Scope	The range of things that can be extracted from or commodified has expanded.	Evidence that major domains were removed from markets or control at a rate matching new additions.
C2 Intensity	The share of human output or life taken by extraction has increased.	Evidence that extraction rates (share of surplus taken by coercion or rent) have fallen.
C3 Direction	The change is progressive: cumulative and directional over history.	Evidence of cycles, reversals or stable levels across long periods.
C4 Mechanism	The change is driven by civilisation itself (scale, complexity, technology), not by contingent choices.	Societies at comparable scale and technology with very different extraction outcomes.

Adversarial rule for this stage: every objection is stated in its strongest form, including objections to positions this project has already adopted.

13. COUNTEREXAMPLES

Organised by which claim each case threatens.

13.1 Decommodification: the most important counterexample

The single strongest challenge to C1 is that **the most intimate commodity of all, the human person, has been progressively removed from markets**. Many things once routinely bought and sold are now prohibited from sale across most of the world.

Formerly traded	Removed from market	Tier
Human beings (chattel slavery)	Abolition across the 19th century; illegal everywhere (Mauritania last formally, 1981). Forced labour persists illegally at large scale.	High
Wives and daughters (coverture, bride sale)	Married women's property acts; legal personhood of women.	High
Children's labour	Child labour law; compulsory schooling.	High (in most rich countries); Moderate globally
Public offices	Venality of office abolished (France 1789 and elsewhere).	High
Salvation (indulgences)	Sale forbidden by the Council of Trent (1562 to 1563).	High
Votes	Secret ballot and vote-buying laws.	High
Organs	Sale prohibited almost everywhere (Iran is the notable exception for kidneys).	High
Blood (in many systems)	Voluntary donation systems; Titmuss (1970) argued gift systems outperform markets.	Moderate

Implication: C1 is not simply true. The boundary of the market has moved in both directions: persons and sacred goods moved out, while nature, information, attention and behaviour moved in. A more accurate statement is that **the commodity frontier has shifted from persons toward what persons produce, emit and reveal**. Confidence: high.

13.2 Scale without proportional extraction (threatens C4)

Case	What it shows	Limitations	Tier
Nordic social democracies	High scale, technology and prosperity with extensive decommodification of health, education and security.	Small populations; oil in Norway; historic homogeneity (contested as explanation); dependence on global supply chains.	High (outcomes)
Botswana after 1966	Diamond wealth managed without the typical resource curse (Acemoglu, Johnson and Robinson 2003).	Inequality remains high; single-commodity dependence.	Moderate
Costa Rica	Army abolished (1948); high life expectancy and forest recovery at middle income.	Tourism and export dependence.	Moderate to high

Case	What it shows	Limitations	Tier
Kerala	High literacy and life expectancy at low income through public provision (Drèze and Sen).	Remittance dependence; limited industrial growth.	Moderate
Mondragon cooperatives (1956 onward)	Worker-owned industrial federation employing tens of thousands.	Has faced pressure to use non-member labour abroad.	Moderate
Haudenosaunee Confederacy	Multi-nation federation with checks on authority, including clan mothers' power to remove leaders.	Written record largely colonial; later idealisation.	Moderate

13.3 Chokepoints governed as commons (threatens H6)

If every coordination solution creates an extractable chokepoint, open chokepoints that stay open are direct counterexamples.

Case	Chokepoint	Why it has not become extractive	Tier
Internet protocols (TCP/IP, HTTP)	Every packet on the internet passes through them.	Open standards governed by multi-stakeholder bodies; no owner to charge rent.	High
Wikipedia	Most-consulted reference work.	Non-profit; volunteer governance; no advertising.	High
Linux and open-source software	Runs most servers and phones.	Licences prevent enclosure of the code itself.	High (though firms extract value on top)
Public libraries	Access to recorded knowledge.	Publicly funded, free at point of use.	High
Weights and measures	Every trade depends on them.	Public standards bodies.	High
Ostrom's irrigation commons	Water distribution.	Locally governed with graduated sanctions.	High

Implication: the chokepoint cycle is wrong as stated. Concentration of flow is **necessary but not sufficient** for extraction. What matters is **who governs the chokepoint** and **how costly it is to switch away**. Section 17 revises H6 accordingly.

13.4 Reversals and cycles (threatens C3)

- **Inequality has cycled, not risen steadily.** Scheidel (2017) shows that across 10,000 years, inequality was reduced mainly by mass-mobilisation war, revolution, state collapse and pandemic. Between these shocks it rose. That is a ratchet broken by catastrophes, not a smooth progression.
- **State formation reversed repeatedly.** Early states often collapsed; populations moved out of state control (Scott 2009). Collapse sometimes improved ordinary welfare.

- **Elite overproduction cycles** (Turchin 2016) describe recurring rises and falls of inequality and instability over secular cycles of one to three centuries.
- **Welfare states** decommmodified large parts of life in the 20th century, then partially recommodified them after 1980. Direction changed twice within a century.

13.5 Pre-state life was not an extraction-free baseline (threatens C2)

The brief's narrative implies a baseline from which extraction increased. Two bodies of evidence complicate this.

- **Violence.** Keeley (1996) and Pinker (2011) argue that rates of violent death in many non-state societies exceeded those of states. Fry and Söderberg (2013) found lethal aggression in mobile forager bands was mostly interpersonal, not organised war. Both sides agree that some non-state societies were very violent. Contested on magnitude.
- **Mortality.** Around half of children died before 15 in historical and forager societies (Volk and Atkinson 2013). Whatever else pre-state life offered, security of life was not among its advantages.

13.6 The strongest objection to decommodification: structural coercion

Section 13.1 finds that persons have been removed from markets. That finding invites a serious objection, made since the 19th century by labour movements under the name "wage slavery". Marx argued that under capitalism, economic necessity rather than direct force compels people to work. Polanyi (1944) called labour a "fictitious commodity": something treated as if produced for sale when it is in fact human life. Galtung (1969) used the term structural violence for harm done by social arrangements rather than by any individual. The objection is this: **the chains were removed, but where survival depends on earning money and no safety floor exists, the pressure to sell one's time can be close to inescapable.**

Where the parallel holds

Mechanism	Evidence	Tier
Survival conditional on market participation. Once land and commons were enclosed, food, shelter and care increasingly had to be bought. Refusing paid work can mean destitution.	Enclosure and dispossession cases in Part II (24, 29); Polanyi (1944). How strong the pressure is depends on the welfare regime (Esping-Andersen 1990).	High for the mechanism
Compounding pressures. Debt, status competition and consumer steering raise the income people need, adding to survival pressure.	Future-claims and steering cases in Part II; debt cycle in Part III, section 6.	Moderate
Health and family strain. Burnout, metabolic disease and mental distress are often attributed to this pressure.	Obesity rise well documented; causes are multiple. Mental-health trends and their causes remain contested (Part III, section 7).	Contested as a causal claim

Where it breaks down

Legal and historical analysis draws a clear line between structural pressure and ownership. The difference matters, because it shows where power to change the system actually lies.

Dimension	Chattel slavery (case 22)	Wage labour today (cases 31, 36, 41)
Legal personhood	The person is property: bought, sold, inherited.	The person is a legal subject who owns their own labour.

Dimension	Chattel slavery (case 22)	Wage labour today (cases 31, 36, 41)
Exit	None in law; flight met with state-sanctioned violence.	Costly but lawful: people can quit, move, retrain.
Means of compulsion	Physical force and legal chains.	Need, incentives, debt and dependency.
Voice	No right to vote, organise, sue or change rules.	Rights to unionise, vote, form cooperatives and change laws exist in most countries, though unevenly protected.
Scored on the eight criteria (Part I, 3.5)	Fails consent, exit and voice: domination.	Partial consent, costly exit, variable voice: extraction to exchange, depending on the safety floor.

The middle of the continuum

The sharpest cases today sit between these poles. The ILO, Walk Free and IOM (2022) estimate that 27.6 million people were in forced labour in 2021, in situations they cannot refuse or leave because of threats, violence, deception or debt. Debt bondage and tied-visa systems, where passports are held or exit is blocked, belong here. The continuum runs:

Position	Exit	Example
Chattel slavery	None	Atlantic plantation system (case 22)
Forced labour and debt bondage	Blocked by threat, debt or confiscated documents	27.6 million people (2021 estimate)
Wage labour with no safety floor	Lawful but may mean destitution	Precarious work without health cover or income support
Wage labour with a safety floor	Lawful and survivable	Universal services and income support (case 35)
Independent means	Free	Owners of sufficient assets

Verdict

Not the same category, but not free of coercion either. Ending the ownership of persons is real and one of the largest moral changes in the record. But labour itself remains a commodity by design, and the degree of coercion in working for a living depends on one variable more than any other: **whether a safety floor exists**, which Esping-Andersen measured as the decommodification of labour. The frontier-shift thesis is qualified accordingly: persons left the market; their time did not. Confidence: high for the structural description; contested for how much coercion modern wage labour involves, which is partly a normative judgement.

Mechanisms historically observed to reduce structural coercion include universal services and income support (Nordic cases), labour law and collective bargaining, cooperatives (Mondragon), and community land trusts. Universal basic income has been tested only in time-limited pilots with mixed and debated results; it remains a proposal rather than an established finding.

14. THE STRONGEST ARGUMENT AGAINST THE THESIS

Constructed as its most capable advocate would build it. Each point is stated without hedging; the assessment follows in section 18.

Argument 1. The extraction rate has fallen

Milanovic, Lindert and Williamson (2011) estimated the "inequality extraction ratio": how close elites came to taking the maximum surplus feasible given average income. Pre-industrial societies typically sat close to that maximum. Modern societies extract a much smaller share of their feasible maximum. On the thesis's own terms (extraction), **the rate has declined dramatically**. What rose is total output, so total extraction can rise while its share falls. The thesis mistakes a bigger economy for a more extractive one.

Argument 2. Persons have been decommodified

The most intimate possible object of extraction, a human being, has been removed from legal markets worldwide. So have wives, votes, public offices, salvation and organs. A thesis of progressive commodification must explain why its most extreme case moved in the opposite direction.

Argument 3. Markets expanded exit

Hirschman (1977) reconstructed an old argument that commerce softens power. For most of history the alternatives to a lord, a clan elder or a priest were few. Markets, cities and wage labour, whatever their costs, gave people alternatives to personal domination. McCloskey (2010) argues that the dignity accorded to ordinary commercial life drove the great enrichment. Expanding markets expanded exit, and exit is the oldest balancing loop.

Argument 4. The harm is more visible because we measure more

Modern societies collect data on mental health, pollution, inequality and addiction that earlier societies never recorded. Rising diagnosed anxiety may partly reflect falling stigma and wider screening. The thesis mistakes the growing legibility of harm for growing harm. The same process the thesis calls extraction, legibility, is what makes the harm countable at all.

Argument 5. The wellbeing record

Child mortality fell from around one in two to around one in twenty-three. Life expectancy more than doubled. Literacy went from one in eight to more than four in five. These are the largest improvements in human conditions ever recorded, and they were produced by the same states, markets, sciences and technologies the thesis indicts.

Argument 6. Constants, not progression

Every primitive mechanism was present by the end of the Bronze Age (Stage 2). Force, tribute, debt, rent, legibility and legitimation are constants of complex society (Mann 1986; Tainter 1988). What changed is scale and technology. That is "same wine, bigger bottles", not a directional transformation of civilisation.

Argument 7. The thesis is unfalsifiable as stated

"Extraction" is defined so broadly that any organised activity qualifies: teaching extracts attention, medicine extracts data, farming extracts from soil. If no observation could count against the thesis, it is an interpretive lens, not an empirical claim. Its persuasiveness comes from vocabulary, not evidence.

Argument 8. Coordination explains more with fewer assumptions

Hayek (1945) described the price system as a way of using knowledge no single mind possesses. The simpler explanation of history is that humanity became vastly better at coordinating strangers at scale, and

extraction is a recurring tax on that coordination whose rate has fallen. On this account the thesis focuses on the tax and ignores the thing taxed.

15. THE STRONGEST EVIDENCE FOR THE THESIS

Only evidence that survives the objections in section 14 is included. For each item, the objection it survives is named.

Evidence	Survives which objection	How	Tier
Absolute pressure on the biosphere is unprecedented and rising. Seven of nine planetary boundaries transgressed (Planetary Health Check 2026); around 80 billion land animals slaughtered annually for food; the Great Acceleration since 1950.	Arguments 1, 4, 6	This is not a rate or a perception artefact; it is physical. The biosphere does not care about extraction ratios. Scale itself is the harm.	High
The commodity frontier moved into nature, information and behaviour. Carbon, biodiversity credits, genetic sequences, attention, behavioural predictions.	Argument 2	Decommodification of persons is real, but the frontier moved rather than closed. C1 survives in revised form.	High
Closed-loop legibility is new. Real-time automatic feedback from measurement to experience (Stage 3).	Argument 6	This is a new primitive capability, not an old one at larger scale.	Moderate to high
Wealth concentration rose again after 1980 in many countries. Top-income shares in the US and UK rose markedly (Piketty 2014; World Inequality Database).	Argument 1 (partly)	Extraction ratios remain far below pre-industrial levels, but the direction reversed within the modern period.	Moderate to high (US magnitude contested)
Institutional conversion recurs across unrelated civilisations.	Arguments 6, 8	Coordination explains why institutions arise; it does not explain why they are so often redirected.	Moderate to high
Selection for extraction in competitive environments.	Argument 3	Markets expand exit for individuals but can trap firms and states in races toward externalisation.	Moderate to high
Global systems lack global balancers. Balancing loops at planetary scale exist only for ozone and a few other issues.	Arguments 3, 8	Exit fails at planetary scale: there is nowhere to exit to.	Moderate to high
Metric governance produces proxy capture in health, education, policing and public administration (Muller 2018).	Argument 4	This is harm produced by measurement, not merely revealed by it.	Moderate

Pattern in what survives: the thesis is strongest at the **boundary between human systems and the biosphere**, and at the **boundary between human systems and the individual mind**. It is weakest when applied to the human person as a legal and economic unit, where the record shows liberation. This is a substantive finding: the thesis survives at the two frontiers the brief most cared about, and fails in the domain it tacitly assumed.

16. BLIND SPOTS

Twenty-six domains or mechanisms that the original grid, and in several cases this project, failed to see. Grouped by the discipline that exposes them. Several are uncomfortable for the thesis; some are uncomfortable for its critics.

#	Blind spot	Why it matters	Exposed by
1	Non-human animals as subjects	By number of controlled bodies, industrial animal farming is the largest system of bodily control in history. The grid lists animals only as "environmental impact".	Ethics; ecology
2	Pathogens as historical agents	Epidemics, not designs, drove the Americas collapse and the Black Death wage shift (McNeill 1976; Crosby 1986). The framework over-attributes outcomes to human systems.	Environmental history; epidemiology
3	Climate forcing	The 17th-century crisis coincided with Little Ice Age cooling (Parker 2013). Extraction regimes are partly responses to climate shocks.	Palaeoclimatology
4	Energy and thermodynamics	Every economy dissipates energy; extraction is ultimately physical (Georgescu-Roegen 1971; Morris 2015). Values themselves may track energy regimes.	Physics; archaeology
5	Intergenerational extraction	The largest unconsented cost-bearers are the unborn: emissions, depleted resources, public debt, ageing-related transfers.	Economics; philosophy
6	Extraction by majorities	Homeowners restricting housing supply (Fischel 2001), distributional coalitions (Olson 1982). Extraction is not only elite; broad middle classes extract through the ballot.	Political economy
7	Extraction within households	Gender, age and kin hierarchies extract labour and obedience at the smallest scale; invisible to institutional maps.	Anthropology; sociology
8	Non-state predators	Bandits, pirates, warlords, cartels and organised crime extract without states. Romanticising statelessness hides them.	History; criminology
9	The coercive side of gift economies	Obligation, bridewealth and feasting debt bind as tightly as contracts.	Anthropology (Mauss)
10	Evolved dominance and status psychology	Status seeking and coalitional dominance predate civilisation (Boehm 1999; Wrangham 2019). Some extraction may express human nature more than system design.	Evolutionary biology
11	Consent and complicity	Users choose platforms, diets and credentials, often knowingly. Treating people only as victims denies their agency and misreads demand.	Psychology; economics
12	WEIRD assumptions about the self	Autonomy as a wellbeing criterion is culturally specific (Henrich 2020). Much of the framework's wellbeing standard is Western.	Cultural psychology
13	Archival survivorship bias	Written records were produced by states and elites; archaeology favours durable monuments. The record over-represents extraction by systems that wrote things down.	Historiography; archaeology

#	Blind spot	Why it matters	Exposed by
14	Measurement asymmetry	Modern harms are recorded; past harms mostly were not. Comparisons across time are biased toward finding modern decline.	Statistics
15	Nostalgia bias	Golden-age narratives recur across cultures and centuries, suggesting a cognitive tendency rather than evidence.	Psychology
16	Collapse as relief	State collapse sometimes improved commoners' lives. The framework treats complexity as the baseline good.	Archaeology (Scott; Tainter)
17	Diminishing returns on complexity	Coordination itself becomes costly; bureaucratic overhead can be a burden with no extractor behind it (Tainter 1988).	Complexity science
18	Cultural evolution of institutions	Institutions evolve under selection like organisms (Richerson and Boyd 2005). "Systems serving themselves" may be literally selection for self-perpetuating institutions.	Evolutionary theory
19	Language and knowledge extinction	Around 40 per cent of the world's roughly 7,000 languages are endangered. Epistemic loss is extraction of a kind the grid cannot see.	Linguistics
20	Cultural and genetic heritage	Human remains in museums, Indigenous knowledge in patents, sacred designs in commerce.	Law; Indigenous studies
21	New commons frontiers	Orbital slots, the deep seabed, the radio spectrum, the Moon. Enclosure is happening now with thin governance.	International law
22	Neuroscience of attention	"Addiction" to platforms is not a formal diagnosis (gaming disorder is, since ICD-11). The attention thesis leans on analogies stronger than the clinical evidence.	Neuroscience; psychiatry
23	Violence baselines	If non-state societies were often more violent, states may have reduced harm on the most basic measure (contested).	Anthropology; archaeology
24	Rent-seeking by protective actors	Professional bodies, unions and regulators can themselves extract (licensing restrictions, credential gates).	Economics
25	The sacred as independent force	Durkheim: religion is not reducible to power. The framework still leans toward reading belief as legitimation.	Religious studies
26	The analyst is inside a case	This framework was produced by an AI system, which is itself case 44 in the matrix. The authoring system has an interest in how AI is characterised, and may carry training-data biases toward particular academic literatures. Readers should weigh sections on AI with that in mind.	Technology studies; reflexivity

17. ATTACKING THE FRAMEWORK'S OWN HYPOTHESES

Hypothesis	Strongest objection	What would falsify it	Verdict
H1 Closed-loop legibility	Real-time feedback is just faster persuasion; speed is not a difference in kind. Also, prediction may be weaker than sold (Hwang 2020).	Evidence that closed-loop systems do not change behaviour more than open-loop ones of similar reach.	Survives, narrowed. New as capability; its behavioural power is contested.
H2 Two routes to restraint	Long-horizon autocracy works only until it does not; the route may be survivorship bias from successful cases.	Systematic evidence that autocracies with long horizons do not restrain extraction more than short-horizon ones.	Survives as fragile. Route two is real but unreliable.
H3 Institutional conversion	Cases were selected because they illustrate it; the base rate of conversion is unknown.	A random sample of institutions showing low conversion rates.	Survives, needs base-rate evidence.
H4 Legitimation drift	Technical legitimation is ancient (engineering the Qin state; the "rational" claims of colonial administration).	Pre-modern cases of dominant technical legitimation.	Weakened. Present in earlier periods; its dominance is modern.
H5 Scale matching	Post hoc: any success can be described as "matching scale".	A case where a smaller-scale balancing loop contained a larger extractive one.	Survives with an operational test. Define scale by jurisdiction and resource extent, measured before outcomes.
H6 Chokepoint cycle	Open protocols, Wikipedia, public libraries (13.3).	Already falsified in its strong form.	Revised. See below.
H7 Selection for extraction	Selection also favours firms that serve customers; reputational and legal selection can favour restraint.	Competitive sectors where externalising firms consistently lose.	Survives, conditional: holds where costs are invisible to customers and unpriced by law.

H6 revised: the governed chokepoint

The original claim, that every coordination solution becomes extractable, is falsified by open chokepoints. The revised claim is conditional and testable:

Extraction at a chokepoint rises with (1) the concentration of flow through it, (2) the switching cost of going around it, and (3) the degree to which it is controlled by a party whose incentives reward extraction. It falls with (4) the scale of the balancing forces able to act on it.

This makes the pattern predictive: two chokepoints of equal concentration (a proprietary platform and an open protocol) should show very different extraction, and the matrix cases suggest they do. The design implication is that **governance form of the chokepoint** (commons, public, cooperative or private) is one of the few variables that societies can actually choose.

18. VERDICT: WHAT SURVIVES

The brief asked for five classes of conclusion. Here they are.

Class	Conclusions
Historically robust	The biosphere's absorption of human extraction is unprecedented and physically measurable. All major extraction mechanisms are ancient. Balancing mechanisms are as old as extraction. Systems can produce exploitation without design. Child mortality, life expectancy and literacy improved enormously.
Survives the challenge	The commodity frontier has expanded into nature, information and behaviour (C1, revised). Institutional conversion recurs. Balancing forces lag behind global-scale systems. Closed-loop legibility is a new capability.
Needs qualification	Decommodification of persons: ownership ended, but labour remains a commodity and, without a safety floor, survival pressure acts as structural coercion (13.6). C2 (intensity): extraction ratios fell dramatically, while absolute extraction rose. C3 (direction): the record shows ratchets, cycles and reversals, not smooth progression. The chokepoint cycle holds only for governed conditions.
Should be abandoned	The strong "inward movement" sequence from land to mind. The idea of an extraction-free baseline in early human societies. The equation of hierarchy, markets or measurement with exploitation. The treatment of persons as a domain of rising commodification.
Requires stronger evidence	Mental-health effects of digital systems. Behavioural power of targeted persuasion. Base rates of institutional conversion. Long-run trends in loneliness, meaning and felt autonomy. Whether AI changes the primitives or only their reach.

The thesis restated

After the adversarial stage, the most defensible version of the brief's thesis is:

Civilisation has become vastly better at coordination and has reduced the share of human life taken by coercive extraction, especially from the human person. At the same time, the frontier of extraction has moved to the biosphere and to the attention, behaviour and data of individuals, where new capabilities (planetary scale and closed-loop legibility) have outrun the balancing institutions that historically contained extraction. The decisive variable is not progress itself but the governance of chokepoints and the scale of the forces that can hold them to account.

Qualification from section 13.6: the person left the market, but labour did not. Where no safety floor exists, economic survival pressure is a form of structural coercion, distinct from ownership but real.

Confidence in the restated thesis: moderate. It is weaker than the original, which is the point: it is also far harder to refute.

Handover to Stage 5

Stage 5 completes the deliverable: the revised final model (section 17 of the brief), contemporary and philosophical implications, the research agenda, the quality-control audit, the deepest question (Part XXVIII), and the eleven visual architectures. Given how much visual work is involved, Stage 5 may be delivered as the final Word document plus a companion visual file.

P A R T



FINAL MODEL, IMPLICATIONS AND VISUAL ARCHITECTURE

The final model, contemporary and philosophical implications, the deepest questions, research agenda, quality-control audit, eleven figures and consolidated bibliography.

17. REVISED FINAL MODEL

The Master Civilisational Systems Map in its final form. It incorporates every correction made in Stages 2 to 4.

17.1 The model on one page

#	Proposition	Confidence
P1	Coordination is primary. Human systems arise mainly to meet needs through coordination at scale.	High
P2	Legibility is dual. Measurement enables both rescue and extraction; who holds and acts on the measure decides which.	High
P3	Governed chokepoint. Extraction risk rises with flow concentration, switching cost and controller incentive, and falls with balancing scale.	Moderate
P4	Conversion. Extraction most often arises by redirecting an existing institution rather than inventing a new one.	Moderate to high
P5	Selection. Where costs are invisible and unpriced, competition selects for externalisation without design.	Moderate to high
P6	Two routes to restraint. Accountability to cost-bearers (robust) or internalisation by long-horizon controllers (fragile).	Moderate
P7	Scale matching. Extraction is contained when a balancing force operates at the same scale as the extractive system; balancing forces decay without renewal.	Moderate to high
P8	Frontier shift. The commodity frontier has moved from persons to the biosphere and to behavioural and biological signals, with closed-loop legibility as the genuinely new capability.	Moderate to high

17.2 Architecture

Component	Content	Origin
23 layers (A to W)	Five tiers (Conditions, Coordination, Flows, Sustaining, Dynamics) plus Meta. Layers R Legibility, S Energy, T Accountability, U Scale, V Intent, W Evidence added to the original seventeen.	Stage 1
14 primitives	Force, enclosure, tribute, bound labour, future claims, rent, legibility, gatekeeping, scarcity management, externalisation, dependency, discipline, steering, legitimisation.	Stage 1, tested Stage 2
5 capability modifiers (new)	Scale, speed, granularity, continuity, adaptivity. These describe how technology changes the reach of primitives without creating new ones. Closed-loop legibility is legibility and steering at maximum continuity and adaptivity.	Stages 2 to 4
8 criteria	Consent, exit, voice, reciprocity, transparency, internalisation, reversibility, proportion. Place a system on the spectrum from coordination to domination.	Stage 1
5 intent codes	Designed, incentive-driven, emergent, unintended, reinterpreted.	Stage 1

Component	Content	Origin
4 confidence tiers	High, moderate, contested, speculative.	Stage 1
Chokepoint score (new)	Four factors scored 1 to 3 (section 17.3).	Stage 4
Inversion test	Goal displacement, loss of voice and exit, proxy capture.	Stage 1

17.3 The governed chokepoint score

A qualitative scoring aid, not a formula to be computed precisely. Score each factor 1 (low), 2 (medium) or 3 (high).

Factor	Question	Low (1)	High (3)
Concentration	How much of the relevant flow passes through this point?	Many alternatives carry the flow	Near-total dependence
Switching cost	What does it cost a participant to go around it?	Trivial	Loss of livelihood, network, or data
Controller incentive	Does whoever governs it profit from extracting?	Commons, public trust, or cooperative with user governance	Private owner rewarded by extraction
Balancing scale	Is there a force able to act on it at its own scale?	None, or much smaller jurisdiction	Matching or larger jurisdiction with enforcement

Reading the score: high concentration, switching cost and controller incentive combined with low balancing scale indicate a high structural risk of extraction regardless of anyone's intentions. An open protocol scores high on concentration and low on everything else; a dominant proprietary platform scores high on the first three. The score explains why these two chokepoints behave so differently (Stage 4, section 13.3).

17.4 Operating procedure: applying the map to any system

- 1. Name the need.** What human need does the system serve? If none can be named, examine it as pure extraction.
- 2. Map the flows.** What resource does it organise, and where do flows concentrate?
- 3. Identify the primitives** in use, and the capability modifiers applied to them.
- 4. Score the chokepoint** on the four factors.
- 5. List every party** and record benefits and costs for each, including non-humans and future generations.
- 6. Apply the eight criteria** and place the system on the spectrum.
- 7. Code intent** separately for design, incentives and outcomes.
- 8. Trace loops:** which reinforcing loops sustain it, and which balancing loops exist at what scale?
- 9. Run the inversion test:** goal displacement, loss of voice and exit, proxy capture.
- 10. Check the legitimization:** sacred, secular or technical, and who could contest it.
- 11. Test at scale:** what changes at ten times and a thousand times the current size?

12. Assign confidence tiers to every conclusion, and state what evidence would change them.

17.5 From the original grid to the final model

Original grid	Final model
Five columns, all recording harm or its cover story	23 layers recording need, function, benefit, cost, intent and evidence symmetrically
Eras and industries mixed as rows	System-cases coded by era, region and system separately
"Systemic justification" as cover story	Legitimation coded as sincere purpose, structural consequence, or later reinterpretation
Four connecting patterns at mixed levels	14 primitives, 8 recurring cycles, the governed chokepoint model, reinforcing and balancing loops
Implicit thesis of progressive extraction	Frontier-shift thesis with explicit confidence and falsification conditions
Western, modern scope	44 cases across all inhabited continents from forager societies to 2026
No resistance or reform	Balancing loops, the two routes to restraint, and scale matching as core propositions

18. CONTEMPORARY IMPLICATIONS

The final model applied to eight contemporary systems. Each row states structure, not verdicts about particular companies. Scores are interpretive and are offered as a starting point for argument.

System	Chokepoint (C, S, I, B)	Inversion signs	Leverage point
Engagement-ranked social platforms	Social graph and feed. C3 S3 I3 B2 (EU rules) or B1 elsewhere	Proxy capture (engagement for connection); weak exit	Interoperability and data portability to cut switching cost
Generative AI foundation models	Model access and compute. C2 to C3 S2 I3 B2 and rising	Too early to observe; displacement of creative income is a watchpoint	Open models and standards; balancing at international scale
Wellness, biohacking and longevity markets	Personal biological data. C1 S1 I2 B1	Proxy capture possible (scores for health)	User ownership of data and targets; the four tests of Stage 3, section 9.5
Ultra-processed food system	Retail shelf and formulation. C2 S2 I3 B2	Proxy capture (price and palatability for nourishment)	Labelling, taxes, public procurement
Urban housing	Land in productive cities. C3 S3 I3 (including incumbent homeowners) B2	Housing as asset displacing housing as shelter	Land-value taxation; zoning reform; public and cooperative supply
Carbon and biodiversity markets	Certification of claims. C2 S1 I3 B1 to B2	Proxy capture (credits for carbon removed)	Binding caps; independent verification
Global finance	Payment systems and credit. C3 S3 I3 B2	Goal displacement recurrently observed before crises	Capital requirements; public payment infrastructure
Educational credentials	Access to professions. C3 S3 I2 B2	Credentials for capability	Skills-based hiring; income-contingent finance

What the framework does and does not say

- **It says** that the risk of extraction in these systems is structural and predictable from their chokepoint scores, and that the most effective interventions historically have changed structure (switching costs, governance form, balancing scale) rather than exhorting actors.
- **It does not say** that these systems are net harmful. Each of the eight delivers real benefits, recorded in the matrix.
- **It does not say** that the people running them intend harm. The model predicts extraction from structure, with or without intent.
- **It flags a reflexive limit:** the AI row describes the category of system that produced this document. Readers should apply their own judgement to it with particular care.

19. PHILOSOPHICAL IMPLICATIONS

What the framework potentially reveals. Each implication is labelled by status, because the brief rightly insists that empirical findings and philosophical interpretations must not be confused.

Theme	Implication	Status
Human nature	Humans carry both levelling instincts (foragers actively suppress domination) and dominance instincts. Civilisation is not a fall from equality or an escape from brutality; it is a changing arena in which both tendencies are institutionalised.	Empirically grounded; interpretation of balance contested
Civilisation	Civilisation is best understood as an expanding capacity for coordination among strangers, whose side effect is concentrated flows. Its moral character depends on how those concentrations are governed, which is a matter of choice, not destiny.	Interpretive, well supported
Consciousness	Attention has become a contested resource as never before, not because minds were previously untouched (confession, propaganda and ritual reached deep), but because steering can now adapt to each mind continuously. The inner life is a new frontier for governance, not only for markets.	Partly empirical; partly speculative
Value	Measurement creates the possibility of value (in both senses). What is measured can be protected, traded, or optimised; what is not measured is invisible to institutions. The central value question of the era is who decides what is measured, and what remains deliberately unmeasured.	Interpretive
Freedom	History shows two kinds of freedom moving differently: freedom from personal domination (masters, lords, husbands) expanded dramatically; freedom from impersonal systems (platforms, markets, metrics) is newer and weaker. The main modern threat to freedom is less a tyrant than a lack of exit from infrastructure.	Interpretive, supported by cases
Power	Power increasingly operates through infrastructure rather than ownership or doctrine: control without title. This is why law built for property and persons struggles to govern it.	Moderate empirical support
Wellbeing	The largest wellbeing gains in history came from institutions the grid indicted. The largest current risks come from optimisation, where measures replace the needs they were meant to track. Wellbeing is best protected by keeping measures subordinate to human judgement.	Empirical (gains); interpretive (risk)

THE DEEPEST QUESTIONS (PART XXVIII)

Question 1

Has civilisation become better at converting life into measurable value, or better at organising cooperation and exchange at scale, with exploitation as one recurring consequence among many?

Built from the evidence: **primarily the second, with a crucial amendment.** The dominant long-run change is a vast expansion of coordination among strangers. Its evidence is the largest improvement in human survival ever recorded, the decline in extraction ratios, and the removal of persons from markets. Exploitation recurs in every era and regime as a consequence of concentrated flows.

The amendment: converting life into measurable value is not separate from coordination. **Measurement is the medium of coordination at scale.** Strangers cooperate through prices, records, standards and scores. So civilisation has become better at both at once, and the question is not which it has done but **who governs the measures.** Where measures are held accountably, conversion into measurable value has saved lives (child mortality, workplace safety). Where they are held by parties rewarded for extraction and insulated from balancing forces, it has produced the harms the brief describes.

Question 2

What happens to a civilisation when the systems created to serve human beings gradually become systems that human beings must serve?

Classified against the brief's options: this is **partially observable and a recurring feature of complex societies**, at the level of institutions. It is **a philosophical interpretation** at the level of civilisation as a whole.

- **Observable at institution level:** Soviet plan fulfilment with falsified output; bureaucratic ritualism (Merton); GDP targeting at the expense of welfare; engagement metrics at the expense of connection; Late Bronze Age palace economies before collapse. In each, the three conditions (goal displacement, loss of exit and voice, proxy capture) can be observed and dated.
- **What follows historically** is one of four outcomes: reform (Factory Acts, New Deal), exit (flight from early states), collapse (Late Bronze Age, Tainter), or long stagnation under an inverted system. None is automatic.
- **Not established:** that civilisation as a whole has inverted. That claim requires aggregating across thousands of institutions, many of which (public health, open protocols, libraries) show no inversion. It is a defensible philosophical reading, not a finding.

Question 3

Can civilisation be complex enough to preserve scale, technology, prosperity and coordination without progressively converting wellbeing, nature, attention, relationships and life into instruments of extraction?

The record gives no utopian answer, but it gives more than nothing: actual arrangements that achieved this partially, with known conditions and known failure modes.

Arrangement	Strength	Limitation	Conditions for success
Ostrom commons	Centuries of sustainable use	Hard to scale beyond communities that know each other	Clear boundaries; users make rules; monitoring; graduated sanctions; recognised rights; nested governance
Social democracy	High prosperity with decommodified essentials	Costly; vulnerable to fiscal and political erosion	High trust; strong organised labour; broad tax base
Global treaties (Montreal Protocol)	Planetary-scale balancing that worked	Easiest when substitutes exist and few firms are affected	Clear science; cheap alternatives; enforcement through trade
Digital commons (protocols, open source, Wikipedia)	Chokepoints that stay open at global scale	Value is often captured by firms building on top	Licences that prevent enclosure; volunteer and foundation governance
Jubilee institutions	Periodic reset of accumulated claims	Depend on rulers' or courts' will	Codification in law (bankruptcy, debt relief)
Cooperatives (Mondragon)	Worker control at industrial scale	Competitive pressure to use non-member labour	Federated support institutions; cooperative banking
Long-horizon stewardship (Tokugawa, Qing, sovereign funds)	Restraint without democratic voice	Fragile under fiscal crisis	Rulers who expect to bear future costs

The conclusion the evidence supports: complexity does not require progressive conversion of life into instruments of extraction, because every arrangement above combined scale or durability with restraint. But none of them was self-sustaining. Each required **deliberate renewal** against the reform-decay cycle, and each worked only under conditions that had to be built. The historical answer is therefore conditional: **yes, where chokepoints are governed accountably, balancing forces match the scale of the systems they check, and measures remain subordinate to the needs they track; and only for as long as those conditions are actively maintained.**

20. RESEARCH AGENDA

The most important unanswered questions, ranked by how much their answers would change the model.

#	Question	Why it matters	How it could be studied
1	What is the base rate of institutional conversion?	P4 rests on selected cases.	Random sample of institutions from a historical database (e.g. Seshat Global History Databank), coded for redirection.
2	Do closed-loop systems change behaviour more than open-loop ones of similar reach?	Tests the core of P8.	Platform-cooperative field experiments; natural experiments from algorithm changes.
3	Does the chokepoint score predict extraction?	Tests P3.	Score 100+ firms and public systems ex ante; compare with margins, prices and complaints.
4	How large are the mental-health effects of digital media?	The most contested contemporary claim.	Pre-registered longitudinal and causal studies across countries.
5	What determines the decay rate of balancing institutions?	Reform decay drives recurrence.	Comparative histories of regulatory lifecycles.
6	Can balancing forces be built at planetary and platform scale?	P7 predicts this is decisive.	Study of Montreal Protocol, EU digital regulation, climate treaties as a comparative set.
7	How much of targeted advertising's value is real?	Determines whether attention extraction is behavioural or financial.	Large-scale incrementality experiments; auditing of ad metrics.
8	Are loneliness and meaning actually declining?	Key wellbeing claims lack long-run data.	Harmonised long-run surveys; historical proxies.
9	What made long-horizon stewardship work, and fail?	Tests the fragile route in P6.	Comparative study of Tokugawa, Qing, and sovereign wealth funds.
10	How does Indigenous land governance achieve lower decline rates?	A major counterexample with policy relevance.	Collaborative research led by Indigenous communities.
11	Does AI change the primitives or only the modifiers?	Determines whether existing balancing tools suffice.	Ongoing case-by-case coding using this map.
12	How strongly does WEIRD bias shape the wellbeing criteria?	The framework's standard may be culturally specific.	Cross-cultural wellbeing measurement (e.g. Global Flourishing Study).

QUALITY-CONTROL AUDIT

The brief's sixteen quality-control questions, answered against the whole project, including where the project initially failed.

Question	Answer	Where the project failed or corrected
Confused correlation with causation?	Largely avoided; contested causal claims flagged.	Digital media and mental health kept at "contested" throughout.
Mistaken unintended consequences for exploitation?	Controlled by intent codes.	Stage 3 added four routes to exploitation without design.
Imposed modern concepts?	Checked in Stage 2 anachronism table.	Welfare, meritocracy, genocide, capitalism, corporation assessed case by case.
Treated Western history as universal?	About 45 per cent of cases from outside Europe and North America.	Stage 1 found the original grid wholly Western.
Ignored counterexamples?	No.	Stage 4 made them central; they falsified the chokepoint cycle and the strong inward thesis.
Selectively chosen evidence?	Partly yes. Case selection was purposive, not random.	Flagged; research question 1 addresses it. Band counts reported as indicative only.
Confused exchange with exploitation?	Separated by eight criteria.	Original grid treated markets as extraction.
Confused regulation with oppression?	Regulation coded as its own band.	Stage 1 correction.
Confused hierarchy with domination?	Separated.	Pacific Northwest, Egypt and Tokugawa cases required distinguishing the two.
Confused technology with social progress?	Modifiers separate reach from direction.	Progress paradox map shows gains and costs separately.
Ignored wellbeing improvements?	No.	Stage 3 opened with them; Stage 4 used them against the thesis.
Ignored systems that constrained extraction?	No.	Balancing loops became a core proposition (P7).
Considered complexity generating harm without malice?	Yes.	Tainter, selection and proxy optimisation incorporated.
Distinguished evidence from interpretation?	Yes, via tiers and status labels.	Philosophical section labels each implication.
Identified weak evidence?	Yes.	Contested items listed in Stage 4, section 18.
Let evidence change the framework?	Yes, repeatedly.	H1 abandoned in strong form; H2 split; H4 weakened; H6 falsified and rebuilt; thesis restated.

VISUAL ARCHITECTURES

Eleven figures, as specified in Part XXIV. Each is followed by what it reveals that the others do not. Scores and placements in figures 5, 8 and 9 are interpretive codings from the text, not measured data.

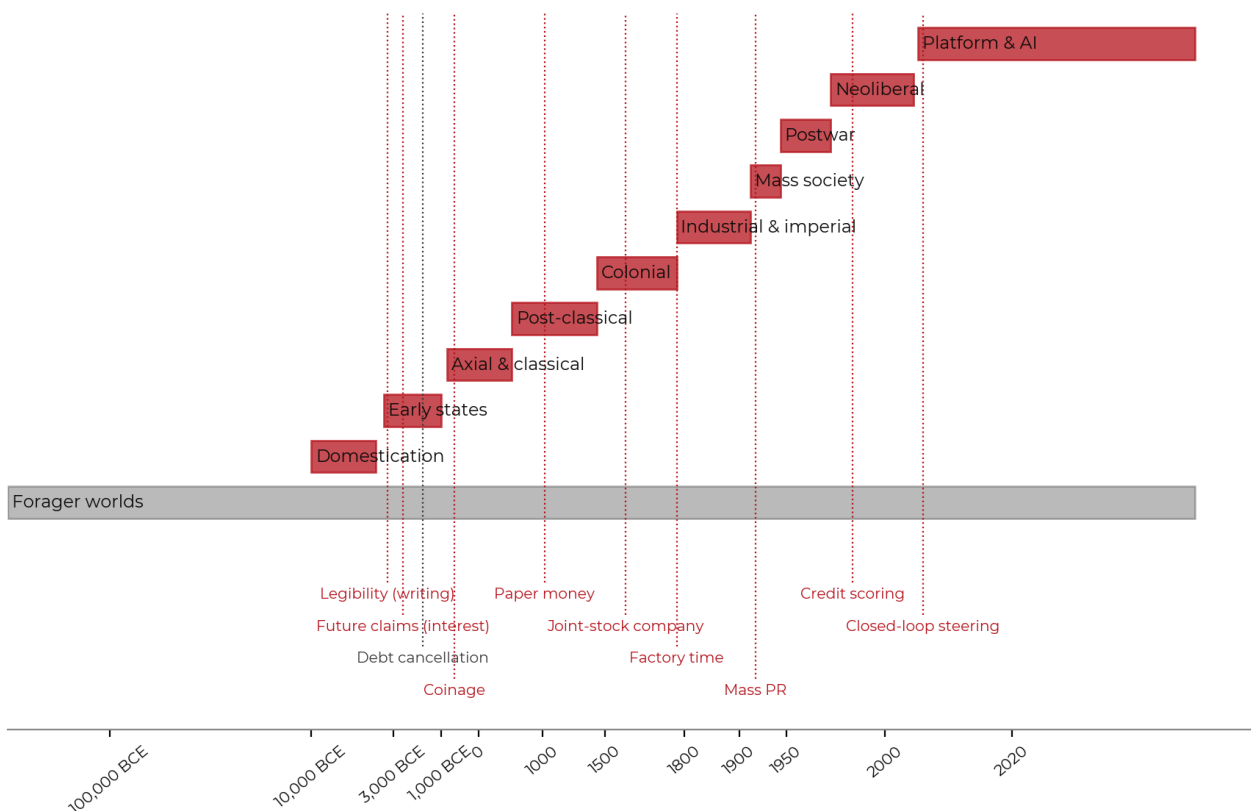
Figure 1. Master matrix



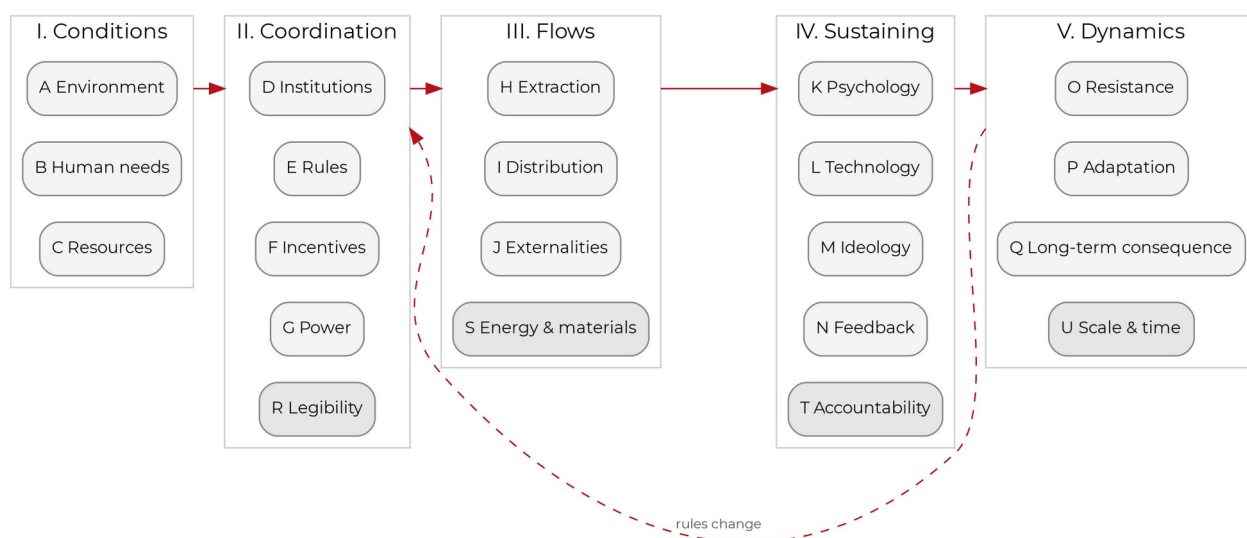
What it reveals: Legibility and legitimation run through the whole record. Force, tribute and bound labour concentrate in cases before 1945; steering, dependency, externalisation and rent concentrate after it. The shift is from coercion toward steering and rent, not from outer to inner. It is the only view showing which primitives are constants and which are period concentrations (subject to case selection).

Figure 2. Historical timeline

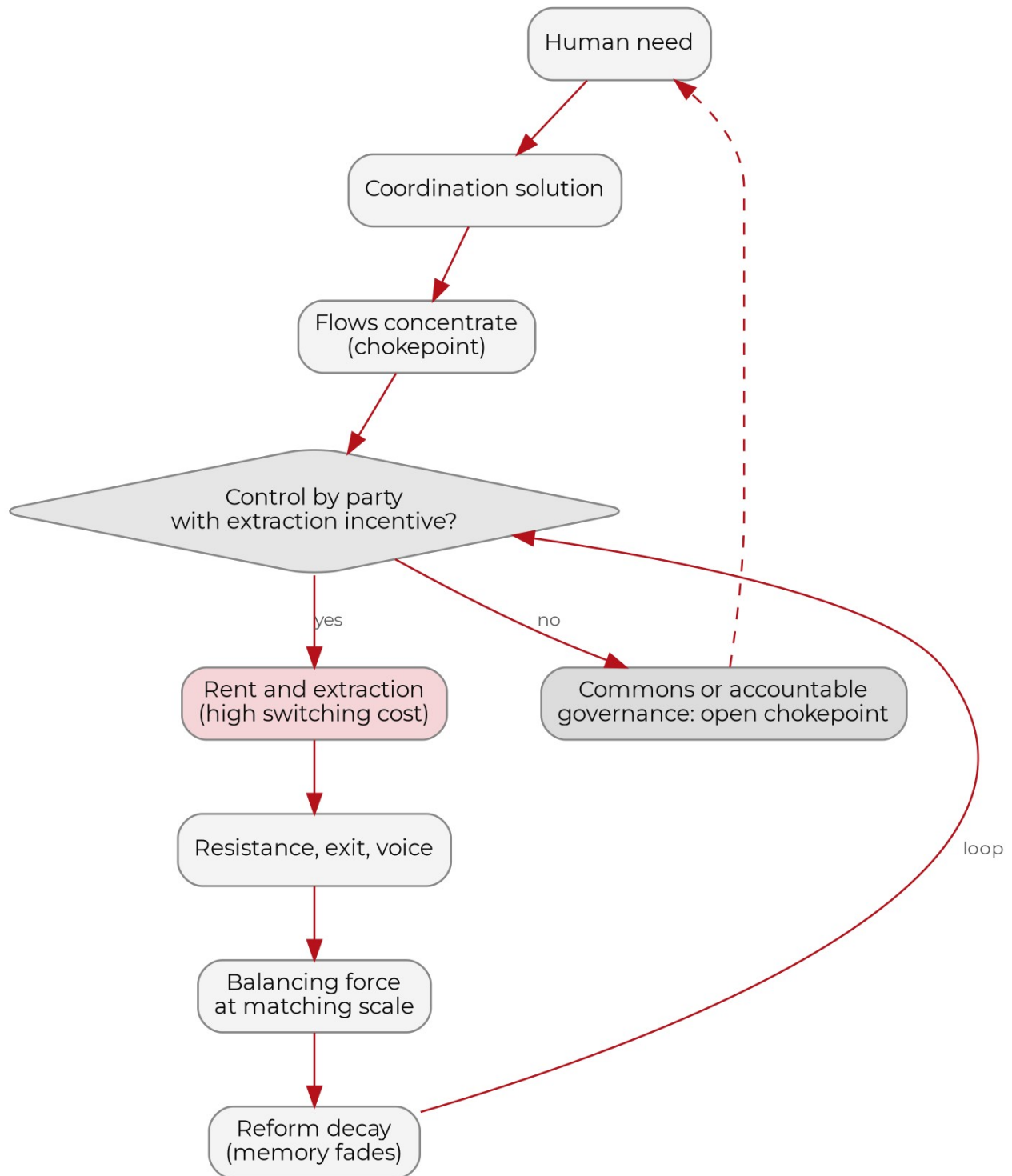
Historical timeline (log time: years before 2027). Red: first appearance of a mechanism; black: balancing institution



What it reveals: The log scale shows how late and compressed the modern period is against the forager baseline, and places the first balancing institution (debt cancellation) alongside the first extraction technologies. Only this view shows timing.

Figure 3. Systems-flow diagram

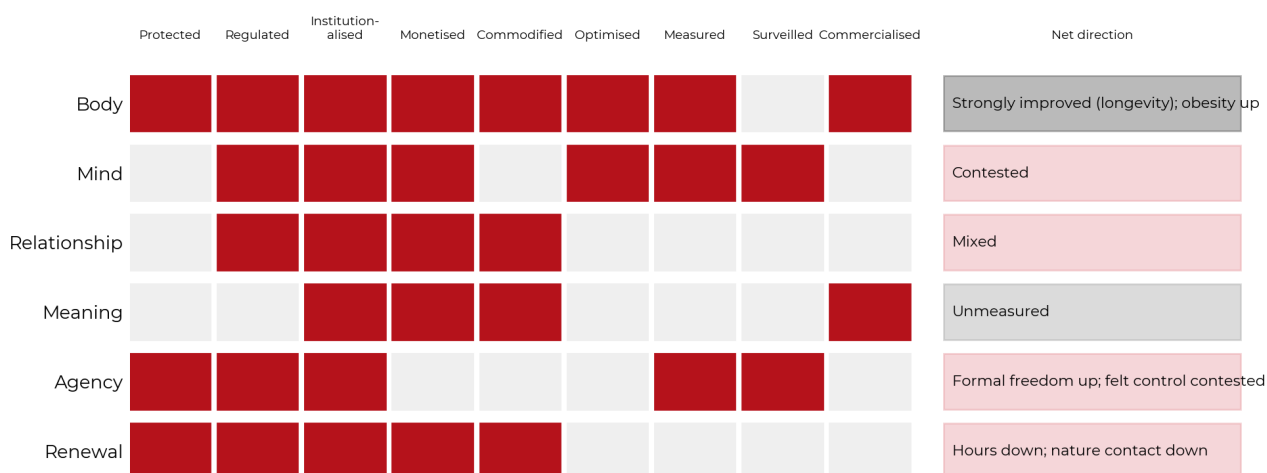
What it reveals: Shows the causal order of the 23 layers and the feedback path through which resistance changes rules. It reveals the model's logic rather than any finding.

Figure 4. Power and extraction cycle (governed chokepoint)

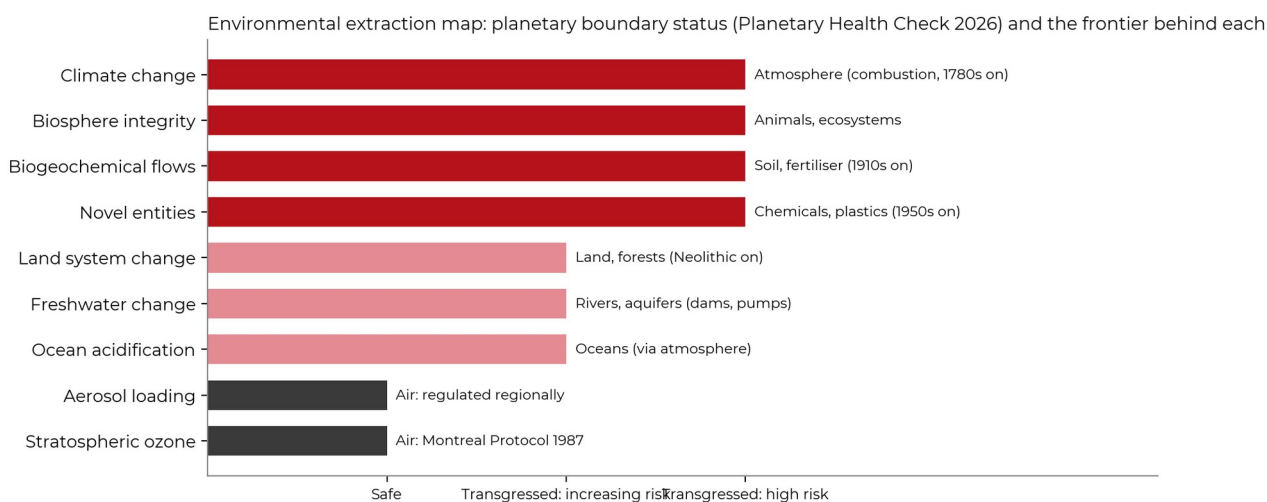
What it reveals: The decision point that separates extractive from open chokepoints, and the reform-decay loop that makes extraction recur. It is the only view showing where societies can intervene.

Figure 5. Human wellbeing map

Human wellbeing map: states each cluster has entered in high-income societies (not a linear path)



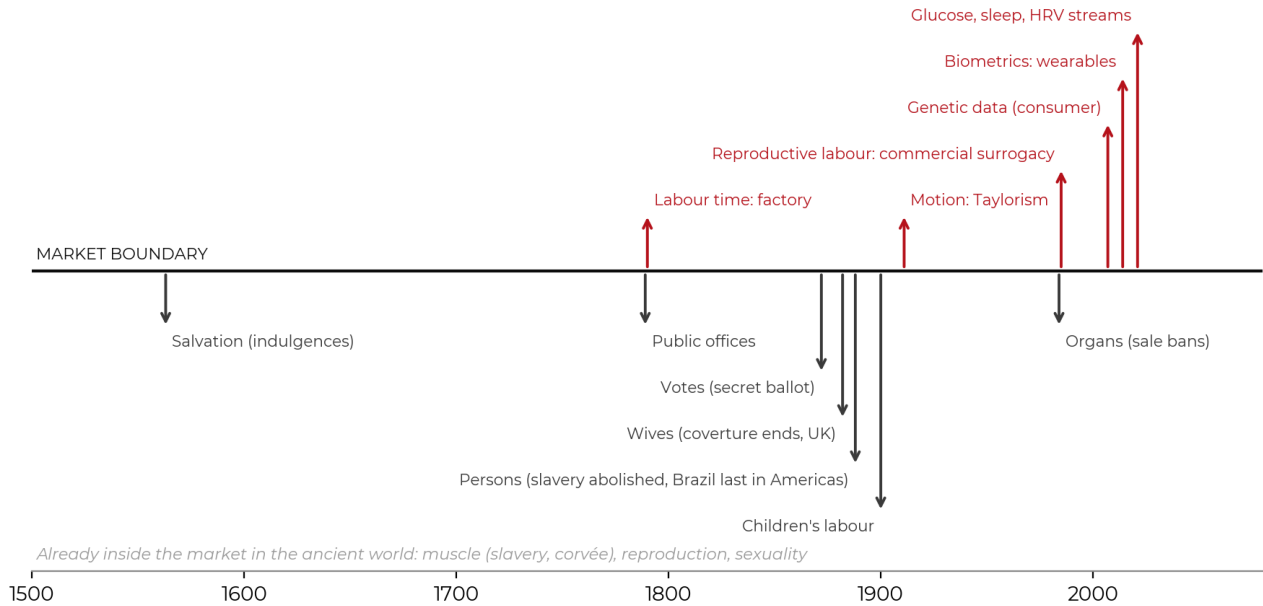
What it reveals: Shows that clusters enter the brief's stages non-linearly, and that net direction differs by cluster. It prevents reading "commercialised" as "worse".

Figure 6. Environmental extraction map

What it reveals: Links each planetary boundary to the frontier opened to reach it; the two safe boundaries are the two with effective regulation. It is the strongest visual evidence for scale matching.

Figure 7. Body commodification map

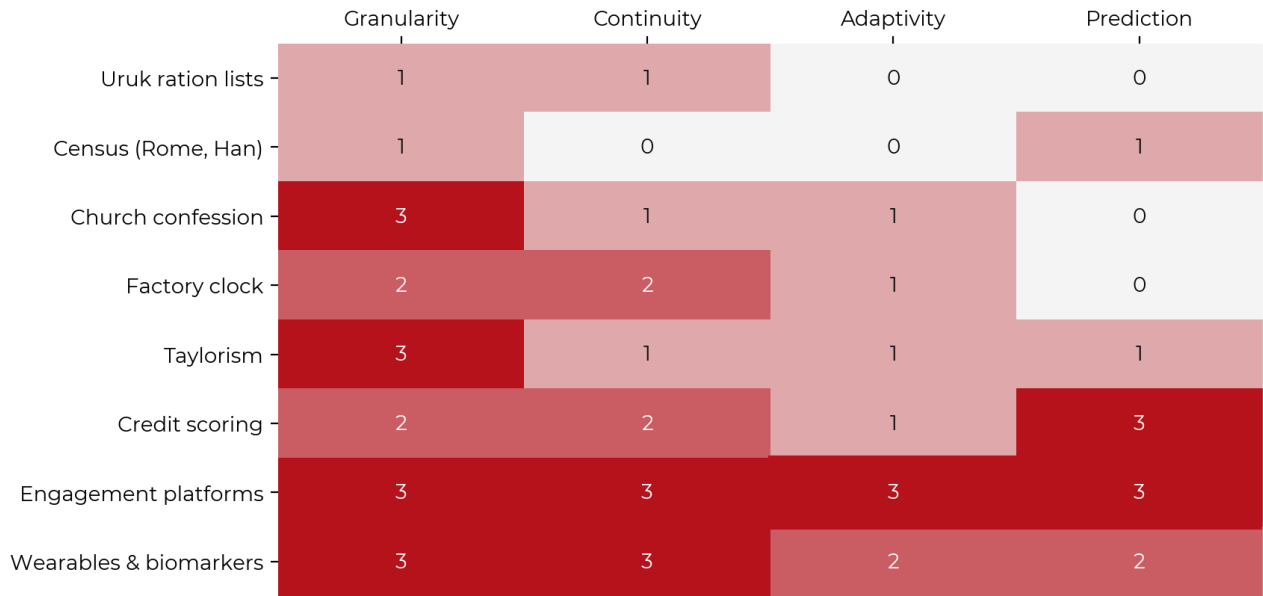
Body commodification map: the person leaves the market (black) while its outputs and signals enter it (red)



What it reveals: The person leaves the market (black arrows) while its outputs and signals enter it (red arrows). This is the visual form of the frontier-shift thesis and the main counterexample to the original.

Figure 8. Attention and data extraction map

Attention and data extraction map: legibility properties scored 0 to 3 (ordinal, interpretive)



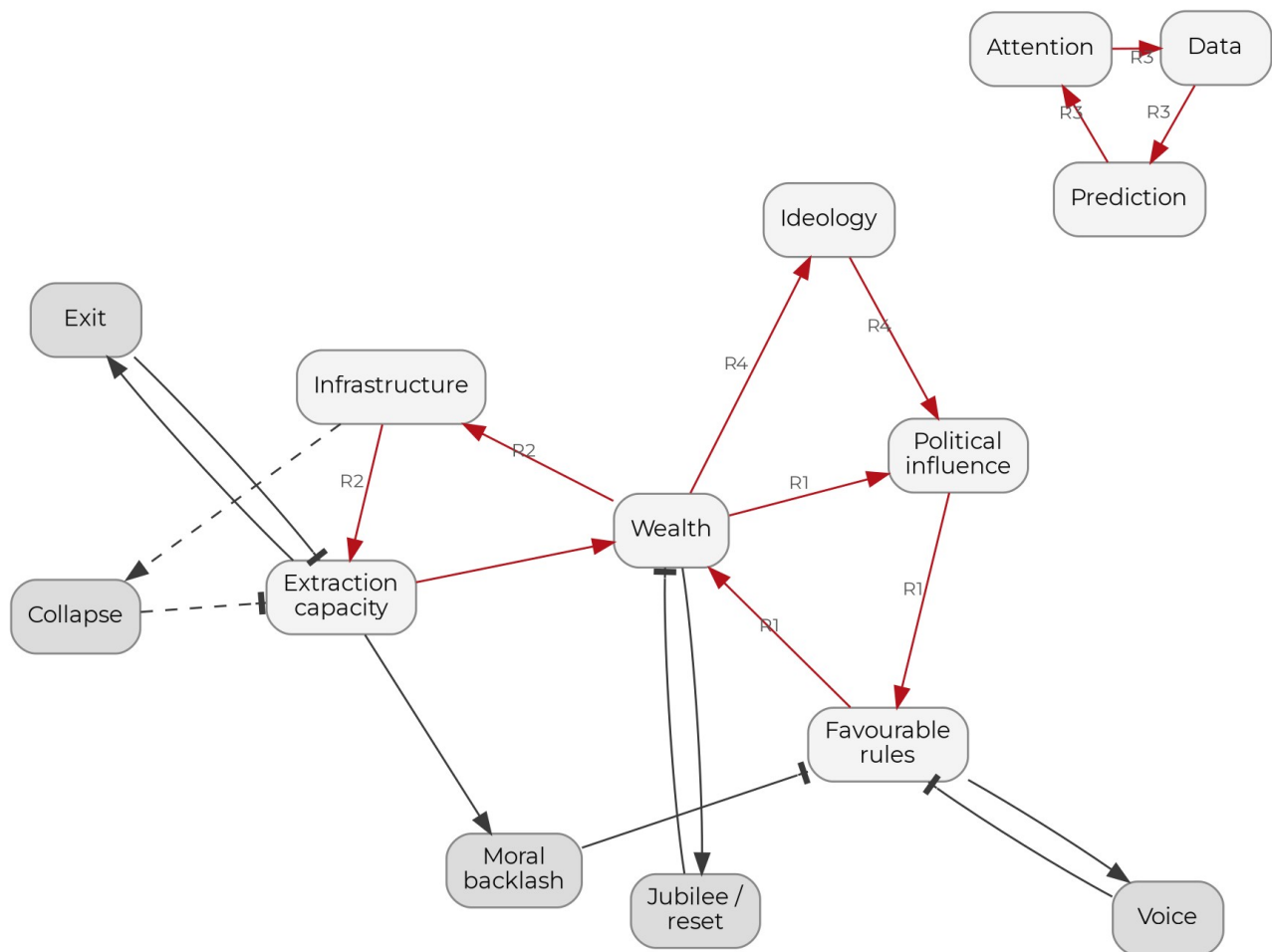
What it reveals: Isolates adaptivity and prediction (outlined) as the properties that are genuinely new, while granularity is old (confession). It is the evidence for closed-loop legibility.

Figure 9. Progress paradox map

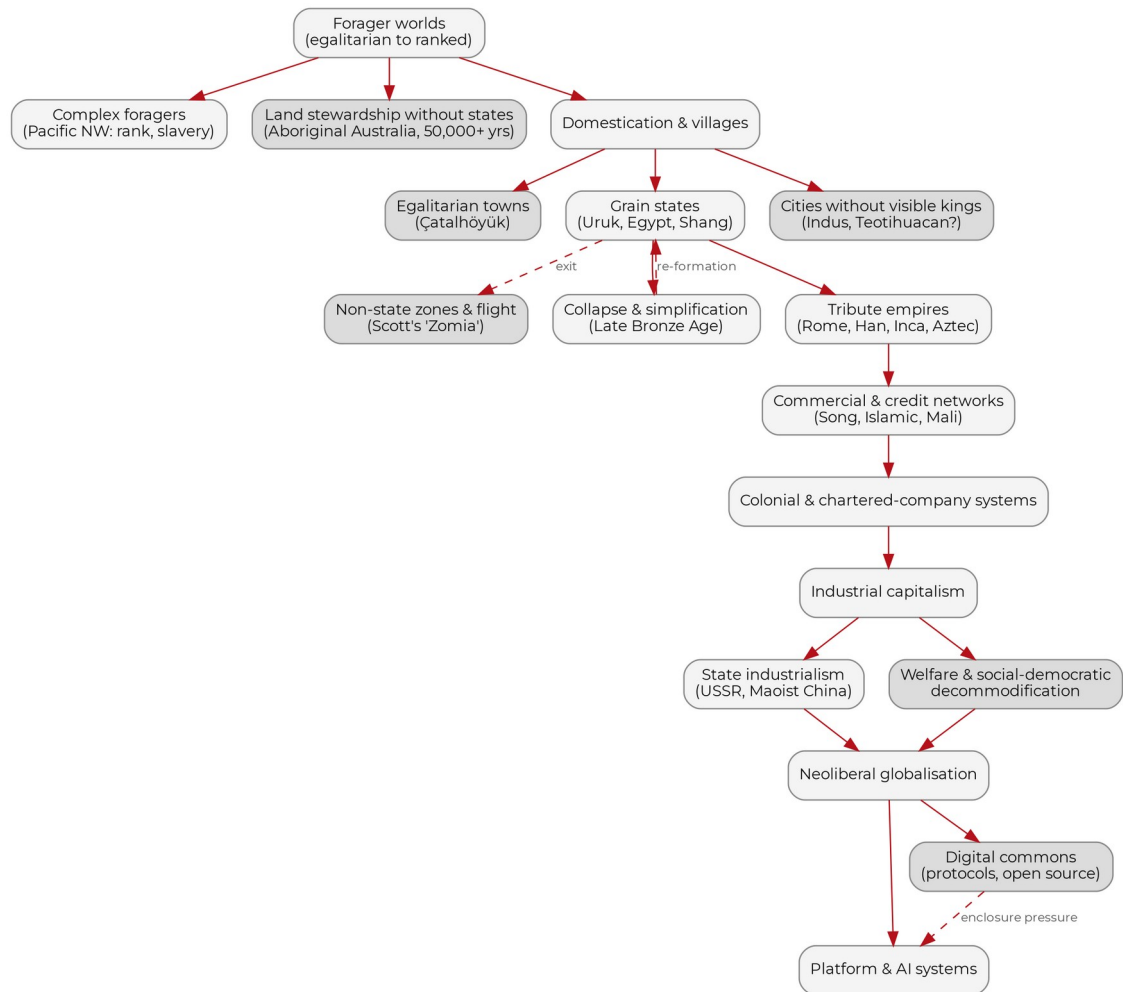


What it reveals: Distributional paradox is nearly universal; proxy and dependency paradoxes rise with information technologies. AI provisionally shows all five, which is why it warrants special attention.

Figure 10. Feedback-loop architecture



What it reveals: Reinforcing loops (red) interlock through wealth; balancing loops (grey nodes, black arrows) attach at different points. It shows why a single reform rarely suffices: wealth sits in several loops at once.

Figure 11. Civilisational evolution map

What it reveals: History as branches, reversals and exits, not a ladder. Grey-shaded nodes mark alternative trajectories that did not reproduce the dominant pattern.

CLOSING ESSAY

EPILOGUE

IS HUMANITY HEADING TOWARD A BETTER FUTURE?

Progress is not a line we ride. It is an architecture we choose.

EPILOGUE

Is Humanity Heading Toward a Better Future?

Ray Mancini

Once the historical data is mapped, one question rises above the rest: is humanity heading toward a better, more beneficial existence?

The short answer is that a better future is not guaranteed. Neither is collapse. The audit of human history suggests the future is something we build, not a destination we arrive at.

Looking ahead from 2026, two powerful forces are accelerating at the same time.

1. The case for optimism: new tools for abundance

If the gains of the past 200 years continue, the material foundations of human life could rise further than ever before. These are possibilities, not certainties.

- **Automation and the future of work.** As AI and robotics mature, the old link between labour and survival could weaken. That opens the door to ideas such as universal basic services, and a shift from economic survival toward human purpose.
- **Proactive medicine.** Medicine is moving from treating illness toward preventing it. Genomics, mRNA therapies and longevity research may further reduce disease and extend healthy lifespans.
- **Clean energy and ecological repair.** Renewables, and technologies still in development such as fusion and synthetic biology, may help separate human thriving from ecological damage.

2. The case for caution: two open frontiers

We cannot assume things will simply get better, because extraction has moved faster than our institutions have adapted.

Frontier	Status
Owning people (slavery, coverture)	Legally closed, though forced labour persists illegally and survival pressure remains where there is no safety floor
The biosphere	Open: seven of nine planetary boundaries crossed
The mind	Open: real-time, automated behavioural steering

- **The biosphere.** Planetary boundaries are physical, not economic. Overusing the atmosphere and ecosystems creates risks, such as climate instability and biodiversity loss, that technology alone is unlikely to solve without governance at planetary scale.
- **The mind.** For the first time, systems can monitor, predict and adjust what people see in real time, across whole populations. How strongly this changes behaviour is still debated. If these systems stay optimised for engagement or control rather than wellbeing, the risk to individual agency and public debate is serious.
- **Scale mismatch.** In the historical record, extraction was usually contained only when a balancing force matched the scale of the system it checked. National labour laws matched national factories; the Montreal Protocol matched a global ozone problem. Today's platforms and supply chains operate across the whole planet, while most of our balancing institutions remain national or local.

The verdict: a choice of architecture

Whether life improves depends on how we answer three questions about every system we build from here:

- 1. Who controls the chokepoints?** Are they run as extractive monopolies, or as accountable public and commons infrastructure?
- 2. Can people leave or change the rules?** Do citizens keep real voice and exit, or are they locked in by network effects?
- 3. Is anyone big enough to push back?** Do balancing forces exist at the same scale as the technology?

Where competition rewards extraction and no binding limits exist, the historical pattern is that power concentrates and costs are pushed onto nature and people.

My own view is this: if we deliberately build balancing forces that match the scale of today's systems, by governing AI in the public interest, setting limits on what we take from the planet, and protecting freedom of thought, humanity has a greater capacity for cooperation and flourishing than at any time in its history.

Progress is not a line we ride. It is an architecture we choose.

CLOSING ESSAY

THE CHAINS CAME OFF. THE PRESSURE DIDN'T.

On survival, work, and the difference between being owned and being trapped.

A personal reflection on Part IV, section 13.6 of this study.

ESSAY

The Chains Came Off. The Pressure Didn't.

On survival, work, and the difference between being owned and being trapped

RAY MANCINI

There is a feeling many people carry and rarely say out loud. It goes something like this: I am free, but I don't feel free.

You wake up, you work, you pay the bills, you do it again. Stopping isn't really an option. Miss enough rent and you lose your home. Lose your job and you may lose your health cover, your stability, sometimes your family's security. You "choose" to work, but the alternative can be destitution.

So people ask a hard question. Is this really so different from slavery?

I spent months mapping how human systems have organised, controlled and taken from human life across history. This question kept coming back to me. It didn't feel right to leave it out, so I want to answer it honestly. That means taking the feeling seriously without letting it turn into something the evidence doesn't support.

The feeling is real

This isn't a new complaint. In the 19th century, working people called it "wage slavery." Karl Marx argued that in a market economy, people are compelled to work by economic necessity rather than a whip. The economic historian Karl Polanyi said labour was a "fictitious commodity": we treat it like something produced for sale, when it is actually a human life. The peace researcher Johan Galtung gave the harm a name, **structural violence**. It is damage done by the way a system is arranged rather than by any one person.

The mechanics behind the feeling are real too.

For most of history, many people had some direct access to land, to shared commons, or to the support of their community. It was never a paradise; plenty of them were bound to lords or crushed by tribute. But as land was enclosed and the basics of life had to be bought, survival became more and more tied to earning money.

Then the pressure compounds. Debt raises what you must earn. Status competition raises what you feel you must own. Industries now study our appetites and attention with great precision. Many people link all of this to burnout, family strain and poor health. Scientists are still debating how much each factor causes what, but few people who live inside that pressure doubt that it weighs on them.

But it is not the same thing

This is where I have to be careful. Calling modern work slavery would dishonour the millions who were actually enslaved, and it would hide where our real power lies.

A person under chattel slavery was **property**. They could be bought, sold and inherited. They had no legal way out; running away was met with violence backed by the state. They had no vote, no right to organise, no right to sue.

A worker today, in most countries, is a legal person who owns their own labour. Leaving a job can be costly and frightening, but it is lawful. We can quit, move, retrain, join a union, start a cooperative, vote, and campaign to change the law.

Ending the ownership of human beings was one of the greatest moral victories in human history. It was won by people who were told the system could never change.

So my honest answer is this: **modern work is not the same category as slavery, but it is not free of coercion either.**

| The chains came off. The pressure didn't.

The middle nobody talks about

There is a grey zone between these two poles, and it is larger than most people realise. The International Labour Organization estimates that around 27.6 million people were in forced labour in 2021. They are trapped by threats, deception, debt they can never repay, or employers holding their passports. For them, the word slavery is not a metaphor.

When I lay it all out, I don't see two boxes. I see a line:

- 1. Owned as property**, with no exit.
- 2. Forced labour and debt bondage**, with exit blocked.
- 3. Work with no safety net**, where exit is lawful but may mean destitution.
- 4. Work with a safety net**, where exit is lawful and survivable.
- 5. Independent means**, where exit is free.

Where you sit on that line depends, more than anything else, on one question: **is there a floor beneath you?** Is there health care, housing support, income support, a way to survive if you stop?

Why it feels like there's no way out

Three things make the current system feel like a law of nature rather than a set of human choices.

We started serving the numbers. We invented measures like GDP, profits, test scores and step counts to track things that matter. Over time, many institutions began chasing the numbers instead of the needs behind them.

The pressure is global, but the protections are local. Money, markets and platforms operate across the whole planet. Most of our safety nets, labour laws and health rules stop at national or local borders.

We forget that it was built. When one way of organising life is everywhere, it starts to look inevitable. It isn't. Countries today make very different choices about how much of life depends on the market, and they get very different results.

The way out is not backwards

History is full of systems that felt inescapable until they weren't. Serfdom felt permanent. So did 14-hour factory days for children. People changed both, not by abandoning organisation or technology, but by changing who the system served.

The tools we have seen work are not mysterious:

- **Safety floors.** Universal health care, education and income support make work something people choose rather than something they are forced into. Some countries already provide far stronger floors than others, and their people feel the difference. Universal basic income is a promising idea, but so far it has only been tested in short pilots with mixed results.
- **Owning the chokepoints together.** Worker cooperatives, open-source technology and community land trusts keep essential resources in the hands of the people who depend on them.
- **Protecting the mind.** Our attention, our quiet and our time with family deserve protection from systems designed to keep us hooked.

What I want you to take from this

If you feel the pressure, you are not imagining it, and it is not a personal failure. It is the predictable result of living inside a system where survival depends on earning and too little stands beneath you if you fall.

But you are not owned. That difference is everything, because it means the rules can be changed by the people living under them.

Seeing the shape of the trap is the first step to changing it.

This essay draws on the Master Civilisational Systems Map, Part IV, section 13.6. Forced labour estimate: ILO, Walk Free and IOM, Global Estimates of Modern Slavery (2022). Further reading: Polanyi, The Great Transformation (1944); Galtung, "Violence, peace, and peace research" (1969); Esping-Andersen, The Three Worlds of Welfare Capitalism (1990).

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