

From Tool to Order: The Dual Reshaping of Employment Structure and Human Social Structure by Artificial Intelligence

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Abstract: Artificial intelligence is penetrating every corner of the economy and society at a pace far exceeding expectations, and its impact on human society has risen from that of a mere technical tool to a structural reordering of society itself. This paper systematically analyzes the profound changes brought about by artificial intelligence along two dimensions: the employment structure and the human social structure. At the level of employment structure, artificial intelligence drives the labor market from "polarization" toward "upgrading" through three mechanisms—substitution, creation, and industrial-structure transformation—giving rise to new structural contradictions such as "middle-tier collapse" and "career-ladder fracture." At the level of human social structure, artificial intelligence is reshaping the modes of knowledge production and cognition, intensifying the concentration of wealth and power, restructuring the social division of labor and human-machine relations, and giving rise to a new form of inequality—the "intelligence divide." The study finds that the transformation of the employment structure and that of the human social structure are not isolated from one another, but are deeply coupled through a transmission chain running from "skills" to "income" to "power." In response to this dual structural shock, this paper proposes a systematic response framework built along three dimensions: the restructuring of the education system, the transformation of the social security system, and the innovation of the governance paradigm.

Keywords: Artificial Intelligence; Employment Structure; Social Structure; Skill Substitution; Social Inequality; Intelligence Divide

1. Introduction

In 2025, the most striking development in the field of artificial intelligence was not a breakthrough in any single technology, but an increasingly clear consensus: AI is no longer a passive tool, but an active force reshaping social order. In the three years since ChatGPT ignited the wave of generative AI, large language models, AI agents, and embodied intelligence have iterated at an accelerating pace, and artificial intelligence is leaping from a specialized tool to a foundational structure of the social system. China's 2026 Government Work Report proposed "building a new form of intelligent economy" and explicitly called for "improving measures that adapt to the development of AI technology and promote employment and entrepreneurship," marking the rise of AI's impact on the labor market from a technical issue to a matter of national strategy.

Yet when people speak of AI "replacing jobs," they often see only the tip of the iceberg. The impact of artificial intelligence on human society goes far beyond "whether a particular position disappears"—it is changing the overall structure of the labor market, reshaping the form of the career ladder, and redefining the relationship between "work" and the "worker"; at the same time, at a deeper level, it is also restructuring society's modes of knowledge production, the logic of wealth distribution, and patterns of interpersonal connection. As some scholars have pointed out, the disruptiveness of artificial intelligence manifests economically as creative destruction, carrying a double-edged effect that markedly raises productivity while also disrupting employment and widening income inequality.

This paper attempts to answer a central question: what picture emerges from artificial intelligence's reshaping of the employment structure and the human social structure? What is the intrinsic relationship between these two structural transformations? And how should society respond to this dual shock? The study first analyzes the mechanisms and manifestations through which AI reshapes the employment structure, then explores its deeper impact on human social structure, and

finally reveals the coupling logic between the two structural transformations and explores paths for governance.

2. Literature Review

2.1 Research Progress on the Impact of AI on Employment

The academic community has accumulated a relatively rich body of research on the relationship between artificial intelligence and employment. Existing studies mainly focus on AI's impact on the total volume of employment, on the employment structure, and on labor mobility and wages. At the level of the underlying mechanisms, scholars generally agree that AI affects the labor market through two pathways: substitution and creation. Under the substitution effect, intelligent systems are gradually replacing positions such as manufacturing assembly-line work and repetitive basic white-collar tasks; the creation effect, meanwhile, has given rise to emerging occupations such as AI engineers and data analysts.

Regarding trends in the employment structure, empirical results show that the application of robots has produced a certain substitution effect on firms' labor demand: for every 1% increase in industrial-robot penetration, firms' labor demand falls by 0.18%; moreover, the effect of robot adoption differs significantly across labor of different skill levels, displaying a feature of "employment polarization," while robot adoption has no clear effect on firms' wage levels.¹ The impact of AI on the employment structure is a process evolving from "polarization" to "upgrading"—in the early stage it manifests as a decline in mid-skill employment alongside growth in both high- and low-skill employment, while in the later stage it shows an overall rise in skill levels. Other scholars, drawing on skill-biased technological change theory, note that artificial intelligence produces a marked polarizing effect on employment.

2.2 Research Progress on AI and Social Structure

Compared with research on employment impacts, the systematic analysis of AI's

¹[1] Wang Yongqin & Dong Wen. (2020). How does the rise of robots affect China's labor market? — Evidence from listed manufacturing firms. *Economic Research Journal*, 55(10), 159-175.

effect on social structure is still in its infancy. Existing research unfolds mainly along three dimensions: the first is inequality, focusing on how AI widens income gaps and polarizes wealth; the negative shock of AI technology on occupational income is more likely to cause unemployment and income loss among workers in low-technical-complexity occupations, while it actually raises the income of those in high-technical-complexity occupations. It is thus evident that AI's impact on occupations is differentiated, widening the income gap between high- and low-technical-complexity occupations and giving rise to occupational inequality.² The second dimension is power, examining the structural imbalance of power brought about by data monopolies and the concentration of computing resources; the third is the human-machine relationship, studying AI's impact on human subjectivity and the restructuring of social relations.

Some research points out that one of the challenges brought by AI is a "de-intellectualizing" function, giving rise to a phenomenon of "artificial intellectual disability," whereby the misuse of AI tools causes humans to inflict intellectual harm upon themselves, thereby profoundly affecting the social order. Put simply, "artificial intellectual disability" refers to an increasingly common phenomenon in the age of AI: self-inflicted intellectual harm resulting from the extensive and unrestrained use—whether active or passive—of AI-related tools, especially internet-based social media. It must be emphasized that this is not what is commonly referred to as "intellectual disability" in the everyday sense, which is often caused by organic damage to the brain or by incomplete brain development leading to persistent impairments in cognition and psychology—conditions that are congenital and unavoidable, and toward which people extend sympathy while continually seeking treatments. "Intellectual impairment" in this new sense, however, is man-made: it can stem from the excessive or improper use of tools, or from the effects that the tools

²[2] Wang Linhui, Qian Yuanyuan, Zhou Huilin & Dong Zhiqing. (2023). The impact of AI technology shocks and the direction of occupational change in China. *Management World*, 39(11), 74-95. <https://doi.org/10.19744/j.cnki.11-1235/f.2023.0131>

humans have created exert on humanity itself.³ At the governance level, scholars call for social governance systems to urgently shift from "passive response" to "proactive adaptation."

2.3 Research Review

Existing research has made important progress in its respective fields, but two clear gaps remain. First, research on employment structure and research on social structure remain relatively disconnected, lacking a systematic analysis of their intrinsic relationship. Second, most studies emphasize describing the problem and explaining its mechanisms, without delving deeply into the coupling logic between the two structural transformations or into comprehensive governance pathways. Building on this foundation, this paper attempts to construct an integrated analytical framework.

3. Research Methods

This study draws jointly on literature analysis and theoretical analysis.

With respect to literature analysis, this paper systematically reviews academic papers, policy documents, and industry reports in the fields of AI, employment structure, and social structure. Sources mainly include journal articles and dissertations indexed in the China National Knowledge Infrastructure (CNKI), policy documents issued by national ministries, and research reports published by international organizations such as the World Economic Forum.

With respect to theoretical analysis, this paper draws on skill-biased technological change theory, task-biased technological change theory, and theories of social structural change, analyzing AI's dual impact on the labor market and on society from a structural perspective. The analytical approach emphasizes logical inference regarding mechanisms of change, evolutionary trends, and intrinsic connections, rather than mere description of phenomena.

4. AI's Reshaping of the Employment Structure

³[3] Zheng Yongnian. (2025). Social order in the age of artificial intelligence. *Bulletin of Chinese Academy of Sciences*, 40(4), 633-641. <https://doi.org/10.16418/j.issn.1000-3045.20250318003>

4.1 A Triple Mechanism: Substitution, Creation, and Industrial-Structure Transformation

During the expansion phase of technological progress, the scale of core industries expands rapidly, and the diffusion effect on related industries gradually emerges, creating large numbers of jobs while also producing marked changes in the employment structure.⁴ AI's impact on the employment structure is not a single-dimensional matter of "replacement," but operates simultaneously through three mechanisms, as shown in Figure 1.

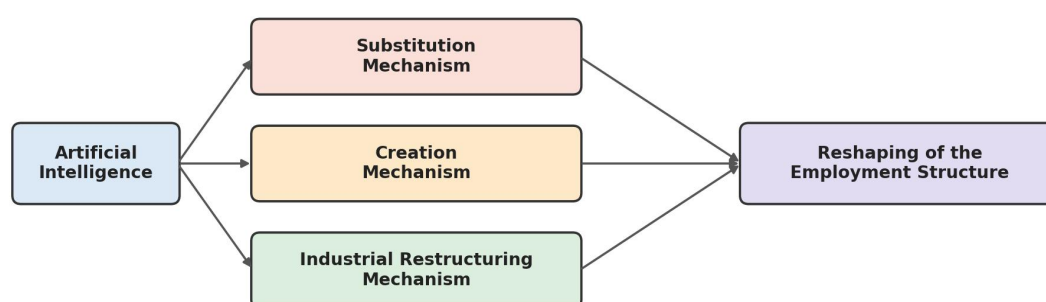


Figure 1 AI's Impact on the Employment Structure

The substitution mechanism is the most direct and most anxiety-inducing pathway of impact. With its capacity for content generation and logical reasoning, generative AI has begun to systematically penetrate task domains such as translation, programming, and copywriting. Mid-skill positions with a high degree of routinization, standardization, and codification are becoming the core zone of impact. Substitution is not evenly distributed, however—simple repetitive manual labor and basic mental labor face the risk of devaluation, while work requiring high originality, contextual judgment, and emotional interaction remains relatively safe.

The creation mechanism offers another possibility. The development of AI has given rise to numerous emerging industries and occupations—demand for positions such as algorithm engineers, data analysts, AI algorithm optimization specialists, and

⁴[4] Wang Jun, Zhang Yuzhe, Zhang Yibo & Hong Qunlian. (2017). The mechanisms and countermeasures by which AI and other new technologies affect employment. *Macroeconomics*, (10), 169-181. <https://doi.org/10.16304/j.cnki.11-3952/f.2017.10.019>

AI data-annotation analysts has surged. The World Economic Forum's Future of Jobs Report 2025 forecasts that by 2030, AI and data-processing technologies will create 11 million jobs. However, the creation effect does not automatically offset the substitution effect—one cannot simply assume, based on historical experience, that new technology will create an equal or greater number of new jobs while eliminating old ones.

The mechanism induced by industrial-structure transformation runs deeper still. Artificial intelligence is driving the reallocation of labor across the primary, secondary, and tertiary sectors, shifting it toward the digital economy, modern services, and related fields. Employment in China's traditional manufacturing sector has generally contracted, with services becoming the main source of employment. All three sectors now display a pattern of jobless economic growth—economic growth no longer automatically translates into employment growth, a trend that warrants serious vigilance.

4.2 From "Polarization" to "Upgrading": The Evolutionary Trajectory of the Employment Structure

AI's impact on the employment structure is not static, but displays a clear staged character, as shown in Figure 2.

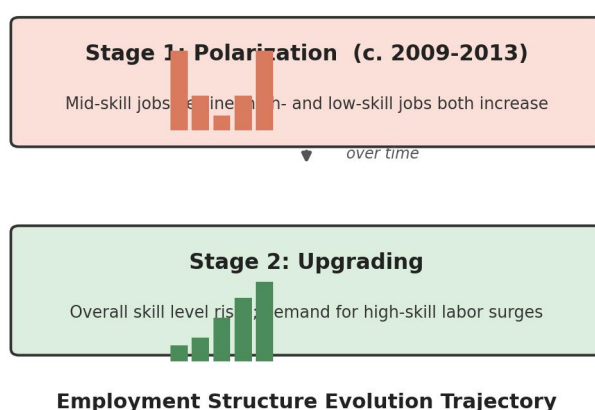


Figure 2 Evolutionary Trajectory of the Employment Structure

The first stage (roughly 2009-2013) is the "polarization" stage. AI caused mid-skill employment to decline while high- and low-skill employment both rose. Mid-skill positions—those involving routine tasks performed according to explicit rules—were the first to be affected. This stage is typically characterized by the labor market being squeezed toward both ends: the high end requiring greater cognitive ability, the low end requiring greater physical dexterity, while the "routine cognitive" work in the middle gradually shrinks.

The second stage is the "upgrading" stage. As AI technology deepens, the employment structure as a whole moves toward higher skill levels. The surge in demand for high-skill labor stands in sharp contrast with the pressure on low- and mid-skill workers to retrain, highlighting the structural contradiction within the labor market. Data show that by 2025, more than nine in ten workers already treated AI tools as a standard part of their jobs, and 19.18% of newly posted positions explicitly required AI-related skills. Demand for algorithm-engineer positions grew 110.1% year on year—both an opportunity and a threshold.

4.3 "Middle-Tier Collapse" and "Career-Ladder Fracture": New Structural Risks

If the analysis above sketches the macro picture of change in the employment structure, the latest trends of 2025-2026 reveal a more severe structural risk, as shown in Figure 3.

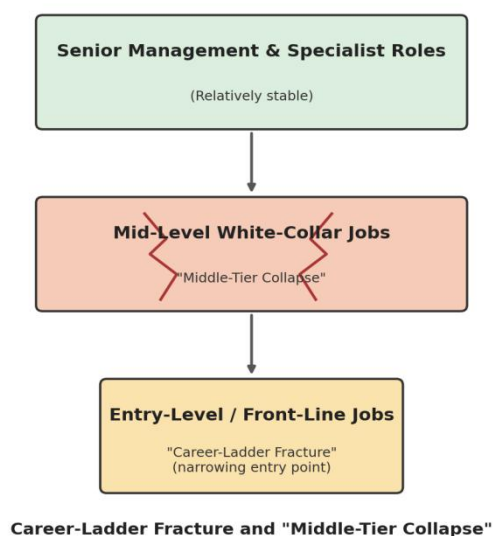


Figure 3 Career-Ladder Fracture and "Middle-Tier Collapse"

"Middle-tier collapse" is one of the most prominent phenomena. Globally, a divergent pattern has emerged in which junior and mid-level white-collar positions face marked pressure while high-end professional and leadership talent remain relatively stable. In the Chinese market, demand has fallen for positions in sales, business development, branding, legal affairs, and some junior internet-technology roles, a phenomenon rooted fundamentally in AI tools' efficiency-driven substitution and structural restructuring of basic labor. The "hollowing-out" of mid-skill positions is changing the shape of the entire career ladder.

"Career-ladder fracture" is another major concern. Firms tend to first scale back recruitment and reduce entry-level positions—the narrowing of career entry points precedes large-scale layoffs. This means the channel through which young people enter the workforce is narrowing, and the traditional career path of "starting at the bottom and gradually being promoted" may be cut off. When entry-level jobs are replaced or reduced by AI, how the new generation of workers is to accumulate work experience and advance their skills becomes an unresolved question.

In addition, structural unemployment, pressure to upskill, and a widening

income-distribution gap are compounding one another. In 2025, China's youth unemployment rate reached as high as 18.9%, and the flexibly employed population exceeded 200 million. The rapid development of AI and the structural difficulties in the labor market are reinforcing one another.

5. AI's Deep Impact on Human Social Structure

We might borrow a concept from British writer Aldous Huxley's *Brave New World* to describe the kind of uncertain social order toward which artificial intelligence may lead.⁵ If the change in employment structure represents the "surface" of AI's impact on society, then the deep transformation of human social structure is the "substratum."

5.1 Restructuring of Knowledge Production and Cognitive Modes

In recent years, scholars have reached a consensus: although AI systems display intelligent-seeming behavior across many tasks, they do not understand data the way humans do.⁶ The integration of algorithms into social interaction is changing traditional modes of knowledge production and dissemination. As people obtain the latest information through search engines and recommendation systems, and as they obtain knowledge and guidance through ChatGPT, the intervention of algorithms not only lowers the threshold for accessing knowledge but also promotes the formation of self-organizing modes of knowledge collaboration.⁷

Even more worthy of vigilance, generative AI displays a "structural positional bias" on controversial issues—generating content whose persuasive force differs markedly for different groups or positions; in meeting personalized needs, algorithms

⁵[5] Zheng Yongnian. (2025). Social order in the age of artificial intelligence. *Bulletin of Chinese Academy of Sciences*, 40(4), 633-641. <https://doi.org/10.16418/j.issn.1000-3045.20250318003>

⁶[6] Mitchell, M., & Krakauer, D. C. (2023). The debate over understanding in AI's large language models. *Proceedings of the National Academy of Sciences*, 120(13), e2215907120. <https://doi.org/10.1073/pnas.2215907120>

⁷[7] Halonen, N., Ståhle, P., Juuti, K., Paavola, S., & Lonka, K. (2023). Catalyst for co-construction: The role of AI-directed speech recognition technology in the self-organization of knowledge. *Frontiers in Education*, 8, 1232423. <https://doi.org/10.3389/feduc.2023.1232423>

also inevitably give rise to problems of information manipulation and social inequality,⁸ and may potentially participate in shaping public attitudes and constructing social consensus, exacerbating social risks such as the digital divide and group polarization. This means that AI is not only a "producer" of knowledge, but potentially also a "shaper" of social cognition—an influence that extends far beyond the technical level.

5.2 Concentration of Wealth and Power

The rapid development of AI technology has markedly raised the efficiency of the economic system, but the sustained concentration of technological dividends among different groups is intensifying economic inequality along multiple dimensions.

At the level of wealth, the gains from AI are highly concentrated among a small number of tech giants and highly skilled talent. Data monopolies and the concentration of computing resources constitute a new type of power structure. The development of AI has made capital relatively more important than labor in the production process, meaning that the distribution of national income tilts further toward capital and away from labor.⁹ Those who are able to master AI technology and who possess data resources and computing power occupy an increasingly advantageous position in the distribution of wealth, while those left behind by technological change face falling incomes or even exclusion from the new economic system.

At the level of power, technical rules exert a concealed governing function through "black-box" operations, dominating ethical judgment and decision logic. The decision-making power of algorithms is expanding ever further—from credit approval to hiring screening, from judicial sentencing to medical diagnosis, AI systems are

⁸[8] Kalpokas, I. (2019). Affective encounters of the algorithmic kind: Post-truth and posthuman pleasure. *Social Media + Society*, 5(2). <https://doi.org/10.1177/2056305119845678>

⁹[9] Chen Yanbin, Lin Chen & Chen Xiaoliang. (2019). Artificial intelligence, aging, and economic growth. *Economic Research Journal*, 54(7), 47-63.

taking over an increasing share of highly consequential human judgments. Whoever controls the algorithm controls the power to define the rules.

5.3 Restructuring of the Social Division of Labor and Human-Machine Relations

Artificial intelligence is fundamentally changing the meaning of "work" and the identity of the "worker."

At the level of the division of labor, the evolution of production tools has profoundly shaped changes in the system of labor division. Machines, as an extension of and substitute for physical labor, drove the formation of a physical division of labor; specialized AI, as an extension of and reinforcement for mental labor, is now driving the restructuring of a mental division of labor. When AI can replace not only physical labor but also a substantial share of mental labor, humanity's place within the division-of-labor system must be redefined. As some scholars have argued, the ultimate transformation of the AI era is not that machines replace human labor, but that human beings and machines achieve a precise division of labor, allowing human value to return—freeing humanity entirely from the bonds of mechanical, repetitive labor and releasing the uniquely human values of creativity, empathy, and critical thought.

At the level of relationships, the human-machine relationship is undergoing a shift from "tool use" to "co-existence and collaboration." As algorithms increasingly permeate the daily lives of ordinary people, human-machine interaction has become an important medium for online interaction and virtual socializing, in turn connecting people's diverse and personalized needs and becoming embedded in the process of shaping shared social values.¹⁰ As more and more people confide in AI and form emotional bonds with it, human social connection and cognitive patterns are undergoing a profound shock. The intelligent qualities that AI displays—qualities that transcend biological limits—pose a challenge to the very essence of human subjectivity. Preserving human subjectivity has become key to the sustainable

¹⁰[10] Zhang Yue. (2024). AI algorithms reshaping social structure: Challenges and insights. *Philosophical Analysis*, 15(4), 32-42+196.

development of an intelligent society.

5.4 The "Intelligence Divide": The Emergence of a New Form of Inequality

Traditional research on the "digital divide" has mainly concerned inequality in access to technology. The age of AI, however, is giving rise to a deeper form of inequality—the "intelligence divide."

The intelligence divide manifests along multiple dimensions: not only whether one can use AI tools at all (the access layer), but also whether one can effectively use AI to enhance one's own abilities (the skill layer), and whether one can share in the gains of an AI-driven economic system (the outcome layer). Digital technology has not delivered inclusive empowerment—digitally disadvantaged groups do not equally enjoy the digital dividends of emerging technology. When service channels are digitized in a "one-size-fits-all" manner, or when online electronic service channels are given priority, groups unable to keep pace with intelligent transformation are systematically marginalized.

Even more concerning is the "Matthew effect"—existing inequalities are amplified through the application of AI. Groups already in a position of advantage are better able to use AI to widen their lead, while disadvantaged groups fall further behind for lack of the relevant skills and resources. Artificial intelligence may become a force that widens, rather than narrows, social gaps.

6. The Coupling Logic of the Dual Structural Transformation and Governance Responses

6.1 Coupling Logic: From Skill Substitution to Social Restructuring

The transformation of the employment structure and that of human social structure are not two parallel tracks, but are deeply coupled through a clear chain of transmission.

The first link is "skill substitution"—as AI replaces particular types of labor, the first thing it changes is the skill-demand structure of the labor market. Mid-skill

positions shrink while high-skill positions expand, giving rise to "middle-tier collapse." The second link is "income divergence"—changes in skill demand inevitably bring changes in income distribution. Displaced workers face falling incomes or even unemployment, while high-end talent equipped with AI skills earn a premium, widening the income gap. The third link is "power restructuring"—the divergence in income accumulates into a divergence in wealth, and the divergence in wealth translates into a divergence in power. Those able to steer the development of AI technology and the rules governing its use gain the ability to define social order. The sustained concentration of technological dividends among different groups ultimately manifests as a restructuring of social structure, as shown in Figure 4.

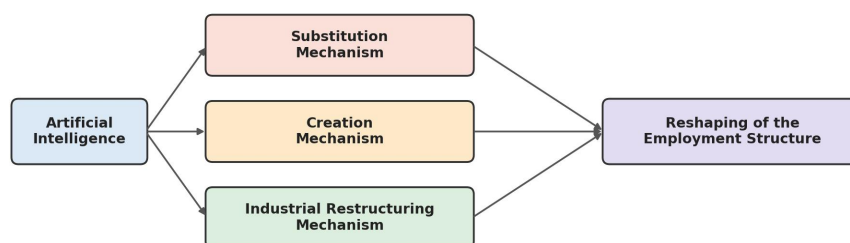


Figure 4 The "Skill-Income-Power" Transmission Chain

This chain reveals an important fact: AI's impact on society is not a "technical problem" but an "order problem." When a technology can simultaneously change who has a job, who has money, and who has power, it is no longer merely a tool, but a force reshaping order itself.

6.2 Governance Response: Systematic Restructuring Along Three Dimensions

Facing the dual shock to the employment structure and human social structure, governance responses cannot be piecemeal patchwork—they must be systematic restructuring.

First, restructuring the education system. AI's reshaping of skill demand requires fundamental adjustment of the education system. Education in the future should not merely transmit knowledge—since knowledge can be generated by AI—but should focus on cultivating abilities that AI cannot replace: critical thinking, creativity,

empathy, and the ability to solve complex problems. At the same time, a lifelong-learning system must become social infrastructure, not a luxury available to only a few.

Second, transforming the social security system. Traditional social security systems face difficulties in identifying beneficiaries, adapting institutionally, and sharing technological dividends. Cai Fang has pointed out that the direction for improving the social security system should be a shift from a system closer to "residual" toward one closer to "institutional." This means social security should not merely be "relief" targeted at the unemployed, but should become a foundational institutional arrangement covering all citizens, adapting to flexible forms of employment, and capable of withstanding the shocks of structural change. The share of government social spending in GDP needs to rise, shifting from "investment in things" toward greater "investment in people." New concepts, technologies, and models represented by "Internet Plus" and big data should be actively promoted for wide application in the field of unemployment services, accelerating the full digitization of unemployment-insurance services and management, and comprehensively improving service and management capacity.¹¹

Third, innovating the governance paradigm. In the face of the social-structural changes triggered by AI, social governance systems urgently need to shift from "passive response" to "proactive adaptation." This includes: establishing a monitoring and early-warning mechanism for AI's impact on employment so as to anticipate its social consequences before technology diffuses; improving the income-distribution system and regulating the share of the labor factor in distribution; promoting the marketization and fair distribution of data as a factor of production; and actively participating in global AI governance so as to secure a voice in the making of the rules.

¹¹[11] Zhang Yinghua, Zhang Zhanli & Zheng Bingwen. (2019). Seventy years of unemployment insurance in New China: Historical evolution, problem analysis, and recommendations. *Social Security Studies*, (6), 3-15.

7. Conclusion

This paper has systematically analyzed the structural changes brought about by artificial intelligence along two dimensions—the employment structure and human social structure—and arrives mainly at the following conclusions.

First, AI's reshaping of the employment structure unfolds simultaneously through three mechanisms—substitution, creation, and industrial-structure transformation—and its impact follows an evolutionary trajectory from "polarization" to "upgrading." The most prominent structural risk at present is "middle-tier collapse" and "career-ladder fracture"—the shrinking of mid-skill positions and the reduction of entry-level positions are changing the shape of the entire career ladder.

Second, AI's impact on human social structure runs deeper still. It is restructuring modes of knowledge production and cognition, intensifying the concentration of wealth and power, reshaping the social division of labor and human-machine relations, and giving rise to a new form of inequality—the "intelligence divide." These changes have already gone beyond the purely economic domain, touching the basic rules by which society operates.

Third, the transformation of the employment structure and that of human social structure are deeply coupled through a "skill-income-power" transmission chain. AI's impact is not a localized matter of "technical substitution," but a systemic "restructuring of order." Governance responses must undertake systematic restructuring along three dimensions: the education system, social security, and the governance paradigm.

The development of artificial intelligence is irreversible, and its reshaping of social structure has only just begun. Faced with this historic transformation, we need to move beyond the shallow anxiety of "how many jobs will AI replace" and think deeply about a more fundamental question: in an era in which AI is deeply embedded in the functioning of society, how should human society redefine the value of "work," the meaning of "knowledge," and the place of the "human being"? This is not merely

a technical question, but a civilizational one.

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