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Civilizational Intelligence Reconsidered: Complexity, Power, Plurality, and Adaptation in a Planetary Age

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Abstract

The concept of civilization has long occupied a central place in historical, sociological, and anthropological inquiry. Classical theories frequently portrayed civilizations as coherent cultural entities, developmental stages, or large-scale historical organisms. More recent scholarship, however, has emphasized fragmentation, power asymmetries, colonial entanglements, epistemic plurality, and the contested nature of social order. This article proposes a relational theory of civilizational intelligence that seeks to bridge these traditions without reducing civilizations to unified organisms or deterministic historical trajectories. Rather than treating civilizations as bounded entities possessing collective minds, the article conceptualizes them as contested relational assemblages composed of heterogeneous actors, institutions, knowledge systems, infrastructures, ecological processes, and power relations. Civilizational intelligence is defined as the capacity of these assemblages to negotiate complexity, manage conflict, integrate diverse forms of knowledge, respond to socio-ecological transformations, and sustain conditions for collective adaptation under uncertainty. Drawing on complexity theory, political ecology, critical governance studies, anthropology, and decolonial scholarship, the article develops a multidimensional framework organized around relational adaptation, epistemic plurality, power-sensitive governance, ecological embeddedness, collective learning, and anticipatory coordination. Comparative illustrations from historical and contemporary societies demonstrate how adaptive capacities emerge not from systemic coherence alone but from the dynamic interaction of cooperation, contestation, and institutional transformation. The article argues that future civilizational resilience in the Anthropocene will depend less on technological sophistication or economic expansion than on the capacity to navigate diversity, inequality, ecological constraints, and planetary interdependence. In this sense, civilizational intelligence is not a property of civilizations as unified entities but an emergent and continuously negotiated process operating across multiple scales of human organization.

Keywords: Civilization, Civilizational intelligence, Complexity science, Complex adaptive systems, Resilience, Systems thinking, Anthropocene, Planetary boundaries, Governance, Sustainability, Adaptive learning, Epistemic diversity, Earth system governance, Multiple modernities, Planetary intelligence

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1. Introduction

Why do some large-scale human formations maintain adaptive capacities under conditions of accelerating

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environmental, technological, and political change while others experience fragmentation, crisis, or institutional paralysis? This question has become increasingly urgent in the twenty-first century as societies confront climate disruption, biodiversity loss, geopolitical instability, technological transformation, widening inequalities, and growing forms of planetary interdependence. These challenges are not confined within national borders, nor can they be adequately understood through isolated disciplinary perspectives. They emerge from the interactions of ecological, political, economic, cultural, technological, and epistemic processes operating across multiple scales simultaneously (Spengler, 1926; Toynbee, 1934-1961; Folke *et al.*, 2016; Dryzek and Pickering, 2019).

The concept of civilization has long served as a framework for examining large-scale patterns of historical continuity and social transformation. Yet it remains one of the most contested concepts in the social sciences and humanities. Classical civilizational theories often portrayed civilizations as coherent cultural entities, developmental stages, or historically bounded units characterized by distinctive values and institutions (Chakrabarty, 2021; Latour, 2018; Connolly, 2017). While such approaches generated influential insights, they have also been criticized for essentialism, determinism, and their tendency to treat highly heterogeneous social formations as internally coherent wholes (Escobar, 2018; Mignolo and Walsh, 2018).

Contemporary anthropology, postcolonial scholarship, and critical social theory have challenged these assumptions by emphasizing fragmentation, power asymmetries, colonial entanglements, contested identities, and the plurality of historical experiences that constitute social life (Santos, 2018; Mbembe, 2017; Tsing, 2015; Wolf, 1982). From these perspectives, societies are not unified entities pursuing common trajectories but dynamic assemblages shaped by conflict, negotiation, exclusion, cooperation, and unequal distributions of power. Social orders are continuously produced and reproduced through interactions among diverse actors whose interests, identities, and aspirations frequently diverge.

At the same time, the limitations of purely fragmented or localized perspectives have become increasingly visible in the context of planetary challenges. Climate change, pandemics, financial crises, digital infrastructures, migration systems, and global supply chains reveal forms of interdependence that transcend local contexts and connect distant actors through complex networks of causation and vulnerability (Said, 1978; Eisenstadt, 2000; Arnason, 2003). These developments have stimulated renewed interest in frameworks capable of examining how large-scale social formations navigate complexity, uncertainty, and long-term transformation without reverting to deterministic or essentialist understandings of civilization.

Recent advances in complexity studies, socio-ecological systems research, political ecology, and Earth system governance provide important resources for addressing this challenge (Delanty, 2024; Scott, 1998 and 2009; North *et al.*, 2009). These approaches emphasize relationality, emergence, adaptation, feedback processes, and multi-scalar interactions. However, complexity-based analyses sometimes risk underestimating the importance of power relations, inequality, historical injustice, and epistemic plurality. Conversely, critical approaches often provide rich accounts of domination and resistance but may offer fewer tools for understanding large-scale coordination and long-term adaptive capacities. A productive dialogue between these traditions remains underdeveloped.

This article argues that a renewed civilizational perspective remains analytically valuable if civilizations are understood not as organisms, bounded cultures, or collective minds, but as contested relational assemblages composed of heterogeneous actors, institutions, infrastructures, knowledge systems, ecological conditions, and power relations. Such assemblages do not possess unified intentions or coherent identities. Rather, they constitute historically evolving fields of interaction within which cooperation and conflict, stability and transformation, coexist simultaneously.

Within this framework, the article proposes the concept of civilizational intelligence. Civilizational intelligence does not refer to a collective consciousness, a civilizational mind, or an organic property of societies. Instead, it denotes the relational capacity of large-scale social formations to negotiate complexity, integrate diverse forms of knowledge, manage conflict, respond to socioecological change, and sustain adaptive possibilities under conditions of uncertainty. Intelligence, in this sense, is not located within a single institution or authority but emerges from the quality of interactions among governance systems, knowledge networks, cultural traditions, social movements, technological infrastructures, and ecological realities.

The concept is particularly relevant in the Anthropocene, an era in which human activities increasingly shape Earth-system processes while simultaneously becoming constrained by planetary ecological limits (Acemoglu and Robinson, 2012; Ostrom, 1990). Under such conditions, questions of adaptation can no longer be separated from questions of justice, power, sustainability, and epistemic diversity. The capacity to address global challenges depends not only on technological innovation or economic growth but also on the ability to coordinate across differences, recognize multiple knowledge traditions, and negotiate competing visions of collective futures.

The purpose of this article is therefore not to revive classical civilizational theory, but to reconstruct it through engagement with contemporary debates in anthropology, political ecology, complexity science, governance studies, and decolonial scholarship. By conceptualizing civilizations as contested relational assemblages rather than unified entities, the article develops a framework for understanding how adaptive capacities emerge through the interaction of plurality, conflict, cooperation, and institutional transformation. In doing so, it seeks to contribute to ongoing discussions about resilience, governance, and human futures in an increasingly interconnected and uncertain world.

2. Historical Foundations of Civilizational Thought

The intellectual history of civilizational thought is neither linear nor unified, but rather composed of successive layers of interpretation shaped by distinct historical contexts, disciplinary formations, and epistemological assumptions. Across time, scholars have attempted to make sense of large-scale social formations using the conceptual resources available to them, producing a shifting archive of ideas that range from normative philosophies of order to macro-historical theories of development and decline. What is commonly referred to today as “civilization theory” is therefore not a coherent tradition, but a contested field in which different ways of seeing social complexity have been constructed, challenged, and reconfigured. A careful reconstruction of this genealogy is necessary not only for historical clarity, but also to avoid reproducing earlier conceptual simplifications under the guise of contemporary theoretical innovation.

Early reflections on large-scale social order emerged long before the institutionalization of modern social sciences. In ancient societies such as Mesopotamia, Egypt, China, India, Greece, Rome, as well as across African and Islamic intellectual worlds, thinkers developed sophisticated normative and institutional accounts of how collective life should be organized, stabilized, and legitimized. However, these reflections did not conceptualize “civilization” as a bounded analytical object. Instead, they articulated relational understandings of order rooted in cosmology, ethics, political hierarchy, ritual practice, and material survival. In Ancient Greece, for example, political life in the *polis* was theorized through the interdependence of citizenship, virtue, and participation, yet this conceptualization was simultaneously embedded in exclusionary structures that restricted political agency to specific social categories. Roman political thought, by contrast, placed emphasis on legal rationalization and administrative integration across vast imperial territories, yet such integration was never homogeneous; it was continuously negotiated through uneven incorporation, coercion, and localized adaptations of imperial authority. Similarly, Chinese intellectual traditions, particularly Confucianism, emphasized moral cultivation and hierarchical responsibility as foundations of social harmony, while competing Legalist traditions foregrounded coercive governance and centralized control, revealing that even within a single civilizational space, there existed deep epistemic and political plurality. Across African, Islamic, and South Asian traditions, comparable reflections on ethics, authority, and collective life reveal similarly plural and situated understandings of order rather than unified civilizational essences (Chakrabarty, 2021; Latour, 2018; Connolly, 2017).

The emergence of modern civilizational theory in the nineteenth and early twentieth centuries introduced a decisive epistemological shift. Thinkers such as Spengler and Toynbee sought to construct large-scale explanatory frameworks capable of capturing long-term historical patterns across societies. Spengler’s cyclical model portrayed civilizations as cultural wholes undergoing stages of birth, maturity, and decline, relying heavily on organic metaphors that have since been widely criticized for their deterministic implications (Toynbee, 1934-1961). Toynbee’s challenge-response framework introduced a more flexible model emphasizing differential adaptation and the role of creative minorities, yet it still retained the assumption that civilizations function as coherent macro-units capable of collective response (Spengler, 1926). In both cases, civilizational

analysis remained anchored in assumptions of boundedness and internal unity, even when acknowledging variation and contingency.

Modernization theory further reconfigured civilizational discourse by embedding it within postwar developmental economics and state-centric narratives of progress. It conceptualized historical transformation as a linear movement from traditional to modern societies, often implicitly positioning Western industrial societies as normative benchmarks of development (Folke *et al.*, 2016). While influential in policy and development planning, this framework has been extensively criticized for Eurocentrism, teleological reasoning, and its neglect of colonial histories and structural inequalities embedded in global systems (Escobar, 2018; Mignolo and Walsh, 2018).

From the late twentieth century onward, civilizational analysis underwent a profound epistemological critique driven by postcolonial theory, anthropology, and critical social theory. Scholars demonstrated that civilizational categories are not neutral analytical tools but historically situated constructs embedded in colonial systems of knowledge production that structured global hierarchies of culture and development (Santos, 2018; Mbembe, 2017; Tsing, 2015; Wolf, 1982). Simultaneously, the theory of multiple modernities challenged linear developmental narratives by emphasizing that modernity is not singular but plural, differentiated, and institutionally diverse across global contexts (Dryzek and Pickering, 2019). These interventions collectively destabilized the notion of civilization as a unified object and opened space for relational and plural approaches to large-scale social formations.

Within contemporary scholarship, complexity science, socio-ecological systems theory, and Earth system governance studies offer important conceptual tools for analyzing interdependence, feedback, and multi-scalar interactions (Delanty, 2024; Scott, 1998 and 2009; North *et al.*, 2009). However, these approaches must be critically reinterpreted to avoid reproducing earlier systemic holisms in new conceptual forms. A relational approach therefore treats civilizations not as bounded organisms or coherent systems, but as historically produced assemblages composed of heterogeneous institutions, infrastructures, knowledge systems, ecological relations, and power structures. These assemblages are continuously constituted through interaction, conflict, and uneven development rather than internal coherence or systemic unity.

From this perspective, civilizational analysis becomes an inquiry into how large-scale social orders are produced, stabilized, contested, and transformed through historically situated relations of power, knowledge, and material dependency rather than the study of civilizations as fixed entities.

3. Civilizational Intelligence: A Relational and Conflict-Sensitive Framework

The concept of civilizational intelligence, as developed in this article, is not intended to revive earlier notions of collective consciousness, systemic unity, or civilizational agency. Such formulations risk reproducing organicist metaphors that obscure internal heterogeneity, political conflict, and epistemic plurality that characterize all large-scale social formations. Instead, civilizational intelligence is defined here as a relational and emergent capacity distributed unevenly across institutions, actors, infrastructures, and knowledge systems, through which societies negotiate complexity, uncertainty, and transformation under conditions of structural inequality and ecological constraint (Delanty, 2024; Scott, 1998 and 2009; North *et al.*, 2009).

Civilizational intelligence does not reside within a single institution or governance center, nor can it be reduced to technological sophistication, economic productivity, or institutional efficiency. Rather, it emerges from the interaction of multiple partially autonomous systems shaped by historical inequalities, political struggles, and contested epistemologies. Intelligence is therefore not a property of civilizations as unified entities, but a dynamic and unstable process produced through ongoing negotiation among heterogeneous actors operating within asymmetrical structures of power (Santos, 2018; Mbembe, 2017; Tsing, 2015; Wolf, 1982).

A central implication of this perspective is that civilizational intelligence is inherently conflictual. Coordination within large-scale societies is never purely functional or consensual; it is mediated by competing interests, structural inequalities, and divergent knowledge systems. Governance structures do not neutrally integrate knowledge or coordinate action; they selectively institutionalize certain forms of knowledge while marginalizing others, thereby shaping what becomes socially actionable or politically visible (Ostro, 2010;

Berkes *et al.*, 2003; Folke, 2006). Civilizational intelligence is therefore inseparable from questions of domination, resistance, and uneven development.

Relational adaptation refers to the capacity of societies to adjust institutional arrangements in response to ecological, economic, and political pressures. However, adaptation is never evenly distributed across social groups; it frequently produces new asymmetries even as it resolves others. It is therefore better understood as a negotiated process rather than systemic optimization (Levin, 1999; Homer-Dixon, 2020; Biermann, 2014).

Epistemic plurality refers to the coexistence of multiple knowledge systems—including scientific, indigenous, local, and experiential forms of knowledge—that often operate under conditions of asymmetrical recognition. These epistemologies are not merely complementary but may be partially incommensurable, generating tensions over legitimacy and authority. Civilizational intelligence depends not on epistemic homogenization but on the capacity to sustain productive interaction across epistemic difference (Biermann, and Kim, 2020).

Power-sensitive governance emphasizes that institutional coordination is always embedded in relations of power. Governance structures determine whose knowledge counts, whose interests are prioritized, and which futures become politically actionable. Understanding civilizational intelligence therefore requires analyzing the political economy of knowledge and institutional authority rather than treating governance as neutral coordination (Kaul *et al.*, 2003; IPBES, 2019; UNEP, 2019).

Socio-ecological embeddedness highlights that civilizational processes are structurally dependent on Earth systems that impose material constraints on human organization. However, these constraints are experienced unevenly across populations, often reinforcing pre-existing inequalities in vulnerability and access to resources. Ecological dynamics therefore interact with social hierarchies rather than operating as external uniform pressures (Escobar, 2018; Mignolo and Walsh, 2018).

Collective learning under constraint refers to the capacity of societies to generate and integrate knowledge over time, but such learning is shaped by institutional inertia, ideological conflicts, and unequal access to epistemic infrastructures. What counts as “learning” is itself politically contested rather than purely technical (Ostro, 2010).

Anticipatory coordination refers to the fragmented capacity of institutions to orient themselves toward uncertain futures. Rather than unified foresight, anticipatory practices are distributed across competing political, scientific, and economic agendas, producing multiple and often conflicting future projections (Scott, 2009).

Taken together, these dimensions indicate that civilizational intelligence cannot be understood as coherence, optimization, or systemic integration. It is instead a relational capacity emerging from interaction, contestation, and partial coordination across heterogeneous systems embedded within structures of inequality and ecological constraint.

4. Civilizational Intelligence

Civilizational intelligence, as developed in this framework, is not conceived as a property that civilizations “possess” in a unified or organic sense, nor as a metaphorical extension of individual cognition to the level of societies. Instead, it is defined as a relational and distributed capacity that emerges from the structured interactions among heterogeneous elements of large-scale social formations. These elements include institutions, infrastructures, knowledge systems, economic arrangements, ecological constraints, cultural repertoires, and power relations. What is central here is not the idea of a coherent civilizational subject, but rather the dynamic quality of coordination, contestation, and adaptation that unfolds across multiple scales of social life (Berkes *et al.*, 2003; Folke, 2006; Meadows, 2008). Civilizational intelligence therefore refers to the ability of these complex assemblages to maintain conditions of viability, manage internal tensions, and adapt to external disruptions without presupposing unity or consensus.

From this perspective, civilizations do not “think,” “decide,” or “act” as singular entities. Instead, forms of intelligence are distributed across networks of governance, expert systems, social movements, markets, and everyday practices. What appears as coordinated civilizational behavior is the emergent outcome of partially

aligned and often conflicting processes. This interpretation avoids the anthropomorphic extension of cognition to macro-social systems while still preserving the analytical usefulness of examining large-scale adaptive capacities (Delanty, 20224; Acemoglu and Robinson, 2012). Civilizational intelligence, in this sense, is best understood as a measure of relational effectiveness: the degree to which a given configuration of social, ecological, and technological relations is able to process feedback, absorb shocks, and reorganize itself under conditions of uncertainty.

At the theoretical level, this approach draws from complexity theory, but it reinterprets its implications through the lens of power and plurality. Complexity alone does not guarantee adaptive outcomes; in fact, complex systems can generate deep inequalities, rigid hierarchies, and pathdependent lock-ins that reduce adaptability for certain groups while enhancing it for others (Scott, 1998; Ostrom, 2010). For this reason, civilizational intelligence must be understood as unevenly distributed. Some actors benefit from adaptive transformations while others are excluded, displaced, or rendered invisible within dominant governance structures. The framework therefore refuses any assumption that systemic adaptation is synonymous with collective benefit. Instead, it emphasizes that adaptation is always politically and socially mediated.

A further implication of this relational approach is that civilizational intelligence cannot be reduced to technological sophistication, institutional density, or economic performance. Highly advanced technological systems may coexist with ecological degradation, social fragmentation, and epistemic exclusion. Conversely, less technologically complex societies may exhibit strong adaptive capacities through dense social coordination, ecological embeddedness, and cultural flexibility (Scott, 2009; Ostrom, 1990). Civilizational intelligence is therefore a multi-dimensional relational quality rather than a linear developmental attribute. It reflects the capacity of a system to sustain livable relations across difference, instability, and change.

In the context of the Anthropocene, this relational understanding becomes particularly significant. Global challenges such as climate disruption, biodiversity loss, and technological risk are not simply technical problems but systemic relational crises involving competing interests, asymmetrical responsibilities, and unequal vulnerabilities (UNESCO, 2021a and 2021b). Civilizational intelligence, in this sense, refers to the ability of societies to navigate these asymmetries without collapsing into systemic breakdown or coercive homogenization. It involves not the elimination of conflict but the creation of institutional and cultural conditions in which conflict can be managed without destroying the possibility of collective continuity (Levin, 1999; Homer-Dixon, 2020).

5. Civilizations as Contested Relational Assemblages

The concept of civilizations as contested relational assemblages marks a decisive departure from classical civilizational theories that treated societies as bounded cultural wholes or macro-organisms. In this framework, civilizations are understood as historically sedimented configurations of relations that are continuously produced and reproduced through interactions among diverse actors, institutions, infrastructures, knowledge systems, and ecological conditions (Santos, 2018; Mbembe, 2017; Tsing, 2015; Wolf, 1982). These configurations are never fully stable, nor are they internally coherent in any final sense. Rather, they are fields of tension in which multiple logics of organization coexist, overlap, and compete.

A relational assemblage is not a fixed structure but a dynamic composition of heterogeneous elements that are temporarily stabilized through institutional arrangements, material infrastructures, symbolic systems, and forms of authority. These stabilizations are always partial and reversible. They reflect contingent alignments rather than intrinsic coherence. Within any given civilizational formation, multiple temporalities and rationalities coexist: economic rationality, political rationality, ecological constraints, cultural meanings, and technological logics often operate in tension with one another. Civilizations, therefore, should be understood less as entities and more as processes of ongoing coordination and disarticulation.

This perspective also foregrounds the centrality of power. Civilizational formations are not neutral systems of adaptation but deeply structured fields of inequality, domination, and resistance. Access to resources, knowledge, and decision-making authority is unevenly distributed, producing asymmetrical capacities to shape civilizational trajectories. What is often described as “civilizational development” is, in many cases, the outcome of contested processes in which certain groups or institutions succeed in stabilizing their preferred

forms of order while marginalizing alternative arrangements. These dynamics are inseparable from historical patterns of inequality, extraction, and political domination that structure global development (Levin, 1999; Homer-Dixon, 2020).

Within such assemblages, knowledge plays a particularly important role. Knowledge systems are not neutral repositories of information but active components of civilizational ordering. Scientific frameworks, bureaucratic categories, indigenous epistemologies, technical standards, and everyday practical knowledge all contribute to shaping how problems are defined and how solutions are constructed. However, these knowledge systems are rarely symmetrical in their influence. Certain epistemologies are institutionalized and globally circulated, while others are localized, marginalized, or rendered invisible. The resulting epistemic hierarchies are central to understanding how civilizational assemblages reproduce both order and exclusion (Santos, 2018; Tsing, 2015).

Ecological relations are equally fundamental. Civilizations are embedded within biophysical systems that condition and constrain their trajectories. However, these ecological relations are not external to civilization; they are actively shaped by civilizational practices such as extraction, land use, industrial production, and technological transformation. The notion of assemblage therefore includes both human and non-human actors, recognizing that ecological processes participate in shaping civilizational dynamics. This does not imply anthropomorphizing nature but acknowledging that material environments exert structural influence on the possibilities of social organization (Connolly, 2017; Escobar, 2018; Mbembe, 2017).

In empirical terms, historical and contemporary cases demonstrate that civilizational assemblages are rarely unified. Even highly centralized states contain competing institutions, conflicting interests, and divergent temporal logics. Empires, modern nation-states, and regional blocs all exhibit internal fragmentation alongside external integration. The European Union, for instance, simultaneously operates as a coordinated regulatory system and a contested field of national interests and political asymmetries (Biermann, 2014; IPBES, 2019). Similarly, large historical formations such as Imperial China or Ancient Rome contained multiple overlapping governance structures, regional variations, and localized forms of resistance that complicate any notion of unified civilizational agency (Folke, 2006; Meadows, 2008).

From this standpoint, civilizational transformation is not the outcome of a singular developmental trajectory but the result of shifting configurations of power, knowledge, and material relations. Change occurs through gradual reorganization, institutional displacement, crisis-induced restructuring, and the emergence of new alignments among previously disconnected elements. These processes are often nonlinear, uneven, and reversible. Stability and transformation coexist rather than exclude one another (Delanty, 20224; Acemoglu and Robinson, 2012).

Ultimately, conceiving civilizations as contested relational assemblages allows for a more realistic account of complexity without reverting to deterministic or organicist models. It preserves the analytical value of large-scale civilizational comparison while avoiding the assumption of unity or coherence. At the same time, it foregrounds the ethical and political stakes of civilizational analysis by emphasizing that adaptation is never neutral: it is always shaped by power, inequality, historical path dependencies, and competing visions of the future (Santos, 2018; Levin, 1999; Homer-Dixon, 2020).

6. Civilizational Design Principles for Resilience

Civilizational resilience in the twenty-first century must be understood less as the outcome of optimal systemic design and more as a continuously contested and uneven process shaped by institutional fragmentation, political struggle, ecological constraint, and unequal access to material and epistemic resources. Earlier modernization and systems-oriented frameworks often conceptualized resilience as a property emerging from coherence, equilibrium, or functional integration. However, contemporary anthropological, political ecological, and critical governance scholarship increasingly demonstrates that large-scale social formations do not operate as unified systems, but as heterogeneous fields of power in which coordination, disruption, negotiation, and resistance coexist as permanent features of social life (Delanty, 20224; Scott, 1998 and 2009; Acemoglu and Robinson, 2012; Ostrom, 1990 and 2010; Berkes *et al.*, 2003). From this perspective, resilience does not indicate harmony or systemic stability, but rather the

provisional capacity of societies to sustain continuity amid structural tensions, uneven development, and recurring crises generated both internally and externally.

The increasing interdependence of global processes—economic integration, ecological disruption, technological infrastructures, and transnational governance regimes—has not produced systemic unity but rather intensified the complexity of social stratification and asymmetrical vulnerability. Disruptions do not propagate through neutral systems; they are mediated by hierarchies of power, uneven infrastructures, and historically sedimented inequalities that determine who absorbs shocks and who benefits from recovery. Consequently, civilizational resilience must be redefined as a politically charged and socially differentiated phenomenon rather than a neutral systemic attribute. The principles outlined below therefore do not describe design features of a coherent “civilizational system,” but rather analytical orientations for understanding how resilience is unevenly produced, negotiated, and contested across institutional and ecological domains.

6.1. Polycentric Governance and Institutional Fragmentation

Polycentric governance, originally formulated within institutional economics and commons theory, refers to the coexistence of multiple overlapping centers of decision-making authority operating at different scales. While earlier interpretations emphasized polycentricity as a mechanism of efficiency or adaptive coordination, more recent critical scholarship highlights that such arrangements are also sites of conflict, jurisdictional competition, and unequal bargaining power (Delanty, 20224; Scott, 1998; Ostrom, 2010). Governance is therefore not simply distributed but fragmented in ways that reflect historical inequalities, state capacities, and asymmetries between local, national, and transnational actors.

In practice, polycentric systems do not eliminate hierarchy; they often reconfigure it. Certain actors—such as powerful states, international financial institutions, or corporate networks—retain disproportionate influence over agenda-setting and resource allocation, while others operate under conditions of constrained autonomy. As a result, institutional diversity does not automatically produce resilience. Instead, it generates a complex political ecology in which redundancy and experimentation coexist with duplication, exclusion, and coordination failure. Meta-governance arrangements, often presented as neutral coordination mechanisms, are themselves embedded in power relations that shape whose knowledge counts, whose interests are prioritized, and whose vulnerabilities remain unaddressed (Acemoglu and Robinson, 2012; Ostrom, 2010; Berkes *et al.*, 2003).

6.2. Anticipatory Governance Under Structural Uncertainty

Anticipatory governance refers to institutional practices aimed at engaging with uncertainty through foresight, scenario analysis, and long-term planning. However, from a critical perspective, foresight is never purely technical; it is deeply political, shaped by competing epistemologies of risk, divergent temporal horizons, and unequal capacities to project influence into the future. The production of “the future” is therefore not an objective process of prediction but a contested field in which actors with unequal resources define which risks are prioritized and which are rendered invisible (Scott, 2009; Levin, 1999).

Rather than assuming that anticipatory mechanisms enhance collective rationality, it is necessary to recognize that they can also reinforce existing asymmetries. States and institutions with advanced modeling capacities may impose their temporal frameworks on less powerful actors, while local and marginalized groups often experience uncertainty not as abstract scenarios but as immediate material precarity. In this sense, anticipatory governance is not a neutral expansion of foresight capacity but a stratified field of temporal politics in which different groups inhabit radically different relationships to risk, uncertainty, and survival.

6.3. Epistemic Plurality and the Politics of Knowledge Integration

Epistemic diversity refers to the coexistence of multiple knowledge systems, including scientific, indigenous, local, experiential, and institutional forms of knowing. However, the integration of these epistemologies cannot be understood as a neutral process of “combining perspectives” within a unified analytical framework. Postcolonial and decolonial scholarship has demonstrated that knowledge systems are embedded in historical relations of domination, extraction, and epistemic hierarchy that shape which forms of knowledge are

recognized as valid and which are marginalized or instrumentalized (Santos, 2018; Mbembe, 2017; Tsing, 2015; Wolf, 1982; Biermann, 2014).

Attempts to integrate diverse epistemologies into a single “complexity framework” risk reproducing epistemic coloniality by translating heterogeneous ontologies into a dominant analytical language that remains structurally Western in orientation. Genuine epistemic plurality therefore requires not synthesis into a unified meta-system, but sustained coexistence of incommensurable knowledge traditions that may interact, conflict, or partially overlap without being fully reducible to one another. In this sense, epistemic diversity is not a functional resource for optimizing system performance but a condition of epistemic justice and political contestation over the legitimacy of knowledge itself (Santos, 2018; Tsing, 2015; Biermann, 2014).

6.4. Ethical Governance as a Field of Conflict and Contestation

Ethical governance is often framed in policy discourse as a set of normative principles intended to guide technological and institutional development. However, ethical frameworks are never neutral; they are embedded in political economies of regulation, corporate influence, and state capacity. What counts as “ethical” is continuously negotiated through struggles over regulation, enforcement, and institutional authority (Kaul *et al.*, 2003; IPBES, 2019).

In contemporary technological and ecological governance, ethical language is frequently mobilized in ways that obscure underlying material inequalities. For example, discourses of “responsible innovation” or “inclusive development” may coexist with expanding surveillance infrastructures, extractive economic relations, and asymmetric access to technological benefits. Ethical governance must therefore be understood not as a stabilizing design principle but as a contested arena in which normative claims are deployed strategically by different actors to legitimize competing visions of order, justice, and development.

6.5. Adaptive Change, Institutional Struggle, and Non-Linear Transformation

Adaptive learning is often described in systems theory as a process through which institutions adjust to feedback from environmental and social conditions. However, such formulations risk understating the extent to which adaptation is shaped by conflict, resistance, and uneven institutional capacities. Institutional change rarely occurs through smooth adjustment; it is typically the outcome of political struggle, crisis, breakdown, and renegotiation of authority (Acemoglu and Robinson, 2012; Ostrom, 2010; Levin, 1999).

Moreover, adaptation does not occur uniformly across society. Some groups benefit from institutional flexibility, while others experience adaptation as dispossession or increased precarity. For instance, environmental adaptation policies may enhance resilience for certain urban populations while displacing rural or indigenous communities. Thus, adaptive processes must be understood as structurally uneven and politically mediated rather than as neutral system adjustments. Stability, when it emerges, is often provisional and dependent on ongoing contestation rather than on systemic equilibrium.

6.6. Ecological Constraints, Unequal Exposure, and Planetary Injustice

Ecological integration cannot be reduced to a technical alignment of human systems with planetary boundaries. While Earth system science has demonstrated the biophysical limits of human activity, the social consequences of ecological disruption are distributed in profoundly unequal ways (Spengler, 1926; Toynbee, 1934-1961; Folke *et al.*, 2016). Climate change, biodiversity loss, and resource depletion do not affect humanity uniformly; they intensify pre-existing inequalities shaped by historical extraction, global capitalism, and uneven development.

From this perspective, ecological crisis is simultaneously a biophysical and political phenomenon. Vulnerability is not simply an environmental condition but a socially produced outcome mediated by infrastructure, governance capacity, and economic inequality. Ecological “limits” are therefore experienced through structures of power that determine exposure, adaptation capacity, and access to mitigation resources. Any account of civilizational resilience that ignores these asymmetries risks reproducing a depoliticized view of environmental transformation.

6.7. *Technology, Power, and Structural Mediation*

Technological systems—including artificial intelligence, digital infrastructures, and biotechnologies—are often described as neutral tools that shape civilizational trajectories. However, critical technology studies emphasize that technologies are embedded within political economies that structure their development, deployment, and distribution (Santos, 2018; UNESCO, 2021a and 2021b; OECD, 2022; World Bank, 2021). Technological systems do not act independently; they are mediated through corporate concentration, state regulation, labor relations, and global inequalities.

Artificial intelligence, in particular, should not be understood as a coordination mechanism for “planetary intelligence,” but as a contested infrastructure whose effects depend on governance regimes and power structures. It can amplify surveillance, concentrate economic power, or reproduce epistemic bias, while simultaneously enabling new forms of coordination and knowledge production. Its civilizational role is therefore not deterministic but deeply contingent on institutional arrangements and political struggles over control, access, and accountability.

Taken together, these design principles suggest that civilizational resilience cannot be reduced to systemic coherence, functional integration, or adaptive optimization. Instead, resilience emerges from the dynamic interaction of cooperation and conflict, stability and disruption, inclusion and exclusion, across multiple scales of social organization. Civilizations are not unified entities that “become intelligent,” but fragmented and contested assemblages in which adaptive capacities are unevenly distributed and continuously renegotiated.

7. *Toward Planetary Civilizational Coordination Without Unity*

The intensification of global interdependence has generated a structural condition in which many of the most consequential processes shaping human futures now operate beyond the governance capacity of individual states, yet remain irreducibly shaped by asymmetrical power relations among them. Climate disruption, digital infrastructures, financial volatility, technological acceleration, migration regimes, and ecological degradation unfold through deeply uneven global architectures in which agency is distributed but never equal. Within this context, the notion of a singular “planetary civilization” must be treated with caution, as it risks obscuring the fragmented, conflictual, and historically stratified nature of global social organization. Rather than implying convergence toward a unified civilizational subject, the present condition is better understood as a dense field of overlapping and competing civilizational trajectories, shaped by unequal capacities to define risk, allocate resources, and impose institutional norms (UNDP, 2024; World Economic Forum, 2025; Zuboff, 2019).

What emerges, therefore, is not planetary unity but planetary entanglement: a condition in which heterogeneous social formations are forced into sustained interaction through ecological limits and technological interconnection, while remaining deeply differentiated in terms of epistemology, economic power, and political sovereignty. In this sense, “civilizational intelligence” cannot be interpreted as a global cognitive faculty or integrated decision-making system. Instead, it refers to the uneven and conflictual capacity of global assemblages to manage interdependence under conditions of structural inequality. This includes the ability to negotiate competing interests, regulate transboundary risks, and construct provisional mechanisms of coordination without presupposing consensus or shared identity. The analytical focus therefore shifts from coherence to negotiated instability, and from systemic integration to contested coordination.

7.1. *Global Interdependence as Asymmetric Entanglement*

Global interdependence is frequently described in neutral systemic terms, yet such descriptions risk masking the deeply asymmetrical structure of global connectivity. Interdependence is not a flat network of mutual exposure but a stratified configuration in which some actors disproportionately generate systemic risks while others disproportionately absorb them. Financial systems, supply chains, and data infrastructures are organized through hierarchies of value extraction, technological dependency, and institutional dominance. As a result, global crises do not propagate uniformly; they are filtered through existing inequalities that determine vulnerability and adaptive capacity (UNDP, 2024).

From this perspective, interdependence should be conceptualized not as a harmonious condition of mutual reliance but as a field of structured vulnerability. The capacity of societies to respond to shared risks is mediated by historical trajectories of colonial extraction, unequal exchange, and differential access to technological infrastructure. Civilizational resilience, therefore, cannot be reduced to coordination efficiency; it must be understood as the outcome of contested negotiations over resources, recognition, and institutional authority.

7.2. Earth System Governance and the Politics of Constraint

Earth system governance has emerged as an analytical framework for understanding the regulation of planetary ecological processes, yet it must also be interpreted as a deeply political field rather than a purely managerial one. Decisions concerning climate policy, biodiversity protection, and resource allocation are not neutral responses to scientific data but reflect competing economic interests, geopolitical tensions, and normative disagreements over development pathways. The notion of “governance of the Earth system” therefore implies not only coordination challenges but also struggles over legitimacy, sovereignty, and distributive justice (Zuboff, 2019).

Ecological limits do not automatically translate into cooperative behavior; instead, they intensify conflicts over responsibility and burden-sharing. The recognition of planetary boundaries generates competing interpretations of obligation, particularly between historically high-emission industrial societies and regions whose ecological footprints remain comparatively low. Consequently, Earth system governance must be understood as a contested institutional arena in which ecological necessity intersects with political economy, and in which adaptation is inseparable from questions of justice and historical accountability (UNESCO, 2021b).

7.3. Artificial Intelligence as an Uneven Infrastructure of Power

Artificial intelligence increasingly functions as a structural layer within global systems of governance, production, and communication. However, its development and deployment are not distributed evenly across societies. AI systems are embedded within corporate infrastructures, military applications, and state capacities that reflect existing asymmetries of technological sovereignty. Far from being neutral tools of coordination, AI systems actively reorganize power relations by concentrating informational control, shaping epistemic authority, and redefining decision-making processes (Kothari *et al.*, 2019).

At the same time, algorithmic systems introduce new forms of opacity that complicate democratic oversight and epistemic accountability. Bias, data colonialism, and infrastructural dependency generate conditions in which certain populations become objects of computation rather than participants in governance. Thus, AI does not simply enhance “planetary intelligence”; it restructures the conditions under which knowledge is produced and validated. Any account of civilizational coordination must therefore treat AI as a contested sociotechnical assemblage embedded in global inequality regimes rather than as a neutral cognitive amplifier (UNESCO, 2021a).

7.4. Global Public Goods and Structural Inequality

The governance of global public goods—such as climate stability, epidemiological security, biodiversity preservation, and open knowledge systems—is frequently framed as a shared global responsibility. However, the production and maintenance of these goods are profoundly shaped by unequal contributions and unequal benefits. Historical patterns of industrialization, resource extraction, and technological accumulation have generated disparities in both responsibility for ecological degradation and capacity for mitigation (de la Cadena and Blaser, 2018; Moleka, 2025a, 2025b, 2025c, 2024 and 2026).

As a result, global public goods are not simply collective goods in a functional sense; they are also contested goods embedded in distributive conflicts. Efforts to maintain them inevitably raise questions about compensation, reparative justice, and structural reform. The ability of global systems to sustain such goods depends less on abstract cooperation than on negotiated settlements among unequal actors whose interests diverge significantly. Civilizational resilience at this level is therefore inseparable from political struggle over the terms of global coexistence.

7.5. Coordinated Plurality as Conflictual Coexistence

Coordinated plurality should not be understood as harmonious diversity integrated into a unified governance framework. Instead, it refers to the coexistence of multiple epistemic, political, and institutional orders that remain partially incompatible yet structurally entangled. These orders interact through negotiation, contestation, translation failures, and selective appropriation rather than through seamless integration. In this sense, plurality is not a transitional stage toward unity but a persistent structural condition of global social life (Biermann, 2014).

From this perspective, coordination does not eliminate conflict; it organizes it. Global institutions function less as mechanisms of integration than as arenas in which competing rationalities are temporarily stabilized. The epistemic plurality emphasized in decolonial scholarship underscores that different worldviews are not simply alternative data sources but fundamentally distinct ontological frameworks that resist full translation into a single meta-language of governance. Any attempt to reduce this plurality to a unified model of “planetary intelligence” risks epistemic domination rather than analytical clarification (Santos, 2018; Mbembe, 2017; Tsing, 2015).

8. Future Research Directions and Methodological Limitations

The relational framework developed in this article opens multiple pathways for future research, particularly in relation to the empirical study of large-scale social coordination under conditions of inequality, ecological constraint, and technological transformation. A key priority concerns the development of methodologies capable of analyzing civilizational processes without reifying them into unified systems or attributing to them collective agency. This requires methodological innovations that combine network analysis, political economy, historical sociology, and ethnographically grounded institutional studies in order to capture both macro-structural patterns and micro-level struggles.

Future research should also focus on operationalizing civilizational intelligence not as a scalar index of coherence or performance, but as a multidimensional field of relational capacities distributed unevenly across actors and institutions. Such capacities include conflict mediation, institutional adaptation, knowledge translation, and infrastructural coordination, all of which are shaped by power asymmetries and historical legacies. Rather than seeking universal indicators, future work should prioritize context-sensitive comparative frameworks capable of capturing variation across geopolitical and socio-ecological settings.

Another critical research direction involves the political economy of technological systems, particularly artificial intelligence, digital infrastructures, and data governance. These domains should be analyzed not as neutral tools of global coordination but as contested infrastructures embedded in regimes of accumulation, surveillance, and epistemic control. Understanding their role in shaping civilizational trajectories requires integrating critical data studies, infrastructure theory, and global political economy.

In addition, future research should further develop historical-comparative approaches that avoid civilizational essentialism while still enabling long-range analysis of institutional transformation. This includes reconstructing historical trajectories not as coherent civilizational narratives but as overlapping processes of exchange, domination, adaptation, and resistance. Such an approach would enable more nuanced accounts of resilience and collapse that account for internal heterogeneity rather than assuming systemic unity.

Despite its conceptual advances, the framework remains methodologically limited in several respects. First, its central categories — relational assemblage, distributed intelligence, and coordinated plurality — remain analytically abstract and require further empirical specification. Second, the emphasis on multi-scalar complexity makes causal attribution difficult, particularly in comparative historical analysis. Third, the normative implications of concepts such as coordination and resilience risk being interpreted in technocratic terms unless explicitly grounded in political economy and critical theory. Finally, the framework deliberately avoids system-level teleology, but this creates challenges for predictive modeling and formal simulation.

9. Conclusion

This article has advanced a relational reinterpretation of civilizational analysis that rejects essentialist, organicist, and teleological conceptions of civilization. Instead of treating civilizations as coherent entities

endowed with collective intelligence or unified adaptive capacity, it conceptualizes them as contested relational assemblages shaped by historical inequalities, epistemic diversity, infrastructural dependencies, and ongoing political struggles.

Within this framework, “civilizational intelligence” is not a property of systems but a descriptive term for the uneven and conflictual capacities through which large-scale social formations negotiate complexity, manage interdependence, and respond to ecological and technological transformation. These capacities are not evenly distributed, nor do they produce systemic coherence; rather, they emerge through negotiation, contestation, and institutional compromise across multiple scales of social organization.

By situating civilizational processes within the intertwined dynamics of power, knowledge, ecology, and technology, the article provides a framework that is compatible with both complexity theory and critical social theory without reducing one to the other. In the context of the Anthropocene, such a perspective highlights that the future of large-scale human organization will depend less on achieving systemic unity than on managing enduring heterogeneity under conditions of ecological constraint and structural inequality.

Ultimately, civilizational futures will be shaped not by the emergence of a planetary mind, but by the capacity of fragmented yet interconnected social worlds to coexist, conflict, adapt, and renegotiate the terms of their interdependence under conditions they do not fully control.

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