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# A Multi-Agent Model of Major Technological Transitions

The civilisation-wide diffusion of a new tech stack is not predetermined by competitive pressures, but is *enacted* by the power-elite's response to them

## Overview

Our advanced, global civilisation is the result of a progressive series of technological revolutions – agricultural, industrial and digital. Each has fundamentally changed the political economy and cultural psychology of human populations, conferred new competitive advantages and reshaped the *fitness landscape* of civilisation as a whole.

So far civilisation has undergone three such *major technological transitions*. We are now in the midst of the fourth (and likely final): the Intelligence Revolution. The underlying structural dynamic driving it – military-economic adaptation, competitive pressures, multi-polar traps, arms races – is continuous with all preceding transitions. However, as an exponential technology, AI will predictably amplify the consequences of pre-existing incentives and generate negative externalities magnitudes more powerful and catastrophic, potentially even *existential*.

This article frames *technological capability acceleration from inter-group competition* (dynamic upregulation in a multi-agent system) as a foundational civilisational problem: an historical process emergent from collective human behaviour, as conditioned by the dominant civilisational paradigm.

Drawing on the literature of science and technology studies, in concert with case studies of previous technological revolutions throughout history, the article formulates a *multi-agent model* of major technological transitions: as structurally driven by global competitive pressures and also agentially enacted by the local decision-making of the power elite, since the inception of complex, hierarchical civilisations.

Ultimately, it is an open question whether pro-human intentions can prevail over the dynamics and agents of the current world-system. As E.P Thompson insightfully put it: *"If Man is ever obliterated from the earth by means of his own armaments, there will be no simple answer to the question: Did he fall, or was he pushed?"*.

philosophy of technology · macrohistory · systemic existential risk · accelerationism · exterminism

## Basis

After a prolonged period of seeming inactivity after sunsetting their publication *The Consilience Project*, the *Civilisation Research Institute* have recently released a series of new papers: ‘Reality Check?’, ‘General Regulatory Process for Advanced Technology’ & ‘Steps for Prudent Problem-Solving’. Following suit, I thought to write my own article as an independent contribution to the civilisation research paradigm.

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## Major Technological Transitions

Whist it is all we have ever known, the advanced, global, technological civilisation of today has only been in existence for a very brief period of human history. The society or *socio-technical system*, that we live within is a highly novel configuration, the large-scale culmination of a series of technological revolutions. So far, civilisation has undergone three such revolutions – Agricultural, Industrial and Digital – and we are now in the midst of a fourth (and likely final) one: the ***Intelligence Revolution***.

We call these *major technological transitions*: periods of time where the introduction of a new form of technology stack (infrastructure) fundamentally changes the wider political economy (social structures) and cultural psychology (superstructures) of the populations that deploy it, conferring competitive advantages and ultimately reshaping the fitness landscape of civilisation as a whole.

To understand this we can turn back to history. The clearest case – and the most consequential (as well as the earliest chronologically) – was the first major technological transition from nomadic hunter-gatherer tribes to settled agrarian civilisations.

## Macrohistorical Developmental Process

Before running through how this first revolution and those that succeeded it unfolded, I'll first present the theoretical framework that will be employed across them all. Combined it provides a systematic way of tracing how civilisation has elaborated itself across time and place, in other words, of deeply understanding its *macrohistorical developmental process* (and its internal logic). Aside from serving knowledge, this understanding also represents a grand narrative for situating the human condition inside.