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The Institutional Mediation of Algorithmic Power: China's Social Credit System in Comparative Perspective

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Abstract

How do institutional arrangements mediate the social effects of algorithmic power? Through comparative analysis of four configurations within China's social credit system—market-mediated (Sesame Credit), state-administered (Rongcheng), professional (Hangzhou), and collaborative (Suzhou)—this study demonstrates that institutional logics function as generative mechanisms systematically shaping technology-society co-construction. We find that market, administrative, professional, and collaborative logics transform shared sociotechnical imaginaries into fundamentally different governance configurations across technical design, power distribution, norm construction, and subject formation. Critically, we theorize "differentiated algorithmic governmentalities" as a novel concept: while all systems cultivate self-regulating subjects through data-driven evaluation, they employ qualitatively distinct power mechanisms—seductive, disciplinary, expert, and networked governmentalities—operating through aspiration, compliance, professional identity, or coordination capacity. Our framework challenges both technological determinism and social constructivism, revealing that algorithmic effects emerge through institutionally specific mediations. This institutional diversity has profound implications for understanding digital governance and designing accountable algorithmic systems.

Keywords Algorithmic Power · Institutional Logics · Differentiated Algorithmic Governmentalities · Sociotechnical Co-construction · Social Credit System

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1 Introduction

How do institutional arrangements shape the social effects of digital governance technologies? This fundamental question has become increasingly urgent as governments worldwide adopt algorithmic systems for public administration, social coordination, and behavioral regulation (Fountain 2001; Mergel et al. 2019). The relationship between technology and society has long been contested in political science, with technological determinists arguing that technical systems drive social change (Ellul 1964; Winner 1980), while social constructivists contend that social forces shape technological development (Pinch and Bijker 1984; Hughes 1983; Bijker 1997; Jin and Dai 2025). However, both perspectives suffer from theoretical limitations: determinism underestimates human agency in technological adoption, while constructivism often neglects how institutionalized technologies create new constraints and possibilities for social action (Winner 1993). Recent scholarship on digital governance recognizes that technological effects are mediated by institutional arrangements and contextual factors (Castelnovo and Sorrentino 2017; Kummitha 2020), yet systematic comparative analysis of how different institutional configurations produce distinct socio-technical outcomes remains scarce. Addressing this gap is critical as algorithmic governance proliferates globally (Gu et al. 2024, 2025), demanding a nuanced understanding of the institutional mechanisms that determine their social consequences (Liu 2024).

This theoretical gap is particularly evident in research on algorithmic social evaluation systems. Much of the existing literature treats algorithmic governance as a unified phenomenon, overlooking how institutional arrangements fundamentally alter the political logics and social effects of technically similar systems (Gritsenko and Wood 2022; Jiang et al. 2025). While some studies emphasize algorithmic design and data processing (Kshetri 2020), and others focus on behavioral changes and public responses (Cui et al. 2023; Liu 2022; Wang et al. 2025; Wang and Pan 2024; Xiao et al. 2024; Xin and Huang 2024; Xu et al. 2022; Zhang, Liu, Zhang et al. 2025a, b; Zhang, Luo, Zhang et al. 2025a, b), few investigate the co-constitutive relationship between institutional structures and technological systems (Ding and Zhong 2021; Klein and Kleinman 2002). This neglect has reinforced a tendency to characterize social credit systems as uniform surveillance apparatus (Creemers 2018; Kostka 2019; Liang et al. 2018), obscuring important variations in their normative frameworks, operational mechanisms, and governance outcomes. Moreover, research often relies on single-case analyses without systematic comparison (Liu 2019), limiting our ability to identify the institutional mechanisms through which algorithmic governance produces divergent social consequences.

China's social credit system provides an exceptional empirical setting to address these theoretical and empirical gaps. With the State Council's *Planning Outline for the Construction of a Social Credit System (2014–2020)* marking its official launch (SCPRC, 2014), the initiative has given rise to diverse institutional experiments in algorithmic social evaluation. These arrangements illustrate how institutional contexts mediate technology–society relations in distinct ways. Market-mediated models, exemplified by Ant Group's Zhima Credit, embed credit assessment within commercial ecosystems, while remaining subject to financial and data regulatory

oversight. State-administered models, such as Rongcheng's municipal citizen scoring system, are government-led frameworks that link evaluation to legal compliance and civic behavior, emphasizing positive incentives over punitive sanctions. Associational models, such as Hangzhou's domestic service industry credit system, delegate evaluation to industry associations and regulatory agencies, using standardized criteria to advance sectoral governance. Finally, networked infrastructure models, as in Suzhou's comprehensive platform, integrate administrative and market domains by institutionalizing data sharing and cross-sectoral collaboration. This institutional variation within a single national system constitutes a unique natural experiment: it holds constant broader political and cultural conditions while enabling systematic comparison of how different governance arrangements shape technological design, implementation, and social outcomes.

Drawing on science and technology studies' co-construction framework (Jasanoff 2004) and institutional analysis from comparative politics (Hall and Taylor 1996), we examine how technical designs and social norms mutually constitute each other through different institutional mediations. Our analysis yields four interrelated findings that collectively demonstrate how institutional arrangements mediate technology-society co-construction. First, institutional logics function as generative mechanisms rather than background variables, systematically shaping algorithmic systems. Market, administrative, professional, and collaborative logics transform the shared "trustworthy society" imaginary into fundamentally different sociotechnical configurations, challenging the dichotomy between technological determinism and social constructivism. Second, while all systems cultivate self-regulating subjects by making behavior visible and calculable, they employ qualitatively distinct mechanisms, revealing the institutional diversity of algorithmic power. Third, different institutional arrangements produce qualitatively different stratification bases and exclusion patterns, demonstrating that algorithmic classification systems actively construct institutionally specific social hierarchies rather than merely measuring pre-existing categories. Furthermore, cross-case comparison reveals a theoretical paradox: despite significant institutional differences, all cases exhibit systematic exclusion and strategic compliance. This suggests that algorithmic governance contains structural tensions transcending any single institutional design, inviting further theorization of algorithmic power's commonalities and limitations.

Our research makes several contributions. Theoretically, it contributes to comparative analyses of digital governance by proposing a framework for examining institutional variation in algorithmic systems, demonstrating how the co-construction of technology and society operates through specific institutional mechanisms (Fountain 2001; Gil-Garcia 2012; Jasanoff and Kim 2015). Empirically, our comparative analysis challenges characterizations of social credit as uniform surveillance, demonstrating how institutional arrangements produce divergent governance configurations. Practically, we illuminate how institutional design choices shape algorithmic governance outcomes, offering insights for policymakers navigating digital governance challenges.

2 Literature Review and Theoretical Framework

This study develops an integrated analytical framework examining how institutional arrangements mediate the co-construction of technology and society in algorithmic governance systems. We argue that market, administrative, professional, and collaborative logics produce systematically different patterns of technical translation, power configuration, norm shaping, and subject formation, generating distinct sociotechnical assemblages despite operating under common policy mandates.

2.1 Technology-Society Co-Construction

We adopt a co-constructivist perspective that recognizes technology and society as mutually constitutive domains evolving together through recursive interactions in specific contexts (Jasanoff 2004; Pinch and Bijker 1984). To understand how this mutual shaping unfolds in practice, it is essential to examine the specific mechanisms through which social values become embedded in technical infrastructures. Bowker and Star's (1999) seminal study of classification systems—including medical taxonomies, occupational codes, and racial categories—demonstrates that such systems are never neutral technical decisions but deeply political acts that determine access to resources, confer social recognition, and delineate group membership. Once institutionalized in infrastructures, these classifications become powerful technologies that organize social life.

Building on this insight, Fourcade and Healy (2017) demonstrate how contemporary market-based rating and ranking systems extend these classificatory logics by quantifying individuals through credit scores, risk profiles, and reputation metrics, thereby embedding contested cultural assumptions about worth and trust into everyday economic life. More recently, Amoore (2020) has shown how algorithmic infrastructures intensify these dynamics by enacting subtle forms of inclusion and exclusion through predictive analytics, rendering classification not only a mode of governance but also an ethical terrain where futures are continuously anticipated and enacted. Taken together, these perspectives underscore that algorithmic classification systems, such as social credit scores, are not neutral governance tools but political technologies that structure opportunities and constraints in digital governance (Rouvroy 2013).

Social credit systems extend this classificatory logic into the algorithmic realm, where decisions about which behaviors count as "trustworthy," how different indicators are weighted, and what consequences attach to various scores embed contested cultural assumptions about social order and appropriate conduct (Fourcade and Healy 2017). Unlike traditional classification systems that operate through bureaucratic procedures, algorithmic classifications in social credit systems enable real-time, automated evaluation that can immediately affect individuals' access to services, opportunities, and social recognition (Yeung 2018). This represents a significant intensification of classificatory power through computational acceleration and scope expansion.

While classification systems reveal how political values are embedded in infrastructures, Jasanoff's concept of "sociotechnical imaginaries" explains why particu-

lar classificatory schemes gain legitimacy and institutional support. Sociotechnical imaginaries are "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" (Jasanoff and Kim 2015, p. 6). These imaginaries provide the normative frameworks that guide technical development by specifying which social problems require technological solutions, what values should be prioritized, and how technological capabilities should be organized to achieve collective goals (Hendriks et al. 2025).

However, the same sociotechnical imaginary can be materialized through dramatically different technical architectures and governance practices depending on the institutional arrangements that mediate its implementation. This variation occurs because institutions provide the organizational forms, regulatory frameworks, and incentive structures through which abstract visions are translated into concrete sociotechnical systems (Hall and Taylor 1996). In China's social credit system, for instance, the shared imaginary of creating a "trustworthy society" through technological means has generated four distinct institutional approaches—state-administered, market-mediated, associational governance, and networked infrastructure arrangements—each producing different technical designs and social effects despite operating under the same national policy framework. This institutional mediation of sociotechnical imaginaries raises a critical theoretical question: through what specific mechanisms do different institutional arrangements generate systematically different outcomes? To answer this, we turn to institutional logics theory, which provides analytical tools for identifying the organizing principles that structure technological implementation.

2.2 Institutional Logics as Generative Mechanisms

Scholarship on digital governance has increasingly recognized that institutional contexts fundamentally shape how technologies are designed, deployed, and experienced, yet systematic comparison of how different institutional configurations produce divergent outcomes remains underdeveloped. Fountain's (2001) seminal work on the "virtual state" demonstrated that organizational arrangements and inter-agency routines condition information technology adoption in the public sector, positioning institutions as primary drivers of technological effects (Ly 2025). Subsequent research has reinforced this insight across various domains: Gil-García (2012) identified institutional capabilities as essential determinants of e-government success; Janowski (2015) traced digital government evolution from technology-centered to context-aware approaches; and Kummitha (2020) showed how institutional contexts mediate smart city deployments toward either techno-driven or human-centered trajectories. In the realm of algorithmic governance specifically, scholars have documented how automated decision systems reshape bureaucratic discretion, accountability, and legitimacy in ways conditioned by organizational settings (Bovens and Zouridis 2002; Vogl et al. 2020), and how platform-based service delivery reconfigures state capacity depending on institutional design choices (Cordella and Paletti 2019; Margetts and Dunleavy 2013).

While this body of work establishes that institutions matter profoundly for digital governance outcomes, most studies remain confined to single institutional contexts or treat institutions as background variables rather than central explanatory mechanisms. Few systematically compare how variations in institutional arrangements generate different technology-society relationships (Zhang & Xiong, 2024), and fewer still theorize the generative principles that make certain institutional configurations produce particular socio-technical patterns. This gap is consequential because institutional arrangements are not merely neutral containers for technological implementation but embody distinct institutional logics—the organizing principles, practices, and symbolic systems that provide cognitive frameworks and normative guidelines for action within institutional fields (Thornton and Ocasio 2008; Friedland and Alford 1991). These logics shape what actors perceive as rational, legitimate, and valued, thereby systematically influencing how abstract technological possibilities are translated into concrete technical systems and governance practices.

The concept of institutional logics emerged from efforts to bring macro-societal structures back into organizational analysis. Friedland and Alford (1991) originally identified several central institutional orders in contemporary Western societies—the capitalist market, the bureaucratic state, the nuclear family, and religion—each guided by distinct material practices and symbolic constructions that constitute organizing principles for social action. As they articulated, each institutional order operates according to "a set of material practices and symbolic constructions which constitute its organizing principles and which is available to organizations and individuals to elaborate" (Friedland and Alford 1991, p. 248). Thornton and Ocasio (1999, p. 804) subsequently refined this concept, defining institutional logics as "the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality." Subsequent theoretical development has expanded the typology of institutional orders to include the corporation, the profession, and the community (Thornton et al. 2012), while emphasizing that these ideal types serve as analytical tools for understanding how different organizing principles generate distinct patterns of cognition, evaluation, and action across institutional contexts.

For the analysis of algorithmic social evaluation systems, we identify four ideal-typical institutional logics embodying fundamentally different organizing principles. Market logic operates through efficiency maximization, consumer sovereignty, and voluntary participation, where commercial actors lacking coercive power must attract users through convenience and immediate gratification, generating consumption-oriented governance measured through transactional behaviors (Friedland and Alford 1991). Administrative logic embodies hierarchical authority and bureaucratic regulation, where states possessing coercive capacity mandate comprehensive participation and integrate diverse data sources, generating moralized governance evaluating civic obligations, legal compliance, and moral conduct across public and private spheres (Weber 1978). Professional logic operates through specialized expertise and collegial self-regulation, where occupational communities establish autonomy from both market and state through credentialing, peer review, and technical standards, generating occupationalized governance certifying qualifications within bounded practice

Table 1 Institutional logics and sociotechnical configurations

Dimension	Market Logic	Administrative Logic	Professional Logic	Collaborative Logic
I. *Technical translation*				
Core Values	Efficiency, choice	Order, compliance	Standards, expertise	Balance, coordination
Technical Design	Gamification, instant feedback	Comprehensive integration	Precise metrics	Modular, interoperable
Data Preferences	Consumption, transactions	Administrative records	Professional credentials	Multi-source fusion
II. *Power configuration*				
Legitimacy Source	User voluntarism	State authority	Professional knowledge	Multi-stakeholder agreement
Stratification Basis	Consumption capacity	Moral-political evaluation	Occupational credentials	Multi-dimensional composite
III. *Norm shaping*				
Subject Formation	Consumer-citizen	Moral-civic citizen	Competent practitioner	Adaptive participant
IV. *Governance effects*				
Incentive Mechanisms	Privileges, conveniences	Rewards & punishments	Reputation, certification	Layered combinations
Inclusion/Exclusion	Soft (cumulative disadvantages)	Hard (resource denial)	Occupational closure	Navigation complexity

domains (Freidson 2001). Collaborative logic embodies network coordination and multi-stakeholder participation, where diverse actors engage in consensus-oriented deliberation balancing competing values through platform-based coordination, generating hybrid governance synthesizing economic efficiency, political accountability, professional standards, and community welfare (Ansell and Gash 2008). These ideal types illuminate how different institutional arrangements systematically shape what behaviors are evaluated, how authority is distributed, which values are prioritized, and what forms of subjectivity are cultivated in algorithmic systems.

2.3 Institutional Mediation and Governmentality

To operationalize how institutional logics mediate technology-society co-construction, our analytical framework examines four dimensions synthesizing insights from classificatory infrastructures (Bowker and Star 1999), institutional resource distribution (Levi 1988), and subject formation (Foucault 2007). Technical translation examines how abstract imaginaries become concrete architectures; power configuration analyzes who controls evaluation and resource allocation; norm shaping investigates what ideal subjectivities are cultivated; governance effects examines how self-regulation is achieved. Table 1 systematizes by specifying how each analytical dimension manifests through observable indicators.

Technical Translation. Institutional logics determine which behaviors are evaluable, which data sources are accessed, and how systems are designed. Market systems prioritize consumption data through user-friendly interfaces encouraging voluntary engagement. Administrative systems integrate comprehensive governmental data through mandatory enrollment emphasizing auditability. Professional

systems employ domain-specific metrics and expert-defined standards measuring occupational competencies. Collaborative systems construct modular architectures enabling cross-sectoral integration and flexible criteria. These technical choices encode institutional values—efficiency versus order, choice versus welfare, expertise versus negotiation—transforming shared policy goals into institutionally specific infrastructures.

Power Configuration. Institutional arrangements also determine evaluation authority, standard-setting mechanisms, and resource allocation linkages. Market systems vest power in commercial entities defining creditworthiness by consumption patterns, creating soft exclusion through differential pricing. Administrative systems concentrate authority in government agencies establishing comprehensive behavioral norms, distributing public resources according to civic-moral hierarchies with family-extended consequences. Professional systems distribute power among credentialed practitioners and associations defining quality standards, creating occupational closure. Collaborative systems disperse power across multiple stakeholders negotiating evaluation through deliberative processes, balancing competing interests. These generate fundamentally different stratification patterns: consumption hierarchies versus civic-moral rankings versus occupational credentials versus multi-dimensional assessments.

Norm Shaping. Institutional logics cultivate distinct ideal subjectivities. Market systems construct rational consumer-citizens demonstrating creditworthiness through responsible purchasing and lifestyle alignment with commercial preferences. Administrative systems promote moral-civic citizens fulfilling comprehensive obligations spanning legal compliance, traditional virtues, and community participation across public and private spheres. Professional systems valorize competent practitioners maintaining credentials and delivering quality services within bounded occupational roles. Collaborative systems encourage adaptive participants navigating multiple frameworks, balancing diverse expectations, and demonstrating meta-competence in managing competing demands. These frameworks construct not only behavioral expectations but deeper understandings of personal worth and legitimate life forms.

Governance Effects. Institutional logics further shape what becomes visible, how exclusion operates, and how self-regulation is achieved. Market systems create transparency around consumption through real-time monitoring, producing exclusion through accumulated disadvantages while encouraging self-optimization for commercial evaluation. Administrative systems establish comprehensive visibility through integrated databases and community observation, generating exclusion through resource denial and sanctions while fostering norm internalization as personal obligation. Professional systems render occupational performance visible through certification and ratings, creating exclusion through occupational closure while cultivating professional identity. Collaborative systems produce partial visibility across boundaries, generating exclusion through navigation difficulties while developing skills in value translation across contexts.

To further analyze how these systems function as governance mechanisms, we integrate Foucault's governmentality—organized practices structuring possible actions rather than relying on coercion, into our framework (Foucault 2007). Scholars conceptualize "algorithmic governmentality" as power operating through con-

tinuous data processing to modulate environments and shape behavioral probabilities (Rouvroy and Berns 2013; Introna 2016). However, different institutional logics employ systematically different strategies, generating what we term differentiated algorithmic governmentalities.

Market logic operates through seductive governmentality—attracting voluntary compliance through privileges and lifestyle enhancements. This governs by making desirable what serves commercial interests, cultivating subjects who willingly modify behaviors for premium access and status. Power works through aspiration: users internalize commercial metrics as personal achievement requiring active cultivation rather than external imposition. Administrative logic deploys disciplinary governmentality—utilizing comprehensive surveillance and explicit reward-punishment mechanisms. This governs through visibility and accountability, making citizens aware that actions across civic, economic, and moral spheres are monitored against state standards. Subjects internalize norms through awareness of potential sanctions affecting families, developing compliance habits spanning public and private life. Professional logic relies on expert governmentality—establishing authority through specialized knowledge and peer-validated credentials. This governs by controlling what counts as competent performance and who may practice. Practitioners internalize norms through professional socialization and peer evaluation, making occupational standing the primary motivation for compliance with technical standards and ethical codes. Finally, collaborative logic practices networked governmentality—coordinating action through multi-party deliberation and platform-based mechanisms. This governs by facilitating coordination among actors with different institutional affiliations. Subjects internalize adaptability and diplomatic competence as necessary for sustained engagement, learning to perform appropriate behaviors across multiple contexts while managing competing evaluation criteria.

These differentiated strategies reveal that algorithmic power manifests through institutional mediations producing qualitatively distinct governance configurations. While all modes structure conduct through data-driven evaluation, they operate through fundamentally different mechanisms—attraction versus coercion, aspiration versus fear, professional identity versus network coordination—producing distinct subjectification processes despite shared technological infrastructures. The empirical analysis applies this framework to demonstrate how these theoretical distinctions manifest in concrete socio-technical configurations.

3 Methodology

This study employs comparative case analysis to examine how different institutional arrangements produce distinct patterns of algorithmic governance within China's social credit system. By analyzing cases varying in implementing agencies and application scope while operating under a common national policy framework, we identify both systematic variations attributable to institutional logics and unexpected commonalities revealing broader dynamics of algorithmic evaluation.

3.1 Case Selection

We selected four cases representing distinct institutional logics across two key dimensions: primary implementing agency (market vs. state vs. professional association vs. hybrid) and scope of application (comprehensive vs. domain-specific). This purposive sampling strategy enables systematic comparison while capturing the major institutional variations in China's evolving credit landscape.

Ant Group's Sesame Credit exemplifies market logic through corporate-led comprehensive evaluation serving over one billion users across multiple life domains, embedding credit assessment within commercial ecosystems while extending beyond traditional financial metrics. Rongcheng City's citizen scoring system represents administrative logic through government-led comprehensive evaluation incorporating all residents and legal entities, integrating assessments across civic, economic, and moral behaviors under direct state administration. Hangzhou's domestic service industry credit system illustrates professional logic through industry-specific evaluation developed via collaboration between government agencies and occupational associations, applying domain expertise to establish sector-specific standards. Suzhou's comprehensive platform demonstrates collaborative logic through hybrid governance combining governmental oversight with market participation, creating coordinated mechanisms across public and private sectors through the Osmanthus Score partnership with Ant Group.

These cases were selected because they: (1) represent analytically distinct institutional logics rather than arbitrary variations; (2) have operated for sufficient duration to observe implementation dynamics and evolution; (3) have received adequate documentation enabling systematic analysis; and (4) span different administrative levels and economic contexts, providing regional variation alongside institutional diversity. Together, they constitute a structured comparison enabling identification of causal patterns linking institutional arrangements to socio-technical outcomes.

3.2 Data Source

Our analysis draws on multiple qualitative data sources collected between 2024 and 2025. Primary sources include policy documents, regulatory frameworks, implementation guidelines, and official communications articulating each system's rationale, design, and intended effects. For government-led systems (Rongcheng, Suzhou), we analyzed municipal regulations, administrative notices, and public education materials. For market-driven systems (Sesame Credit), we examined corporate white papers, technical documentation, and promotional materials. For industry-specific systems (Hangzhou), we collected both governmental regulations and industry association standards jointly shaping evaluation.

Secondary sources include media coverage from state outlets, commercial publications, and social media discourse revealing how systems are publicly represented, debated, and negotiated. We conducted interface analysis of mobile applications and web platforms, examining how technical designs materially structure user interactions and embody particular values. We also incorporated published interview data from academic studies and journalistic investigations providing insights into stake-

holder experiences and perceptions. We supplemented documentary analysis with limited semi-structured interviews with residents in Suzhou and Hangzhou during 2024 field visits, though access constraints prevented systematic interview programs across all cases.

3.3 Analytical Approach

Analysis proceeded through iterative comparison guided by our theoretical framework's four dimensions: technical translation, power configuration, norm shaping, and governance effects. For each case, we first conducted within-case analysis establishing the dominant institutional logic, mapping how it shaped technical design choices, authority distributions, normative frameworks, and subjectification processes. This involved coding documentary evidence for manifestations of institutional logics—identifying which values were prioritized, which behaviors measured, which actors held authority, and what consequences followed from evaluation.

We then conducted systematic cross-case comparison along each analytical dimension, identifying patterns of variation and commonality. This involved explicit theoretical reasoning: for each dimension, we articulated theoretical predictions about how different institutional logics should shape outcomes, then examined empirical evidence for confirmation, modification, or challenge. Unexpected findings—such as Sesame Credit's "voluntary coercion," Rongcheng's community embeddedness, Hangzhou's exclusionary professionalization, and Suzhou's fragmentation—received particular analytical attention as potential theoretical refinements.

Throughout analysis, we attended to the co-constitutive relationship between technical systems and social practices, examining how algorithmic designs encoded institutional values while their operation generated feedback reshaping both technologies and norms. This approach avoids technological determinism (treating systems as autonomous forces) and social reductionism (treating technology as merely reflecting preexisting values), instead analyzing how institutional logics mediate ongoing co-construction processes generating emergent socio-technical configurations.

4 Case Study

4.1 Market Logic in Action: Sesame Credit's Gamified Consumer Governance

Ant Group's Sesame Credit (Zhima Credit, 芝麻信用), launched in 2015, represents China's most influential market-driven social credit system, with over one billion users as of 2023 within Alibaba's commercial ecosystem. As a for-profit enterprise translating the "trustworthy society" imaginary into a consumer product, Sesame Credit exemplifies how market logic systematically shapes algorithmic governance toward voluntary participation, consumption-based stratification, and aspirational self-regulation. Our analysis reveals that while the system validates theoretical predictions about market-mediated governance, it also demonstrates unexpected boundary-blurring between commercial authority and governmental functions, challenging assumptions about clear public-private distinctions in algorithmic evaluation.

Market logic predicts technical designs prioritizing user attraction through friendly interfaces, instant gratification, and minimal participation barriers. Sesame Credit's architecture validates these expectations while revealing sophisticated mechanisms of voluntary engagement. The system employs a four-dimensional scoring model—user behavioral accumulation, fulfillment records, identity verification, and asset certification—that primarily processes data generated within Alibaba's ecosystem: transfer payments, shopping transactions, travel bookings, accommodation reservations, daily life services, and public welfare donations. This data selection reflects market logic's preference for readily captured consumption and transaction behaviors over civic conduct or moral attributes requiring complex observation.

The technical interface manifests market logic through extensive gamification. Users encounter colorful visualizations presenting scores (ranging 350–950) as achievement metrics, with milestone celebrations, peer comparisons, and actionable optimization tips. Real-time feedback loops enable users to observe score changes within days of behavioral modifications, creating tight coupling between action and evaluation that encourages continuous platform engagement. Critically, participation remains technically voluntary—users activate Sesame Credit by choice rather than mandate.

However, our analysis reveals an unexpected phenomenon we term "voluntary coercion." While formally optional, declining Sesame Credit increasingly limits access to platform services: deposit-free rentals, expedited hotel check-ins, consumer credit, and identity verification for various lifestyle services. This strategic integration makes non-participation practically costly despite theoretical voluntarism. This finding nuances market logic theory: commercial systems attract users not only through positive incentives but by quietly rendering alternatives inconvenient, blurring boundaries between choice and necessity. The technical architecture thus embodies a subtle form of power—governing through apparent freedom while structuring choice fields to make participation nearly compulsory for full platform functionality.

Theory predicts market systems vest evaluation authority in commercial entities that define creditworthiness according to consumption patterns, generating stratification based on market participation capacity. Sesame Credit confirms this while demonstrating how private actors accumulate quasi-governmental power through platform dominance. Ant Group unilaterally determines what constitutes "trustworthiness"—a fundamentally political judgment clothed in technical rationality. The proprietary algorithm remains opaque; users cannot contest weighting criteria or demand transparency, accepting commercial authority through continued participation. This represents, in certain respects, a significant power transfer from traditionally authoritative state agencies to private corporations, urgently necessitating governmental regulation and oversight.

Stratification patterns follow consumption hierarchies precisely. Higher scores generate greater conveniences: users with scores above 700 not only gain access to deposit-free services and priority processing but can even bypass certain documentation requirements when applying for international visas, significantly expediting the process. This creates cumulative advantages where algorithmic evaluation compounds existing socioeconomic privileges. Crucially, this stratification maps onto class positions: frequent consumers with stable transaction histories and advanced

consumption patterns (typically middle-class urbanites) achieve high scores, while infrequent platform users, cash-preference populations, or rural residents score lower—not due to untrustworthiness but limited commercial engagement with Alibaba's ecosystem.

An unexpected finding challenges pure market logic predictions: Sesame Credit extends beyond commercial domains into governmental functions. Through partnerships with immigration authorities and municipal governments, high scorers access not only commercial privileges but also preferential public services. This boundary-crossing reveals that market-mediated systems can accumulate hybrid authority combining commercial and political power. Market logic thus not merely commodifies citizenship but creates new pathways for private actors to shape access to public goods—a development theory inadequately anticipates. The stratification produced is therefore doubly consequential: it differentiates both market access and civic opportunities.

Theory also predicts that market systems cultivate consumer-citizen subjectivity emphasizing rational purchasing, contractual fulfillment, and lifestyle alignment with commercial preferences. Sesame Credit validates this while revealing how consumption becomes moralized through algorithmic evaluation. The system explicitly links creditworthiness to lifestyle choices extending beyond financial transactions, though specific mechanisms require careful verification. The normative framework constructs "good citizenship" around disciplined, future-oriented consumption aligned with middle-class aspirations.

The ideal Sesame Credit user maintains stable patterns of advanced consumption and timely repayment (predictability), purchases insurance products (risk management), invests in wealth management (delayed gratification), and engages in socially valued activities like public welfare donations. Notably absent are civic virtues unrelated to consumption—volunteering, political participation, or community service carry minimal algorithmic weight unless conducted through Alibaba platforms, where charitable giving via Alipay becomes visible and valued.

This incorporation of limited non-commercial behaviors—charitable donations, public welfare contributions—complicates pure market logic predictions. Commercial actors recognize that purely consumption-based metrics generate legitimacy problems, requiring incorporation of "social responsibility" elements to maintain public acceptance. Market logic thus adapts to institutional environments demanding broader value demonstrations beyond profit maximization. The norm shaping therefore produces a hybrid subject: primarily a rational consumer, but one who strategically performs social responsibility within commercially mediated channels to optimize evaluation outcomes.

Furthermore, market systems govern through seductive governmentality—attracting voluntary compliance through rewards rather than coercion, cultivating anticipatory self-regulation. Sesame Credit exemplifies this mode while demonstrating its unexpected disciplinary power. The system renders consumption behaviors hypervisible through real-time score monitoring, detailed activity logs, and predictive modeling showing potential impacts of behavioral changes. This visibility encourages self-surveillance: in our interviews, some users reported unconsciously checking their scores, modifying purchase behaviors to optimize ratings, and experiencing

anxiety about score fluctuations. Governance operates through aspiration rather than fear—users desire high scores for material privileges, social status, and self-image as responsible and capable consumers.

Our fieldwork reveals that some users actively share high Sesame Credit scores on social media platforms like WeChat Moments, reflecting an underlying mentality of "my score represents who I am"—indicating successful normative internalization. This public performance of creditworthiness transforms algorithmic evaluation into social capital, where scores become markers of personal worth displayed for peer recognition. The willingness to publicly exhibit scores demonstrates how deeply market-based metrics have penetrated self-understanding and social identity construction.

Inclusion and exclusion mechanisms operate subtly compared to administrative systems. Rather than explicit prohibitions, Sesame Credit generates soft exclusion through cumulative disadvantages. Lower scorers face higher costs, longer processing times, and reduced access—exclusion through friction rather than formal sanction. This produces "privilege creep": as more services integrate Sesame Credit benefits, score disparities compound, creating expanding gaps between consumer classes. The governance effect appears gentler than administrative coercion but may prove equally consequential through accumulated disadvantages over time.

However, an unexpected finding complicates assumptions about complete normative internalization. Social media platforms feature numerous guides for "rapidly boosting Sesame Credit scores," revealing instrumental engagement with the system. These strategies include making purchases solely for score improvement then immediately canceling them, making strategic micro-donations, manipulating social network metrics by adding high-scoring contacts, and timing transactions to maximize scoring periods. Users employ these tactics to participate in the system strategically while maintaining critical distance from its normative claims. This resistance through strategic compliance challenges assumptions about governmentality's totalizing effects, suggesting subjects can instrumentally engage surveillance systems without necessarily embracing their underlying values. The self-regulating subject produced by market logic thus may be more cynical and calculating than theory assumes—adapting to algorithmic evaluation not through authentic belief but through tactical optimization that treats scoring as a game to be won rather than a moral framework to internalize.

4.2 Administrative Logic in Practice: Rongcheng's Moralized Civic Evaluation

If Sesame Credit exemplifies governance through market seduction, Rongcheng City's citizen scoring system represents its administrative alternative: comprehensive state-led evaluation deploying moral assessment across all life domains. Launched in 2013 in Shandong Province, Rongcheng's system incorporates 600,000 local residents, 210,000 floating population, as well as legal entities and party-governmental organizations into a unified credit management system, assigning initial scores to residents and institutional actors, adjusting scores through reward and penalty mechanisms, and ultimately classifying subjects into credit grades. Whereas Sesame Credit attracts voluntary participation through commercial incentives, Rongcheng mandates

universal enrollment backed by governmental authority. Where market logic commodifies citizenship through consumption, administrative logic moralizes it through comprehensive civic-behavioral evaluation. Our analysis reveals how state-administered systems achieve technical comprehensiveness, concentrate evaluative power in government agencies, and cultivate moral-civic subjects through disciplinary rather than seductive governmentality—while also demonstrating the system's reliance on social mobilization that distinguishes it from purely platform-based surveillance.

Administrative logic predicts technical architectures prioritizing comprehensive coverage, mandatory participation, and integration of diverse governmental data sources. Rongcheng's system validates these expectations through its all-encompassing design. Unlike Sesame Credit's ecosystem-specific data, Rongcheng integrates administrative records from multiple government departments, enabling tracking of financial credit records, public utility payments, administrative licenses and penalties, judicial judgments, commendations and awards, volunteer services, and charitable donations. This creates a unified information platform capturing behaviors across civic, economic, and moral domains that far exceed market platforms' transactional focus.

The technical architecture manifests administrative logic through its mandatory and universal character. Participation is automatic for all residents and legal entities within jurisdictional boundaries; there is no opt-out mechanism. The system's comprehensiveness extends beyond Sesame Credit's transactional focus to encompass non-market behaviors: respecting elders, assisting neighbors, participating in community activities, and maintaining public order. Credit scores transcend individual boundaries. Social entities' credit evaluations become publicly visible through "credit identity cards" (信用身份证), emphasizing collective responsibility and public oversight. Even for individuals, highly quantified point management systems make credit evaluation results more visible, though through different mechanisms than direct public posting. While personal credit scores are not displayed as openly as corporate ratings, they remain more accessible to community knowledge than pure privacy would suggest, creating layered visibility that varies by subject type.

Interestingly, a critical finding reveals that implementing credit governance requires extensive social mobilization beyond purely technical systems. The system deploys community credit supervisors whose role involves identifying credit-relevant issues in daily social life rather than simply inputting data. This organizational infrastructure—neither purely algorithmic nor traditionally bureaucratic—reflects administrative logic's need to extend state evaluation capacity into granular social spaces that automated systems cannot fully penetrate. Credit becomes a governance tool requiring human intermediaries to translate everyday behaviors into evaluable data, distinguishing this model from platform-based systems that passively collect digital traces.

Administrative systems concentrate evaluation authority in government agencies, linking assessment outcomes directly to public resource allocation and regulatory privileges. Rongcheng confirms this through explicit governmental control over all aspects of evaluation. The municipal government unilaterally determines scoring criteria, weighting mechanisms, and consequence structures. Unlike Sesame Credit's proprietary opacity justified by commercial secrecy, Rongcheng publishes detailed

scoring rules emphasizing transparency and administrative accountability, though citizens still cannot contest the fundamental legitimacy of being evaluated.

Stratification patterns follow civic-moral hierarchies rather than consumption capacity. High-credit residents gain preferential access to government services, simplified administrative procedures, reduced administrative fees, financial loan preferences, and even advantages in children's school admissions and subsidized housing allocation. High-credit enterprises similarly receive preferential policies including regulatory facilitation and government contract priority. Low-credit subjects face service restrictions, increased regulatory scrutiny, and potential ineligibility for government benefits. Critically, Rongcheng extends consequences beyond individuals to families—a parent's evaluation can affect children's opportunities, reflecting administrative logic's emphasis on collective responsibility.

This produces a qualitatively different stratification than market systems. While Sesame Credit differentiates consumers by purchasing power, Rongcheng ranks subjects by civic-moral standing as defined by state authorities. The stratification is simultaneously more explicit (published grade classifications for entities) and more consequential (affecting fundamental civic opportunities like housing and education rather than commercial conveniences). An unexpected finding reveals that community social capital partially shapes credit visibility rather than directly manipulating scores: residents with strong local ties can more effectively demonstrate their creditworthy behaviors and explain circumstances behind negative records, suggesting that social embeddedness provides informational advantages in navigating evaluation. Administrative authority thus operates through but remains influenced by existing social structures, with evaluation outcomes reflecting both bureaucratic criteria and local social knowledge.

Administrative logic also predicts systems cultivating moral-civic subjectivity emphasizing legal compliance, collective welfare, and state-defined propriety. Rongcheng validates this through explicit moralization of evaluation criteria. The system rewards not only legal behaviors (tax compliance, traffic rule observance) but also traditional virtues: "filial piety" (regular visits to elderly parents earn points; neglecting eldercare obligations incurs penalties), "neighborhood mutual assistance," volunteer service, blood donation, and maintaining community harmony. This transforms Confucian ethical principles into quantifiable behavioral standards, creating what scholars term "technomoral governance (Bruckermann 2024)."

Unlike Sesame Credit's consumer-citizenship model, Rongcheng constructs comprehensive moral-civic identity spanning public and private spheres. The ideal Rongcheng citizen fulfills legal obligations, participates actively in community affairs, maintains traditional family values, and voluntarily contributes to collective welfare. Where market logic treats private consumption as irrelevant unless affecting commercial relationships, administrative logic extends moral scrutiny into intimate family dynamics—how often you visit parents, whether you assist neighbors, how you maintain your household all become subject to state evaluation.

However, this norm shaping reveals tensions between traditional values and contemporary realities. The system's emphasis on filial piety, for instance, may conflict with urban migration patterns where adult children work far from parents. Similarly, expectations for community participation assume stable residential patterns increas-

ingly rare in mobile Chinese society. These tensions suggest that administrative logic's comprehensive moral vision may face practical implementation challenges despite technical capacity for evaluation. The moral-civic subject Rongcheng envisions—deeply rooted in community, fulfilling traditional family obligations, voluntarily serving collective interests—represents an idealized citizenship that may be structurally difficult to achieve in contemporary China's rapidly urbanizing, economically dynamic context.

Administrative logic predicts governance through comprehensive visibility, explicit reward-punishment structures, and cultivation of self-disciplining subjects aware of constant evaluation. Rongcheng exemplifies disciplinary governmentality through its pervasive evaluation architecture. Community supervisors' identification of credit-relevant behaviors, coupled with integrated administrative databases, render conduct visible across multiple domains. Unlike Sesame Credit's self-surveillance prompted by commercial aspiration, Rongcheng's visibility stems from awareness of governmental monitoring and potential community knowledge—governance through consciousness of being evaluated rather than direct panopticon observation.

Inclusion and exclusion mechanisms operate explicitly rather than through Sesame Credit's soft friction. Lower credit evaluations trigger direct consequences: denial of government benefits, exclusion from subsidized programs, restrictions on administrative services. These are formal sanctions rather than market-based inconveniences, making exclusion more severe but also more legible and potentially contestable through administrative procedures. The system generates boundaries between subjects in good standing and those facing restrictions, with consequences extending beyond individuals to affect family members' opportunities—a mechanism absent in market systems focused on individual consumers.

Subject formation manifests through internalized civic accountability rather than aspirational consumption. In our interviews, residents reported that their primary concern involves how lower credit grades might affect family members' opportunities, as these extended consequences create powerful incentives for behavioral adjustment. Proactive efforts to improve credit standing are common, though whether these reflect genuine normative internalization or instrumental compliance remains ambiguous. The self-regulation cultivated differs qualitatively from market systems: rather than optimizing for commercial privileges, subjects conform to comprehensive behavioral norms spanning legal, moral, and civic domains. However, this disciplinary self-regulation may generate compliance without deep normative commitment—subjects follow rules to avoid penalties affecting family welfare rather than necessarily internalizing state-defined morality. The system's social mobilization intensifies pressure through community-level awareness and evaluation, creating layered governance combining state administrative power with social knowledge and local accountability mechanisms.

4.3 Professional Logic in Sectoral Governance: Hangzhou's Domestic Service Certification

Neither market-driven like Sesame Credit nor state-administered like Rongcheng, Hangzhou's domestic service industry credit system exemplifies professional logic—

evaluation governed by occupational standards, industry associations, and technical expertise rather than commercial incentives or governmental authority. Established through collaboration between Hangzhou's Bureau of Commerce and the city's Domestic Service Industry Association, this sector-specific model demonstrates how professional logic generates precision-focused technical designs, distributes authority among credentialed practitioners and industry bodies, and cultivates occupational identity rather than consumer aspiration or civic morality. Our analysis reveals that while professional systems achieve quality standardization and labor professionalization, they also risk creating occupational barriers that exclude informal workers who cannot meet credentialing requirements, generating stratification within rather than across social domains.

Professional logic predicts technical architectures emphasizing precise measurement of occupational competencies, verifiable credentials, and domain-specific evaluation criteria developed through expert consensus. Hangzhou's system validates these expectations through its narrow but deep focus. Unlike Sesame Credit's broad lifestyle data encompassing consumption patterns across multiple domains, or Rongcheng's comprehensive civic-moral records spanning public and private behaviors, Hangzhou concentrates exclusively on professional service dimensions: vocational training certifications, service quality ratings, client satisfaction scores, professional conduct records, and compliance with industry standards.

The technical centerpiece—the "domestic service assurance code" (家政服务码)—embodies professional logic's emphasis on verifiable credentialing. Service workers carry digital codes enabling instant verification of identity authentication, health certifications, training credentials, and service histories. Employers scan codes to access standardized professional profiles, transforming traditionally opaque household labor relationships into transparent professional service transactions. The system employs a "1+3" evaluation architecture: one unified information platform supporting three levels of credit subjects—domestic service workers (家政服务员), domestic service agencies (家政服务机构), and community domestic service centers (社区家政服务网点)—each assessed through profession-specific metrics rather than generalized trustworthiness.

This technical specificity distinguishes professional systems from both market and administrative models. Where Sesame Credit's algorithm remains a proprietary black box and Rongcheng's criteria blend legal, moral, and civic dimensions, Hangzhou publishes detailed professional standards as "Domestic Service Agency Credit Evaluation Specifications" (家政服务机构信用评价规范), making evaluation criteria transparent and contestable within professional communities. The technical architecture prioritizes precision over comprehensiveness—measuring fewer dimensions but with greater accuracy and professional validation. However, this specificity also creates technical rigidity: the system struggles to accommodate emerging service types or unconventional work arrangements that don't fit standardized categories, revealing professional logic's tension between quality assurance and flexibility.

Theory predicts professional systems distribute evaluation authority among credentialed practitioners, occupational associations, and regulatory agencies rather than concentrating power in either corporate or governmental hands. Hangzhou's industry credit system embodies a collaborative governance structure where the Bureau of

Commerce primarily provides regulatory oversight and policy guidance, while the Domestic Service Industry Association focuses on developing industry-specific standards through professional consultation. Enterprises implement quality monitoring and service management systems, and community organizations facilitate coordination at the grassroots level. This multi-stakeholder arrangement reflects distributed authority where no single actor unilaterally controls evaluation, distinguishing it from Sesame Credit's corporate monopoly or Rongcheng's governmental centralization, though the precise division of responsibilities and coordination mechanisms remain complex and context-dependent.

Stratification follows occupational hierarchies rather than consumption capacity or civic-moral standing. Service workers with higher certifications (senior housekeepers, certified caregivers) access better employment opportunities, higher wages, and enhanced professional mobility. Enterprises with superior credit ratings receive government contracts, regulatory facilitation, and market recognition. Lower-rated workers and enterprises face employment restrictions and market marginalization. Critically, this stratification operates within the domestic service sector rather than across society—a five-star worker gains advantages in service employment but not necessarily in visa applications or housing allocation, contrasting with Sesame Credit and Rongcheng's cross-domain consequences.

An unexpected finding reveals professional stratification's exclusionary potential. The emphasis on formal certifications and standardized training creates barriers for informal workers—typically rural migrants and older women—who possess practical skills but lack official credentials. These workers become "uncertified" and potentially "un-creditable," forced into informal markets with lower wages and no protections. Professional logic thus achieves quality improvement partly through exclusion, raising questions about whether occupational standardization serves workers' interests or primarily employers' and middle-class consumers' preferences for certified labor. Authority distribution among professional bodies may empower credentialed practitioners while marginalizing those unable to meet professionalization requirements.

Professional logic predicts systems cultivating occupational identity emphasizing technical competence, adherence to professional standards, and commitment to service quality rather than consumption patterns or civic virtues. Hangzhou validates this through explicit professionalization of domestic work. The system rewards vocational training participation, skill certification acquisition, continuing education, and quality service delivery. It penalizes contract violations, customer complaints, and substandard performance. This constructs domestic service workers not as subordinate "helpers"(保姆) but as skilled professionals (家政服务人员) whose value derives from verifiable expertise.

Unlike Sesame Credit's consumer-citizenship or Rongcheng's moral-citizenship, Hangzhou promotes professional-citizenship where worth is demonstrated through occupational competence. The ideal subject maintains current certifications, delivers consistent service quality, adheres to industry standards, and contributes to professional reputation. Notably, the system evaluates professional conduct—reliability, honesty, skill—but not workers' personal consumption habits, family relationships, or civic participation. Professional logic thus creates bounded evaluation: workers

are assessed within occupational roles but their private lives remain outside evaluation scope, contrasting sharply with Rongcheng's comprehensive moral scrutiny.

However, this norm shaping reveals tensions between professionalization and traditional domestic service relationships. The system encourages standardized contracts, transparent pricing, and formal procedures, transforming personalized employer-worker bonds into professional service transactions. While this protects workers' labor rights and reduces exploitative informal arrangements, it may also eliminate flexibility and personal trust that characterized traditional domestic work. Some workers resist professionalization's formality, preferring informal arrangements offering higher pay or closer employer relationships. The professional subject Hangzhou envisions—credentialed, standardized, formally contracted—may not align with all workers' or employers' preferences, suggesting professional logic faces resistance when imposed on sectors historically governed by informal norms.

Professional logic predicts governance through credential verification, peer evaluation, and reputational mechanisms within occupational communities rather than market incentives or state coercion. Hangzhou exemplifies expert governmentality through its certification infrastructure. The system renders occupational competence visible through verifiable codes, enabling employers to distinguish certified professionals from uncertified workers. This visibility operates differently from Sesame Credit's commercial scoring or Rongcheng's civic evaluation—it certifies fitness for specific professional roles rather than general trustworthiness.

Inclusion and exclusion mechanisms operate through occupational gatekeeping. Workers must obtain certifications, maintain quality records, and avoid serious violations to remain "creditable" within the professional system. Those failing these requirements face not administrative sanctions or commercial disadvantages but professional exclusion—inability to access formal employment channels, work for reputable agencies, or command premium wages. This creates a bifurcated labor market: certified professionals enjoying protections and opportunities versus informal workers lacking credentials and recognition.

Subject formation manifests through occupational identity construction. Workers report that obtaining certifications and achieving high ratings generates professional pride and self-respect, transforming their understanding from "domestic helpers" to "skilled service providers." This identity shift encourages continuous skill improvement and quality maintenance to preserve professional standing. However, this self-regulation operates primarily among already-credentialed workers. For those excluded from formal certification—due to age, education, or resources—the system provides no pathway to professional identity, instead reinforcing their marginal status. Professional governmentality thus proves highly effective for those admitted to professional communities but irrelevant or exclusionary for those outside, revealing that expert governance depends on initial credentialing gatekeeping that may reproduce existing inequalities even while raising standards within professionalized sectors.

4.4 Collaborative Logic in Hybrid Governance: Suzhou's Multi-Stakeholder Platform

Suzhou's comprehensive social credit platform represents collaborative logic—integrating governmental authority, commercial efficiency, and social participation through networked coordination rather than singular institutional control. In 2015, Suzhou partnered with Ant Group to develop a citizen credit evaluation product based on its social credit system—the "Osmanthus Score" (桂花分), which integrates "data + models + application scenarios." The city constructed a "one network, two databases, one platform, one hall" credit infrastructure, forming a governance model termed as "government platform, multi-party construction" (政府搭台, 多方共建). While Sesame Credit operates through corporate monopoly, Rongcheng through governmental centralization, and Hangzhou through professional self-regulation, Suzhou attempts to synthesize market mechanisms, administrative authority, and social participation into a coordinated system. Our analysis reveals that collaborative logic generates technical modularity and value pluralism, but also produces coordination costs and internal tensions when divergent institutional rationalities collide within unified platforms.

Collaborative logic predicts technical architectures emphasizing interoperability, modular design, and capacity to integrate diverse data sources across organizational boundaries. Suzhou validates these expectations through its comprehensive data infrastructure. The system encompasses basic data and credit data from over 20 departments including finance, public security, social insurance, and civil affairs, integrating data resources from multiple governmental agencies. According to official reports, the basic database also sources from "enterprises and public institutions closely related to citizens' lives," reflecting the system's public–private partnership model.[1] This breaks traditional data silos through platform-based coordination mechanisms, where data does not depend on monopoly by either enterprises or government alone.

The Osmanthus Score exemplifies collaborative technical design. Unlike Sesame Credit's proprietary algorithm or Rongcheng's governmental formula, the scoring mechanism explicitly combines multiple evaluation dimensions: governmental concerns for legal compliance, commercial emphasis on transaction integrity, and social dimensions of public welfare participation. The platform architecture employs modular design allowing different stakeholders to contribute evaluation components while maintaining overall system coherence. However, this modularity creates technical complexity absent in single-logic systems—ensuring data compatibility, resolving conflicting evaluation criteria, and maintaining consistent scoring mechanisms across diverse inputs requires continuous coordination that Sesame Credit's unified corporate control or Rongcheng's governmental authority avoid.

Theory predicts collaborative systems distribute authority among multiple stakeholders through platform-based coordination and negotiated standards. Suzhou Case confirms this through its meta-governance structure. The municipal government

[1] https://m.szdushi.com.cn/news/201611/14782270268617.shtml?utm_source=chatgpt.com. Last retrieved on August 1 st, 2015.

functions not as direct evaluator but as rule-maker and platform provider, establishing frameworks within which market actors, industry associations, community organizations, and other entities participate in credit construction. This represents neither Sesame Credit's corporate sovereignty, Rongcheng's governmental command, nor Hangzhou's professional self-regulation, but rather orchestrated collaboration where government sets parameters while enabling multi-party participation in implementation.

This power distribution generates both flexibility and fragmentation. Multiple stakeholders contribute evaluation expertise—government monitors legal compliance, commercial partners assess transaction behaviors, social organizations document volunteer activities—creating comprehensive coverage surpassing single-actor capabilities. However, coordination costs prove substantial. Stakeholders negotiate evaluation weights, dispute data-sharing protocols, and contest consequence mechanisms, producing slower adaptation than market systems' corporate agility or administrative systems' governmental decisiveness.

Suzhou's comprehensive credit evaluation system shapes a "balanced citizen" ideal—simultaneously responsible consumer, law-abiding resident, competent professional, and engaged community participant. However, while Sesame Credit's consumption orientation, Rongcheng's moral emphasis, or Hangzhou's professional focus provide clear behavioral guidance, Suzhou's multi-dimensional expectations require residents and social entities to balance conflicting values across different domains. Moreover, a comprehensive evaluation system is often simultaneously fragmented—collaborative subjects are effectively required to possess meta-competence in managing multiple evaluative frameworks at once. This normative complexity creates uncertain pathways for optimization: should one prioritize commercial success, civic participation, professional advancement, or community service when time and resources are limited? The collaborative logic provides no clear hierarchy among these values, leaving subjects to navigate competing demands without authoritative guidance.

Collaborative logic predicts governance through platform-based coordination, procedural rules facilitating multi-party cooperation, and continuous negotiation among diverse stakeholders. Suzhou exemplifies networked governmentality through its layered application ecosystem. High Osmanthus Score holders access both government-provided administrative conveniences (expedited public services) and commercial partner benefits (financial privileges), extending evaluation consequences across public–private boundaries potentially more thoroughly than other models. This creates powerful incentives for score optimization spanning multiple behavioral domains.

However, inclusion and exclusion mechanisms prove complex. The system generates multiple potential exclusion pathways—commercial exclusion through poor transaction records, administrative exclusion through legal violations, social exclusion through minimal community participation—each governed by different institutional logics and remediation procedures. This complexity may advantage sophisticated actors who understand navigating multi-criteria evaluations while disadvantaging those struggling with any single dimension. Subject formation requires adaptive capacity absent in simpler systems, developing skills in translating expec-

tations across institutional contexts and managing diverse evaluative relationships rather than internalizing singular normative frameworks. This produces what we term "portfolio citizenship"—maintaining multiple institutional identities simultaneously. Whether this cultivates genuine multi-dimensional responsibility or merely strategic surface compliance across multiple domains remains ambiguous, revealing collaborative logic's uncertain normative effects when institutional rationalities compete rather than reinforce each other within unified governance systems.

4.5 Cross-Case Analysis: Institutional Logics as Generative Mechanisms

Comparing these four cases reveals that institutional logics function not as surface-level variations but as generative mechanisms systematically producing distinct socio-technical configurations across all analytical dimensions. While superficial similarities exist—all systems employ algorithmic evaluation, generate stratification, and cultivate self-regulating subjects—the cases demonstrate how different institutional logics transform shared technological capacities into qualitatively different governance assemblages.

All four systems achieve what Foucault terms "conduct of conducts," rendering behavior visible and encouraging anticipatory self-regulation. However, the mechanisms producing this outcome differ fundamentally across institutional logics. Sesame Credit governs through seductive attraction—users voluntarily optimize behaviors to access commercial privileges, internalizing market-based metrics as personal achievement. Rongcheng employs disciplinary surveillance—mandatory enrollment and comprehensive monitoring encourage compliance through awareness of governmental observation and family-extended consequences. Hangzhou operates via professional gatekeeping—credentialing requirements and peer evaluation motivate workers to maintain occupational standards for continued market access. Suzhou utilizes networked coordination—multi-stakeholder participation and value balancing require subjects to navigate diverse evaluative frameworks simultaneously.

This convergence-in-divergence pattern suggests that algorithmic governmentality is not a singular phenomenon but a meta-category encompassing multiple institutional modalities. The shared capacity to shape conduct through data-driven evaluation manifests differently when mediated by market competition, state authority, professional expertise, or collaborative negotiation. Self-regulation emerges not from algorithmic technology per se but from institutional arrangements determining what behaviors become visible, how they are evaluated, and what consequences follow from assessment outcomes.

Each system produces algorithmic stratification, but the bases, boundaries, and consequences of hierarchy differ systematically. Sesame Credit generates consumption hierarchies where purchasing power and lifestyle alignment determine access to commercial conveniences, creating soft exclusion through cumulative market disadvantages. Rongcheng establishes civic-moral hierarchies where state-defined behavioral compliance determines public resource allocation, producing hard boundaries between trustworthy and untrustworthy citizens with family-extended impacts. Hangzhou constructs occupational hierarchies where professional credentials and service quality differentiate workers within bounded sectors, generating bifurcated

labor markets excluding uncertified practitioners. Suzhou creates multi-dimensional hierarchies where subjects are simultaneously evaluated across commercial, governmental, and social domains, advantaging those with coordination capacity to navigate complex requirements.

These divergent stratification patterns reveal that algorithmic classification systems do not simply measure pre-existing social categories but actively construct new forms of hierarchy grounded in institutionally specific rationalities. Market logic stratifies by consumption capacity, administrative logic by moral-political standing, professional logic by occupational competence, and collaborative logic by adaptive meta-competence. Critically, these hierarchies crosscut rather than reinforce traditional class structures: high Sesame Credit scores may correlate with middle-class status but reward consumption behaviors independent of wealth; high Rongcheng grades require civic participation accessible to all income levels; Hangzhou credentials depend on training access rather than inherent ability; Suzhou's balancing act privileges educated urbanites with institutional literacy regardless of economic position.

Despite institutional diversity, all cases reveal unexpected exclusionary dynamics and subject resistance challenging theoretical assumptions about inclusive governance. Sesame Credit's voluntary participation produces "voluntary coercion," where declining evaluation becomes practically costly; Rongcheng's comprehensive surveillance cannot eliminate informal power networks mediating administrative consequences; Hangzhou's professionalization excludes informal workers unable to meet credentialing requirements; Suzhou's coordination complexity advantages sophisticated actors while overwhelming those struggling with single dimensions. These findings suggest that algorithmic evaluation systems, regardless of institutional logic, systematically privilege subjects possessing resources—economic capital, social connections, educational credentials, or institutional literacy—to navigate evaluation requirements.

Moreover, all systems generate strategic compliance without normative internalization. Sesame Credit users game scores through tactical purchases; Rongcheng residents adjust visible behaviors while potentially maintaining private skepticism; Hangzhou workers obtain credentials instrumentally without embracing professional identity; Suzhou subjects perform portfolio citizenship across multiple domains without deep commitment to any. This resistance through strategic engagement challenges governmentality theory's assumptions about subjectification, suggesting that algorithmic evaluation may produce cynical adaptation rather than authentic normative transformation. Institutional logics shape what behaviors are performed but cannot guarantee that performance reflects internalized values rather than instrumental calculation optimizing for evaluation outcomes.

5 Conclusion and Discussion

This study examined how institutional arrangements mediate the co-construction of technology and society in algorithmic governance by comparing four implementations of China's social credit system. Our findings demonstrate that institutional log-

ics—market, administrative, professional, and collaborative—function as generative mechanisms systematically shaping socio-technical configurations across technical design, power distribution, norm construction, and subject formation. First, different logics produce fundamentally different technical architectures: market logic generates gamified voluntary systems emphasizing consumption data; administrative logic creates comprehensive mandatory platforms integrating governmental records; professional logic develops domain-specific certification systems measuring occupational competencies; collaborative logic constructs modular platforms coordinating diverse stakeholder inputs. Second, these systems establish qualitatively distinct stratification patterns based on consumption capacity, civic-moral standing, professional credentials, or adaptive meta-competence, demonstrating that algorithmic classification actively constructs new social hierarchies grounded in institutionally specific rationalities rather than merely measuring pre-existing categories. Third, while all systems cultivate self-regulating subjects through algorithmic governmentality, they employ divergent mechanisms—seductive attraction, disciplinary surveillance, professional gatekeeping, or networked coordination—revealing that technological effects emerge from institutional mediation rather than inherent technical properties. Fourth, despite institutional diversity, all cases exhibit unexpected commonalities: exclusionary dynamics privileging subjects with resources to navigate evaluation requirements, and strategic compliance without normative internalization, challenging assumptions about both inclusive governance and complete subjectification.

These findings make several theoretical contributions. For science and technology studies, we demonstrate that technology-society co-construction operates through specific institutional mechanisms rather than abstract mutual shaping, with institutional logics determining which values are prioritized, how behaviors are measured, and what consequences follow from evaluation. This moves beyond technological determinism's overemphasis on technical capacities and social constructivism's neglect of how institutionalized technologies create new constraints and possibilities. For institutional analysis, we show how organizational logics generate systematically different socio-technical outcomes despite operating under identical national policy frameworks, revealing institutions as active mediators rather than background variables in digital governance. For governmentality studies, we extend Foucault's analytics by specifying multiple modalities of algorithmic power—seductive, disciplinary, expert, and networked governmentalities—each producing distinct subjectification processes while sharing the meta-characteristic of governing through conduct shaping rather than direct coercion. Empirically, our comparative analysis challenges characterizations of social credit as uniform surveillance apparatus, demonstrating instead that institutional variation produces divergent governance configurations with different implications for individual autonomy, social equality, and public accountability. The Chinese case thus provides important analytical insights into how institutional arrangements globally will shape algorithmic governance as it proliferates across societies.

Policy implications follow from recognizing institutional logics' mediating role. First, regulatory frameworks should account for institutional diversity rather than treating algorithmic systems as technologically determined: market-driven systems require consumer protection and anti-monopoly oversight; state-administered sys-

tems need accountability mechanisms preventing rights violations; professional systems must balance quality standards with accessibility; collaborative systems require coordination infrastructure supporting multi-stakeholder participation. Second, policymakers should recognize that technical features alone—transparency, explainability, fairness—cannot ensure beneficial outcomes without addressing institutional power distributions determining who controls evaluation, whose values are prioritized, and how consequences are allocated. Third, given that all institutional configurations exhibit exclusionary tendencies and generate strategic rather than normative compliance, governance frameworks should incorporate safeguards against cumulative disadvantages, maintain alternative pathways outside algorithmic evaluation, and preserve spaces for contestation and resistance. Finally, rather than pursuing singular optimal models, societies should cultivate institutional diversity, recognizing that different logics suit different contexts while acknowledging that no institutional arrangement eliminates fundamental tensions between governance efficiency and individual autonomy. The future of algorithmic governance depends not on perfecting technologies but on designing institutional arrangements that balance efficiency, accountability, and justice across diverse social domains.

Several limitations warrant consideration. First, our cases operate in different sectors (finance, civic governance, domestic services, multi-sectoral coordination), raising questions about whether sectoral differences rather than institutional logics drive divergent outcomes. We address this theoretically—institutional logics shape sectoral selection rather than being determined by it—and empirically—the same sectors can host different logics with systematically different results (e.g., financial credit under both market and administrative logic). Nevertheless, matched-pair designs comparing institutional arrangements within identical sectors would strengthen causal claims. Second, data access constraints, particularly for commercial systems, limited direct observation of implementation dynamics. Third, our cases all operate within China's political-institutional environment, raising questions about generalizability to other political systems. Future research should examine how institutional logics operate across political contexts and in other algorithmic governance domains beyond social credit.

Declarations

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Ansell, C., and A. Gash. 2008. Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory* 18 (4): 543–571.

Amoore, L. 2020. *Cloud ethics: Algorithms and the attributes of ourselves and others*. Duke University Press.

Bijker, W. E. 1997. *Of Bicycles, Bakelites, and bulbs: Toward a theory of sociotechnical change*. MIT Press.

Bovens, M., and S. Zouridis. 2002. From street-level to system-level bureaucracies: How information and communication technology is transforming administrative discretion and constitutional control. *Public Administration Review* 62 (2): 174–184.

Bowker, G. C., and S. L. Star. 1999. *Sorting things out: Classification and its consequences*. MIT Press.

Bruckermann, C. 2024. Automating morality: Environmental governance in the digital age in China. *Social Anthropology/Anthropologie Sociale* 32 (4): 31–50.

Castelnovo, W., and M. Sorrentino. 2017. The digital government imperative: A context-aware perspective. *Public Management Review* 20 (5): 709–725. https://doi.org/10.1080/14719037.2017.1305693.

Cordella, A., and A. Paletti. 2019. Government as a platform, orchestration, and public value creation: The Italian case. *Government Information Quarterly* 36 (4): 101409.

Creemers, R. 2018. China's Social Credit System: an evolving practice of control. Available at SSRN 3175792.

Cui, X., N. Xu, X. Yan, and W. Zhang. 2023. How does social credit system construction affect corporate carbon emissions? Empirical evidence from Chinese listed companies. *Economics Letters* 130: 110099.

Ding, X., and D.Y. Zhong. 2021. Rethinking China's social credit system: A long road to establishing trust in Chinese society. *Journal of Contemporary China* 30 (130): 630–644.

Ellul, J. 1964. *The technological society (J. Wilkinson, Trans)*. New York: Alfred A. Knopf. (Original work published 1954).

Foucault, M. 2007. Security, territory, population: Lectures at the Collège de France. In ed. G. Burchell, M. Trans, and M. Senellart, 1977–78. New York: Palgrave Macmillan.

Fountain, J. E. 2001. *Building the virtual state: Information technology and institutional change*. Brookings Institution.

Fourcade, M., and K. Healy. 2017. Seeing like a market. *Socio-economic Review* 15(1):9–29.

Friedland, R., and R.R. Alford. 1991. Bringing society back in: Symbols, practices, and institutional contradictions. In *The new institutionalism in organizational analysis*, ed. W.W. Powell and P.J. DiMaggio, 232–263. Chicago: University of Chicago Press.

Freidson, E. 2001. *Professionalism: The third logic: On the practice of knowledge*. Chicago: University of Chicago Press.

Gil-Garcia, J. R. 2012. *Enacting electronic government success: An integrative study of government-wide Websites, organizational Capabilities, and institutions*. New York: Springer.

Gritsenko, D., and M. Wood. 2022. Algorithmic governance: A modes of governance approach. *Regulation & Governance* 16(1):45–62.

Gu, Y., S. Guo, Y. Gan, X. Qin, W. Qu, Z. Wang, and T. Zhang. 2024. Global justice index report 2023. *Chinese Political Science Review* 9 (3): 275–380.

Gu, Y., S. Guo, Y. Gan, X. Qin, W. Qu, and Z. Wang. 2025. Global justice index report 2024. *Chinese Political Science Review*.

Hall, P.A., and R.C.R. Taylor. 1996. Political science and the three new institutionalisms. *Political Studies* 44 (5): 936–957.

Hendriks, A., K. Karhunmaa, and P. Delvenne. 2025. Shaping the future: A conceptual review of sociotechnical imaginaries. *Futures*. https://doi.org/10.1016/j.futures.2025.103607.

Hughes, T.P. 1983. *Networks of power: Electrification in Western Society, 1880–1930*. Baltimore, MD: Johns Hopkins University.

Introna, L. D. 2016. Algorithms, governance, and governmentality: On governing academic writing. *Science Technology & Human Values* 41(1):17–49.

Jasanoff, S., and S.-H. Kim. 2015. *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power*. Chicago: University of Chicago Press.

Janowski, T. 2015. Digital government evolution: From transformation to contextualization. *Government Information Quarterly* 32 (3): 221–236.

Jasanoff, S. 2004. *States of knowledge: The Co-production of science and social order*. London: Routledge.

Jiang, Y., X. Yu, and Y. Qin. 2025. Unraveling the balance between personal data protection and public interest: A theoretical framework and its empirical application in personal data processing. *Journal of Chinese Governance*, 1–22.

Jin, X., and Y. Dai. 2025. Data-driven technology, organizational structure, and interdepartmental data sharing: The case of government-led digital projects in Guangzhou. *Chinese Political Science Review* 10: 329–346.

Kostka, G. 2019. China's social credit systems and public opinion: Explaining high levels of approval. *New Media & Society* 21(7):1565–1593.

Kshetri, N. 2020. China's social credit system: Data, algorithms and implications. *IT Professional* 22 (2): 14–18.
Klein, H. K., and D. L. Kleinman. 2002. The social construction of technology: Structural considerations. *Science Technology & Human Values* 27(1):28–52.
Kummitha, R.K.R. 2020. Smart technologies for fighting pandemics: The techno- and human-driven approaches in controlling the virus transmission. *Government Information Quarterly* 37 (3): 101481.
Levi, M. 1988. *Of rule and revenue*. University of California Press.
Liang, F., V. Das, N. Kostyuk, and M. M. Hussain. 2018. Constructing a data-driven society: China's social credit system as a state surveillance infrastructure. *Policy & Internet* 10(4):415–453.
Liu, C. 2019. Multiple social credit systems in China. *Economic sociology: the European electronic newsletter* 21 (1): 22–32.
Liu, C. 2022. Who supports expanding surveillance? Exploring public opinion of Chinese social credit systems. *International Sociology* 37 (3): 391–412.
Liu, L. 2024. *From click to boom: The political economy of e-commerce in China*. Princeton: Princeton University Press.
Ly, B. 2025. Bridging governance and technology: Key determinants of AI adoption in public administration. *Chinese Political Science Review*.
Margetts, H., and P. Dunleavy. 2013. The second wave of digital-era governance: A quasi-paradigm for government on the web. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 371 (1987): 20120382.
Mergel, I., N. Edelmann, and N. Haug. 2019. Defining digital transformation: Results from expert interviews. *Government Information Quarterly* 36 (4): 101385.
Pinch, T.J., and W.E. Bijker. 1984. The social construction of facts and artifacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science* 14 (3): 399–441.
Rouvroy, A. 2013. The end(s) of critique: Data-behaviourism vs. due-process. In *Privacy, due process and the computational turn*, ed. M. Hildebrandt, and K. De Vries. 143–168. Routledge.
Rouvroy, A., & Berns, T. (2013). Algorithmic governmentality and prospects of emancipation: Disparateness as a precondition for individuation through relationships? Réseaux 177(1), 163–196.
State Council of the People's Republic of China. 2014. Planning Outline for the Construction of a Social Credit System (2014–2020). Retrieved from https://digichina.stanford.edu/work/planning-outline-for-the-construction-of-a-social-credit-system-2014-2020/
Thornton, P.H., and W. Ocasio. 1999. Institutional logics and the historical contingency of power in organizations: Executive succession in the higher education publishing industry, 1958–1990. *American Journal of Sociology* 105 (3): 801–843.
Thornton, P. H., and W. Ocasio. 2008. Institutional logics. In *The SAGE handbook of organizational institutionalism*, ed. R. Greenwood, C. Oliver, K. Sahlin, and R. Suddaby. 99–129. SAGE Publishing.
Thornton, P.H., W. Ocasio, and M. Lounsbury. 2012. *The institutional logics perspective: A new approach to Culture, structure and process*. Oxford, UK: Oxford University Press.
Vogl, T.M., C. Seidelin, B. Ganesh, and J. Bright. 2020. Smart technology and the emergence of algorithmic bureaucracy: Artificial intelligence in UK local authorities. *Public Administration Review* 80 (6): 946–961.
Wang, J., X. Li, A. Memari, M. Skitmore, Y. Zhong, B. Ashuri, Jianli Chen, and J. Cao. 2025. Assessing the implementation and effectiveness of China's social credit system of the construction industry: A case study of Nanjing. *International Journal of Construction Management* 25 (7): 850–859.
Wang, Y., and H. Pan. 2024. Information collection, public attitudes, and supportive behavior tendencies in the urban digital transformation: A survey experiment in a facial recognition scenario. *Journal of Chinese Governance* 9 (4): 483–510.
Weber, Max. 1978. *Economy and society*. University of California Press.
Winner, L. 1980. Do artifacts have politics? *Daedalus* 109 (1): 121–136.
Winner, L. 1993. Upon opening the black box and finding it empty: Social constructivism and the philosophy of technology. *Science Technology & Human Values* 18(3):362–378. http://www.jstor.org/stable/689726
Xiao, H., Y. He, and W. Ge. 2024. Living with digital government: Effects of technology anxiety on public support for policy in China. *Journal of Chinese Political Science*.
Xin, G., and J. Huang. 2024. Making the people's voice heard: Pathways of e-participative governance in China. *Journal of Chinese Governance* 10 (1): 33–56.

Xu, X., G. Kostka, and X. Cao. 2022. Information control and public support for social credit systems in China. *The Journal of Politics* 84 (4): 2230–2245.

Yeung, K. 2018. Hypernudge': Big data as a mode of regulation by design. In *The social power of algorithms*, 118–136. Routledge.

Zhang, S., X. Luo, and Z. Gu. 2025b. The impact of digital governance efficiency on regional social capital: A panel data analysis of 21 cities in Guangdong Province, China. *Journal of Chinese Political Science*.

Zhang, X., and Y. Xiong. 2024. *The* siphon effect in data-driven innovation of government hotlines? A comparative study of Beijing and Shanghai. *Chinese Political Science Review*. https://doi.org/10.1007/s41111-024-00267-x.

Zhang, F., B. Liu, and J. Zhang. 2025a. The role of ICT tool interactivity on citizen e-participation in public service provision: A survey experiment based on self-determination theory. *Journal of Chinese Governance*, 1–42.