

The Simulacrum of Metrics and the Retreat of Reality

On the Idealist Turn in Knowledge Production, Global Cognitive Decline, and the Return to Empirical Realism

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Abstract

This essay examines a recurring structural pathology in modern systems of knowledge production and governance: the substitution of internal completeness within a symbolic system (logical coherence, model elegance, metric attainment) for the investigation and testing of external reality. It first distinguishes "logical correctness" from "factual correctness" and, drawing on Goodhart's law and the image of the map devouring the territory, explains how metrics degenerate into simulacra. It then traces the epistemological divergence between "investigating things" and "cultivating the mind" in Song–Ming Chinese philosophy; the drift of the School of Mind in the late Ming; the institutional severance of knowledge from production under the scholar–peasant–artisan–merchant hierarchy; and the twentieth-century conversion of the School of Mind into an instrument of rule. It proceeds to the extreme voluntarism of the mid-twentieth century, the 1978 correction centred on practice as the criterion of truth, and the pendulum-like over-correction that replaced competence with credentials. At the contemporary level, the essay analyses the new scholar–artisan–merchant hierarchy produced by credentialism, the industrialisation of academic output and the global ranking compact that sustains it, the mathematisation of the social sciences and their record of predictive failure, and the twin degenerations of contemporary philosophy into instrumentalisation and formalisation. It extends the analysis to the West—financialisation, the inward turn of the humanities, and voluntarism in policy—as a parallel evolutionary path, and reads the near-simultaneous "from the virtual to the real" policy shifts in China and the United States as both a reaction to the pathology and a potential reproduction of its metric logic. Finally, it explains why such systems resist self-correction and proposes institutional and individual paths back to an empirical realism grounded in "seeking truth from facts" and "investigating things to extend knowledge," while stating the limits of its own argument.

Keywords: metric alienation; empirical realism; voluntarism; credentialism; research evaluation; econometrics; cognitive decline; *gewu zhizhi*

1. Introduction: The Failure of the Calculating Regime

In the first quarter of the twenty-first century, human societies reached unprecedented heights in data collection, algorithmic complexity, and institutional standardisation. In market-oriented Western systems and state-directed Eastern systems alike, the levers of social, financial, and scientific governance were increasingly entrusted to a heavily credentialed professional class. Its promise was that precise mathematical forecasting, rigorous key performance indicators, and globally standardised measurement could manage, if not eliminate, the messy and unpredictable frictions of social life.

Confronted with the non-linear crises of the past decade or more—systemic geopolitical rupture, the weaponisation and decoupling of supply chains, fiscal contraction, demographic inflection—this calculating regime has exhibited a disquieting failure. The question Queen Elizabeth II put to economists at the London School of Economics after 2008, "Why did nobody notice it coming?", remains the most concise challenge to the predictive capacity of mainstream economics; the British Academy's subsequent forum conceded that the crisis reflected "a failure of the collective imagination of many bright people" (British Academy). At the other end of the world, a nation can lead the planet in high-quality natural-science output (Nature Index 2025) while remaining constrained for years in several critical core technologies. The two phenomena appear unrelated but share one structure: prosperity at the level of symbols coexisting with fragility at the level of reality.

The central hypothesis of this essay is that such failures are not technical errors of execution or resource allocation but a structural bias at the level of epistemology. Modern knowledge production has, to a significant degree, severed itself from the inductive, empirical investigation of the external world and withdrawn into a self-referential symbolic system in which **the internal coherence of the symbol is equated with truth about reality**. We call this bias the "idealist turn" in knowledge production and attempt to show that it has a deep historical lineage, stable social-structural support, identifiable contemporary forms, and foreseeable real-world consequences.

A preliminary clarification is in order. This is an interpretive, theoretical essay rather than an empirical study. The historical lineage it proposes is an explanatory framework, not a mono-causal verdict on complex historical processes; several of its historical and philosophical judgements remain contested in the scholarly literature, and the relevant sections and the conclusion will indicate those disagreements and the boundaries of the argument.

2. Conceptual Framework: Symbolic Completeness, Real-World Validity, and the Simulacrum of Metrics

2.1 Two Kinds of Correctness

Every knowledge system faces two tests. The first is internal: Is the reasoning coherent? Does the model converge? Are the formulas error-free? Does the text conform to the required format? The second is external: Do the conclusions match the observed world? Do the predictions come true?

Does the thing that was designed actually work? The first may be called logical correctness; the second, factual correctness.

In the mature natural sciences the priority between the two is unambiguous: when a mathematically beautiful theory disagrees with a reproducible experiment, the theory is abandoned. This ordering constitutes the core discipline of empirical science. The pathology this essay examines is the inversion of that ordering in particular fields of knowledge and systems of governance—when model and reality disagree, it is no longer the model that is doubted; reality is declared "noise," "friction," or "not yet at the efficient state."

2.2 Goodhart's Law and the Alienation of Metrics

A metric is a compressed representation of reality. It is useful precisely because it is simpler than reality. But once a metric becomes a target to be pursued, its correspondence to reality loosens and eventually breaks. The British economist Charles Goodhart, discussing monetary policy in 1975, observed that any statistical regularity tends to collapse once it is used as a control target—an observation later generalised as "when a measure becomes a target, it ceases to be a good measure" ([Wikipedia: Goodhart's law](#)). The anthropologist Marilyn Strathern used exactly this formulation in 1997 to describe how audit culture was reshaping British universities ([Strathern 1997](#)). Earlier still, the social psychologist Donald Campbell noted that the more any quantitative social indicator is used for decision-making, the more subject it becomes to corruption pressures and the more apt it is to distort the social processes it was meant to monitor ([Wikipedia: Campbell's law](#)).

The common implication is that governance by metrics has an endogenous tendency toward self-subversion. The historian Jerry Muller called the generalisation of this tendency across education, medicine, finance, and academia "the tyranny of metrics" ([Princeton University Press](#)); the political scientist James C. Scott argued that the simplifying schemes modern states impose to render society "legible," when combined with over-confidence in scientific rationality, frequently end in failure ([Wikipedia: Seeing Like a State](#)). This essay borrows the term *simulacrum* to name the terminal point of metric alienation: a symbol that no longer refers to any external reality yet is managed and pursued as though it were reality itself.

2.3 Voluntarism and the Boundaries of Will

Parallel to metric alienation is a second epistemological bias: voluntarism—the belief that subjective will, spiritual force, or moral purity can override material conditions and objective laws. It looks like the opposite of metric worship—one venerates numbers, the other venerates will—but the two are structurally cognate: both treat an internal state (the coherence of a model, or the intensity of a will) as a sufficient grasp of the external world.

It must be stressed that rejecting voluntarism is not denying the role of will. Effort, ambition, and perseverance are necessary conditions of any achievement; but they are the engine, not the track. Given recognition of and adherence to objective laws, will determines how far one travels; absent that

condition, the stronger the will, the greater the deviation. The boundary between will and law, as later sections argue, is key to understanding several of the twentieth century's great governance catastrophes.

3. Historical Lineage I: Investigating Things versus Cultivating the Mind

3.1 Zhu Xi: Principle in Things, Knowledge through Investigation

Song-dynasty Neo-Confucianism achieved a relatively complete epistemology in Zhu Xi (1130–1200). Its core proposition is that *li* (principle) exists objectively in all things, and that human knowledge must proceed through *gewu*—the item-by-item investigation and accumulation of concrete things—before it can "extend knowledge" (*zhizhi*). Zhu Xi's supplementary commentary on the *Great Learning* states the path explicitly: for every thing under heaven, proceed from the principle one already knows and press further toward its limit; after long exertion, one day there will be a sudden breakthrough. The formulation concedes two points: truth lies outside the mind and must be sought outward; and knowing is a gradual, cumulative process requiring sustained effort.

One should not exaggerate the resemblance between Zhu Xi's system and modern experimental science—his "things" included ethics and canonical texts, and his method involved neither controlled experiment nor mathematisation. But in its basic epistemological orientation, Cheng–Zhu learning preserved an outward-looking stance that acknowledged the priority of external regularities over subjective cognition. That stance kept a channel open between intellectual activity and the empirical world.

3.2 Wang Yangming: Mind as Principle and Two Readings of "Unity of Knowledge and Action"

In the mid-Ming, Wang Shouren (Yangming, 1472–1529) came to his realisation at Longchang that "the way of the sage is complete in my own nature; to have sought principle in external things was a mistake," and founded the School of Mind on that basis. Its three core propositions—mind is principle, knowledge and action are one, extend the innate moral knowing—relocated truth from outside the mind to within it. The famous exchange in the *Chuanxilu* about flowers blooming on a cliff ("Before you looked at these flowers, they and your mind were both in silence; when you came to look at them, their colours at once became clear") is routinely cited as the canonical statement that "there is nothing outside the mind."

For the present argument, "unity of knowledge and action" deserves particular scrutiny, because it admits two readings with sharply different practical consequences.

The first is the ontological reading, and Wang's own intention: knowledge and action are one and the same event; there is no such thing as "knowing without acting"; if one has not acted, one's "knowledge" was not real knowledge. The weight of this reading falls on inner sincerity, and its cultivation is inward self-examination.

The second is the evidential reading, the one most often adopted in later political and managerial practice: what a person says is unimportant; what matters is what he does; action is the only reliable test of cognition and intention. This reading converts "unity of knowledge and action" into a results-based audit of behaviour whose weight falls on externally observable conduct.

The distinction matters because the second reading strips away the metaphysical core of the School of Mind and retains only a practical principle compatible with empiricism—"test speech by action." That principle has no idealist colouring in itself; but once embedded in relations of power it degenerates readily into an instrument for auditing subordinates' loyalty. Section 3.5 examines the canonical case.

3.3 The Late-Ming Drift and the Critique of the Statecraft Scholars

After the School of Mind gained wide influence in the mid-to-late Ming, its epigones drifted into what historians call "wild Chan" (*kuang chan*)—sudden enlightenment in place of study, discussion of mind and nature in place of practical administration. The most forceful critique came from the statecraft scholars of the Ming–Qing transition. Gu Yanwu wrote in the *Rizhilu*: "The pure talk of old discussed Laozi and Zhuangzi; the pure talk of today discusses Confucius and Mencius... They do not practise the texts of the six arts, do not examine the institutions of the hundred kings, do not grasp the affairs of the present age... They replace the real learning of cultivating oneself and governing others with the empty words of illuminating the mind and seeing one's nature. The limbs grow idle and all affairs fall to ruin; the claws and teeth are lost and the four quarters descend into chaos. The divine land is overturned; the ancestral altars become mounds of earth" ([China Confucius Net](#)). Yan Yuan's summary is sharper still: "In peacetime they fold their hands and discuss mind and nature; in crisis they repay the sovereign with a single death" (*Yan Yuan ji*, "Xue bian I").

The point of these critiques is not whether the metaphysics of the School of Mind is sound, but the governance consequences of an intellectual orientation: when a society's most talented people are directed toward inward moral examination rather than outward empirical inquiry, the state will find, in the face of famine, fiscal collapse, and military invasion—crises requiring specialised knowledge—that it lacks the corresponding reserves of capability.

Fairness requires noting that historical assessments of the School of Mind diverge. Many scholars emphasise Yangming learning's emancipatory significance for individual agency and its influence on the activists of Japan's Meiji Restoration; the School of Mind itself contains a strong orientation toward "tempering oneself in affairs." This essay does not attempt a global judgement of Wang Yangming's thought. It argues only that in the course of its socialisation, popularisation, and politicisation, the inward tendency within the School of Mind was amplified and combined with particular institutional structures to produce the consequences the statecraft scholars described.

3.4 Scholar, Peasant, Artisan, Merchant: The Institutional Severance of Knowledge from Production

An epistemological orientation does not operate in a vacuum; it requires social-structural support. In traditional China that structure was the hierarchy of *shi*, *nong*, *gong*, *shang*—scholars, peasants, artisans, merchants. Its decisive feature was that those who commanded writing and interpretive authority (the *shi*) sat at the top, while those who actually dealt with materials, craft, capital, and logistics (the *gong* and *shang*) sat at the bottom. The result was an institutional severance between knowledge and production: those with cultural resources did not face the material world, and those who faced the material world had no cultural resources. Artisans' practical experience, lacking social standing, could not be systematised into theory and was transmitted orally from master to apprentice; merchants' capital, under status discrimination, flowed not into machinery and reinvestment but into land and examination degrees.

This analysis echoes part of Joseph Needham's own explanation of why modern science did not arise in China. Needham observed that the education of the scholar-official class fostered an antagonism toward manual work, and that the stability of the bureaucratic order inhibited the formation of an independent merchant class ([ChinaFile](#)). It must be stated plainly, however, that the "Needham question" has multiple explanatory traditions—institutions and property rights, geography and resource endowments (as in Kenneth Pomeranz's argument about coal and overseas colonies), demography and factor prices—and the "epistemological orientation plus status hierarchy" account stressed here is one among them, not an exclusive explanation.

Yet it is precisely this account that is most illuminating for the present. The structure it describes—symbol-manipulators above, material practitioners below, and no feedback loop between them—has a structural counterpart in today's knowledge institutions. That is the subject of Section 5.

3.5 The School of Mind as an Instrument of Rule: A Twentieth-Century Case

Chiang Kai-shek (1887–1975) was the twentieth century's most prominent political admirer of the School of Mind. He combined a severe discipline of personal cultivation—decades of early rising, meditation, and diary self-examination, together with abstention from tobacco and alcohol—with public veneration of Wang Yangming's doctrine of "unity of knowledge and action." In 1950 he renamed Taipei's Grass Mountain "Yangmingshan"; Taiwan's official archives record that the renaming reflected his "especial esteem for Wang Yangming's doctrine of vigorous action" and was intended to "inspire patriotic sentiment and a spirit of action among the whole people" ([National Archives Administration, Taiwan](#)).

The case bears on this essay in two ways.

First, it shows how the evidential reading of "unity of knowledge and action" was instrumentalised within relations of power. Facing an organisation riven by factions, in which professed loyalty and actual conduct frequently diverged, a ruler needed a yardstick that could cut through speech and judge loyalty directly by behaviour. "Unity of knowledge and action" supplied it: you profess the

doctrine yet fail to execute orders, which proves you do not truly know, which is to say you are not truly loyal. In this usage the School of Mind is no longer a metaphysics about the location of truth; it is a compliance test.

Second, it shows the separation between personal virtue and institutional capacity. Even in the historical narratives of his adversaries, Chiang's personal austerity and self-discipline are rarely questioned; yet this individual-level cultivation did not translate into organisational-level governing capacity, and his regime's systemic failures in administration, finance, and grassroots control were not mitigated by the leader's personal virtue. The separation confirms exactly the statecraft scholars' critique: inward cultivation, however sincere, cannot substitute for outward, specialised governing knowledge and institution-building.

4. Historical Lineage II: The Extremes of Voluntarism and the Pendulum of Correction

4.1 The Misplacement of Revolutionary Experience

In the mid-twentieth century voluntarism reached a historic extreme in China. On 27 August 1958 the *People's Daily* published, under the headline "As Bold as People Dare, So Much Will the Land Yield" (*ren you duo da dan, di you duo da chan*), a letter from investigators in Shouzhong County, Shandong, describing a "high-yield campaign" aiming at ten thousand or even tens of thousands of *jīn* per *mú* (Phoenix TV). The slogan became the emblem of an era.

Within this essay's framework, the core error of the period was a misplacement of experience: the direct transplantation of military and political-struggle experience—in which will, discipline, and sacrifice can indeed compensate substantially for material inferiority—into economic construction and science. Crop cycles, smelting temperatures, and the laws of population reproduction do not respond to slogans and resolve. Once "laymen leading experts" was established as a principle and those who pointed out scientific common sense were labelled "conservative," the system lost its capacity for feedback from reality. The great famine of 1959–1961 was the direct consequence of this systemic failure.

The period is formally remote from late-Ming "wild Chan," but structurally continuous with it: both substituted an internal state (moral purity or revolutionary will) for inquiry into external laws, and both institutionally punished those who insisted on looking outward.

4.2 The 1978 Correction: Practice as Criterion, Professionalisation as Policy

On 11 May 1978 the *Guangming Daily* published the special commentator's article "Practice Is the Sole Criterion for Testing Truth," asserting that "the criterion for testing truth can only be social practice" and that every theory must continually submit to that test ([Government of China](#)). The epistemological significance of the article was to return the authority of judgement from internal dogma to external reality.

Personnel policy shifted in step. The restoration of the national university entrance examination in 1977 rebuilt a mechanism of knowledge-based selection; in December 1980 Deng Xiaoping formulated at a Central Work Conference the full standard that cadres should be "revolutionised, younger, better educated, and more professional," adding that "a complete cadre system must gradually be established to guarantee this" ([People's Daily Online](#)). "Respect knowledge, respect talent" and "science and technology are the primary productive force" became the new policy vocabulary. The direction of this correction was right: it acknowledged that governing a modern economy requires specialised knowledge, and that such knowledge derives from the study of and practice within objective laws rather than from political fervour.

4.3 Over-Correction: Three Stages of Credentials Replacing Competence

A society that has long suppressed knowledge, however, often lacks a healthy mechanism for screening competence when it turns to respecting knowledge, and so substitutes visible credentials for competence that is hard to observe. Looking back over the past four decades, three successive stages can be identified, each adopting some credential as a proxy for ability, and each proxy diverging to a greater or lesser degree from actual ability.

Stage one: academic credentials in the gap years. In the 1980s, after a decade's interruption of higher education, a severe talent gap opened within the system. Under the policy pressure for "younger, better-educated" cadres, a university diploma or a period of overseas residency could suffice for exceptional promotion. The education this cohort received was heavily constrained by objective conditions: curricula were largely outdated Soviet-style systems; economics meant political economy with almost no treatment of market mechanisms or modern finance; foreign-language instruction lacked real contexts; frontier journals and original textbooks were scarce. What this cohort genuinely mastered was often the organisational skill of surviving and advancing within the system, not the professional knowledge modern governance requires. In that specific historical vacuum, however, it became the only cohort in half a century to achieve large-scale upward mobility almost on the strength of credentials alone, reaching the upper levels of the power structure by the end of the 2000s. It ended the era of governing by political campaign and sustained a pragmatic line centred on economic construction; but the limits of its professional capacity also left their mark in the corruption and stalled institutional reform of the same period.

Stage two: overseas degrees. From the late 1990s into the 2000s, large numbers of state-sponsored and self-funded students returned from abroad to universities, research institutes, financial agencies, and policy think tanks. This cohort brought back updated knowledge, but also a new dogmatic tendency: treating models and institutional paradigms learned in Western classrooms as universal standards while remaining insensitive to the historical, legal, and social foundations on which those paradigms rested, and lacking long-term participatory knowledge of how their own society operated at the grassroots. The result was detachment from reality of another kind—not inward cultivation but outward transplantation. In higher education this cohort drove the shift of evaluation toward "SCI and top journals above all," marginalising indigenous research oriented to actual engineering and industrial problems.

Stage three: metric credentials. As degrees and overseas experience depreciated through diffusion, evaluation turned to finer-grained indicators: publication counts, journal tiers, impact factors, citations, talent titles, grant volumes. This is the subject of Section 6.

The common feature of all three stages is pendular motion: from anti-intellectualism to credential worship, from closed dogma to imported dogma, never arriving at a screening mechanism centred on the ability to solve real problems. Each correction targeted the defects of the previous stage, yet reproduced the same structure under a new proxy: credentials are visible and competence is not, so credentials replaced competence.

5. Contemporary Form I: Credentialism and the New Scholar—Artisan—Merchant Hierarchy

The *shi–nong–gong–shang* structure described in Section 3.4 reappears today in refined form. It may be called technocratic credentialism.

At the top of this structure stands the "new *shi*" class—academic administrators, think-tank experts, and policy officials fluent in international scholarly discourse and metric management—who command policy-making, research funding, and academic evaluation. Their authority derives from credentials and symbolic capital rather than from any record of solving problems in the material world. Beneath them are the "new *gong*"—hardware and software engineers, physical-technology developers who deal daily with the laws of physics, code defects, process tolerances, and supply-chain friction—and the "new *shang*"—entrepreneurs and front-line operators who bear real bankruptcy risk in markets.

The problem with this structure is not the division of labour itself but the absence of a feedback loop. In a healthy system, those who make policy and allocate resources must continuously receive signals from practitioners and revise their judgements accordingly. But when promotion and evaluation at the top depend wholly on indicators internal to the symbolic system—whether documents are compliant, papers published, rankings rising—signals from the material world are systematically filtered out. People at the top can decide resource allocation in fields where they have never understood a production line, a system architecture, or a market risk. Society's hands and brain are thereby separated: those who face reality have no decision-making power, and those who have decision-making power do not face reality.

A further consequence is adverse selection. Just as the traditional *shi* could gain status through essays rather than administrative ability, the contemporary new *shi* can gain promotion through metrics rather than results. The system comes imperceptibly to favour those adept at metrics over those adept at real work, who then promote successors like themselves.

6. Contemporary Form II: The Industrialisation of Academic Output and the Ranking Compact

6.1 Ranking Algorithms and "Working Out the Rules"

Global university rankings (QS, Times Higher Education) and bibliometric indicators (SCI inclusion, impact factor, Nature Index) define a "world-class university" in quantifiable, comparable terms. These indicators are not meaningless, but they are compressed representations of academic quality and therefore fully subject to Goodhart's law: once they become targets, optimisation around them decouples them from what they were meant to measure.

Over the past two decades, several East Asian universities—first in Hong Kong and Macau, then the leading institutions of mainland China—achieved striking ranking ascents under these rules. The mechanism is not mysterious: concentrate resources in highly cited fields, stimulate top-journal publication with large bonuses, expand citation networks through international collaboration, and publish in English to interface with the evaluation system. In data terms the approach has been enormously successful. China's share in the Nature Index for the natural sciences surpassed that of the United States from 2022 and has continued to widen its lead ([Nature](#); [Nature Index 2025](#)).

6.2 The Production Model: Division of Labour and the Adverse Selection of Originality

At the micro level, ranking competition has generated a highly specialised production model. A principal investigator with international standing secures funding, cultivates relations with journals and reviewer networks, and endorses outputs as corresponding author; mid-career faculty organise and manage; large numbers of doctoral students and postdocs generate data, tune parameters, and write texts to the format preferences of target journals. The model establishes a stable exchange among the parties: the young obtain degrees, promotions, and recommendation letters; the leader obtains more funding and higher titles; the institution obtains rankings and reputation.

The problem is not the division of labour but its reshaping of research goals. Under piece-rate performance regimes, incremental outputs that can be replicated in volume over short horizons—change a material, adjust a parameter set, reproduce a hot topic—are the optimal "product," whereas original exploration requiring a decade of obscurity and carrying a high failure rate, or sustained assault on an engineering bottleneck that yields no publications in the near term, becomes a burden on team performance. Researchers genuinely committed to the latter face marginalisation. This is the metric regime's adverse selection of the research agenda.

Its extreme form is the paper mill. In 2023 global retractions exceeded ten thousand for the first time, a record ([Nature](#)); a 2026 bibliometric study traced 10,409 papers retracted for paper-mill problems through 2024, with by far the highest concentration from China ([Scientometrics](#)). Paper mills are not an inevitable product of ranking competition, but they are the same incentive structure deformed at the bottom.

6.3 A Global Compact

It must be stressed that this is not unilateral "fraud" by any one country but a global compact in which every party gets what it wants. Students need top-journal publications as passports to overseas graduate study, because the only "lingua franca" overseas supervisors can read is a publication record; university administrators need rankings as achievements; ranking agencies need wide adoption to sustain commercial value; international journals and publishers earn revenue from processing charges and database subscriptions. In this closed loop, each party's rational choice reinforces the decoupling of metrics from reality. The only party outside the loop, yet bearing the ultimate cost, is public finance and the real industrial base.

6.4 Why Change from Within Is Difficult

China began dismantling the "papers, titles, degrees, and awards above all" orientation as early as 2018. In February 2020 the Ministry of Education and the Ministry of Science and Technology jointly issued *Opinions on Regulating the Use of SCI Paper Indicators in Universities*, requiring institutions to "sever the direct linkage between SCI-related indicators and resource allocation and performance bonuses" and stating that "the number of SCI papers and impact factors should not be used as restrictive conditions for graduation and the conferral of degrees" (Ministry of Education); the Ministry of Science and Technology's parallel *Measures for Breaking the Undesirable Orientation of "Papers Above All" in Research Evaluation* introduced representative-work and classified evaluation (MOST).

Implementation has met structural resistance, for reasons detailed in Section 9. The core may be stated here: if an entire system's funding, promotion, degree conferral, and institutional ranking rest on one set of indicators, removing them means the system temporarily loses its evaluative standard; and the existing evaluators were themselves selected under the old standard, lacking both the capacity to judge by the new one (real value and social impact) and the motive to do so.

7. Contemporary Form III: The Mathematisation of the Social Sciences and the Problem of "Mathiness"

7.1 Inversion of Tool and Purpose

That mathematics is the foundational language of every exact science needs no argument. But mathematics is itself a discipline of internal logic and deductive inference whose propositions are true or false irrespective of whether factories, famines, or wars exist in the world. When a discipline whose object is society elevates mathematics from tool to purpose—treating model elegance, derivational rigour, and parameter significance as the final criteria of research value—it commits a category error: substituting logical correctness for factual correctness.

This critique is not an outsider's prejudice but a long-standing self-examination within economics. In his 1974 Nobel lecture "The Pretence of Knowledge," Hayek attributed economists' repeated policy failures to their inclination "to imitate as closely as possible the procedures of the brilliantly

successful physical sciences," an attitude he called "scientistic" and, in the true sense, "unscientific" (Nobel Prize). Wassily Leontief, founder of input–output analysis, complained in a 1982 letter to *Science* that theorists "continue to produce scores of mathematical models and to explore in great detail their formal properties" while econometricians "fit algebraic functions of all possible shapes to essentially the same sets of data," without perceptible advance in understanding the structure and operation of a real economic system (*Science*). In 2015 Paul Romer introduced the term "mathiness" in the *American Economic Review*, criticising theoretical work in which the use of mathematical symbols "lets academic politics masquerade as science"—unlike genuine mathematical theory, mathiness "leaves ample room for slippage between statements in the languages of words as opposed to symbols" (*AER*).

7.2 Mathematics as Shield and the Record of Predictive Failure

Sociologically, mathematisation also performs a protective function within the discipline. A scholar who discusses tariffs, local debt, or supply chains in ordinary language can be argued with by anyone possessing common sense and industry experience; once the same argument is packaged in dozens of pages of differential equations and regression tables, external criticism is effectively excluded. Mathematics here is not an instrument of discovery but a barrier of status.

The price of that protection is persistent predictive failure. Before 2008, mainstream macro models almost universally failed to foresee systemic risk; the supply-chain ruptures and inflationary shocks of the 2020s again exceeded model expectations. Models cohere on paper yet repeatedly misfire in reality, and the discipline's mainstream response has typically been to add parameters and patch details rather than abandon core assumptions. This is precisely the inverted ordering described in Section 2.1: reality treated as noise in the model, rather than the model treated as an approximation of reality.

7.3 Philosophy's Two Degenerations: Instrumentalisation and Formalisation

The pathology is not confined to economics. Philosophy—once the discipline at the summit of human knowledge, charged with generalising the operation of the world and the method of living—exhibits two degenerations in opposite directions.

The first is instrumentalisation. The most active and best-funded areas of contemporary philosophy—AI ethics, algorithmic governance, gene-editing ethics, the moral dilemmas of autonomous vehicles—are to a large degree the "safety codes" and "brake pads" of technological development. Such work has value, but it is applied ethics, not high-level generalisation about the world and human life. When a philosophy department's survival depends on supplying ethical endorsement to technology projects, the discipline descends from overseer to servant.

The second is formalisation. At the opposite pole, the languages of mathematics and physics are imported into metaphysics and epistemology—formal epistemology, Bayesian epistemology, structural realism, the relativity-based "block universe." These research programmes are technically refined, but several of their claims warrant caution. The block-universe view, for example, holds that

past, present, and future exist equally within a four-dimensional spacetime block and that the passage of time is a subjective illusion; pressed to the level of human life, its practical implication becomes hard to distinguish from ancient fatalism—choice, effort, and opportunity become "a picture already painted." A discipline whose vocation is reflection on the human condition should pause when its frontier conclusions amount in practice to the cancellation of human agency. More generally: if a question about the world can be answered by the equations of physics, it belongs to physics; philosophy's distinctive value lies precisely in handling questions that cannot be formalised yet are decisive for how humans understand themselves and act. To found every discipline on mathematics is to misunderstand what "hard" means—mathematics supplies the underlying tool, not the core of every discipline.

The two degenerations appear opposite but share a root: both evade philosophy's most difficult and most important task—to produce generalisations about the operation of human society and history that possess height and depth and can be tested against experience.

8. The Global Dimension: The West's Parallel Evolution and the Synchronised Turn "From the Virtual to the Real"

The pathology examined here belongs to no single country or system. The West has travelled a parallel road over the past half-century, and the near-simultaneous policy adjustments in China and the United States in recent years reveal similar responses by two systems to the same disorder.

8.1 Financialisation and Symbolic Wealth

The eighteenth- and nineteenth-century West established its modern position through systematic investigation of the material world—experimental science, engineering, industrial organisation, logistics, infrastructure. Over the past four decades, however, a substantial share of the West's best minds was channelled into financial engineering: designing derivatives, optimising balance sheets, manufacturing value on paper through buybacks and divestitures. Financial symbols were treated as ultimate reality while the manufacturing base was systematically hollowed out. Structurally this is the same thing as the East's substitution of publication metrics for technological breakthroughs: completeness at the level of symbols standing in for capability at the level of matter.

8.2 The Inward Turn of the Humanities

Simultaneously, a considerable part of the Western humanities and social sciences turned inward in a new way: making the purification of language, the parsing of identity, and the performance of moral position the core of scholarly value, while growing increasingly resistant to empirical evidence—whether from biology, economics, or statistics. Structurally the tendency resembles late-Ming "wild Chan": both adopt an inner moral purity as the criterion of judgement, and both incline to punish those who insist on citing external facts. This essay passes no value judgement on particular scholarly positions; it observes only that when a discipline's internal standards decouple from external evidence, it loses the capacity for self-correction.

8.3 Voluntarism in Policy

Nor is voluntarism an Eastern monopoly. When a Western leader believes that personal negotiating will and tariff instruments can reverse within a short span decades of accumulated industrial hollowing and structural debt, the epistemological structure differs in no essential way from "as bold as people dare, so much will the land yield"—both substitute intensity of will for respect for law. The regularities of the global economy, the inertia of demographic structure, and the momentum of supply-chain migration do not respond to political resolve.

8.4 Synchronised Policy Shifts and Their Limits

Notably, China and the United States have in recent years adopted almost simultaneous policy adjustments "from the virtual to the real," though with differing motives and means.

On the Chinese side: according to Ministry of Education data, between 2021 and 2025 universities revoked or suspended 12,200 undergraduate programmes and added about 10,200, a cumulative adjustment exceeding 30 per cent, with arts, foreign-language, and management programmes most often cut and new programmes concentrated in artificial intelligence and advanced manufacturing (Caixin Global; Forbes). From March 2026 the Chinese Academy of Sciences stopped using academic funds and central government allocations to pay publication fees for thirty high-priced international open-access journals, including *Nature Communications*, *Cell Reports*, and *Science Advances* (China.org.cn). Together with the 2020 "breaking the five onlys" documents, these measures share one direction: severing the direct link between indicators and resources.

On the American side: in February 2025 the National Institutes of Health announced a uniform 15 per cent cap on indirect-cost rates for research grants, far below the 30–70 per cent previously negotiated with individual institutions (Congressional Research Service), a move later blocked in court; in October 2025 the White House presented nine universities with a *Compact for Academic Excellence in Higher Education* offering preferential access to federal funds in exchange for accepting a set of policy demands, which several universities rejected (Reuters; Inside Higher Ed). Under the pressure of federal funding uncertainty, research universities including Harvard, Columbia, Chicago, Brown, and Princeton reduced or paused admissions to some doctoral programmes for 2026–27, with the humanities and social sciences especially affected (Chicago Maroon).

The synchronisation is not accidental. Both countries face the twin pressures of fiscal constraint and geopolitical competition and no longer have the slack to sustain symbol production that cannot be converted into substantive capability; the personal trajectories of both current leaderships lie outside the traditional academic path, and neither identifies naturally with a credentialed knowledge class.

The limits of these adjustments must nonetheless be stated. First, abolishing disciplines and cutting funding by administrative fiat is itself a form of governance by metrics—replacing "paper counts" with "employment rates" or "alignment with national priorities"—and does not touch the underlying problem of evaluative capacity. Second, this essay's subject is the epistemological orientation of knowledge, not disciplinary labels: a social science or philosophy that faces experience and can be

tested against reality is closer to "the real" than an engineering programme that produces only publishable, non-functioning outputs. Equating "from the virtual to the real" with "cut the humanities, keep the sciences" misreads the problem and risks destroying, along with the bubble, the very disciplines that should carry the task of high-level generalisation. Third, cutting funding does not automatically generate new capability; if the evaluators who survive the cuts remain products of the old system, new resource allocation will simply reproduce old behaviour under new indicators.

9. Why Systems Resist Self-Correction

The pathology described here is widely recognised in every country, and reform documents are not scarce. Why, then, is change so difficult? At least four mutually reinforcing mechanisms are at work.

First, path dependence and capability lock-in. Those selected under the old evaluation system possess, as their core skills, precisely what scores highly within it: writing compliant documents, producing publishable papers, managing indicators and networks. Were the standard suddenly to shift to "how much verifiable value has been created in reality," those skills would depreciate sharply, and their holders possess no substitute. Incumbents therefore have strong motives to defend the old standard and to legitimise that defence with more sophisticated language ("basic research cannot be judged by utilitarian criteria," "scholarship requires patience in obscurity"). Such language is not wholly without merit, but its function here is defensive.

Second, mutual hostage-taking. Superiors need reportable numbers; subordinates need attainable tasks. Assessing whether a research team has genuinely solved a problem requires evaluators with professional judgement who accept responsibility for being wrong; counting papers and rankings is both easy and safe. Both sides thus reach a tacit settlement within "numerical bureaucracy": controllable numbers mask uncontrollable reality.

Third, the reverse cycle of selection. Those genuinely able to solve real problems are often at a disadvantage in a system whose sole standard is metrics—they are unwilling or unskilled at devoting energy to metric optimisation and more likely to leave after friction with the system. Those who remain and advance continue to select successors by the same standard. Over time the distribution of competence inside the system diverges systematically from that outside it.

Fourth, the masking effect of dividends. For decades, the dividends of globalisation and demography and the infrastructure accumulated by previous generations allowed systems to bear the cost of symbol production for long periods without visible consequence. This gave incumbents the illusion that the system was functioning well. Only when dividends are exhausted and external constraints tighten does the gap between symbol and reality surface in the form of crisis.

Together these mechanisms explain why reform documents proliferate while behaviour does not change, and why genuine correction tends to come not from internal awakening but from the compulsion of external reality—technological blockade, fiscal exhaustion, employment crisis. This is not an optimistic conclusion, but it is an honest one.

10. Conclusion: Returning to Knowledge That Reality Can Test

10.1 Summary

This essay has sought to show that from the popularisation of late-Ming mind-learning, through mid-twentieth-century voluntarism, through the reform-era pendulum that replaced competence with credentials, to the contemporary industrialisation of scholarship that replaces results with metrics and the social sciences that replace experience with mathematics, there runs an identifiable structural thread: **the substitution of completeness in some internal state for the investigation of external reality**. The thread is not uniquely Chinese; Western financialisation, the inward turn of the humanities, and voluntarism in policy constitute a parallel path. Their shared consequence is the collective blindness of governing and intellectual classes before non-linear crises of the material world, and a resulting decline in cognitive capacity that crosses the boundaries of political systems.

That decline is becoming visible now because the "reality credits" that sustained symbol production—infrastructure accumulated by earlier generations, the dividends of globalisation and demography—are running out. The laws of thermodynamics, the scarcity of critical resources, the inertia of demographic structure, and the entropy of economic systems do not read policy documents and do not respond to econometric models.

10.2 Implications for Institutions

If the diagnosis holds, the way out lies not in more refined metrics but in restoring the feedback loop between knowledge and reality. This implies:

First, shifting the centre of evaluation from symbolic output to verifiable real-world effect—whether a study has solved a genuine engineering or social problem, whether a policy has produced observable improvement in implementation, whether a model has withstood out-of-sample reality. Such evaluation is harder, demands professional judgement, and requires evaluators to bear responsibility; but it is the only standard whose "rules" cannot be worked out and gamed.

Second, rebuilding the channel between practitioners and decision-makers, so that those who directly confront physical and market laws—engineers, entrepreneurs, front-line researchers—hold substantive voice in resource allocation and agenda-setting rather than serving merely as objects of evaluation.

Third, distinguishing "virtual" from "real" by epistemological orientation rather than disciplinary label. A philosophy that generalises the human condition in ways historical experience can test is "real learning"; an engineering programme that produces only publishable, non-functioning results is "virtual learning." Abolition by discipline may preserve what is wrong and discard what is right.

Fourth, keeping will in its proper place. Will is necessary, but it must operate within the recognition of law. Governance that substitutes resolve for research and slogans for argument, under whatever system it appears, has had its ending rehearsed repeatedly by history.

10.3 Implications for Individuals

For individuals living through this era, the analysis also has consequences. In an environment that over-values credentials, rankings, and discourse, the core method for preserving cognitive independence is to insist on real-world effect rather than symbolic status as the basis of judgement: look at what a person does rather than says; at the practical consequences of a claim rather than the elegance of its expression; at what an institution has solved rather than where it ranks. This is the empiricism-compatible core of the evidential reading of "unity of knowledge and action," and it is what "seeking truth from facts" and "investigating things to extend knowledge" mean at the level of the person. To keep one's intellect continuously and unconditionally tied to the real, rough, rhetoric-indifferent material world is not only an epistemological stance; in an age of symbolic over-expansion it is also the most reliable strategy for survival.

10.4 Limits of This Essay

Finally, the boundaries of the argument should be stated. First, this is an interpretive theoretical analysis; its historical lineage is an explanatory framework that does not exclude others, and on the historical role of the School of Mind and the causes behind the Needham question there is substantive scholarly disagreement, of which this essay's position is one. Second, the characterisation of three stages of talent is a typological generalisation and should not be read as a judgement on every individual in any group; each stage contains many exceptions. Third, the descriptions of contemporary Western scholarship and policy rest on public reporting and secondary literature, not first-hand empirical work. Fourth, the institutional proposals are clear in direction but their operational detail remains to be developed; in particular, the concrete form of "evaluation by real-world effect" across different disciplines is itself a difficult problem requiring long exploration. These limits do not weaken the central thesis, but they remind the reader that the test of this essay, too, should be empirical rather than merely logical.

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