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When Digital Market Moves Towards Productive Organization: Technological Empowerment and Legal Impact

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Abstract

While codes/architectures in cyberspace are usually considered to regulate human activity, the productive dimension of such power has less been discussed. Codes/architectures also change market mechanisms, largely due to the evolution of digital platforms as drivers of new modes of production, increasingly becoming a powerful organizing body that mobilizes and manages productive resources like goods, services, information, human capital, money, *et cetera*, ostensibly through market mechanisms and processes. It is therefore necessary to further explore how market mechanisms have changed under the shaping of digital platforms and, indirectly, how the legal rules surrounding market resources, structures, competitive behaviors, distribution, and other dimensions need to be adjusted accordingly. This Article attempts to further identify the dual attributes of platforms, focusing on how market mechanisms have been affected by changes in modes of production, changing their operation and adapting to advances in productivity, and evolving from a traditional free market to a more cybernetic marketplace, and indirectly to a more controlled marketplace, which indirectly requires the corresponding legal rules to be adjusted. In this sense, digital markets and platform organizations are two sides of the same coin, and this Article discusses the functions of the two in some of the argumentative paragraphs without distinguishing between them.

Keywords: Digital market; mode of production; productive resource; productive organization

A. Introduction: Digital Architecture and Markets

In the field of cyberlaw, Lawrence Lessig’s classic assertion that “code is law”¹ has long dominated researchers’ imaginations of the changing shape of legal rules and their forms in the digital age, where code/architecture as a more coercive technological default has more control over social subjects.² However, fewer follow-up studies have discussed the impact of codes on the other two resources of his regulatory framework—market and social norms.³ Indeed, both market and social norms, which rely on information for their regulatory functions, are changing constantly as

¹See generally LAWRENCE LESSIG, CODE: AND OTHER LAWS OF CYBERSPACE (1999).

²See generally ROGER BROWNSWORD, LAW 3.0: RULES, REGULATION, AND TECHNOLOGY (2020); PRIMAVERA DE FILIPPI & AARON WRIGHT, BLOCKCHAIN AND THE LAW: THE RULE OF CODE (2019); KEVIN WERBACH, THE BLOCKCHAIN AND THE NEW ARCHITECTURE OF TRUST (2018).

³See Daniel B. Levin, Building Social Norms on the Internet, 4 YALE J.L. & TECH. 97 (2002) (describing how the regulatory framework consists of four resources: law, market, social norms, and code/architecture).

digitization processes reduce the cost of information. For example, widely used evaluation and ranking mechanisms have altered the formation and utility of social norms on a large scale.⁴ Similarly, productive codes/architectures are also changing market mechanisms, largely due to the evolution of digital platforms as drivers of new mode of production, increasingly becoming some kind of powerful organizing entity that mobilizes and manages productive resources like goods, services, information, human capital, money, et cetera, ostensibly through market mechanisms and processes.⁵ It is therefore necessary to further explore how market mechanisms have changed under the shaping of digital platforms and, indirectly, how the legal rules surrounding market resources, structures, competitive behaviors, distribution, and other dimensions need to be adjusted accordingly.

In recent years, the rapid evolution of digital platforms has fundamentally reshaped economic and regulatory landscapes, prompting scholars from multiple disciplines to examine their unique characteristics and societal impacts. While legal scholars have primarily focused on the governance of platform power, political economists have increasingly explored how these digital intermediaries are transforming traditional market mechanisms. Legal scholars have long focused on private power of the platform and its regulation,⁶ but political economists tend to note at the theoretical level that, along with lower information costs, established free-market concepts and practices in cyberspace are likely to merge more with planned economy concepts to form more controlled and efficient market mechanisms.⁷ This is not simply a case of local governments mobilizing and coordinating the flow of productive resources in their own jurisdictions to form a “market in state,”⁸ but more of a case of digital platforms generating some kind of flat trans-regional trading network in the process of creating new mode of production, and forming a digital market that transcends the geographical limitations in cyberspace.⁹ This kind of market facilitates the accelerated flow of all kinds of resources on the one hand, and on the other hand, it also creates a pool of aggregated data as a byproduct, which has a great impact on the traditional production, circulation, and consumption links. Therefore, when we say that platforms have the dual attributes of market and enterprise, such saying no longer emphasizes the flat organizational structure of the platform enterprise itself, but sees that the marketplace it shapes has a certain kind of organizational power, that is, the “invisible hand” gradually becomes the “visible hand.”¹⁰

⁴See generally HU LING, DYNAMICS IN CHINESE DIGITAL COMMONS: LAW, TECHNOLOGY, AND GOVERNANCE (2024) (discussing information changing social norms).

⁵See Jerome H. Saltzer, David P. Reed & David Clark, *End-to-End Arguments in System Design*, 2 ACM TRANSACTIONS COMPUT. SYS. 277 (1984) (tracing the evolution of digital platforms as drivers of new modes of production to open Internet architectural design). See also Lawrence Lessig & Mark A. Lemley, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. REV. 925 (2001).

⁶See generally Kate Klonick, *The New Governors: The People, Rules, and Processes Governing Online Speech*, 131 HARV. L. REV. 1598 (2018); James Grimmelman, *The Platform is the Message*, 2 GEO. L. TECH. REV. 217 (2018); Julie E. Cohen, *Law for the Platform Economy*, 51 U.C. DAVIS L. REV. 133, 143 (2017); Christopher S. Yoo, *Modularity Theory and Internet Regulation*, 2016 U. ILL. L. REV. 1.

⁷See generally SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM (2019). See also He Da'an, 市场型计划经济: 数字经济未来发展图景 [The Future Development of Digital Economy and the Vision of Market-Typed Planned Economy], 55 ACAD. MONTHLY 6 (2023) (China), <https://mp.weixin.qq.com/s/5iaMcVHOZiScJkWLSurC-g>; Katharina Pistor, *Rule by Data: The End of Markets?*, 83 L. & CONTEMP. PROBS. 101 (2020); Salomé Viljoen, *Informationalism Beyond Managerialism*, 86 L. & CONTEMP. PROBS. 257 (2023).

⁸See generally YONGNIAN ZHENG & YANJIE HUANG, MARKET IN STATE: THE POLITICAL ECONOMY OF DOMINATION IN CHINA (2018).

⁹See generally LIZHI LIU, FROM CLICK TO BOOM: THE POLITICAL ECONOMY OF E-COMMERCE IN CHINA (2024).

¹⁰See generally Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS'N 990 (2003); DAVID S. EVANS & RICHARD SCHMALENSEE, MATCHMAKERS: THE NEW ECONOMICS OF MULTISIDED PLATFORMS (2016); Orly Lobel, *The Law of the Platform*, 101 MINN. L. REV. 87, 100–03 (2016); Jean-Christophe Plantin, Carl Lagoze, Paul N. Edwards & Christian Sandvig, *Infrastructure Studies Meet Platform Studies in the Age of Google and Facebook*, 20 NEW MEDIA & SOC'Y 293 (2016).

The digital market constitutes an economic process whereby platform enterprises shape a productive space, incorporating diverse types of production factors and primarily matching these factors through market mechanisms rather than bureaucratic directives. The author's previous research has found that digital markets emerge and co-evolve with the transaction software and information networks provided by platform enterprises; the "digital architecture" as a productive space creates special interests that not only help shape the law, but also shape the market place.¹¹ Continuing this line of research, this Article attempts to further identify the dual attributes of platforms, focusing on how market mechanisms have been affected by changes in mode of production, changing their operation and adapting to advances in productivity, and evolving from a traditional free market to a more cybernetic marketplace, and indirectly to a more controlled marketplace, which indirectly requires the corresponding legal rules to be adjusted. In this sense, digital markets and platform organizations are two sides of the same coin, and this Article discusses the functions of the two in some of the argumentative paragraphs without distinguishing between them. Although this Article draws primarily on Chinese experiences and case studies to address the issue, it nonetheless seeks to respond to general questions of political economy.¹² Due to space constraints, certain paragraphs in this Article may not fully address China's particularities or provide comparative analysis with other nations. Nevertheless, an effort has been made to expand upon existing English-language literature.

This Article's argument is structured as follows: Section B briefly recapitulates the principles of the digital mode of production, distinguishes between platforms that are closer to the production of labor activities in physical space (material labor) and those that revolve around the production of information content (immaterial labor), and finds that changes in the mode of production have brought the digital marketplace closer to organizations aiming at increasing productivity and driven by both types of platforms. Section C provides a detailed discussion around the four-dimensional drivers of the shift in market shape, namely infrastructure, productive resources, distribution of rights and interests, and market structure, analyzing the mechanisms of change and their impact. Section D further discusses what changes and requirements the above transformations bring to different legal sectors—for example, speech, property, personal information, competition, labor, *et cetera*—so as to better adapt to the development of the two types of digital markets mentioned above. The concluding Section provides an outlook on more automated market mechanisms driven by artificial intelligence.

B. When Markets Evolve Towards the Productive Organization

Researchers have long recognized that the boundary between the market and the productive organization (the firm) has evolved along with changes in technology and transaction costs.¹³ The boundaries between enterprises and markets invariably shift in tandem with changes in the costs of internal productive networks. In the real world, the market mechanism is external to the organization of firms and is not always efficient for independent productive resources because its mechanism for mobilizing matching resources and forming transactions is too costly, thus requiring firms to internalize transaction costs. The digital platform itself reduces the organizational and transaction costs, so that the original aggregation of productive resources in the traditional enterprises can be spread to the market, either individual or simple collaborative way of transaction flow, and produce network effects, which is similar to the phenomenon of "phase transition" observed in physics.¹⁴ The history of the Internet over the past twenty years or

¹¹See generally LESSIG, *supra* note 1; LING, *supra* note 4.

¹²See, e.g., ANGELA ZHANG, HIGH WIRE: HOW CHINA REGULATES BIG TECH AND GOVERNS ITS ECONOMY (2024) (studying China's recent technology regulations).

¹³See generally Ronald Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386 (1937).

¹⁴See generally PHILIP BALL, CRITICAL MASS: HOW ONE THING LEADS TO ANOTHER (2004).

so has shown that the ability of productive resources to be absorbed into the digital marketplace depends more on the value of the resources being produced in a modular and decentralized way, and distributed and consumed in a fragmented way. This is why jobs that are purely transactional or service works have been able to take the lead in being aggregated through the Internet and appearing as one-to-one services in the face of the sharing economy, particularly adapted to the highly decentralized and independent nature of small and medium-sized producers. If there are still more distinct similarities between e-commerce or sharing economy platforms and traditional markets for goods or services, another seemingly different market for information content services better characterizes the digital economy, namely, the accumulation of traffic in multilateral markets facilitated by free information services and the profitability of value-added services. As a result, the boundaries between market mechanisms and productive organizations begin to blur. We can understand the organizing power of digital markets through the following characteristics.¹⁵

First, in terms of established industrial economic processes, productive organizations are responsible for resource integration and production within firms, while markets seem to be independent of the productive process and are more concerned with resource flows and consumption. A lot of production is blind and inefficient due to the lack of information about relevant market flows and usage. Digital markets, by contrast, are characterized by platforms that have the ability to connect the production chain with the circulation and consumption chain through information technology to form a whole within a specific spatial architecture. In order to enable large-scale transactions of goods, services, or information content, the efficient market process itself still exists, but embedded within this organization, and the boundaries of the platform's architectural design delineate the boundaries of the digital marketplace and become perceptible. Compared to traditional markets, digital markets are characterized by more clearly defined boundaries, aligned with the productive space defined by the digital architecture. Whereas, in the view of traditional economics or legal studies, even as long as property rights are freely traded through a single contract, it can be said that there is a market process, whose offline spatial status tends to be the default—for example, within an administrative jurisdiction. The connectivity of the production and consumption segments of the digital marketplace continually fragments the productive process and integrates value in the architecture, which in turn continually adapts production to the realities of consumption on the fly. The nature of information is then not only a kind of productive resource, but also has the distinct status of a resource of market circulation and a resource of distribution.

Second, the productive organization is a key component of any mode of production and the primary force driving the application of advanced technology. In the past, organizations adopted a hierarchical system in order to achieve as much efficiency as possible, and information flowed in a more top-down manner, and even if a certain degree of flat organizational forms were adopted to look more at the outcome, such as allowing teams to be outsourced or to work independently, information was still dispersed in society.¹⁶ Once the cost of information can be brought down to a very low level, it drives change in the organization. From within the organization, resources are still dispersed, but platforms have the ability to gradually organize individual resources, develop specific institutional grips to manage market players, and gradually establish the market infrastructure to benefit from mobility. Of course, it is not that platform-dependent organizations disappear altogether, but rather that subproductive organizations become smaller and more flexible and are able to help platforms with governance issues at times. Changes in the cost of information have both made the marketplace a more information-oriented organization, and the platform itself has become closer to an information marketplace.

¹⁵See generally EVANS & SCHMALENSSEE, *supra* note 10.

¹⁶See generally Friedrich Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945).

Third, the digital market is essentially a productive space in which the way resources are organized in the market form is only a product of a particular stage. Reduced information costs have led to dramatic changes in the conditions for the effective functioning of markets, such as resource mobility, pricing mechanisms, property rights regimes, access to information for decision-making, innovation, and infrastructure. The main reason is that diffusing small-scale information production and exchange can become more pervasive and standardized, and platforms become more centralized information providers, open to all producers through traffic allocation, development of reputation mechanisms, mandatory information disclosure, algorithmic matching, differentiated pricing, and progressively strengthen management and control through user agreements. Such process gradually changes the shape of the market, and some e-commerce platforms even become semi-trusted organizations, in which the platform order goods directly from sellers with strict conditions. What we originally imagined as the classic “invisible hand” of the market has now become a kind of “visible hand,” with the market process and platform behavior intertwined, getting closer and closer to the regulation or coordination of quasi-public power. While increasing efficiency, platforms are reducing both producer and consumer surplus through information collection and analysis, reducing the scope for profitability on both sides.¹⁷

As mentioned earlier, because of the differences in the resources mobilized and matched, we can at least loosely distinguish between two types of digital markets: One type mobilizes labor-intensive businesses such as physical goods and offline services to operate, borrowing from an influential Western theory on the division of labor, which is referred to as material labor platforms; while the other type favors distributing and matching the economy of gifts, such as information content, which is referred to in this Article as immaterial labor platforms.¹⁸ These two types of productive organizations are often intertwined in reality, as digital platforms all try to create omni-directional services for competitive purposes, such as embedding various types of productive resources through a single application portal, which may thus subsidize each other’s spreads as bilateral markets.¹⁹ However, distinguishing between the two has a strong public policy value in terms of the objectives of this Article, and therefore the two types of platforms are still separated as ideal types. The manifestation and implications of changes in production methods in the two types of markets are discussed separately below.

C. How Digital Markets Become Cybernetic

The digital economy has given rise to a new paradigm of market organization that challenges traditional economic theories, as platforms combine elements of both market mechanisms and centralized control in unprecedented ways.²⁰ These hybrid structures, which blend algorithmic governance with apparent neutrality, represent a fundamental shift in how economic activity is coordinated and regulated in the information age. In discussing the organizational characteristics of digital marketplaces, we have seen that platforms have strong managerial characteristics over the resources that operate on them, such as (1) directing, scheduling, and controlling production behaviors, (2) assisting in the management of the productive process by setting up self-governance norms and user organizations, (3) making extensive use of informational tools, such as reputations and ratings, (4) collecting large amounts of information to monitor the users, (5) carrying out an

¹⁷See generally ANNA BERNASEK & D.T. MONGAN, *ALL YOU CAN PAY: HOW COMPANIES USE OUR DATA TO EMPTY OUR WALLET* (2015).

¹⁸See Maurizio Lazzarato, *Immaterial Labor*, in *RADICAL THOUGHT IN ITALY: A POTENTIAL POLITICS* 133, 142 (Paolo Virno and Michael Hardt eds., Maurizia Boscagli, Cesare Casarino, Paul Colilli, Ed Emory, Michael Hardt & Michael Turits trans. 1996).

¹⁹See generally GEOFFREY G. PARKER, MARSHALL W. VAN ALSTYNE & SANGEET PAUL CHOUDARY, *PLATFORM REVOLUTION: HOW NETWORKED MARKETS ARE TRANSFORMING THE ECONOMY—AND HOW TO MAKE THEM WORK FOR YOU* (2017).

²⁰See generally PAUL BELLEFLAMME & MARTIN PEITZ, *THE ECONOMICS OF PLATFORMS: CONCEPTS AND STRATEGY* (2022).

architectural design (5) architectural design that guides users from spontaneous production to production of structured content, (6) development of automated recommendation and information matching mechanisms, and (7) instantaneous collection and centralization of transactional data. At the same time, however, the relationship between the platforms and the productive resources is detached, with most platforms, except for some material labor platforms, having few self-operated businesses, which implies asset-light operations, reducing the costs that come with the assets, and with no employment contracts for the workers to bind themselves to, and still behaving as some kind of neutral information intermediaries. It is in this flexible legal relationship that platforms shoulder the main responsibility of market management more according to the occasion. In this Article, we call this productive space different from the free market the “cybernetic market,” not only because platforms have become super-complex information systems, but also because the digital market itself is built as a kind of closed loop of information and resources, where platforms can intervene in the market at any time at different points in the process to gain a competitive advantage for the sake of maximizing the overall efficiency, making it closer to a kind of huge information organization. It is closer to some kind of vast information organization.²¹ This Article goes on to understand the reasons for this change in the shape of markets along four main dimensions.

1. (Information) Infrastructure

In the traditional economy, because of the high cost of information dispersed throughout society, overall market conditions are more dependent on the expansion of large-scale merchants and technological development, and the market itself can only rely on the state as a regulator to build infrastructure or regulate it through secondary distribution. In the digital economy, the platform organization itself is shaping up to be a marketplace that absorbs a large number of productive resources while at the same time has the incentive to build its own infrastructure, such as payment tools, logistics, authentication, dispute resolution, financial services, and so on.²² These infrastructural services, traditionally provided mainly by public authorities, now carry entirely private attributes. Through infrastructure building, digital markets have the ability to reduce the information costs of all types of resources and enhance their ability to make informed decisions and choices, which in turn increases social welfare. In turn, resources will increasingly rely on sophisticated information infrastructure rather than on other productive organizations, which increases the potential control of digital markets.

In fact, both material and immaterial labor platforms are formed by the fact that the platforms can mobilize and match relevant elemental resources, including both traditional goods and services and information content, which is mainly used for free display for consumer use and accumulation of attention. At the same time, efficient matching in both platforms requires high-quality and accurate information. Particularly in the immaterial labor platform, where the flow of information itself poses risks and order problems not comparable to those of tangibles—unless attached to a physical medium—there is also a need for auxiliary information, given that the production of large quantities of information is prone to negative externalities and the efficacy of its use may be reduced. Attached to goods and services in the market, this auxiliary information is generated through the daily flow of resources and is more characteristic of market infrastructure. In other words, it represents market-assisted information as a public good, covering authentication, credit, matching, and other types of information. Such infrastructural information

²¹See generally YANIS VAROUFAKIS, *TECHNOFEUDALISM: WHAT KILLED CAPITALISM* (Vintage Publ'g 2024) (2023) (providing a similar sense of problematic); DANIEL E. SAROS, *INFORMATION TECHNOLOGY AND SOCIALIST CONSTRUCTION: THE END OF CAPITAL AND THE TRANSITION TO SOCIALISM* (2014).

²²Since 2004, e-commerce platforms exemplified by Alibaba have progressively established a comprehensive infrastructure system. Subsequently, other major platforms followed suit by building similar frameworks, which have become the moats protecting these digital marketplaces.

can help identify risks, provide validation of participants' identities and behaviors, and thus help maintain market order.

It is worth noting that while display information is constantly produced and used in a transactional or exchange manner, ancillary information very often does not need to be operated and used in a marketable manner, and is often even centrally collected and developed by platform organizations. Such fact requires us to re-understand the connotation of the central government's document on strengthening the construction of data resource markets, for example, what kind of data can really become a resource that can be configured in a market-oriented manner and enhance its value through the market,²³ while some other more basic data may not need to be marketized to generate value at scale. For example, effective authentication services are public goods, provided by resource managers or activity organizers, and are less likely to be collected and distributed through the market. If there is indeed a market for identity information, it will only be a market in which providers of basic identity services compete with each other, and social subjects will choose which information identifiers to use to verify their personal identities according to their actual needs. Another example is that public data openness can be very helpful in promoting market development, and while there is a lot of talk about the dynamics and effectiveness of public data openness in local governments, the hierarchical structure of the inter-governmental level dictates that for certain types of public data, there is a *de facto* hierarchy between the central and local governmental departments—and their operating organizations—in terms of how they openly use different types of public data—and not only in the sense of central-local authority—which directly affects the boundaries of local public data markets.²⁴ All of the above examples illustrate that the information infrastructure that drives the formation of digital markets can be affected by a variety of resources, including the characteristics of the information itself, and the decentralization of power between the central and local levels.

II. Market/Resource Patterns

According to the previous classification, both types of digital markets attempt to mobilize and match different types of productive resources, which differ in their form and nature, leading to different organizational functions of the market.²⁵ In material labor platforms, a considerable amount of manual work or sale of goods is repetitive labor that can be piece-accounted for and is highly substitutable—either by other people or by machines—and although there is a certain degree of mobility of laborers, the platforms' lack of diversified jobs in general leads to a stronger inter-platform mobility, which results in an incentive for the platforms to sometimes adopt a binary measure with the aim of keeping the resources in their own digital marketplace. Conversely, in the case of immaterial labor platforms, whose labor culture is also more oriented toward non-monetary sharing and gift economies, for example, live streaming, video, online writing, *et cetera*, their services are not functional *per se*, and they are less likely to fluctuate too much in tandem with economic downturns. Its model relies mainly on the public to engage in fragmented cross-regional participation in creation, and is less likely to require stable labor organizations for coordination; the fruits of their labor are often creative, and the income is difficult to quantify, and less likely to be replaced—even in the avatar industry, which is basically still reliant on real labor—but it is prone to a situation in which the rich get richer and so digital

²³See generally Opinions of the Central Committee of the Communist Party of China and the State Council on Building a More Perfect Institutional Mechanism for the Market-Based Allocation of Factors (promulgated by the St. Council, Mar. 30, 2020, effective Mar. 30, 2020) (China), <https://www.lawinfochina.com/display.aspx?id=32683&lib=law&EncodingName=big5>.

²⁴See generally HU LING, THE LEGAL ORDER OF PUBLIC DATA OPENNESS: A THEORETICAL PERSPECTIVE ON FUNCTION AND STRUCTURE (2023).

²⁵See generally ERIC A. POSNER & E. GLEN WEYL, RADICAL MARKETS: UPROOTING CAPITALISM AND DEMOCRACY FOR A JUST SOCIETY (2018).

platforms will invest more traffic and other resources to head producers, while also taking more means to prevent them from jumping ship at will.²⁶

In the case of immaterial labor markets, where the content of information used for exchange is different from that of physical goods, and where the cost of resource production is constantly decreasing, or even free, the pricing model is beginning to shift, in other words, non-scarce information is beginning to become less important, and more scarce value is beginning to manifest itself. This also means that there is not much need to fix rights to data that is constantly flowing in the marketplace, otherwise it will impede the flow and continued production of value. The fact that data itself is a dependent by-product of the behavior of other resources or subjects, and can be separated from the subject, may have given rise to the popular idea that data alone produces value and corroborates rights, in other words, as long as the data rights and interests are assigned to a particular social subject *ex ante*, according to certain principles, *ex post* seems to work out well. Although *ex ante* rights can be operationalized as the cost of technology decreases, the result may not be optimal because of the uncertainty of the economic effect after the fact, and the only way to know its approximate value is to use it in the mobility first. Therefore, if we want to ask what is a better way to allocate data rights and interests, we need to understand where the value comes from in the first place.²⁷ Digital markets accelerate the process of producing, matching, using, feeding back, and reproducing productive resources, and the use of data facilitates this process, making it more efficient, but cannot itself operate in a vacuum. Therefore, platforms that promote resource mobility will limit the incentives for data corroboration as much as possible and take other measures to provide incentives for data use, which in turn strengthens the ability to control digital markets.

III. Distribution Mechanism

The digital economy is fundamentally reshaping how we conceptualize and distribute value, particularly as intangible assets like data challenge traditional economic frameworks that were designed for physical goods and labor.²⁸ As platforms mediate the exchange of information and services, the question of how to equitably distribute the benefits of digital resources has become a central concern for both theory and practice. Taking on the different attributes of market resources, in material labor platforms, the outcome of resource trading is mainly monetary gains, while in immaterial labor platforms, it seems that a large amount of free information does not directly generate monetary gains. This phenomenon directs attention to the distribution of new types of resources like data in digital markets.²⁹ There has been some discussion on the distribution of data rights and interests; however, it seems to be very simple to say, it is mainly set in the established three-distribution framework and that data should be dividends. Such idea is similar to the past distribution by labor and technology, and both emphasize how to add value to the data products. But in the digital market, whether information is free to become a public good, or we have to continue to buy and sell information, has to become the problem, to ensure that this market operates effectively, and does not split because of the right to dividends. Therefore, data distribution remains essentially a distribution of information rather than monetary gains, which means that trading opportunities are more important. As a result, information/data entitlements are not expressed in terms of information products or dividends, but about opportunities, which are demonstrated through flows. One cannot discuss information dividends away from the entire

²⁶See generally JEREMIAS PRASSL, *HUMANS AS A SERVICE: THE PROMISE AND PERILS OF WORK IN THE GIG ECONOMY* (2018).

²⁷See generally JIA KAI & HU LING, 合作的互联网 [THE INTERNET OF COOPERATION] (Comm. Press ed. 2024).

²⁸See generally Robert P. Merges & Justin Hughes, *Copyright and Distributive Justice*, 92 NOTRE DAME L. REV. 513 (2016).

²⁹See generally Opinions of the National Data Administration and Other Departments on Promoting the Development and Utilization of Enterprise Data Resources (Exposure Draft) (promulgated by the National Data Administration, Dec. 20, 2024, effective Dec. 20, 2024) (China), <https://www.lawinfochina.com/display.aspx?id=44145&lib=law&SearchKeyword=&SearchCKeyword=>.

productive process, that is about industrial age imagery, but the possibilities of information are infinite, and what is to be done is to drive actions and transactions that may be driven by the accumulation of large amounts of data, rather than simply distributing them or transferring the information, which changes the previous thinking of distribution by labor or by technology.

Information/data allocation starts out as a manifestation of a convergence of opportunities and capabilities toward equity, but as competition intensifies, the market structure dictates that no one can consistently occupy a high position with lasting access to traffic and its benefits. Especially in immaterial labor markets, as information production loses its scarcity and information content becomes a medium for value exchange—but not in monetary consideration, only based on free information—the important question depends on whether the information allocation is efficient or not. If the market mechanism is effective, market instruments are used, while once it is not effective, contracts or directives can be used. This is why both types of digital markets are allocating data traffic through coercion, forcing resource producers to accept such managerial arrangement. In traditional markets, the amount of price as a market signal can determine trading opportunities, but in digital markets, traffic cannot be obtained through the gradual flattening of the price or even free of charge, but rely only on the platform to force the allocation.

In material labor platforms, service providers or merchants rely more on evaluation mechanisms developed by the platform; many services exist offline or are influenced by the scale of production, and the products or services have specific standards, so that they can be judged only on the basis of the number of sales or the degree of positive feedback. Platform-led public domain traffic is therefore easier to distribute, but is always of limited value and can be plagued by problems such as returns, leading to a loss of brand strength. These types of platform organizations can easily achieve market price control and easily change the organizational structure of transactions—for example, semi-custodianship—which is why public domain traffic is also more likely to be an economic policy catch-all for governments.³⁰ In contrast, in immaterial labor platforms, service providers often offer non-standardized services that cannot be uniformly evaluated by a third party and whose attention is not affected by production capacity, and whose evaluations are more reflective of consumers' private or niche preferences. Therefore, while the platform distributes traffic, service providers are also prone to accumulate private domain traffic, and even fight against the platform. Then the platform will not be able to easily carry out price and reputation control. What platforms can do is to influence as much as possible the updating of the service content track, guide consumer preferences, constantly introduce newcomers to the competition, and maintain cooperation with the head service providers. Therefore, the goal of both types of platforms on the allocation issue is to increase the proportion of resources controlled by the platform by targeting uncontrollable head service providers, keeping the traffic in their hands and strengthening their control ability.

IV. Expansion and Closedness of Market Structures

As mentioned earlier, the visualization boundaries of digital markets are becoming clearer, the architectural interests of platforms are more prominent, and the infrastructure continues to be improved as an important resource in the acquisition of monopoly positions by large platforms. The acquisition of this position is inseparable from their specific business models. First, digital marketplaces create network effects through information and are able to target relevant user groups, reinforcing winner-take-all positions through free content production. Second, digital marketplaces have developed bilateral/multilateral market models where each side is cross-

³⁰See generally 国家市场监督管理总局关于引导网络交易平台发挥流量积极作用扶持中小微经营主体发展的意见 [Opinions of the General Administration of Market Supervision on Guiding Network Trading Platforms to Play a Positive Role in Traffic to Support the Development of Small and Medium-sized Microbusiness Entrepreneurs] (promulgated by Gen. Admin. for Mkt. Regul., 2024) (China).

subsidizing each other, generating large user bases. Third, the productive architecture of platforms is expanding through investments, mergers, and acquisitions, rapidly moving into different businesses and markets and integrating them into a multifaceted and unified production space, with the large user base itself helping platforms to channel their strengths into emerging areas and rapidly capture a new market. Fourth, low-cost data analysis gives large platforms an information advantage and exerts control over various resources. Rapid mergers and acquisitions can enable giant platforms to quickly acquire productive resources in new fields, have a greater impact on other entrepreneurs, and move toward closure through, for example, technological moats.³¹ This feature is common in both material and immaterial labor platforms/markets.

In the course of this rapidly advancing virtually spatial expansion—compressing physical space and altering opportunities for trade and cooperation—the potential connotation of the market has also changed, with productive resources actually entering into some kind of infinite competitive relationship that goes beyond a single field and completely transcends the traditional offline territorial market, thus making it all the more necessary for platforms to uniformly provide the information infrastructure to obtain adequate information. Market concentration also goes beyond the single market identified by traditional monopolies to a combination of multiple markets. And platform markets are not only concentrated in cyberspace, but also in physical world as arithmetic power is enhanced and energy demand increases. For instance, AI-driven markets tend to concentrate a large number of data centers, chip deployments, and electric energy in reality, thus dramatically expanding network effects and bringing the competitive advantages of giant platforms to the fore.³²

D. How Cybernetic Market Organization Drives Changes in Law

The study of law has long been shaped by the historical and economic contexts in which it emerged, often reflecting the dominant modes of production of its time. However, as societies transition into new economic paradigms—the digital mode of production—, traditional legal frameworks are increasingly strained, revealing gaps between established norms and the realities of modern economic organization. At the end of the twentieth century, the social demand for law by the productive organization appeared to be overlooked in existing legal theoretical studies. This was because researchers in China were confronted at the outset with the fact that the knowledge they received came mainly from Western societies where the industrial mode of production was well developed. In these societies, the economic structure centered on industrial production and was assisted by a market economy.³³ As a result, researchers tended to disregard the real impact and need of the economic and social processes on the legal system. Instead, we tend to see the borderless and transplantable nature of the content of the law and want to understand its universal meaning in a vacuum. Thanks to the massive diffusion of information technology, which has helped to expand the market process, we have witnessed and are gradually realizing that the digital mode of production itself is having a greater impact on the legal system, requiring new rules to gradually replace the old system, or even to hollow out the established norms, or to change the original concept of law.³⁴ Carrying on from the discussion of organizational changes in digital

³¹See generally LING, *supra* note 4.

³²See generally Tejas N. Narechania & Ganesh Sitaraman, *An Antimonopoly Approach to Governing Artificial Intelligence*, 43 YALE L. & POL'Y REV. 95 (2024).

³³Although the West has philosophically entered the “post-industrial” or “postmodern” era, the legal knowledge introduced into China predominantly consists of mature Anglo-American legal systems steeped in neoliberalism, reflecting the industrialised economic conditions of the entire twentieth century.

³⁴See generally Anupam Chander, *How Law Made Silicon Valley*, 63 EMORY L.J. 639 (2014); JULIE E. COHEN, *BETWEEN TRUTH AND POWER: THE LEGAL CONSTRUCTIONS OF INFORMATIONAL CAPITALISM* (2019). For Cohen and other scholars in the field of “law and political economy,” law has always been a constituent element of the market. Consequently, law does not merely adapt to new market realities but has long been involved in shaping the market’s new forms. On this basis, Cohen

markets above, what follows is a brief sketch of how the organization of digital production may require changes in legal rules in several major areas of law, namely, the four dimensions along which the productive organization may attempt to force rule changes by promoting at least (1) information matching, (2) resource mobility, (3) flexible labor, and (4) unlimited competition.

I. Speech Zoning and Matching

For over a century, the “marketplace of ideas” has served as a foundational metaphor in legal and philosophical discourse, shaping how societies conceptualize free speech and its role in truth-seeking. Yet, as communication has migrated from physical public spheres to algorithmically mediated digital environments, this idealized model has faced mounting challenges in explaining the complexities of modern information exchange. The “marketplace of ideas” is the abstract paradigm in which researchers usually imagine the field of speech production and dissemination and justify speech protection.³⁵ But we need to look more empirically at how market mechanisms affect the effectiveness of speech expression, especially when we are confronting the era of “cheap speech.”³⁶ Reputational mechanisms in traditional markets of ideas may be useful for enhancing the quality of production; however, they are less effective for the random behavior of large numbers of individual producers. Under the premise that it is difficult to significantly improve the quality of information while ensuring the security of bottom-line information, it is necessary to focus on the matching of speech information—making different types of information available to different groups of listeners in the circulation chain—which can better meet the needs of users. The logic of widely used platform reputation mechanisms, which are essentially information disclosures, can help improve this matching problem. We need to focus on how platforms and users try to differentiate speech and typify engagement relationships, which in turn can better incentivize the production of different types and levels of information, such as hashtags. Recommendation practices by platforms through algorithms and search are already widespread, in which the marketplace of ideas is no longer a free market as imagined, but rather a sort of cybernetic marketplace—in other words, a system of large-scale information flows with stable boundaries, in which digital platforms dynamically regulate the production and exchange of speech.³⁷ Especially on immaterial labor platforms, the matching effect of the productive organization on the content of speech is more pronounced, which may imply a restructuring of the traditional governance of speech.³⁸

II. Forms of Property

The rise of digital platforms has fundamentally reshaped how value is created, exchanged, and protected in the digital economy, challenging traditional legal frameworks designed for physical

rejects the “free market” notion that treats law as a purely external force—the market is constructed, not ontologically predetermined. In this Article’s view, digital markets and law co-evolve together in response to changes in modes of production.

³⁵See *Abrams v. United States*, 250 U.S. 616, 630 (1919) (arguing

“[W]hen men have realized that time has upset many fighting faiths, they may come to believe even more than they believe the very foundations of their own conduct that the ultimate good desired is better reached by free trade in ideas—that the best test of truth is the power of the thought to get itself accepted in the competition of the market, and that truth is the only ground upon which their wishes safely can be carried out. That, at any rate, is the theory of our Constitution. It is an experiment, as all life is an experiment.”)

³⁶See generally RICHARD L. HASEN, *CHEAP SPEECH: HOW DISINFORMATION POISONS OUR POLITICS—AND HOW TO CURE IT* (2022); CASS R. SUNSTEIN, *TOO MUCH INFORMATION: UNDERSTANDING WHAT YOU DON’T WANT TO KNOW* (2020).

³⁷See generally Evelyn Douek, *Content Moderation as Systems Thinking*, 136 HARV. L. REV. 526 (2022).

³⁸See generally OMRI BEN-SHAHAR & ARIEL PORAT, *PERSONALIZED LAW: DIFFERENT RULES FOR DIFFERENT PEOPLE* (2021).

goods and industrial-era production. As peer production models proliferate across immaterial labor platforms, they are driving a profound transformation in property relations—redefining ownership, control, and the very nature of what constitutes “property” in the digital age. The peer production model of digital productive organizations has brought about a number of changes in virtual property relations, which are particularly reflected in the immaterial form of labor platforms.³⁹ On the one hand, the increased capacity for social production and mobility has made information content cheap and the marginal returns to creation lower. This has led to the traditional resources—virtual goods/property—taking on the following characteristics: goods become services, physical hardware is subordinated to software, purchases become rentals, and the user no longer possesses and controls, but merely has conditional use.⁴⁰ At the same time, when the fruits of the user’s labor appear in the form of works; they are acquired by the platform without compensation through user agreements, while the data content in the form of non-works is protected through the law of unfair competition. On the other hand, platforms need to constantly search for new scarcities, for example, traffic and data analytics as a result of increased production capacity and lower marginal returns on creation, even more so as AI production further increases production capacity. Intellectual property rights seem to be coming to an end, with elemental property giving way to architectural property, such as the protection of productive spaces from infringement. The protection mechanism of the “right to network communication,” which is currently in vogue, is characterized by the “safe harbor” rule and the protection of a controlled process of dissemination, which means that, depending on the business model, the work can be disseminated and parodied within the platform, but it cannot flow out of the space of the platform. Name marking and attribution rights have nothing to do with authorship, but are merely an information mechanism to build up reputation, which can be separated from the work itself. In terms of pricing mechanisms, membership to a subscription database replaces the sale of copies, and what matters to the creator is the opportunity to be seen—access rather than direct cash income. Works can be loosely characterized as “data” in this sense, and there is little point in strictly distinguishing between the two, as disputes over copyright and trademark infringement are increasingly subsumed under the rubric of unfair competition in China.⁴¹

III. Digital Labor

The digital economy has fundamentally redefined the boundaries of labor, challenging traditional legal and economic frameworks that were designed for industrial-era employment relationships. As platforms increasingly mediate work across diverse sectors, they are creating new forms of productive activity that blur the lines between employment, self-employment, and voluntary participation, raising critical questions about labor rights, value distribution, and the very definition of work in the twenty-first century.⁴² The organization of digital production on the form of labor began with organized wage labor, shifted to unorganized individual activities—whether in the form of material or immaterial labor—and extended to platforms very similar to those of traditional labor and industry. In terms of the evolution of the organized employment relationship in the traditional industrial era, a process from labor contracts, then staffing agency contract, and flexible labor adjustment laws arose. While we are more able to think of the direct provision of visible human labor as real labor in an everyday linguistic and empirical sense, and

³⁹See generally ZOHAR EFRONI, *ACCESS-RIGHT: THE FUTURE OF DIGITAL COPYRIGHT LAW* (2010).

⁴⁰See generally AARON PERZANOWSKI & JASON SCHULTZ, *THE END OF OWNERSHIP: PERSONAL PROPERTY IN THE DIGITAL ECONOMY* (2016); SHELLY KREICZER-LEVY, *DESTABILIZED PROPERTY: PROPERTY LAW IN THE SHARING ECONOMY* (2019).

⁴¹See Gavin Zuo and Jade Chen, *Judicial Trends in Trademark Infringement and Unfair Competition in Live-Streaming E-Commerce: Lessons from the Typical Cases Selected by the Beijing High People’s Court and the Supreme People’s Court*, BIRD & BIRD (Feb. 10, 2026), <https://www.twobirds.com/en/insights/2026/china/judicial-trends-in-trademark-infringement-and-unfair-competition>.

⁴²See generally SARAH KESSLER, *GIGGED: THE END OF THE JOB AND THE FUTURE OF WORK* (2018).

while sitting at a computer typing or playing a mobile game may seem difficult to incorporate conceptually, a large number of immaterial labor platforms have sprung up and prospered precisely through the use of users' unpaid labor. This portion of labor, under the ideology of the sharing and gift economy, generates a large amount of value that is not well distributed to producers, but is appropriated without compensation through user agreements and becomes aggregated value stored on the platform. In the event of a dispute between a producer and a platform, the courts many times do not recognize the labor relationship, but rather uniformly view it as an online trading process where the platform is not the employer, but merely an information middleman receiving a commission for the transaction. This confirms that in the digital marketplace, all productive subjects carry out their activities and choices in an autonomous capacity, albeit under the guidance and even algorithmic control of the platform organization.⁴³ It also means that the theory of labor subordination is less often applied due to the overall cost of labor employed by the platform.⁴⁴

IV. Unfair Competition

The evolution of internet competition law has been shaped by landmark legal battles that exposed the tensions between innovation, market power, and user welfare. As digital platforms have grown into dominant economic forces, the boundaries of fair competition have become increasingly blurred, raising fundamental questions about how traditional legal frameworks can adapt to the unique dynamics of the digital economy. We are now familiar with the origins of unfair competition on the Internet, which began with the legal controversy surrounding jamming software in the *Qihoo360 vs. Tencent* war in 2010, which resulted in the amendment of the *Anti-Unfair Competition Law* to add Article 12 prohibiting software blocking and jamming, but also gradually contributed to the tendency of platforms to become closed under conditions of fierce competition, which may have deprived users of more autonomy.⁴⁵ Since then, as a continuation of the logic of "illegal emergence," new platforms have continued to search for free means of production and resources to explore the emergence of new business models, and established platforms have continued to expand the scope of the digital marketplace to form an expanded ecosystem. Unfair competition disputes occur more often between new and old platforms, and related behaviors are gradually typified through judicial precedents, such as ad blocking, data crawling, and deep linking.⁴⁶ The generalization of competitive relationship on the Internet has reached a consensus that as long as services are carried out through the Internet around the same group of users or traffic, they may be recognized by the court as having a competitive relationship, and this understanding is a gradually deepening process, but it is still a clear divergence from the determination of competitive relationship on a territorial basis in the industrial mode of production. Rationally, the digital mode of production requires platform companies to cross-subsidize extensively using the bilateral market model in order for users to be attracted to use free services. Platform firms continue to increase the types and dimensions of their services, match resources, reduce cycle and management costs, and provide cross-subsidies that lead to more behavioral consumption data, so that a single platform firm integrates multiple industries and markets, even as the boundaries between markets become blurred.

⁴³See generally Chen Long, *Labor Order Under Digital Control: Research on Labor Control of Take-out Platform Riders*, 9 J. CHINESE SOCIO. 1 (2022).

⁴⁴See generally KAI & LING, *supra* note 27.

⁴⁵See generally Hu Ling, 3Q 大战的遗产“ [The Legacy of the 3Q War], NPC LAW REVIEW (2021), <https://mp.weixin.qq.com/s/HDBHP0Nobvws7nij2QMCVA>.

⁴⁶See generally LIN WEN, THE REGULATION AND JUDICIAL DETERMINATION OF NEW TYPES OF UNFAIR COMPETITION ON THE INTERNET (2023).

E. Conclusion: Towards an Automated Market of AI?

The digital mode of production is essentially the process of information production and its use behind the matching of productive resources. This Article has provided an initial demonstration of the phenomenon and consequences of this seeming paradox: Early digital markets were formed purely through simple transactions mediated by software information, consistent with free market characteristics, but due to security, order, and competitive efficiency considerations, the market form has gradually evolved into a powerful and controlling organization, with a strong ability to influence resource flows and reproduction.⁴⁷ Formal transactions are still realized through contracts, but in the absence of the infrastructure and distribution of flows provided by the platform, a large number of transactions will struggle to occur.⁴⁸ At a time when government departments and researchers are still emphasizing resource mobility and resource market building, the emphasis on the organizational orientation of digital markets is even more special. It reminds us that in the market process of increased mobility, pure resource mobility may not produce scale effects and aggregate value, but rather a high degree of fragmentation in the absence of organizational forces. Given the reduced cost of production of productive resources like information, deployment through a unified platform production organization is desirable.

A more automated marketplace will gradually emerge as AI technologies continue to be upgraded and deployed in different segments of the marketplace, further driving the digital marketplace toward a more self-operating productive organization. First, professional production is gradually separated from mass production and may be replaced by more standardized machines, whereby user-generated content (UGC) begins to shift to AI-generated content (AIGC)—for example, virtual idols, soundtracks, web article templates, machine chats, and voice conversations—and will extend to a wider range of services, such as unmanned logistics and automated transportation. Second, AI continues to assist the productive process through specific types of information, such as analyzing consumer behavior, automated scoring, face swipe authentication, targeted distribution, and dynamic pricing. Third, the automatic market could impose more risks over consumers and laborers in terms of free choice and right to be informed.⁴⁹ All of these tools essentially increase resource supply and accelerate production and distribution at low information costs, and therefore will further drive cybernetic market formation.

The Article also distinguishes between two types of digital platforms based on the nature of their resources, and despite differences in particular business models and organizational processes, there is an overall convergence in the logic of digital markets. For material labor platforms, given the materiality and scarcity of the products and service processes themselves, platforms are more able to discipline and control producers through standardized reputation and pricing mechanisms; for immaterial platforms, the non-scarcity of information content makes price and traffic control difficult, and platforms, while not able to establish standardized reputation mechanisms, are able to influence producers through the means and tools of creation, the constraining or cooperating with them through horse-racing mechanisms, all of which ultimately reinforce the platform's organizational control over the productive resources.

Particularly, this Article attempts to understand the market structure of data property allocation against this understanding of market, seeing that *ex ante* production relations affect the allocation of rights and interests, and that the goal of public policy should be to not affect the continued output of information value, and therefore a flow-oriented allocation of data rights and

⁴⁷See generally JONATHAN ZITTRAIN, *THE FUTURE OF THE INTERNET-AND HOW TO STOP IT* (2008) (explaining that this process began with large Internet companies adopting a vertically integrated model, thereby incorporating productive resources from different stages into a closed ecosystem).

⁴⁸See generally Tom C.W. Lin, *The New Market Manipulation*, 66 EMORY L.J. 1253 (2017).

⁴⁹See generally Michael Guihot & Hannah McNaught, *Platform Power, Technology, and Law: Consumer Powerlessness in Informational Capitalism*, 13 L., INNOVATION & TECH. 510 (2021); Valerio De Stefano, "Negotiating the Algorithm": Automation, Artificial Intelligence, and Labor Protection, 41 COMPAR. LAB. L. & POL'Y J. 15 (2019).

interests is more desirable.⁵⁰ The digital marketplace allocates information entitlements essentially closer to the process of intra-firm activities, which in turn changes the structure of the digital marketplace itself and strengthens the control of the platform over the production flow network. The platform acts as an organizer of production methods, using market or command instruments to regulate and dominate the allocation. Distribution is not a spontaneous process, but is deeply influenced by external forces, and thus combines in itself the idea of primary and secondary distribution. On top of this economic foundation, different types of legal knowledge have responded to the digital economy process and, according to practice, have largely confirmed the formation of this new mode of production. We can continue to observe the structural changes in the digital marketplace mentioned in this Article amid emerging technological shifts, along with their implications for legal regulations.

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⁵⁰For instance, data generated during platform economic processes rarely faces claims of ownership. This is primarily because the production process—dominated by platform enterprises and transcending geographical boundaries to allocate production factors across sectors—creates behavioral data emerging from diverse network relationships. This enables platforms to make production and consumption decisions based on real-time behavioral data, thereby driving economic circulation.