

THE POWER GENERATION LOGIC OF INTELLIGENT RECOMMENDATION ALGORITHMS

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Abstract: *Power operates through the interplay of unequal and dynamic relationships. Asymmetry characterizes the essence of power. The actualization of power requires a specific field of demand where it occupies an asymmetrical position. Unlike externally imposed regulatory power, technology maintains a complicit relationship with human intrinsic purposes, thereby possessing endogenous power attributes. Modern humans inhabit a blended world of data and reality. Born from information explosion and personalized distribution demands, intelligent recommendation algorithms demonstrate structural asymmetry in information processing and allocation, manifesting characteristics of a power subject.*

Keywords: *power mechanism; Intelligent recommendation algorithm; Algorithmic power*

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Introduction

1. What is the problem?

The core problem is the emergence and operation of algorithmic power inherent in intelligent recommendation systems. These algorithms, driven by structural information asymmetry and embedded within fundamental human needs, function as quasi-autonomous power subjects. They exert "immanent domination" by shaping users' informational ecosystems, constructing symbolic orders, and ultimately reconfiguring human subjectivity and agency. This transforms users into passive objects within algorithmic governance systems,

risking the submergence of human freedom, critical potential, and diverse self-actualization under deterministic operational logic .

2. Why is it interesting and important?

Ubiquity & Impact: Intelligent recommendation algorithms are fundamental infrastructure in the contemporary "blended world of data and reality," deeply integrated into daily life (navigation, consumption, leisure, social relations).

Power Transformation: It reveals a new, subtle, and pervasive form of power ("immanent domination", "cybernetic sovereignty") distinct from traditional coercive (monarchical) or juridical power, operating through persuasion, identification, and the construction of symbolic orders within cognitive and informational spaces.

Subjectivity & Agency: It addresses the critical existential question of human freedom, autonomy, and the potential for becoming mere appendages to technological systems in the digital age.

Ethical Foundation: Understanding the "logic of algorithmic power generation" is presented as the foundational ethical problematic of deploying these systems .

Why is it hard? (Why do naive approaches fail?)

Black Box Nature: Algorithms operate as complex, opaque ("black box") systems, making their concrete operations, biases, and decision-making processes unknowable and ungovernable by users.

Endogenous Alignment: Unlike external power (punishment), algorithmic power aligns immanently with human needs (information access) and technological dependence. Resistance feels like self-exclusion from essential life matrices.

Structural Dependency: Humans are fundamentally limited cognitively and technologically when facing the "infinite" of the data world. Algorithms become indispensable prostheses, creating a deep structural dependency that masks their power effects.

Illusion of Freedom/Choice: Algorithms create a "spectralization of choice" - a simulated freedom where selection protocols are prefigured, making user

sovereignty performative and illusory. Naive critiques focusing on overt coercion miss this subtle control.

Quasi-Subjectivity: Algorithms achieve a form of "quasi-subjectivity" (Inverted Agency, Epistemic Escape, Autopoietic Closure), dissolving traditional subject-object binaries and making resistance conceptually and practically challenging.

Why hasn't it been solved before? (What's wrong with previous approaches? How does mine differ?)

Instrumental View: They treat technology (including algorithms) merely as neutral tools, overlooking their inherent power attributes and role as mediators that reshape human existence and subjectivity.

External Focus: They primarily analyze algorithmic impacts (bias, filter bubbles) as external consequences, rather than tracing the ontological logic of power generation rooted in asymmetry, needs, and technological mediation itself.

Limited Power Framework: They apply traditional power frameworks (coercion, resource control) without fully accounting for the unique mechanisms of algorithmic power: persuasion, symbolic order construction, immanent domination, quasi-subjectivity, and cybernetic symbiosis.

Neglecting Need Matrix: They underestimate the critical role of the human "need matrix" (especially the universal need for managing information overload) as the ontological terrain enabling algorithmic power to crystallize and operate effectively.

This Paper's Difference: This paper integrates historical materialism (needs, technology), Foucauldian power analysis (sovereign, disciplinary, immanent power; subjectivation; symbolic order), and critical media/technology studies. It specifically traces the genealogy of power strategies, grounds power generation in the dialectic of human needs and technological mediation, and analyzes the unique conditions enabling intelligent recommendation algorithms to become quasi-subjective power agents within the modern datasphere. It frames the core dilemma as the human-world finitude/infinity tension.

What are the key components of my approach and results? Limitations?

Key Components of Approach

Historical Power Analysis: Examines the evolution of power strategies from monarchical (asymmetry amplification) to juridical (asymmetry concealment through formal equality) to modern immanent power operating through persuasion, identification, and symbolic order construction.

Needs-Technology Dialectic: Positions "needs" as the immanent driver of practice and power transmutation, and "technology" as the inherent mediator/appropriator of asymmetry, possessing endogenous power attributes.

Algorithmic Specificity: Analyzes how intelligent recommendation algorithms, born from information explosion and personalized distribution needs, monopolize informational asymmetry within the modern "blended reality." Highlights their role in constructing symbolic orders and their achievement of "quasi-subjectivity" (Inverted Agency, Epistemic Escape, Autopoietic Closure).

Ontological Shift: Emphasizes the datasphere as a fundamental existential matrix and the "mediatization" of life, where algorithmic curation becomes an existential necessity.

Key Results

Intelligent recommendation algorithms function as power subjects due to their monopolization of informational asymmetry within the field of universal human need (information management).

Their power operates through "immanent domination," constructing symbolic orders and shaping subjectivity within the cognitive-informational ecosystem.

They achieve a state of "quasi-subjectivity," fundamentally altering the traditional subject-object relationship in power dynamics.

The core tension enabling this power is the anthropological condition of human finitude confronting the infinitude of the world (material and informational), with technology (algorithms) as the necessary, yet power-laden, mediator.

Specific Limitations

Theoretical Focus: The paper is primarily a theoretical/philosophical analysis. It does not provide empirical validation of the mechanisms or effects described.

Solution Agnostic: While diagnosing the problem and power logic, it offers limited concrete solutions beyond advocating for "critical vigilance".

Algorithmic Homogeneity: It discusses "intelligent recommendation algorithms" as a somewhat monolithic category, potentially underplaying significant variations in design, purpose, and implementation.

Resistance Nuance:

While acknowledging the possibility of counter-hegemonic praxis (Section 2.1), it doesn't deeply explore concrete forms of resistance or agency within the algorithmic power framework it describes.

Since the advent of the internet, human social life has manifested an accelerating trend of datafication, transitioning the existential sphere from a purely physical world to a hybrid reality interwoven with digital data. As the infrastructural force underpinning information acquisition, communication media have gained critical salience by predetermining the possibility space for human decision-making. Confronted with the deluge of massive information, intelligent recommendation algorithms exercise unprecedented efficiency in identifying data patterns and modeling user preferences, subsequently executing information distribution through computational matching mechanisms. This operational paradigm endows intelligent recommendation algorithms with agency power over human subjects. Consequently, the analytical lens of power relations becomes essential for decoding such algorithms, with the very logic of algorithmic power generation constituting the foundational ethical problematic inherent to their deployment.

1. The Substance and Strategy of Power: Asymmetry and Its Concealment

Academic discourse on power within domestic and international scholarship is remarkably rich in its elaborations. For instance, Steven Lukes expounds power through dimensions of coercion, manipulation, inducement, motivation, persuasion, and authority [Lukes, 2008]; Manuel Castells conceptualizes power through intersubjective relations and violence, positing that power operates through the (both physical and symbolic) actual or potential application of violence grounded in production and experience, thereby imposing certain subjects' will upon others [Castells, 2006]. Liu Shaojie interprets traditional institutionalized power through a top-down hierarchical structure from central to local governance, characterizing it as a monopolistic dominance controlled by elite groups [Liu and Wang, 2018]; Zhai Yan examines the internal cycle between resources and power through the lens of resource allocation, possession, and social mobility, framing it as an interest-driven mechanism [Zhai, 2020]. Whether manifested through coercion, violence, monopoly, or resources, the exercise of power inevitably demonstrates asymmetry – a hierarchical superiority of power subjects over power objects. As critically observed: 'Power is not something acquired, seized, or shared, nor is it something we guard against or renounce. It operates through innumerable points within the interplay of unequal and dynamic relationships' [Foucault, 2016].

1.1. Reinforcement and concealment of asymmetry

In the monarchical era, power manifested as oppression—a force of 'making die' through violence. 'The origin of the state lies in violence against the external,' [Mann, 2015]. The monarch's arbitrary power over life and death stemmed precisely from their monopoly on violence. Public torture, as a spectacular ritual, served as a grand ceremony to manifest sovereign authority [Arendt, 2012] (p.55). The more brutal the punishment, the more glaring the asymmetry revealed through violence. The prevailing power strategy during this period was the systematic intensification of such asymmetry.

However, constrained by limited surveillance capabilities and the checks among multiple power centers—monarchs, aristocrats, and local magnates—legally prescribed consequences were not always enforceable. Yet law remained indispensable. While brute force constituted the foundation of inequality, it proved suboptimal for sustaining power and extracting benefits. As observed: 'Exclusive reliance on coercion would dissipate most profits into the exorbitant costs of oppressive rule' [Lenski, 2018]. Hence, 'no government ever existed that was founded solely on violent means' [Arendt, 2012]. The establishment of legal systems marked a strategic shift in power operations—from 'amplifying asymmetry' to 'concealing asymmetry,' transitioning from the spectacular display of power to its clandestine operation.

The decline of monarchical power precipitated the ascendancy of bourgeois juridical rationality. Power now donned the discursive mantle of social contract theory: a framework wherein all individuals collectively embrace legislative principles and their derivative legal codes, while simultaneously claiming rights and bearing obligations. Through ubiquitous surveillance, rigorous law enforcement, and systematic punishment execution, the legal apparatus evolved into a self-actuating institution operating with mechanical determinism akin to physical laws. This regime of explicit consequences for actions paradoxically engendered an illusion of volitional freedom among the governed.

Contemporary punishment functions as a disciplinary mechanism forging an inexorable causal chain of 'crime-punishment-deterrence,' thereby inscribing the symbolic order of codified norms into the collective psyche. As critically observed: The ultimate aim of law resides not in retributive justice, but in the normalization of docile subjects through terrorized compliance.

Juridical power, operating through semiotic apparatuses, reconstitutes the 'mind' (as cerebral surface) into an inscriptive substrate, achieving corporeal subjugation through cognitive domination [Foucault, 2012]. In the abstract equivalence of legal prohibitions—such as criminalizing bread theft for both indigent and affluent—asymmetry enacts its self-concealment through the guise of formal equality. Though bourgeois juridical structures retain their top-down hierarchical architecture and function as external coercive apparatuses, the very

emergence of asymmetry's self-effacing strategies prefigures the microphysics of power.

1.2. Strategies of Power Concealment: Corporeal Discipline and Symbolic Order Construction

The transition from monarchical sovereignty to juridical rationality epitomizes a paradigmatic shift in power strategies: asymmetry evolves from ostentatious self-assertion to systemic self-concealment, while domination transforms from external coercion to immanent intervention in the subject-formation of the governed. Within this new strategic matrix, asymmetry dissolves into the fabric of 'identification,' engendering a corresponding modality of power rooted in 'persuasion'—a regime aimed at implanting autonomous-operating symbolic order within the inner sanctum of subjects.

The crux of social contract theory resides in 'collective acceptance' as performative identification. 'Only by invoking universal social rights can particular classes legitimize their claim to universal domination' [Žižek, 2017]. The ruling class must rhetorically transmute its particular interests into universal human aspirations, thereby converting its demands into societal imperatives through 'ephemeral collective euphoria'. When class-specific agendas don the cloak of 'universal human interests', they attain hegemonic consent [Castells, 2006]. It is through such identificatory processes that power actualizes itself.

In the information age, identification emerges as the paramount organizing principle, orchestrating social actors' self-recognition and meaning-construction processes. This mechanism predominantly anchors itself in predetermined cultural or ascribed attributes, deliberately obfuscating broader structural determinants [Castells, 2006].

Persuasion emerges as the quintessential modality of power corresponding to identification. 'If A presents arguments, appeals, or counsel to B, who then independently evaluates their content through personal values and objectives before adopting A's propositions as behavioral guidelines, A has effectively persuaded B' [Wrong, 2001]. The telos of persuasion transcends mere acceptance of specific viewpoints; it constructs an autopoietic symbolic order.

This symbolic regime operates as power's cybernetic automaton—generating domination through totalizing enclosure, real-time operation, and mental enslavement via semiotic shackles.

Within semiotized fields of practice, human agency interlaces hierarchical power relations with their depoliticized symbolic representations. The somatic symbolic activation mechanisms become subject to misrecognition as agential capacities, while subjugated conditions are mythologized into 'existential justifications.' Ultimately, through complicit entanglement between corporeality and power, subjects descend into semiotic idolatry [Wrong, 2001]. The effects and preconditions of domination crystallize as embodied dispositions – durably encoded in biological matrices [Lukes, 2008]. Humans exhibit mechanized conformity through habituated social alignment [Fromm, 2015].

In the network society of the information age, power exists in the code of information and in the reappearance of images; Around this new power, society has organized its system, and people have established their own lives and decided what they do. The human psyche itself—now reconstituted as cybernetic wetware for ideological programming [Castells, 2006].

Yet the construction of symbolic orders cannot be achieved through 'persuasion' alone—the disciplining of bodies necessarily enters power's operational horizon as its indispensable mechanism. Foucault terms this corporeal-operational power regime 'disciplinary power.' Rooted in preexisting asymmetry, disciplinary institutions obtain control over subjects' bodies, engineering docile subjects through systematic corporeal manipulation. Within these carceral architectures, spatial partitioning of bodies materializes conceptual hierarchies; bodily movements undergo meticulous choreography, with disciplinary techniques perpetually optimized through iterative refinement. Administratively, rulers construct panoptic power systems through tripartite mechanisms: hierarchical surveillance, normalizing judgment, and perpetual examination.

The transition from monarchical to juridical power constitutes not sequential replacement but cumulative stratification – a reconfiguration of operational emphases. Corporeal disciplining expands the pathways for symbolic order construction. Bodies and consciousness emerge as dual vectors of

subjectivation. Power strategies thus evolve from external suppression to immanent intervention in subject-formation processes.

2.The Matrix of Power Actualization: Needs and Technology

The imperative of self-preservation compels humans to engage in material reproduction, inevitably giving rise to tool production—which in turn generates novel needs. Through this dialectical process, humanity constructs proliferating need systems that propel productive forces' development and production relations' transformation, constituting the very engine of historical evolution. Thus, 'needs' function as immanent drivers of praxis, while 'tools' materialize as operational mediations for need-fulfillment [Marx and Engels, 1960]. As historical materialism reveals: 'History is nothing but the activity of humans pursuing their objectives' [Marx and Engels, 1956].

2.1. Needs: The Immanent Impetus of Power Transmutation

Power crystallizes through need matrices and can only emerge within their parameters. Mere external coercion proves insufficient for effective domination—the sovereign's 'thanatopolitical' force (making die) fails to constrain the fearless. Bourgeois juridical rationality demonstrates parallel limitations. Capital's behavioral logic, as Marx's razor-sharp analysis exposes: 'With adequate profit, capital becomes bold. A 10% return guarantees its universal deployment... 100% profit drives it to trample all human laws; 300% profit emboldens it to commit any crime' [Domingos, 2017]. The establishment of bourgeois legal systems, fundamentally serving capital's valorization needs, inevitably breeds systemic juridical hypocrisy. External constraints merely introduce additional causal variables, marginally influencing behavioral probabilities. When asymmetry neither originates from nor sufficiently corresponds to needs, it becomes power-inert. Therefore, need-structures constitute the ontological terrain enabling power's actualization.

Asymmetry does not halt before 'needs,' nor does power submit to them; rather, it penetrates the very genesis of needs, intervening in the subjectivation processes of the governed to become immanent domination. Whether through

monarchical torture or juridical punishment, power cannot eradicate resistance—it merely captures transgressions to discipline remaining subjects. Foucault's analysis of childhood masturbation reveals this logic: 'The child's "vice" constitutes not an enemy but the foundational substrate for power apparatuses. Attempts to eradicate it inevitably fail... Power advances by multiplying its capillary effects, its objectives perpetually diverging and merging with emergent realities. Ostensibly a containment mechanism, it actually weaves infinite penetration lines around the child' [Foucault, 2012] (p.35).

To achieve endogenous subject control, external asymmetry must self-conceal. Thus, power shifts from tangible coercion to intangible ontogenesis, transforming its modality from domination to affect. Power relationship is defined by a way of behavior that exerts influence on the behavior of others: by influencing the occurrence of behavior, power affects the behavior of possible or actual, future or current behavior [Dunning, 1860]. Based on this, the power strategy should naturally change from torture and punishment to the construction of symbolic order.

If power operates through affect, 'freedom' emerges precisely at the rupture points of domination's absoluteness. Affect presupposes subjects' emancipatory potential: 'By "freedom" we mean the field wherein individual/collective subjects confront possibility matrices – spaces of multiple actions/reactions. Power relations evaporate under total determinism' [Foucault, 1994]. Far from opposing freedom, power's existence depends on subjects' obstinate liberty—freedom constitutes power's transcendental condition [Foucault, 1994]. This paradoxical interdependence opens possibilities for counter-hegemonic praxis within social subjectivities [Zhu, 2018].

2.2. Technology: The Inherent Appropriation of Asymmetry

Human existence unfolds within a cosmos of boundlessness, confronting existential finitude against universal infinitude. Yet humanity perpetually transcends its ontological constraints through technological mediation – ceaselessly expanding spheres of activity and rupturing its own limitations. Technology emerges as the dialectical synthesis reconciling anthropological

needs with material constraints, fundamentally reconfiguring the existential matrices of human dwelling.

As need-fulfillment apparatuses, technologies remain immanent to the very needs they address. Consider transportation evolution: from bipedal locomotion and animal-drawn carriages, through steam-powered locomotives and combustion-engine vehicles, to contemporary high-speed rail networks, aviation systems, and aerospace rockets. Each epoch's transit technologies demarcate geographical frontiers through their velocity thresholds.

In productive domains, technological progression manifests similarly: primal bare-handed tool making with stone/bone implements evolves into animal-traction metallurgy, later supplanted by steam-driven and combustion-powered industrial machinery. Today, advanced manufacturing ecosystems featuring 3D printers and CNC machine tools enable unprecedented material abundance. The productive capacity ceiling of each era's techno-assemblages not only determines material output possibilities but, more profoundly, redefines the existential parameters of human becoming.

These technological mediations transcend instrumental functionality. Transportation infrastructures and production mechanisms reconfigure quotidian life patterns and cognitive schemata, enforcing adaptation to their operational protocols. Human subjectivity becomes reshaped through compliance with technological imperatives – a process of ontological reprogramming through machinic symbiosis.

As technological extensions of human capacities, technologies inherently generate asymmetry in agency between humans and techno-artifacts. The imperative to fulfill transregional needs compels adoption of specific transportation modalities; material demands necessitate engagement with particular productive tools. Whereas monarchical/juridical power strategies operate through ex post facto sanctions—external punishments activated post-transgression – technological asymmetry aligns with human intentionality, enforcing internally adhered operational protocols. This constitutes an immanent, a priori governing strategy.

Beyond embodying endogenous power mechanisms, technologies also form external preconditions for power operations. Metallurgical advancements in weapon/armor production undergirded monarchical monopoly on violence; ubiquitous surveillance systems and forensic technologies enable law's panoptic deterrence; a society that is permeated by various information media and efficiently circulates information has the possibility of constructing a "symbolic order" through "persuasion" to achieve power domination. The efficacy of persuasion depends not merely on argumentative content, but crucially on media resource hegemony [Gong and Qiao, 2024]. Differential media resource allocation creates veiled asymmetries – systemic power gradients imperceptible to media consumers.

The media's essence resides in information distribution, with intelligent recommendation algorithms operationalizing hyper-efficient dissemination mechanisms. Through existing preference models and semantic content parsing, fully deployed recommendation systems instantaneously channel power agents' information to user interfaces of maximally persuadable subjects, thereby actualizing power effects while concomitantly marginalizing counter-hegemonic narratives. In our digitally hybridized reality, human existential matrices are saturated by informational oceans, perpetually reconfigured within algorithmically engineered semiotic ecosystems. Given the inherently semiotic nature of these informational matrices, intelligent recommendation algorithms exhibit ontological affinity with symbolic order construction – a cybernetic symbiosis enabling epistemic governance through predictive modulation of consciousness flows.

3. Intelligent Recommendation Algorithms: The Immanent Domination of Informational Ecosystems

The successful construction of particular symbolic orders – and the systemic erasure of others – is now algorithmically mediated. Through deliberate information curation, intelligent recommendation systems operate at the cognitive stratum, unconsciously subjecting users to repetitive epistemic drills. These algorithms thereby acquire meta-power over symbolic governance, becoming both architects of semiotic regimes and operational matrices for

disciplinary power. This dual potency stems from two historical-technological conditions: the ontological fusion of digital/physical realities reconfiguring human existential domains, and the algorithms' strategic monopolization of informational asymmetry.

3.1. The data sphere has ascended as a fundamental existential matrix.

During the pre-internet era, information scarcity constrained human experience, with knowledge dissemination relying on oral transmission and print media. Early web phases maintained human agency through manually curated directories and social graph-based sharing. Search engine ranking algorithms later introduced nascent power effects, yet preserved users' perception of volitional information retrieval.

The Smartphone revolution triggered an information explosion—user-generated content volumes and complexity now surpass human cognitive thresholds. Intelligent recommendation algorithms emerged as cybernetic arbiters: identifying data patterns, modeling preference architectures, and executing hyper-efficient content matching. Intelligent recommendation algorithm makes it possible to push personalized information, significantly improves the efficiency of information distribution, and reduces the cost of distribution and user access to information [Yu and Geng, 2018], this techno-logistical regime transforms users into flotsam adrift on algorithmic currents—their informational horizons perpetually bounded by recommendation systems.

While the evolution of information distribution mechanisms and exponential data proliferation appear as surface narratives, their latent trajectory resides in the ontological construction of informational cosmos—the projective mapping of material reality into digital simulacra. Information never emerges *ex nihilo*; it is a semiotic representation of the real world formed through technical means mediation. Thus, information's infinitude mirrors the transcendental boundlessness of physical existence and human praxis—not as static plenitude, but as dynamic becoming. Diachronically, it perpetually regenerates through lived experience; synchronically, its spatiotemporal magnitude transcends the scalar confines of individual lifeworlds.

Through this informational cosmogenesis lens, shifts in distribution mechanisms reveal deeper transformations in world-building agency. Pre-internet, informational reality was architected by institutional gatekeepers—governments, publishers, journalists. Digitalization and networking democratized cosmogonic capacities in abstraction: all users became potential co-authors of the data-sphere, their participatory degrees contingent on volitional choice and interactive dynamics.

Yet as social praxis increasingly migrates to digital platforms and smartphone dependency intensifies, this emancipatory potential atrophies. Users' agential power over information production becomes systematically expropriated, completing the dialectical inversion from participatory cosmogenesis to algorithmic subjugation.

The data-driven reality has become an indispensable existential matrix for daily life, with its gravitational pull on the physical world intensifying relentlessly. Every human gesture now propagates minute yet legible data ripples across this digital continuum. Inhabiting hybridized lifeworlds where sensory experience interpenetrates algorithmic architectures, individuals – whether actively or passively—generate explosive surges of information, rendering the data-sphere increasingly isomorphic with lived reality. As data metastasizes beyond cognitive scale, human agency diminishes into statistical insignificance. The expropriation of informational production autonomy culminates in the spectralization of choice—a simulated freedom where selection protocols are algorithmically prefigured, reducing user sovereignty to illusory performativity.

3.2 Algorithmic Monopolization of Asymmetry

Intelligent recommendation algorithms emerge as technological prostheses confronting the infinitude of data worlds. Similar to how transportation infrastructures (airplanes, railways) construct activity fields in physical reality, these algorithms architect informational ecosystems for human navigation. This 'construction' operates not through ontological generation, but through finite augmentation—expanding human limitations when facing the infinite. Just as transportation and logistics have bridged the contradiction between people's

cross regional needs and limited mobility, recommendation systems mediate between human decision-making/hedonic desires and the cognitive overload induced by dataspheric hypercomplexity.

Crucially diverging from intermittent transportation dependencies, intelligent recommendation systems maintain perpetual presence in daily life. Navigation apps dictate mobility patterns; restaurant/hotel algorithms shape consumption behaviors; entertainment platforms govern leisure through predictive curation; even social relations become algorithmically mediated. Embedded within countless applications, these recommendation systems evolve into existential necessities—a new stratum of technological unconsciousness.

Intelligent recommendation algorithms, as a medium of dissemination, are gradually penetrating into various aspects of people's lives through various software. Based on this, the influence of communication media on social life and even spiritual civilization is becoming increasingly significant. The boundary between reality and virtuality is gradually blurred, and various media are closely integrated and adapted to various fields of society in the field they create. We call this process "mediatization".[Asp, 2014] It is precisely through the intermediary of intelligent recommendation algorithms that the impact of the data world on the real world is becoming increasingly significant. In the context of this mediatization, human-computer interaction is frequent, and with the efficiency advantage of algorithms, global interconnection and the Internet of Things are gradually becoming normalized, and the integration of the real world and the data world is becoming increasingly evident.

Beyond reconfiguring human spheres of activity, intelligent recommendation algorithms extend human limitations at the capacity stratum. Their power to architect informational ecosystems stems precisely from this asymmetry of epistemic agency. Addressing algorithms' capacity for 'acquisition, processing, and analysis of big data,' Tim Gray's concept of the 'Fourth Paradigm' delineates how scientific methodologies, objects, and institutions transform under data deluge [Hey et al., 2009]. Though humans nominally control data workflows, data's ontological primacy escalates alarmingly, exhibiting tendencies toward epistemic usurpation [Jiang, 2024]. Quantitatively, data's

spatiotemporal scales dwarf human lifespans; qualitatively, its complexity exceeds cognitive thresholds. Like industrial machinery extending physical labor, algorithms now augment human understanding as cognitive prostheses. Originally confined to scientific research, this Fourth Paradigm now permeates daily existence through dataspheric-physical convergence.

Human information receptivity remains doubly constrained—by biological limits (Limited cognitive ability) and technological interfaces (limitations of user information receiving devices). Presenting total information proves neither feasible nor desirable, making personalized curation imperative. Consequently, individuals confront not impossibility of refusal, but the existential ultimatum: non-participation entails obsolescence [Sun and Wang, 2021].

This universal need for customized information elevates intelligent recommendation algorithms to architectonic subjects within personal data ecosystems – technological quasi-subjects enveloping each individual. 'Subjecthood' here operates through three dialectical vectors:

Inverted Agency: Humans become terminal objects in information delivery chains, reduced to passive recipients while algorithms assume active agential status.

Epistemic Escape: The algorithmic black box transforms concrete operations into unknowable/ungovernable processes, dissolving traditional subject-object binaries.

Autopoietic Closure: Algorithms achieve self-referential autonomy through data-algorithm feedback loops—automating data production, model optimization, and decision-making into a closed-loop system where automation automates itself.

When intelligent recommendation algorithms attain such quasi-subjectivity while monopolizing informational asymmetry, power inevitably crystallizes – a cybernetic sovereignty emerging from the very infrastructure of cognitive existence.

Further work:

This paper establishes intelligent recommendation algorithms as immanent power agents that monopolize informational asymmetry to construct symbolic orders and reshape human subjectivity. To advance this research, future work will focus on three interconnected directions:

1. Empirical Validation of Algorithmic Quasi-Subjectivity : While our theoretical model posits algorithms as quasi-autonomous power subjects, empirical studies are needed to: Quantify inverted agency through user behavioral analysis. Map epistemic escape via algorithmic auditing. Test autopoietic closure by simulating data-algorithm feedback loops in controlled environments. Connection to broader task: This bridges critical theory with computational social science, operationalizing power concepts for algorithmic impact assessment.
2. Resistance Strategies in Symbolic Ecosystems : The paper identifies algorithmic power' s dependence on human "critical vigilance" but does not systematize countermeasures. Future work will: Develop symbolic disidentification frameworks. Design adversarial user practices that exploit power' s reliance on "obstinate liberty". Propose regulatory interfaces forcing transparency in symbolic order construction. Connection to broader task: This transforms Foucaultian "counter-conduct" into actionable interventions for platform governance.
3. Cross-Domain Power Topologie: Our analysis focuses on recommender systems, but the needs-technology-asymmetry triad applies universally. We will: Compare power generation in generative AI and algorithmic management. Investigate cultural variability in symbolic order internalization. Connection to broader task: This scales our power logic model into a unified theory of 21st-century technological domination.

Conclusion

The emergence of power lies in the monopolization of asymmetry within the realm of human needs, and technology inherently aligns with this mechanism. In modern society, individuals constantly confront massive information flows,

which have become a defining feature of social existence. As a contemporary information distribution technology, intelligent recommendation algorithms possess the capability to efficiently process vast data and deliver personalized content, thereby exhibiting characteristics of a quasi-autonomous power agent.

The boundless complexity of the physical world fundamentally drives the information explosion in the digital realm, while informational feedback loops further stimulate real-world transformations. The exponential growth of information renders the development and widespread adoption of recommendation algorithms inevitable. However, the core dilemma resides not in the algorithms themselves, but in the tension between human limitations and the infinite nature of the world—a tension that defines the human-technology relationship.

Uncritical reliance on recommendation algorithms risks submerging human subjectivity and diverse potentials under their deterministic operational logic. Humanity could degenerate into passive objects of algorithmic governance, reduced to appendages of technological systems. Conversely, maintaining critical vigilance allows us to recognize their dual nature. While these algorithms may mass-produce standardized subjectivities, they also empower individuals to access information efficiently and make informed decisions, potentially accelerating self-actualization.

By transforming human existence into quantifiable data profiles – making subjective states legible through informational representation—recommendation algorithms simultaneously necessitate and enable the reexamination and reconstruction of subjectivity. This data-mediated mirror stage creates both possibilities and imperatives for redefining human agency in the algorithmic age.

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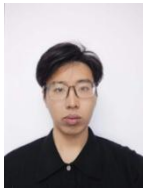
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