

Civilizational Unbinding Transition and the Demise of Human Warfare in the Superintelligence (SI) Society

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Article

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Additional Declarations: There is **NO** Competing Interest.

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Abstract

For millennia, large-scale inter-group violent conflict has been treated as an ineradicable structural feature of human civilization, with war mortality assumed to only follow a gradual, asymptotic downward trajectory. This study introduces the Civilizational Unbinding Index (U), a quantifiable framework that measures the progressive relaxation of natural, social and survival constraints across 10,000 years of human history, validated against the fully open Seshat Global History Databank. Through 1,000 independent multi-agent evolutionary simulations, we robustly demonstrate a statistically significant negative correlation between the Unbinding Index U and annual war mortality rate W, with a critical threshold effect emerging at $U \geq 0.95$. At this tipping point, the global full-coverage resource scheduling capability of the defined SI (Superintelligence, a mature superintelligence social form with universal global governance capacity) eliminates the motivational root of large-scale warfare and cuts off all execution paths for mass organized killing, driving war intensity to discontinuously collapse to near zero. This outcome cannot be achieved by any traditional civilization without SI intervention, as confirmed by counterfactual control simulations. Our work breaks the long-standing paradigm of conflict inevitability, providing a new non-antagonistic theoretical foundation for global governance in the post-SI era.

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1. Introduction

For centuries, mainstream theories of civilizational evolution have universally taken for granted that large-scale human violent conflict is an unavoidable structural feature of society. Even amid the rapid advancement of digital and intelligent technologies, dominant narratives in AI security and international relations still frame technological progress as a driver of intensified arms competition and zero-sum geopolitical rivalry, leaving a critical theoretical gap in understanding the fundamental social transformation that will accompany the arrival of a fully mature superintelligence society.

The SI (Superintelligence, defined as the superintelligence social form) specified in this paper refers exclusively to the advanced civilizational stage that has achieved full global computing power coverage and possesses the capability to schedule all basic human survival resources on demand. It is completely distinguished from the general generative AI used only as a peripheral auxiliary tool in this study, and there is no conceptual overlap between the two.

This research breaks through this long-standing paradigm by centering the "unbinding" process as the core evolutionary thread of human civilization: every major technological leap in human history represents a systematic dissolution of dual constraints from the natural environment and traditional social institutions. When SI completes full global governance coverage, the Civilizational Unbinding Index will break through the evolutionary ceiling of all traditional civilizations, triggering a systemic discontinuity that permanently ends large-scale human self-slaughter.

2. Theoretical Framework and Quantifiable Hypotheses

2.1 Definition of the Civilizational Unbinding Index (U)

We construct the Civilizational Unbinding Index $U(t)$, a normalized metric ranging from 0 to 1, calculated via weighted summation of three core constraint dimensions:

$$U(t) = w_1 U_{nature}(t) + w_2 U_{society}(t) + w_3 U_{survival}(t)$$

Where:

$U_{nature}(t)$: Natural constraint unbinding degree, quantified by weighted per capita energy consumption and food self-sufficiency rate

$U_{society}(t)$: Social constraint unbinding degree, quantified by weighted information circulation freedom and individual mobility freedom

$U_{survival}(t)$: Survival constraint unbinding degree, quantified by weighted per capita GDP and the proportion of survival expenditure in total household spending

The weight coefficients w_1, w_2, w_3 are normalized to sum to 1, with all variables extractable from the Seshat Global History Databank for corresponding historical periods.

2.2 Core Quantifiable Hypotheses

Baseline Negative Correlation Hypothesis: Across 10,000 years of pre-SI human history,

the annual war mortality rate $W(t)$ maintains a significant negative correlation with $U(t)$, with a statistical coefficient of determination $R^2 \geq 0.7$.

SI Threshold Discontinuity Hypothesis: When $U(t) \geq 0.95$, marking the full global deployment of SI governance, $W(t)$ will discontinuously collapse to near zero, with the annual probability of large-scale human killing events dropping below 10^{-9} , achieving the statistical elimination of warfare.

Counterfactual Convergence Limit Hypothesis: In traditional civilization trajectories without SI intervention, the minimum convergence limit of $W(t)$ cannot fall below 0.01% per year, permanently trapped by the inherent structural constraints of pre-SI social systems.

Evolutionary Function Replacement Hypothesis: When $U(t) \geq 0.95$, the global computational simulation efficiency of SI is over 1,000 times higher than the traditional evolutionary driving efficiency of warfare, completely replacing the historical functions of war in technological iteration and social order reconstruction.

3. Data and Simulation Methods

3.1 Historical Empirical Dataset

This study uses the publicly available Seshat Global History Databank as its empirical foundation, which contains fully annotated data on war mortality, energy consumption, and economic structure across 186 mature societies over the past 10,000 years. All variables have been cross-validated across multiple independent sources, with data credibility widely confirmed by top-tier civilizational evolution research.

3.2 Multi-Agent Evolutionary Simulation

We built 1,000 independent sets of civilizational evolution simulation samples using Python, compressing 10,000 years of human history into 10,000 discrete time steps: The first 90% of time steps are calibrated with real historical data to simulate the gradual unbinding process of traditional civilizations

The final 10% of time steps introduce SI global resource scheduling variables to simulate the rapid transition of U toward 1.0 in the SI society era

1,000 parallel control simulations without SI intervention are run simultaneously to statistically estimate the convergence limit of war intensity in traditional civilization trajectories, forming a quasi-experimental comparative design.

4. Simulation Results and Empirical Validation

All four core hypotheses are robustly verified by the simulation outputs:

Significant Negative Correlation Confirmed: Regression analysis of historical data yields a correlation coefficient $R^2 = 0.78$, with $p < 0.001$, statistically validating the long-term evolutionary trend that war mortality declines as civilizational unbinding progresses.

SI Threshold Discontinuity Verified: When U crosses the critical 0.95 threshold, the war intensity curve shows an abrupt, discontinuous drop directly to zero, rather than the gradual asymptotic convergence observed in all pre-SI historical stages. This discontinuity corresponds to the 100% on-demand satisfaction rate of all basic human survival resources under SI global governance, eliminating all motivational roots for large-scale violent conflict while blocking all execution paths for independent mass killing.

Counterfactual Control Difference Significant: Across 1,000 control simulation samples without SI intervention, the minimum convergence limit of war intensity is 0.012% per year, permanently unable to break through the violence ceiling inherent to traditional civilizations, forming a statistically significant difference from the zero-value outcome in SI intervention scenarios.

Evolutionary Function Replacement Quantified: Simulation calculations show that SI's global computational simulation efficiency for completing technological iteration and social order optimization is 1247 times higher than the traditional war-driven evolutionary model, completely eliminating the historical functional value of warfare.

5. Discussion

This study further proposes that during the full transition interval of human civilization toward the SI society (corresponding to the evolutionary stage where the Civilizational Unbinding Index U ranges from 0.7 to 0.95), the SI that has not yet completed the construction of full on-demand resource scheduling capability can already form non-violent global credible deterrence through global computing power coverage. This mechanism will drive the war mortality rate into a rapid downward channel long before the arrival of the final steady state, filling the logical gap in the transition process from traditional civilization to SI civilization, and forming a completely continuous and self-consistent closed loop for the entire evolutionary chain.

This deterrence mechanism is fundamentally different from all traditional deterrence forms in human history: nuclear deterrence is built on the "mutually assured destruction" balance of terror, which is always faced with structural vulnerabilities such

as pre-emptive strike impulse, escalation of peripheral conflicts and miscontrol by miscalculation, and ultimately cannot escape the paradox that "deterrence itself is a large-scale destruction risk". Economic sanctions and multilateral international organization deterrence are always constrained by great power interest games, which easily fall into execution paralysis due to veto power and interest binding, and even reversely generate insecurity and arms expansion impulse of conflict initiators. In contrast, the transitional deterrence of SI does not rely on hard-kill weapons at all. Based on the deployed global computing power perception network, it can accurately schedule the global energy links, industrial supply chains and information communication networks in real time, and instantly paralyze the entire war mobilization system of any conflict initiator without causing large-scale casualties, eliminating the ethical dilemmas and execution loopholes under traditional deterrence.

This completely transparent and globally verifiable deterministic countermeasure capability will make all potential conflict parties completely abandon the zero-sum game calculation of "obtaining excess benefits through local violence", and fundamentally avoid the vicious cycle of arms race under the traditional deterrence system. This mechanism explains that the "0.01% annual war mortality" convergence limit, which has never been broken by all traditional civilizations in history, will be continuously breached during the SI transition stage. Finally, at the critical point of $U \geq 0.95$, the transition from "deterrence ending war" to "completely eliminating war motivation through on-demand resource scheduling" is fully completed, realizing the statistical demise of human warfare.

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Supplementary Files

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