On the Protection of the Digitally Disadvantaged from the Perspective of the Capabilities Approach

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Abstract: *Digital survival and development is not only an important part of the theory and practice of human rights in the digital society but also the purpose of protecting the digitally disadvantaged. Today, the rights approach to protecting the digitally disadvantaged ignores individual differences, the process of action, the quality of rights, and digital capability development which are of greatest concern to the capabilities approach. Therefore, it is inferior to the latter in terms of both content and effectiveness. From the perspective of the capabilities approach, the digitally disadvantaged manifest a combined state of weakened digital rights and digital disability. The exclusion of individual rights by technological rights, the lack of inherent capabilities due to individual differences, and the weak combination of structural imbalances are the essential logic of the problem of the digitally disadvantaged. Therefore, it is necessary to embed the capabilities approach as a value principle into the legal protection of the digitally disadvantaged and enhance the intrinsic capabilities by cultivating digital literacy within the dimension of rights. Additionally, it is also necessary to develop a comprehensive capability by combining digital power constraints and responsible allocation, diversified collaborative digital capability assessment, promotion and assistance, and national standardized, motivational, and preferential empowerment to ensure that the digitally disadvantaged unleash and develop their capabilities.*

Keywords: capabilities theory ♦ the digitally disadvantaged ♦ digital rights ♦ digital disability ♦ legal empowerment

The protection of the digitally disadvantaged is an inherent part of human rights protection in a digital society, with its core focus on the freedom of choice for digital survival and development. As basic human right in the digital age, the right to digital survival and the right to digital development hold a comprehensive significance in protecting the digitally disadvantaged. Current research methodologies tend to "interpret (basic) rights or human rights through the lens of rights," but this approach, on one hand, faces the impact of

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technological power, and on the other, downplays the challenges posed by technological change to the development of human capabilities. In fact, once the core human capabilities of digital subjects are secured, their basic human rights (and rights in general) can be effectively safeguarded.

Based on the capabilities theory, this paper examines and analyzes the issue of the digitally disadvantaged from the perspective of capabilities, exploring ways and solutions to empower the digitally disadvantaged through the rule of law. Focusing on the core concern of "enhancing the capabilities-based rule of law for the digitally disadvantaged," the paper addresses four key areas: First, why is the capabilities approach necessary and advantageous compared to the rights protection-based approach? Second, how is the capabilities theory feasible in analyzing the problem of the digitally disadvantaged, and how can legal empowerment be achieved under the guidance of this theory? Third, what is the actual state of the digitally disadvantaged from the perspective of the capabilities framework? What is the essential logic identified by the capabilities theory in addressing the capabilities dilemma of the digitally disadvantaged? Fourth, how can the legal protection of the capabilities of the digitally disadvantaged be effectively implemented? This paper aims to alleviate the plight of the digitally disadvantaged by addressing these questions, enhancing their capabilities, and promoting their digital survival and development in the digital society.

I. The Capabilities Approach: A Reflection on the "Rights Approach" to the Protection of the Digitally Disadvantaged

Humanity has entered a new form of digital civilization,[1] with human survival and development increasingly dependent on digital technology. In fact, the ability to use digital technology directly determines one's development and its extent.[2] However, in stark contrast to the burgeoning digital revolution, digital dividends have not benefited all members of society equally and have even led to more severe social divisions. More subtly, there is a significant disparity in how much digital dividends individuals can enjoy, even though they are all users of digital technology. The digitally advantaged can fully leverage digital dividends and achieve self-development through the power of digital technology; while the digitally disadvantaged[3] struggle in the digital wave, with their digital

[1] He Zhe, "Digital Civilization: A New Form of Human Civilization — From the Perspective of Technology, System, Cultural Ethics and Governance," *E-Government* 8 (2023): 48.

[2] Zhang Wenxian, "Human Rights Jurisprudence in the New Era," *Human Rights* 3 (2019): 20-23.

[3] Regarding the concept of the digitally disadvantaged, this paper makes three clarifications: First, the reason for using the term "digitally disadvantaged" rather than "digitally vulnerable groups." On one hand, this paper adopts the framework of the capabilitise approach, which focuses on "an individual's" functionings and the exercise of "each person's" capabilities. Therefore, the concept of the "digitally disadvantaged," which implies individuality, is more precise than "digitally vulnerable groups." On the other hand, the digital society has surpassed previous levels in terms of density, complexity, and especially the frequent switching of scenarios, manifesting in terms of groups, generalizations, and typifications. The concept of "vulnerable groups," with its stable scenario characteristics, not only overlooks the fluctuating digital capabilities of the digitally disadvantaged in changing scenarios but also diminishes individual differences and the development of each person's capabilities. Second, the definition of "digitally

survival and development under threat. We may be facing the creation of a more unequal society with extreme disparities in digital power.[4] Clearly, the digital society is not a "digital utopia."

Whether in the context of freedom values or the context of equality values,[5] the weakening of rights and the digital disability of some people has profoundly affected their subsistence and development in the digital society. In this regard, there are relevant studies focusing on the "protection of the rights of the digitally disadvantaged (groups)": First, the studies address the basic concepts of the digitally disadvantaged. It involves the understanding of basics such as the concepts and characteristics of the digitally disadvantaged. It is believed that the digital disadvantages are mainly reflected in the weakening of digital rights and the lack of protection for the digitally disadvantaged. Second, these studies analyze the necessity and legitimacy of protecting the rights of the digitally disadvantaged using the rights approach, make a normative analysis for the legal protection of the rights of the digitally disadvantaged, and outline the specific rights that they may enjoy. Third, these studies analyze the current status of the protection of the rights of the digitally disadvantaged, indicating problems such as the infringement upon certain specific rights and inefficient legal regulations. Fourth, these studies propose paths to alleviate the difficulties in protecting the rights and interests of the digitally disadvantaged, such as the formulation of relevant legal norms, technology governance, right relief/remedy, and the provision of relevant services by the state to protect rights.[6]

disadvantaged" in this paper. The term "digitally disadvantaged" in this paper refers to individuals in the digital society who, due to insufficient digital literacy, structural imbalances in society, and other subjective and objective factors, exhibit a lack of digital resources, are marginalized in social interactions, and are vulnerable to setbacks. This leads to digital disability and the weakening of their rights. Third, in order to rigorously present the existing literature referenced in the paper, any use of the term "digitally vulnerable groups" in prior research research will not be rendered as "digitally disadvantaged."

[4] Yu Xingzhong, "Algorithmic Society and Human Nature," *China Law Review* 2 (2018): 57.

[5] The framework of freedom values essentially discusses the suppression of one party by another after an unequal empowerment of different subjects through technology, primarily manifesting in the infringement of individual rights by public power and digital platforms. The framework of equality values essentially discusses the inability of an individual's own capabilities, social interaction environment, and conditions to meet the transformation of production relations and the updating of social structure in the context of social digitalization. As a result, in a specific historical period, certain individuals are in a disadvantaged position compared to other members of society, mainly manifested in the digital access divide, usage divide, knowledge divide, and development divide. This paper uses the capabilities approach as an analytical framework, focusing not only on the subject's intrinsic capabilities but also on the combined capabilities resulting from the interaction between the subject and social, political, and economic conditions. Therefore, both the digitally disadvantaged in the context of freedom values and in the context of equality values are the focus of this paper.

[6] Such relevant papers are as follows: Gao Yifei, "Protection of Rights of Digital Vulnerable Group in Intelligent Society," *Jianghai Academic Journal* 5 (2019): 163-169; Song Baozhen, "The Rights of the Digitally Disadvantaged and their Legal Protection," *Science of Law (Journal of Northwest University of Political Science and Law)* 6 (2020): 53-64; Ning Libiao, "On Legal Governance of Digital Poverty," *Nanjing Journal of Social Sciences* 12 (2020): 87-92; Song Baozhen, "Legal Protection of Information Rights in 'Digital Vulnerable Groups'," *Journal of Northeast Normal University (Philosophy and Social Science Edition)* 5 (2021): 91-107; Meng Rong, "Weakening of Elder Rights in Digital Times and Its Legal

This shows existing research on the protection of the digitally disadvantaged, especially on "rights protection," has achieved certain results. However, the plight of the digitally disadvantaged has not yet been solved, and the way out is still unclear. The rights approach has difficulty in answering at least the following questions: What digital rights do digital subjects have? This is the first question that must be clarified for the protection of the rights of the digitally disadvantaged. Currently, both theory and practice fail to provide a definitive answer. To take a step back, even if digital subjects possess digital rights, does it necessarily mean that they have the ability to access, acquire, and use digital technologies? Can their digital survival and development be effectively protected? In other words, does having digital rights enable digital subjects, especially the digitally disadvantaged, to achieve digital survival and development? Clearly, there remains much to be done in both scenario-based and systematic studies of protecting the digitally disadvantaged.[7] Among these, the capabilities approach effectively fills the gap left by the rights approach. This is because the capabilities approach, simultaneously addresses individual differences, the realization and quality of rights, the process of individual actions, and the exercise of digital capabilities, thus complementing and advancing the rights approach, which primarily focuses on general, ideal, and normative aspects.

First, the generalized standard of rights outlines a blueprint for achieving digital survival and development but fails to provide individuals with the means to realize those rights. In contrast, the capabilities approach focuses on "each individual," concerned with "individual differences" and "the exercise of each individual's capabilities." In the digital society, there are significant disparities between digital subjects, especially the digitally disadvantaged, with each individual facing different real-world conditions. It is not sufficient to use a uniform rights standard to measure or realize different individuals' evaluations and aspirations regarding digital applications. From the outset, the capabilities approach emphasizes each individual's actual circumstances and the development of their functionings. It aims not only to offer a uniform standard but also to consider the differences among individuals, focusing on the lives they strive for and hold dear.

Second, the capabilities approach encompasses more and deeper content in addressing the problem of the digitally disadvantaged compared to the rights approach. The capabilities approach takes into account both the digital disability and the weakening of rights faced by the digitally disadvantaged, which are significant and distinctive characteristics of this group, and should be examined simultaneously in terms of their impact on the digitally disadvantaged. Current

Measures: Taking Feasible Capability as An Analytical Framework," *Studies on Socialism with Chinese Characteristics* 5/6 (2022): 143-153 and others.

[7] Wang Ye, "Digital Divide and the State Protection of Digitally Disadvantaged Groups," *Journal of Comparative Law* 5 (2023): 122.

research based on the rights approach primarily focuses on digital subjects' "access to digital rights," but more important aspects, such as "the realization of rights," "the quality of rights," and the achievement of digital subjects' ~~functionings,~~ that is, the agency involved in individual in digital survival and development, have received less attention. The capabilities approach emphasizes the exercise of capabilities and the political, social, and other environmental factors that contribute to the transformation into capabilities. In other words, the rights approach is more of a means for protecting the digitally disadvantaged, rather than a goal-oriented approach. The purpose of protecting the digitally disadvantaged is to ensure human dignity, freedom, and agency. While possessing rights is the foundation for the exercise of capabilities, capabilities are the driving force behind the realization of rights, and therefore, capabilities provide a more effective method for protecting the digitally disadvantaged.[8]

Third, the capabilities approach can include procedural or process-related matters (whether a person can participate in a certain process), while rights, particularly digital rights, always concern substantive opportunities (what a person can actually have).[9] Therefore, embedding capabilities in the protection of the digitally disadvantaged is both an inherent requirement of the capabilities theory and a solution to the process-related shortcomings of the rights approach. The core task of rights is to plan an ideal vision for human beings, but it lacks the procedural actions to achieve this ideal. In contrast, capabilities emphasize an individual's experiential functionings, focusing on both process and state. Additionally, capabilities can strengthen the exclusionary function of rights. The primary function of rights is to define and exclude unlawful infringements, but due to differences in individual capabilities, some people, despite having rights, remain vulnerable to violations. The main function of capabilities is to guarantee freedom of opportunity and choice, thereby preventing or mitigating the weakening or violation of rights during their realization process.

Fourth, since the capabilities approach focuses on the process of human activity, its object of concern is not the redistribution of utility or basic goods that the rights approach primarily addresses, but rather an individual's capabilities and actions to enhance his or her goals.[10] As such, capability and development are inherently linked in content, and capability means development. Viewing development and achieving development solely through the lens of rights protection presents numerous theoretical and practical challenges,[11] and its effectiveness is weaker compared to a perspective that views development

[8] Zhu Zhen, "Capabilities and Rights: Prerequisite Thoughts on the Rights Index in the Evaluation of Rule of Law," *Journal of Henan University (Social Sciences)* 2 (2019): 57.

[9] Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge: Cambridge: The Belknap Press of Harvard University Press, 2011), 67.

[10] Zhu Zhen, "Capabilities and Rights: Prerequisite Thoughts on the Rights Index in the Evaluation of Rule of Law," *Journal of Henan University (Social Sciences)* 2 (2019): 67.

[11] He Zhipeng, *Basic Theory of Rights: Reflections and Reconstruction* (Beijing: Peking University Press, 2012), 168-172.

and achieves development through capabilities. In the case of the digitally disadvantaged, the question is: how can they achieve digital survival and development? If approached from the rights approach, issues arise such as the ambiguity and generalization of rights like the right to digital survival or the right to digital development. However, when approached from the capabilities perspective, the central issue is whether an individual has the freedom to choose their digital survival and development. If they do, digital development is achievable; if not, it is difficult to ensure their development in the digital society.

Fifth, the basic rights framework, which is based on a dual structure of state and society, has been profoundly deconstructed by the tripartite structure of state, society, and the individual in the digital age. The relationship between rights and obligations is undergoing a fundamental reshaping, with the distribution and realization of rights and obligations being continuously deconstructed and reconstructed. The relationship between rights and power has undergone a structural shift:[12] individual rights have been both expanded and weakened.[13] The normative system centered on rights is facing a disruptive impact from the transformative power of digital technologies. A rights-based approach to the protection of the digitally disadvantaged is insufficient to cope with the full-scenario, full-process, and dynamic challenges posed by technological power. In contrast, the capabilities theory, which assumes the enjoyment of rights as a premise, places greater emphasis on the individual's achievement of functionings, highlighting the importance of maintaining the capabilities for safeguarding rights, digital survival, and development. Thus, the capabilities approach shifts the research perspective from the generality, idealism, and normativity of rights enjoyment and realization to the contextual, actual, and experiential aspects, while still maintaining the content of rights planning.

II. Capabilities: The Theoretical Foundation and Legal Requirements for Protecting the Digital Disadvantaged

John Stuart Mill offered a cautious reminded that without a fundamental change in thought and methodology, humanity's great progress would be impossible.[14] In the current era, where digital technological transformations deeply affect all aspects of life and production, the pressing theoretical question is: what methodology should we adopt to alleviate the struggles of the digitally disadvantaged. The capabilities theory, as a normative framework centers on human dignity, core values and ethical foundations. It uses rights protection and realization as means, with the fundamental implication of enabling the capabilities of each individual, thereby supplementing and developing the rights approach to the protection of the digitally disadvantaged.

A. The theoretical implication of embedding "capabilities" in the

[12] Ma Changshan, *Law Towards A Digital Society* (Beijing: Law Press China, 2021), 58-62.
[13] Klaus Schwab. *The Fourth Industrial Revolution*, translated by Li Jing (Beijing: CITIC Press, 2016), 97.
[14] John Stuart Mill, *The Autobiography of John Stuart Mill* (US: Seven Treasures Publications, 2009), 93.

protection of the digitally disadvantaged

The concept of capabilities[15] was first introduced by Amartya Sen, a winner of the Nobel Prize in economics. Sen, who has long focused on issues concerning the marginalized, the poor, social equality, and social welfare, defines capabilities as a combination of the "functionings" that an individual can potentially achieve.[16] In this context, capabilities focus on personal freedom, rights, and opportunities, facilitating the unfolding of an individual's functionings and self-realization, allowing individuals to lead lives that are worth valuing, and thus contributing to the realization of social justice.

Amartya Sen believes that capability is essentially a kind of "substantive freedom" people have to choose the life they value, encompassing not just the ability to achieve basic needs like food, clothing, shelter, and transportation but also broader freedoms like political participation and other political rights.[17] "Substantive freedom" refers to what a person is capable of doing, or the opportunities available to them, rather than what they actually choose to do.[18] "What a person is capable of doing" signifies that "freedom of choice" is the core element of a person's capability, meaning the ability to select and pursue the state or action they value most. The freedom of choice goes beyond just the range of target states and actions that an individual can achieve but also emphasizes the real opportunity for individuals to achieve their desired outcomes. The opportunity to achieve a desired outcome is provided by guaranteeing certain rights, thus enabling them to transform the opportunity into the desired outcome. Therefore, the capabilities approach views the "realization of rights" as an important direction and means. In short, Sen's capabilities theory states that while a person may have the freedom to choose their desired life, their ability to actually live that life depends on the planning of rights and the exercise of capabilities.

Contemporary philosopher Martha C. Nussbaum built upon Amartya Sen's capabilities framework, emphasizing the essential role of freedom, the realization of rights, and the actual life of individuals through the exercise of capabilities in achieving comprehensive human development. However, Nussbaum's capabilities theory places greater emphasis on the role of political and legal domains in planning for individual development. The core of her theory lies in the realization of rights, the content of capabilities, the list of core capabilities, and the state's obligations in ensuring the realization of these

[15] There are slight differences in the academic Chinese translation of the term "capabilities." Most translate it directly as "capabilities," while some translate it as "feasible capabilities." This paper does not make any distinction.

[16] Amartya Sen, *Development as Freedom*, translated by Ren Ze and Yu Zhen (Beijing: China Renmin University Press, 2013), 63.

[17] Amartya Sen, *The Idea of Justice* (Cambridge: The Belknap Press of Harvard University Press, 2009), 228.

[18] Amartya Sen, "Human Rights and Capabilities," *Journal of Human Development*, vol. 6, no. 2 (2005): 153.

capabilities.

Nussbaum emphasizes that her capabilities approach is grounded in Aristotelian and Marxist ideas of human functionings[19]. It begins with human dignity and human flourishing, building a political doctrine centered on basic rights. The capabilities approach "specifies some necessary conditions for a decently just society, in the form of a set of fundamental entitlements of all citizens."[20] Thus, in alignment with Sen's ideas, Nussbaum's approach also inherently demands rights, advocating for a positive assertion of rights.[21] In this sense, capabilities constitute the source and process of rights realization, with rights being the outcome of the exercise of these capabilities.

In terms of the content of capabilities, Nussbaum divides human capabilities into subjective basic capabilities and internal capabilities, and the combined capabilities represent the interaction between an individual and their environment, based on the nature of capabilities.[22] Among them, internal capabilities refer to the personal abilities and characteristics a person possesses, including their personality traits, physical condition, intellectual and emotional abilities, as well as their perception and movement capabilities.[23] It should be noted that internal capabilities are not constant but constantly changing, and their development is closely related to political and economic conditions, social contexts, etc. Because people are social beings and their internal capabilities are not solely formed within themselves but are significantly shaped by their interactions with the world around them, including social contexts and the conditions they encounter. Therefore, according to Nussbaum, "One job of a society that wants to promote the most important human capabilities is to support the development of internal capabilities–through education, resources to enhance physical and emotional health, and much more."[24]

However, simply possessing internal capabilities is not enough for a person to achieve self-development; more importantly, these internal abilities must be supported by the surrounding political, legal, economic, and social conditions. The capabilities formed by adding internal capabilities to various contexts and conditions are combined capabilities. Therefore, the realization of combined capabilities means making requirements on the contexts and conditions. The core

[19] Martha C. Nussbaum, *Women and Human Development: The Capabilities Approach*, translated by Zuo Xi (Beijing: China Renmin University Press, 2020), 10.

[20] Martha C. Nussbaum, *Frontiers of Justice*, translated by Chen Wenjuan et al. (Beijing: China Renmin University Press, 2016), 108.

[21] Zhu Zhen, "Capabilities and Rights: Prerequisite Thoughts on the Rights Index in the Evaluation of Rule of Law," *Journal of Henan University (Social Sciences)* 2 (2019): 64.

[22] Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge: The Belknap Press of Harvard University Press, 2011), 20-25. Since basic capabilities are considered "innate capabilities," and this paper focuses on the capabilities of digital subjects, primarily reflected in the two dimensions of internal capabilities and combined capabilities, this paper will analyze only the impact of internal capabilities and combined capabilities on digital subjects.

[23] Ibid., 23.

[24] Ibid., 21.

of combined capabilities refers to the opportunities and conditions that allow individuals to utilize their internal capabilities, which are the subjective premise for forming combined capabilities. From this perspective, combined capabilities are the core human capabilities in a more essential sense. However, both capabilities are crucial to the realization of people's rights and the exercise of their capabilities. Take the case of the digitally disadvantaged as an example. An individual can possess the internal capabilities to access/acquire and utilize digital information and equipment through training but cannot form the combined capabilities if the society or the country does not provide such corresponding information or equipment and has no corresponding rights planning or protection. The individual cannot fully carry out the functioning if he or she has no internal capabilities to access and use the information and equipment due to the lack of corresponding digital literacy even if the society or the country provides them.

The next question is: Since the formation of combined capabilities depends on specific environments and conditions, what exactly are these so-called environments and conditions? Nussbaum first affirms that public policies and public services by the state and its government are necessary conditions for the realization of human combined capabilities. She points out: "The capabilities approach insists that all rights imply an active task for the government: the government must actively support people's capabilities, not merely refrain from setting obstacles or lacking action, because without this, rights will remain just on paper…unless government action turns basic rights into reality, they are nothing but slogans."[25] To this end, Nussbaum has developed a relatively specific list of core human capabilities,[26] emphasizing that this core list represents the actual minimum agency for every individual. The government should acknowledge these capabilities and take action to establish the conditions for the realization of combined capabilities, ultimately ensuring the realization of rights. On this basis, the most important point is that capabilities should be treated as a general principle in the legal norms of the state and government, in order to achieve and develop social justice.[27] However, since capabilities as a legal principle are sufficiently abstract, they still need to be concretized. This requires the joint actions of the state, government, society, and individuals to provide the other conditions and environments necessary for the formation of combined capabilities. From this perspective, Nussbaum's capabilities theory is more concrete in terms of individual self-development, focusing more on process

[25] Martha C. Nussbaum, *Frontiers of Justice*, translated by Zhu Huiling, et al. (Beijing: China Renmin University Press, 2016), 289.
[26] The list of core human capabilities is as follows: (1) Life; (2) Bodily Health; (3) Bodily Integrity; (4) Senses, Imagination, and Thought; (5) Emotions; (6) Practical Reason; (7) Affiliation; (8) Other Species; (9) Play; (10) Control over One's Environment.
[27] Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge: The Belknap Press of Harvard University Press, 2011), 116 and 50.

and operability. Building upon Sen's capabilities theory, Nussbaum profoundly reveals the significance of capabilities for human dignity, the realization of rights, and the unfolding of functionings. She advocates that the acquisition of capabilities provides a minimum guarantee for the realization of social justice.[28]

Thus, the capabilities theory can be succinctly expressed with the formula: *C* (Capabilities) = *R* (Rights) + *IC* (Internal Capabilities) + *CC* (Combined Capabilities), simplified as *R* + *IC* + *CC*. Here, *R* represents the foundational and instrumental elements for exercising capabilities, while *IC* and *CC* constitute the structural components of capabilities. This implies that for an individual to achieve development within society, he or she must fulfill three conditions: the enjoyment of rights, sufficient internal capabilities, and positive interaction between their internal capabilities and external environments and conditions. The absence of any of these three elements may hinder functionings, limit the exercise of capabilities for the realization of rights, and increase the likelihood of becoming disadvantaged in social development.

In the digital society, if an individual desires digital survival and development, he/she must possess the internal capabilities to access the internet, obtain information, use digital products, and achieve self-development through them; at the same time, he or she must have the opportunity and conditions to exercise his/her internal capabilities and form combined capabilities with the support of rights planning, national and government guarantees, social environment and other conditions. To be specific, from the perspective of subjectivity, if an individual is subjectively capable of accessing the internet, obtaining information, and using digital products, it means that he or she can carry out relevant functions and possess basic internal capabilities. More importantly, digital rights planning that allows for the enjoyment of the opportunity to exercise internal capabilities, as well as the actions of the state and government, society, especially commercial organizations, platform enterprises, and the digitally advantaged, are necessary for individuals to form combined capabilities. Otherwise, it cannot guarantee an individual's digital rights, let alone realize their digital survival and development. The issue with the digitally disadvantaged in social practice is not just a simple "self-negative effect" caused by the changes brought about by digital technology but also a profound problem in social structure and environment. It results from marginalization due to the insufficiency of subjective internal capabilities and the inadequacy of objective combined capabilities. Therefore, the realization of digital survival and development of the digitally disadvantaged must include the extensive support of the state and government, legal norms, platform organizations, etc., and their interactions. Responding to the improvement of the capabilities of the digitally disadvantaged from the perspective of the rule of law has become the core task of the capabilities approach.

[28] Ibid., 23-24.

B. Requirements for the capabilities-based rule of law for the digitally disadvantaged

According to Nussbaum, human dignity and human flourishing are considered the core values that capabilities aim to achieve, while functionings and rights realization are the concrete elements that represent these capabilities, and the rule of law (legal mechanisms) is seen as the fundamental way to achieve these capabilities.[29] The law-based protection of the digitally disadvantaged under the capabilities framework is the legalization of human dignity, rights, internal capabilities, and combined capabilities.

1. Human dignity: the end value and ethical requirement for capabilities-based rule of law

Rights are more of a means for the digitally disadvantaged to achieve digital survival and development, while human dignity and human flourishing are the goals. Rights are the manifestation of the connotation of dignity, and dignity is the normative basis of rights. Because to some extent, "we often realize our rights from the intuitive feeling that human dignity is violated."[30] Therefore, human dignity is a value that cannot be weighed in any situation,[31] and maintaining human dignity is the basic consensus of civilized society.[32] The capabilities theory places a strong emphasis on individual differences and attaches importance to the exercise of functionings and the realization of the rights of everyone in society because it recognizes that each individual is unique and unrepeatable. It is also because of the unrepeatable uniqueness of individuals that human dignity has become a fundamental value that exists in an undifferentiated and universal situation. Therefore, the individual differences concerned by the capabilities theory constitute the fundamental basis for proving that people have substantive dignity. Human dignity is the ultimate goal and ultimate ethical basis of the legal protection of the digitally disadvantaged under the capability framework.

Therefore, human dignity has also been regarded as the highest ethical standard in law,[33] constituting a basic norm in the *Universal Declaration of Human Rights*, the *Charter of the United Nations*, various international conventions, and the constitutions of many countries.[34] Xi Jinping Thought on

[29] Martha C. Nussbaum, *Frontiers of Justice*, translated by Zhu Huiling, et al. (Beijing: China Renmin University Press, 2016), 49-57.
[30] Wang Fuling, "Dignity: as the Moral Basis of Rights," *Journal of Renmin University of China* 6 (2014): 57.
[31] Gan Shaoping, "Dignity: A Value That Can Not Be Weighed According to Situations," *Academic Journal of Zhongzhou* 1 (2018): 83.
[32] Han Dayuan, "New Life Philosophy: Emerging Technology and Construction of Open Ethics," *Exploration and Free Views* 12 (2018): 4.
[33] Hu Yuhong, "Jurisprudential Interpretation on Xi Jinping's Overview of the Major Discourse on Human Dignity," *Academic Exchange* 4 (2022): 6.
[34] Hu Yuhong, "Analysis on the Legal Attributes of Human Dignity," *Social Sciences in China* 5 (2016): 101; Qi Yanping, "Human Dignity is the Basic Norm in Universal Declaration of Human Rights," *Modern Law Science* 5 (2018): 22.

the Rule of Law is also rich in discourses on dignity. Respect, decency, and equality constitute the core content of dignity in Xi Jinping Thought on the Rule of Law.[35] Respect requires attention to the subjectivity of people as a purpose; decency is a representation of human dignity. Only when it is reflected in a decent life and decent work can human dignity be realized. Dignity is the premise of equality, and equality maintains human dignity through rights. So, as the wave of digitalization sweeps across our lives, how much equality in decent life, decent work, rights, and opportunities does an individual enjoy if he or she cannot access the Internet, acquire digital devices, use digital products, and protect his or her legitimate rights and interests? Further, how can his or her dignity be maintained? This implies that the dignity of each individual based on "individual differences" requires the law and the system to ensure its maintenance and protection. The capabilities approach takes human dignity and human flourishing as a starting point, which not only directly deduces the basic rights that people can enjoy, but also creates a foundation for the protection of the rights of the digitally disadvantaged.[36]

2. Rights realization: the legitimacy and means of the capabilities-based rule of law

The improvement of the capabilities of the digitally disadvantaged is a right rather than welfare or others, which presents the legitimacy requirement for the normative protection of the digitally disadvantaged. For a long time, the protection of vulnerable groups mostly relied on sympathy and compassion, welfare assistance, and relief from institutional systems, with little attention paid to the realization of rights and capabilities, thus no legitimacy for normative protection. The capabilities theory is based on the concept of human dignity and examines an individual's needs of capabilities from the perspective of basic rights. This essentially turns people's human dignity-based experiential life needs into rights. In fact, in Nussbaum's list of ten core human capabilities, the specific content of almost every capability claim can be reduced to the claim for the realization of human rights. As the cornerstone of the realization of rights, core capabilities are expressed with the help of rights discourse on the one hand, and on the other hand, achieving these capabilities requires the presence of supportive, social, and economic conditions. In the case of the digitally disadvantaged, their capabilities of digital survival and development in the digital society are based on possessing relevant basic digital rights, the realization of which is a process of actions for achieving the individuals' functionings; besides, the exercise of core capabilities poses requirements to the state and its government, legal norms, digital platforms and digital power to protect individuals' digital rights.

[35] Hu Yuhong, "Respect·Decency·Equality: Dignity in Xi Jinping Thought on the Rule of Law," *Oriental Law* 4 (2022): 4-18.

[36] Hu Yuhong, "Human Dignity and the Protection of the Rights of the Disadvantaged," *Jianghai Academic Journal* 2 (2014): 127-128.

Nussbaum emphasizes: "The capabilities theory is closely related to human rights theory, and more specifically, the capabilities theory I have developed can be considered a form of human rights theory."[37]

The rights claims in her theory, considered a human rights theory in a sense, are conceptually linked to government actions. The connotation of capabilities shows that government actions are not only to ensure that digital subjects have digital rights but also to ensure the realization of rights and the quality of rights. Rights are the basis for realizing capabilities, and the rights claim of capabilities also legitimizes the protection of the digitally disadvantaged in the legal system. From the perspective of capabilities' requirements for rights, the protection of the digitally disadvantaged is a question of maintaining and realizing human rights, while its path is for states and governments to establish legal principles based on capabilities in the form of laws and institutions.[38]

3. Achievement of functionings: the purpose-oriented requirements for the capabilities-based rule of law

In the capabilities theory, functionings refer to the various states of being and activities that an individual can achieve, essentially representing what a person is actually doing or experiencing with their available resources.[39] Whether these resources can be obtained is dependent on a combination of subjective and objective conditions, which will directly affect the individual's freedom of opportunity. For individuals to develop in the digital society, their freedom of choice of their digital functionings must be ensured, and the fundamental premise of achieving functionings is the exercise of internal capabilities and combined capabilities of the digital subjects. Therefore, the way to enhance the capabilities of the digitally disadvantaged is through acquiring internal capabilities of digital literacy, along with the formation of combined capabilities through interaction with the environment and conditions provided by society, law, the state, and the government. In short, legal protection of the digitally disadvantaged is the legalization of internal capabilities and combined capabilities.

The further question is: How can we ensure the standardization and feasibility of enhancing internal capabilities and combined capabilities for the digitally disadvantaged? In response, the capabilities approach also emphasizes the need for the legalization, institutionalization, and long-term effectiveness of actions by various actors, including digital subjects, society, the state, and government. According to Nussbaum, there is a conceptual connection between core capabilities and the government. If a capability is indeed a core capability,

[37] Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge: The Belknap Press of Harvard University Press, 2011), 63.
[38] Li Zhongxia, "Constitutional Protection of Vulnerable Groups," *Journal of Shandong University (Philosophy and Social Sciences)* 6 (2013): 12-14.
[39] Erika George, "Instructions in Inequality: Development, Human Rights, Capabilities, and Gender Violence in Schools," *Michigan Journal of International Law*, vol. 26, no. 4 (2005): 1139-1202.

then the government's task is, at the very least, to ensure that the public has the opportunity to live a life that meets the demands of human dignity.[40] Digital survival and development are the core of life with human dignity in the digital society. The capabilities theory aims at the demand for rights, the utilization of internal capabilities, and the formation of combined capabilities, and provides concrete guidance for the digital survival and development of the digitally disadvantaged. The capabilities theory believes that there is a prerequisite opportunity, that is, digital rights planning, for individuals to use their internal capabilities to live a desired life and realize basic digital rights, and improve the quality of rights by using their internal capabilities. At the same time, the utilization of internal capabilities requires a skill assessment, supply (assistance), and rights protection actions by social entities such as technology power platforms; it also requires the state and government to clarify "preferential" digital rights content in legal norms, provide "capability-building" public service content and ensure the improvement of individuals' "capabilities" through government responsibility mechanisms, that is, to enhance the combined capabilities of the digitally disadvantaged, to guarantee individuals' free choice of functioning for digital access, use and development, and to safeguard human dignity and promote human flourishing.

III. The Capabilities Dilemma of the Digitally Disadvantaged and Its Root Causes

According to the capabilities theory, in order to accurately understand and address the issues faced by the digitally disadvantaged, it is necessary to examine the realities and causes behind their rights, internal capabilities, and combined capabilities. In the digital society, the ability to access/acquire, and use digital technologies, and thereby achieve development, varies from person to person. These disparities have a profound impact on the realization and protection of individual digital rights. The structural imbalances in opportunities, resources, and abilities related to digital use and development can lead to substantial inequality, further widening differences between individuals, and threatening the foundational value of the community.[41]

A. Technological power squeeze: the weakening of individual digital rights

The digital survival and development of individuals first and foremost entails the enjoyment of full digital rights. In the "Digital Leviathan Kingdom," however, people live in an environment and complex context shaped by algorithms. In the communication process in such a situation, the digitally advantaged present a technological power suppression on the disadvantaged, whose privacy rights, personal information, and data rights are explicitly or

[40] Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge: The Belknap Press of Harvard University Press, 2011), 64.
[41] Wang Ye, "Digital Divide and the State Protection of Digitally Disadvantaged Groups," *Journal of Comparative Law* 5 (2023): 121.

implicitly violated, meaning a serious challenge to their right to digital development, also a basic human right.

First of all, the right to privacy has been violated unprecedentedly. Privacy is fundamental to human dignity. Without privacy, an individual will lose the integrity that they should have as a person.[42] However, the right to privacy in the digital age has been widely violated. According to the subject categories of the digitally advantaged, there are three main types of privacy violations against the digitally disadvantaged: First, "public power" uses digital technology to monitor the public in an all-round way. For example, during the COVID-19 pandemic prevention and control period, the information of confirmed patients announced included not only the scenes they visited but also private information such as personal ID numbers and detailed family addresses. Second, digital platforms, enterprises, or organizations improperly obtain and used personal data or information of the digitally disadvantaged. For example, some e-commerce platforms sold users' personal information to a third party without the user's consent.[43] Third, some individuals with digital advantages illegally obtain, disclose, and sell other people's personal information. For example, an employee of an information company illegally obtained citizens' personal information to make a profit.[44] As the digitally advantaged, platform organizations or individuals that collect personal data for profit, as well as public power that uses digital technology for social administration, threaten individual privacy and dignity in many scenarios. In particular, the privacy rights of the digitally disadvantaged who do not know how to protect or cannot protect personal information are seriously threatened.

Second, the basic rights related to personal information and data are widely violated. The right to personal information and data is an important concern in theory and practice and has profoundly affected the quality of the digital life of individuals. At present, the definition and understanding of personal information and data-related rights are still actively promoted in theory and practice, yet still with no exclusive or unified scope. According to the provisions of China's *Personal Information Protection Law* and other normative documents of law, personal information and data rights generally encompass the right to access your information/data, the right to decide how it's used, the right to correct inaccurate information, the right to delete your data, and the right to obtain a copy of your data, etc. As is well known, the above rights are suffering from widespread infringement, and the digitally disadvantaged have almost no power

[42] Zhang Minan, *A Comparative Study of Privacy Rights* (Guangzhou: Sun Yat-sen University Press, 2013), 341.

[43] For details, see the case of Zhang XX v. Guangdong XX Marriage Service Co., Ltd. and others regarding online infringement liability, Civil Judgment of Guangzhou Internet Court (No. 22388 [2022] Yue 0192 Min Chu).

[44] For example, the case of Lan XX and Fang XX on infringement of citizens' personal information, Criminal Judgment of Jiangcheng District People's Court of Yangjiang City ([2017] Yue 1702 Xing Chu No. 501), among others.

to protect themselves.

There is a very prominent problem of the weakening of rights such as the right to access your data, the right to decide how it's used, and the right to delete your data. As digitalization sweeps across all aspects of our lives, a considerable number of people are forced to become an invisible nobody. Their personal data is collected and used on a large scale without their knowledge and they have no idea what to do: "We don't even know if they know about us."[45] Digital subjects are providers of information and data, objects of algorithm analysis and prediction, users receiving precise information push from commercial organizations, and citizens monitored by the government. Still, they are not necessarily informed persons and cannot decide to use, delete, change, or maintain their personal information and data. Even if the government, commercial organizations, and technology platforms have "standardized processing" of citizens' personal information, the digitally disadvantaged are limited by the lack of internal capabilities of digital literacy and find it difficult to properly access their own data and process relevant matters. At the same time, commercial organizations, technology platforms, and other relevant parties have different degrees of algorithm suppression problems in the process of information collection and processing. The "notification-consent" rule is the core principle of personal information protection. In actual application, however, it has been alienated into a tool for technology content providers to manipulate privacy policies for acquiring personal information and evading legal responsibilities.[46]

Due to the widespread infringement on specific digital rights, the personal right to digital survival and development as a basic human right has also been seriously violated. Development provides for people's basic needs and gives them hope for a better life. The right to development is an inalienable human right, symbolizing human dignity and honor.[47] As the embodiment of the right to development in the digital society, the right to digital development has become a basic human right in the current era.[48] Digital technology has been and will be more deeply integrated into people's lives, profoundly changing people's lives and ways of subsistence. Whether an individual can achieve self-development with the help of digital technology directly determines his or her subsistence in the digital age.

The right to digital development is a bundle of rights consisting of core rights such as digital rights to economic, political, cultural, and social

[45] Luciano Floridi, *The Ethics of Information*, translated by Xue Ping (Shanghai: Shanghai Translation Publishing House, 2018), 351.

[46] Zhang Xinbao, "Collection of Personal Information: Restricting the Application of the Principle of Informed Consent," *Journal of Comparative Law* 6 (2019): 2-3.

[47] State Council Information Office, "The Right to Development: China's Philosophy, Practice and Contribution," *Human Rights* 1 (2017): 120.

[48] Wang Xigen and Duan Yun, "China's Experience of Digital Development Rights Protection and Its World Significance," *Study and Practice* 7 (2023): 21.

development. Whether these rights to digital development can be realized, and to what extent, are closely related to whether digital subjects can access the Internet, obtain information, use digital products, and maintain their digital rights. Affected by subjective and objective environments and conditions, the rights to the equal digital development of the digitally disadvantaged are being weakened on a large scale.[49] With the digital transformation of social interaction methods, more and more information and services related to public participation, social security, labor employment, education and scientific research, and lifestyle are concentrated in digital networks and products. A wide range of smart government, recruitment software, online education, smart homes, smart offices, and other platforms and devices are gradually replacing traditional models of public participation, social security business, labor intermediary service, education and scientific research, and lifestyle and production. In this way, the amount of digital information obtained and proficiency in using digital products will directly and significantly affect the individual exercise of relevant rights[50] and in a certain sense determine individuals' opportunities and freedom of choice in accessing democratic participation, social security, employment, efficient living and work, etc. For digitally disadvantaged individuals who cannot access/obtain digital information or use digital products, there are obstacles to their political participation, employment opportunities, and engagement in a smart lifestyle, preventing them from fully realizing their right to digital development. This creates a stark contrast with the digitally advantaged, who can fully enjoy the digital dividend and leverage digital technology for self-development, ultimately leading to an increasingly imbalanced society.

B. Individual differences: insufficient inherent capabilities

Individual differences are the primary reason for insufficient inherent capabilities among the digitally disadvantaged. Digital society places high demands on digital competence, making it impossible to adapt without a certain level of digital literacy.[51] Individuals vary in their opportunities and abilities for network access, information acquisition, and the use of smart facilities. High digital literacy enables the "empowering" effect of digital technology; conversely, low digital literacy results in a "substitutive" effect on individual capabilities[52]. This dynamic often leads to a Matthew Effect of "the strong get stronger and the weak get weaker," further exacerbating the imbalance in social development.

The practical challenges in leveraging the inherent capabilities of the

[49] Cui Jingzi, "Crisis and Response of Equal Rights Protection under the Challenge of Algorithmic Discrimination," *Science of Law (Journal of Northwest University of Political Science and Law)* 3 (2019): 30.

[50] Zhang Linghan, "Protection of Female Workers' Rights in Algorithmic Automated Decision-making," *Journal of Chinese Women's Studies* 1 (2022): 60.

[51] Yu Xingzhong, "Algorithmic Society and Human Nature," *China Law Review* 2 (2018): 57.

[52] Carl Benedikt Frey, *The Technology Trap*, translated by He Xiao (Beijing: Democracy and Construction Press, 2021), 54.

digitally disadvantaged are primarily reflected in the first-level digital divide, characterized by limitations in network access and information acquisition. Digital technology has reshaped the structure of social communication and interaction, yet this structure is riddled with information gaps and smart technology gaps, inherently marking it as an unequal society.[53] Within the framework of the digital social structure, while digital networks and intelligent applications offer everyone equal access/acquisition opportunities, equal opportunity does not translate to actual equal access/acquisition. This is because the act of inherent access/acquisition requires a certain level of digital literacy. For example, during the COVID-19 pandemic, an elderly man, unable to provide a digital health code as required by the prevention and control policies at the time, was forced to walk over a thousand li, taking more than ten days, from a location in Anhui province to another in Zhejiang province to seek refuge and work with relatives. In fact, for individuals with low digital literacy, even seemingly simple digital applications can carry significant cognitive and economic costs. Fortunately, with the ongoing development of China's digital infrastructure, the digital access divide is gradually narrowing. According to the *54th Statistical Report on China's Internet Development* (hereinafter referred to as the "*Report*"), the number of internet users in China has reached 1.0997 billion, with an internet penetration rate of 78 percent. The remaining 310 million non-internet users cited the lack of relevant digital devices as a reason for non-use, accounting for 19 percent. Issues related to digital networks and information access have been and will continue to be effectively addressed.

Secondly, a bigger problem plaguing the digitally disadvantaged is the second-level digital divide beyond the first-level digital divide of access gap, that is, the barrier that arises in the maintenance of digital rights, the identification, judgment, screening, and use of digital devices, and especially in digital development.[54] Individuals with the awareness to access/acquire digital information and use digital facilities, and possessing the knowledge and skills to use digital facilities (i.e., possessing good digital literacy) are considered digitally wealthy. Lacking any of these elements potentially makes one digitally disadvantaged. Those who possess digital products but lack the skills to use them and related services are considered subjectively digitally disadvantaged. Those who have the awareness to use digital products and services but lack the access,

[53] Qi Yanping, "The Change of the Legal Field in the Age of Artificial Intelligence," *Science of Law (Journal of Northwest University of Political Science and Law)* 4 (2018): 39-41.

[54] Some studies suggest that the knowledge gap represents a higher-level divide than the usage gap, with the two existing in parallel. However, this paper argues that the knowledge gap is a component of the usage gap. This is because individuals with limited knowledge are inherently restricted in their usage, and part of the limitation in usage stems from a lack of knowledge. From an outcome perspective, both usage and knowledge limitations ultimately hinder the development of the digitally disadvantaged, in contrast to the access gap, which primarily impacts access opportunities rather than development. Therefore, the usage gap and the knowledge gap are not parallel but have an inclusive relationship, with the usage gap encompassing the knowledge gap as part of the same tier of the digital divide.

skills, or economic means are considered objectively digitally disadvantaged. And lacking all these conditions undoubtedly results in being digitally disadvantaged.

Compared to the first-level digital divide, the second-level digital divide — characterized by the inability to know, use, or develop digital products — has become a defining feature of the digitally disadvantaged in the current stage. According to the *Report*, the primary reasons why 310 million non-internet users in China do not go online are as follows, in descending order: lack of knowledge about computers or the internet, low educational attainment, lack of relevant digital devices, age-related limitations, disinterest or lack of need, and lack of time. These factors account for 49 percent, 27.6 percent, 19 percent, 15.3 percent, 12 percent, and 5.7 percent, respectively. Clearly, those who lack knowledge of digital technologies or the relevant skills constitute more than 77 percent of this group. Thus, the ability to survive and develop in the digital society largely hinges on overcoming barriers related to asymmetry in usage and knowledge, effectively accessing useful information, and utilizing digital products for personal development. In recent years, empirical studies in communication and sociology both domestically and internationally have further validated the impact of digital literacy on an individual's digital development.[55]

Intrinsic factors such as individual consciousness, psychology, physiology, economic status, and knowledge deficiencies, are key contributors to the digital divide and the insufficient internal capabilities of digital subjects. First, digitally disadvantaged in consciousness and psychology. Whether individuals have a basic awareness of accessing and using digital technology products, and whether they resist the integration of digital technology into their lives, directly impacts their ability to access and utilize digital products and services. The lack of capabilities among the digitally disadvantaged often manifests as conservatism and closed-mindedness in values and thinking, coupled with passivity and delays in accepting digital products. Additionally, the absence of widespread cultivation of social digital literacy exacerbates psychological resistance ("unwilling to use") and technophobia ("afraid to use")[56], effectively barring the digitally disadvantaged from overcoming the threshold of the first-level digital divide

[55] Such studies include Kwok-Kee Wei, et al., "Conceptualizing and Testing a Social Cognitive Model of the Digital Divide," *Information Systems Research,* vol. 22, no.1 (2011): 170-187; Matthew S. Eastin, Vincent Cicchirillo, and Amanda Mabry, "Extending the Digital Divide Conversation: Examining the Knowledge Gap through Media Expectancies," *Journal of Broadcasting & Electronic Media,* vol. 59, no.3 (2015): 416-437; Yan Hui, "Structural Origins of Digital Poverty in Rural China," *Journal of Library Science in China* 228 (2017): 24-39; Li Tianlong and Jiang Chunyun, "The Impact Mechanism of Information Literacy on High-Quality Farmers' Participation in Rural Digital Governance — Empirical Evidence from 1,280 High-Quality Farmers in the Northwest," *E-Government* 6 (2022): 86-98; Wu Xuhong, He Rui, and Wu Duo, "Bilateral Empowerment: Solving the 'Silver Divide' in the Context of Digital Transformation — A Study Based on the 'Smart Elderly Care' Practice in J District, Nanjing," *E-Government* 5 (2022): 19-30.

[56] Li Peilin, Chen Guangjin and Wang Chunguang, *Blue Book on China's Society: Analysis and Forecast (2021)* (Beijing: Social Sciences Academic Press, 2020), 16.

related to access/acquisition. Second, physiologically digitally disadvantaged. This group faces greater difficulties in terms of accessing, acquiring, and using digital products compared to the general population, due to physical and mental disabilities. As early as in the *National 13th Five-Year Plan for Informatization*, it was explicitly pointed out that rural populations, particularly left-behind children, the elderly, and persons with disabilities, exhibit a relative lack of digital literacy. Moreover, the country's provision of information and skill services for these special groups remains relatively insufficient.[57] After years of internet proliferation, the country has basically achieved nationwide network coverage. However, this has not resolved the issue of fragile digital literacy among the physically disadvantaged. Their ability to leverage the internet for self-development opportunities remains greatly limited. Third, economically digitally disadvantaged. This group also struggles to overcome the first-level digital divide. In direct correlation with the imbalanced economic development between the eastern and western regions, the issue of digital disadvantage in China also shows a strong regional disparity. The problem of digital poverty is more severe in the western regions, especially in remote mountainous areas, compared to the central and eastern regions. Moreover, in terms of digital skills, knowledge, and digital psychology and awareness, the western regions are clearly weaker than the central and eastern regions, with relatively limited access to digital devices. This indicates a close connection between digital poverty and socioeconomic development. Fourth, knowledge-based digitally disadvantaged. Digital skills and education levels deeply influence the use and development of digital technologies. Furthermore, in today's specialized and detailed social division of labor, those lacking corresponding digital knowledge are not only those with low education levels or weak economic conditions. A considerable number of highly educated individuals may also become digitally disadvantaged. For example, a scholar focused on humanities and social sciences may become a digital weakling in areas like smart research, smart offices, and smart homes due to a lack of knowledge of algorithms and limited attention to rapidly evolving digital technologies.

Due to the lack of digital literacy, the digitally disadvantaged exhibit extremely limited agency, with their functionings largely confined to low-threshold digital applications such as entertainment and consumption, while failing to engage in activities related to knowledge acquisition, economic opportunities, or development. Consequently, their chances and conditions for survival and development in the digital society through digital technology are severely hindered. This exacerbates disparities in education, economy, and

[57] See *Notice of the State Council on Issuing the 13th Five-Year National Informatization Plan - Information Industry (including Telecommunications)*, accessed September 21, 2023, available on www.gov.cn.

profession,[58] leading to challenges such as communication exclusion[59] and a host of other social inequities. The digitally disadvantaged thus become trapped in a vicious cycle of digital underdevelopment, ultimately resulting in substantive inequality among different groups in digital progress. This, in turn, undermines the equitable distribution of digital dividends and may even distort the structure of society.[60]

C. Structural imbalance: the weakening of combined capabilities

The capabilities theory indicates that combined capabilities, as more core human capabilities, are realized through the interaction between an individual's internal capabilities and the political, legal, and social structural environments and conditions. Therefore, political, legal, and social structures and conditions are the main factors influencing the formation of combined capabilities. In the issue of the digitally disadvantaged, a structural imbalance arises when the conditions and environments necessary for the exercise of internal capabilities are not met, leading to the weakening of combined capabilities. Specifically, there are two main structural issues at play.

First, existing social contradictions have led to imbalanced digital development. The current primary contradiction in China's imbalanced and inadequate social development has created a systemic barrier for the digitally disadvantaged in accessing the social and economic conditions and environments necessary to leverage their internal capabilities and develop their combined capabilities. This, to a certain extent, determines the unequal application of digital technology. Social stratification theory reveals that an individual's digital resources largely reflect their economic level, social status, and political power. Digital wealth shows a significant positive correlation with economic wealth and social status. The digitally disadvantaged are caught in a vicious cycle of economic, social, and political disadvantages.[61] The existing social structure creates the first and second-level digital divides, while the digital divide further reinforces and amplifies social stratification. [62] The aforementioned practical characteristics of the digitally disadvantaged show that the social interaction environment and conditions shaped by the urban-rural dual structure and the uneven economic development between the eastern and western

[58] Li Sheng, "'Digital Divide': A New Perspective for Analyzing Modern Social Stratification," *Chinese Journal of Sociology* 6 (2006): 92-93;

[59] Wu Guanjun, "Health QR Code, Digital Person, and the Remainder-life: Technopolitical and Biopolitical Reflection," *Exploration and Free Views* 9 (2020): 121.

[60] Wang Ye, "Digital Divide and the State Protection of Digitally Disadvantaged Groups," *Journal of Comparative Law* 5 (2023): 124.

[61] International Telecommunication Union, *Measuring the Information Society Report*, vol. 1, 2018, page 23; Luo Tingjin and Cha Hongwang, "'Digital Divide' and Anti-Poverty Research — An Empirical Analysis Based on Panel Data from 31 Provinces and Cities Nationwide," *Inquiry Into Economic Issues* 2 (2018): 15-18.

[62] Jan Van Dijk and Kenneth Hacker, "The Digital Divide as a Complex and Dynamic Phenomenon," *The information society*, vol. 19, no. 4 (2003): 315-326.

regions exhibit significant structural imbalances, resulting in a clear structural tendency among digital subjects. Traditionally disadvantaged groups in society, such as a significant portion of persons with disabilities, the elderly, and children, are even more at a loss in digital applications without a good social interaction environment and conditions.

Second, digital technology has triggered three layers of new structural contradictions. While unresolved issues stemming from the stratification of social structures persist, the rapid and imperfect development of digital technology has compounded both old and new problems, further amplifying imbalances in social development — a phenomenon particularly evident in the field of digital technology. The transformation driven by intelligent technologies has reshaped social order, creating a state of convergence between the state and society[63], thereby giving rise to new structural social contradictions.[64] Regarding the weakened combined capabilities of the digitally disadvantaged, three main factors are at play: the exclusion of social (technological) rights on individual rights, the professional segmentation inherent in the application of intelligent technologies, and the "drifting" of state responsibilities.

The first factor is that technological power exerts overwhelming pressure on individual rights, damaging the internal capabilities of digital subjects and constraining the foundational rights-based conditions necessary for the formation of combined capabilities. According to the capabilities theory, the network of rights relationships is a key factor in determining whether the digitally disadvantaged can escape digital poverty and access desired digital products and services.[65] However, in the digital society, technological power has rapidly risen and expanded, leveraging its capacity to decentralize and centralize power simultaneously. This advantage integrates extensive and penetrating power, as well as authoritative and diffuse power, in unprecedented ways[66], concentrating it in the hands of the digitally advantaged.[67] Many digital platforms, technology companies, and commercial organizations with control over algorithms have assumed quasi-legislative, quasi-administrative, and quasi-judicial powers[68], overwhelmingly suppressing individual digital rights.

"All data is generated by us, yet ownership does not belong to us."[69] This encapsulates the phenomenon of weakened privacy rights, personal information

[63] Ma Changshan, *Law Towards A Digital Society* (Beijing: Law Press China, 2021), 116.
[64] For details, see the Notice on the Development Plan for the New Generation of Artificial Intelligence (Guo Fa [2017] No. 35) issued by the State Council on July 8, 2017.
[65] Ren Fuxin, "Inspirations of Amartya Sen's Theory of Poverty and Its Methodology," *Jianghan Academic* 1 (2018): 94-96.
[66] Zhou Shangjun, "Reshaping the Power Mechanism in Digital Society," *ECUPL Journal* 5 (2021): 26.
[67] Nicholas Negroponte, *Being Digital*, translated by Hu Yong and Fan Haiyan (Beijing: Publishing House of Electronics Industry, 2017), 229.
[68] Ma Changshan, *Law Towards A Digital Society* (Beijing: Law Press China, 2021), 116.
[69] Wang Tianyi, *The Revolution of Artificial Intelligence: Past, Present and Future* (Beijing: Beijing Times Chinese Press, 2017), 184.

and data rights, digital development rights, and other social development rights. The underlying logic lies in the exclusion of individual rights by the technological dominance of digital platforms. Digital platforms aggregate various entities and activities, using technologies such as Digital Rights Management (DRM) and cookies to link multiple actors. These technologies enable the comprehensive collection, sharing, and utilization of diverse data — including personal private information — often without notifying the individuals concerned.[70] Commercial platforms leverage this powerful network effect to collect data, achieving a first-round monopoly. They then use the advantages gained from this initial dominance to expand into multiple fields, establishing multi-layered monopolies.[71] Throughout these processes, the actions of digital platforms are not only deemed legal but are also justified as representing "the new direction for future economic development."[72]

The second factor is that the complexity of the foundational theories behind intelligent field applications has created intricate smart application products, resulting in an unprecedented professional differentiation in smart technology applications. However, society has not yet formed a systematic application mechanism, making it difficult for digital subjects to develop the combined capabilities needed to fully leverage their internal capabilities and seek digital applications. Unlike the "low threshold" of digital applications in entertainment and basic life domains, the current and future applications in the intelligent technology field are continuously advancing towards "broad scenarios." Applications in sectors such as AIGC (Artificial Intelligence Generated Content), smart finance, smart agriculture, smart education, smart governance, smart offices, smart research, and smart living have ushered in a transformation characterized by industrial interconnection, value conversion, and the integration of virtual and real worlds. Non-specialists often lack an understanding of the fundamental theories behind data intelligence, cross-media perception computing, human-machine hybrid intelligence, swarm intelligence, autonomous collaboration, and decision-making. Consequently, they cannot grasp the underlying mechanisms of intelligent products and applications built upon these theories, leading to difficulties in practical use. Even though accessible designs may benefit users or the methods for using digital facilities may be disclosed, digital technology still creates significant barriers to understanding for the public.[73] This is because algorithms, as the underlying logic of digital life, blur the boundaries of technological applications, potentially

[70] Yang Dong, "On the Reconstruction of Anti-monopoly Law: Responding to the Challenge of Digital Economy," *China Legal Science* 3 (2020): 220-222.

[71] Li Yongjian and Xia Jiechang, "Potential Risks and Its Preventive Strategies of Double Round Monopoly of Super Platform under the Background of Digital Economy," *Reform* 8 (2020): 58-60.

[72] Song Baozhen, "The Rights of the Digitally Disadvantaged and their Legal Protection," *Science of Law (Journal of Northwest University of Political Science and Law)* 6 (2020): 54.

[73] Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money and Information* (Cambridge: Harvard University Press, 2015), 54.

infringing upon the rights and capabilities of the digitally disadvantaged, leading to technological discipline and deprivation of digital rights and capabilities.

The third factor is the "drifting" of government responsibility, which weakens the enabling conditions for the formation of combined capabilities. The government's regulatory and interactive oversight of digital technology is lagging, and the public policies and services aimed at promoting digital development lack sufficient "anticipatory and developmental" aspects. Firstly, the three-tier structure of state power, social power, and individual rights has dissolved the two-tier structure of state power and individual rights in modern foundational systems.[74] The state's response to issues of digital power, such as its discovery, supervision, and regulation is insufficient. There is a lack of effective preventive measures for the widespread and highly invasive nature of technological power, which often infringes on private rights. Consequently, issues like platform data and information monopolies, algorithmic discrimination, and digital barriers challenge the protection of rights. Secondly, there is a relative lack of regulatory safeguards from the government to promote the enhancement of the internal and combined capabilities of the digitally disadvantaged. A systematic and developmental framework for improving capabilities has not been established. At the same time, the public services provided by the government offer limited assistance to the digitally disadvantaged in achieving social development. As previously mentioned, with the construction of digital infrastructure, the digital access divide that threatens the digitally disadvantaged has been effectively bridged. However, a more severe digital usage and development divide, which hinders the progress of the digitally disadvantaged, has yet to see a clear, systematic advancement. Currently, the most important focus of government public services is to improve the digital literacy of digital subjects with distinct individual differences, ensuring the survival and development of the public in the digital society. However, a progressive and systematic plan and regulatory mechanism are yet to be established.

D. Overlapping of rights weakening and digital disability

It is important to note that in real life, many of the digitally disadvantaged face an intersection of multiple vulnerabilities, including both rights weakening and digital disability. On one hand, the same digitally disadvantaged individual may experience violations of different types of rights simultaneously. Additionally, there may be overlapping weaknesses in psychological, physiological, economic, and knowledge-related abilities. These individuals often struggle to overcome the first and second-level digital divides, and their ability to leverage digital literacy and use digital information and devices for development is further limited.

Second, weakened rights and digital disability are both constitutive elements

[74] Ma Changshan, *Law Towards A Digital Society* (Beijing: Law Press China, 2021), 116.

of the digitally disadvantaged. One individual may simultaneously experience both. For example, an individual unable or unwilling to use job search software will experience a significant weakening of their personal right to digital development and employment-related rights. The weakened digital economic rights will further restrict a person's digital survival and development. However, it should be distinguished that although weakened rights and digital disability have a personal correlation and together constitute the practical characteristics of the digitally disadvantaged, they do not have a conceptual, essential, or necessary connection, unlike capabilities that necessarily lead to demands for rights.

In summary, it can be seen that in practical terms, the digitally disadvantaged exhibit distinct characteristics of digital disability, including the weakening of digital rights, insufficient internal capabilities, and weakened combined capabilities. Under the analytical framework of the capabilities theory, the root cause of this phenomenon can be attributed to the digitally disadvantaged's lack of internal capabilities for high-level digital literacy, and objectively, to the weakening of combined capabilities due to structural imbalances. And the structural imbalances leading to weakened combined capabilities are more fundamental. This is because the lack of internal capabilities is not merely a personal deficiency of the digitally disadvantaged, but rather stems from structural contradictions and challenges: the "center-periphery" technology diffusion path, the logic of digital power allocation[75], the illusion of imbalanced empowerment in technology governance[76], and other technological deviances, as well as structural imbalances such as the "drifting" of state responsibility. Structural imbalances further hinder the development of the internal capabilities and the combined capabilities of the digitally disadvantaged. Therefore, the realization of the rights and the exercise of capabilities of the digitally disadvantaged must be achieved through the rule of law, promoting the enhancement of internal capabilities with rights realization as the means and the subject's digital literacy as the core content, as well as the development of combined capabilities with environmental interaction between the subject and the government, law, and society as the core content.

IV. Pathways to Enhance the "Capabilities" of the Digitally Disadvantaged

Rights realization, internal capabilities, and combined capabilities are the core elements of the capabilities theory. Under this theoretical framework, the digitally disadvantaged face the dilemma of weakened rights due to the exclusion of rights by technological power, insufficient internal capabilities due to

[75] Li Qi, "Power Production and Government Responsibility in the Digital Age," *Chinese Public Administration* 11 (2019): 45.
[76] Han Zhiming, "Four Illusions of Technological Governance — Reflections on Information Technology in Urban Governance," *Exploration and Free Views* 6 (2019): 47-58.

individual differences, and the weakening of combined capabilities due to insufficient environment and conditions provided by the state and government. Therefore, the legal protection of the capabilities of the digitally disadvantaged ~~should start~~ from the rights realization, internal capabilities, and combined capabilities[77]: In terms of internal capabilities and rights realization, effective mechanisms for cultivating and protecting those with weak digital rights awareness and insufficient digital capabilities should be established. In terms of combined capability and rights realization, the main focus should be on standardizing the social and technological power constraints and responsibility allocation, establishing the multi-stakeholder collaborative empowerment mechanism, and standardizing the three-phase obligatory state empowerment with a lasting effect.

A. Enhancing internal capabilities within the dimension of rights

The capabilities theory asserts that the enhancement of internal capabilities for the digitally disadvantaged does not necessarily mean that the subject must access/obtain information and use digital devices for development. Instead, it is about ensuring that all members of society have the opportunity and ability to choose access to information and the use of facilities. In short, enhancing internal capabilities means providing the digitally disadvantaged the freedom to choose their digital survival and development paths. This freedom of choice requires each digitally disadvantaged individual to engage in functionings both in terms of subjective rights awareness and subjective actions, thereby enriching the conditions for the exercise of their internal capabilities.

On one hand, in terms of subjective awareness, it is essential to foster a recognition of digital survival and development centered around rights. The digital literacy of the digitally disadvantaged is a hierarchical structure that develops progressively in stages.[78] The first step is to enhance digital thinking focused on risk prevention, especially improving the ability to safeguard digital rights. Purposeful cultivation of digital rights protection and remedy thinking for digital subjects can effectively prevent and reduce the infringement of relevant rights and the infringement extent. Second, it is necessary to cultivate an awareness of digital survival. Enhancing the internal capabilities of the digitally disadvantaged requires the subjects to actively participate in digital development, develop and enhance digital awareness, cultivate digital skills and literacy, and thus form the ability to survive in digital life. Finally, it is necessary to establish an awareness of digital development. On the basis of basic digital survival awareness, digital subjects should purposefully cultivate deeper literacy in areas such as digital culture, digital creativity, digital safety and health, and digital

[77] Among them, the realization of rights as a means is reflected in the legalization of internal capabilities and the legalization of combined capabilities.

[78] Wu Xiaolong and Wang Han, "Farmers' Digital Literacy: Framework System, Driving Effect and Cultivation Path — An Analytical Perspective of Competency Theory," *E-Government* 8 (2023): 105.

ethics and morality, ensuring that they have sufficient internal capabilities to engage in digital functionings, maximize digital development based on achieving digital survival, and contribute to development in the digital society.

On the other hand, rights-based action training should be arranged to improve the subject's digital literacy. In the digital society, no skills mean no rights. The digitally disadvantaged should actively transform their roles in the digital society and actively participate in valuable social activities.[79] On the one hand, the subjects, having rights as a premise, gradually cultivate basic digital literacy in areas such as digital acquisition, digital social activities, and digital life through the acquisition of basic knowledge and professional skills, and develop their internal motivation and ability for self-cultivation of digital literacy. On the other hand, based on the above, to ensure the social development of digital subjects, attention should also be paid to cultivating and improving development-oriented internal capabilities for digital literacy including digital culture, digital ethics, and digital mindset. For the digitally disadvantaged, the improvement of development-oriented internal capabilities is a developmental issue after the issue of digital survival is resolved, and therefore constitutes a component of their internal capability enhancement. Of course, internal capabilities for survival and development can be acquired through training concurrently.

However, since internal capabilities cannot be fully developed solely through self-training, individuals cannot achieve capability development and rights realization solely through their own conditions, and they inevitably need society, the state, government, and law to create corresponding environments and conditions, through interaction between themselves and social, economic, and political environments and conditions, i.e., through the enhancement of combined capabilities to achieve comprehensive capabilities.

B. Legal empowerment for enhancing combined capabilities

The foregoing analysis reveals that the underlying logic behind the weakened digital rights and the weakening of combined capabilities of the digitally disadvantaged is the exclusion of individual rights by digital technological power, social structural imbalance, and the "drifting" of government responsibility. These issues fall under the category of combined capabilities. Therefore, the key to legal protection for the development of combined capabilities of the digitally disadvantaged is to achieve legal empowerment of the subjects in three dimensions: 1. Responsibility empowerment by the digitally advantaged to achieve the conditions for rights protection. 2. Multi-stakeholder collaborative empowerment to achieve the conditions for capability provision. 3. Three-phase obligatory state

[79] Li Longfei and Zhang Guoliang, "Generation Mechanism and Governance Path of the 'Information Cocoon' Effect in the Algorithm Era: Based on the Perspective of Information Ecology Theory," *E-Government* 9 (2022): 59.

empowerment to guarantee and safeguard rights and capabilities.

1. Constraint of technological power and responsibility empowerment: rights protection for the development of combined capabilities

Given the reality that digital rights are easily infringed upon which obviously results in digital disability and further triggers social inequality, technological power should be controlled through power constraints and preferential responsibility allocation to ensure the development of the combined capabilities of the digitally disadvantaged. On one hand, it is necessary to establish regulations to ensure the limited and transparent exercise of technological powers, optimize the compliance construction of digital platforms, and safeguard the rights realization of digital subjects. The basic idea is to maximize the proactive guidance and retroactive regulatory effects of these regulations. In terms of the principles of the regulations, proactive guidance should follow the principle of "technology for good" to reduce the infringement of individual rights by digital power and the control of individuals by digital technology. Retroactive regulation should adhere to the principle of "temper justice with mercy." Strict liability should be stipulated for acts that intentionally infringe upon personal rights. However, if the infringing party proactively takes remedial measures or provides compensation, liability may be mitigated accordingly. This will effectively prevent the abuse of technological power, and promote the standardization of digital power exercise and the healthy development of the digital society. In terms of regulatory content, proactive guidance should focus on the allocation of benefits from the use of digital technology, extend the guidance of legal norms to cover the initial stages of algorithm design, and incorporate ethical elements such as green and care in line with the "technology for good" principle. This will prevent and mitigate the potential power imbalances caused by the professional divide in digital applications through preventative and preferential allocation of rights and obligations. Retroactive regulations should focus on the abuse of technological power, the legitimacy of algorithms, and algorithm accountability.

On the other hand, it is necessary to establish a regulatory mechanism that empowers digital subjects with responsibility. Social environments such as technological platforms and commercial organizations should provide the necessary conditions for the development of combined capabilities. As the absolute dominant players in digital technology, digital platforms, commercial organizations, and technology companies should assume the social responsibility of appropriately empowering the digitally disadvantaged. Three key regulatory requirements and actions should be established.

First, a progressive regulatory system should be established to ensure technical support from digital powerhouses. In fact, technology platforms can provide the most effective technical support for digital users. Currently, in response to the weakened rights of the digitally disadvantaged and their

insufficient digital capabilities, digital platforms should assume corresponding social responsibilities. They should develop progressive and differentiated skill and knowledge empowerment plans based on the individual differences among digital subjects and establish mechanisms for technological empowerment. Second, the service content of digital platforms should be standardized for the benefit of the people and develop technology from a people-oriented and rule-of-law perspective. While profit-seeking is the core goal of digital commercial organizations, it should not be the only goal, nor should it develop without control. As a new productive force, technology companies and platform enterprises should establish an ecological framework for service content hierarchy, rights, and digital application convenience based on the scope of technology content, and define the mechanism for the development of digital content. Digital devices and services for daily life should emphasize convenience and rights protection. Financial, educational, and other professional and industry-specific services should emphasize practicality and increase knowledge support. Third, digital technologies and applications are no longer merely tools. Digital enterprises should be held accountable for their social functions. A social function evaluation mechanism for the application, control, and supervision of digital technologies can be established, allowing the public to participate in the development, control, and supervision of digital applications, constructing organizational scenarios that facilitate independent judgment by the public, and clarifying the basic principles for public recognition and control of digital application design.

2. Multi-stakeholder collaborative empowerment: social protection for the development of combined capabilities

Improving the capabilities of the digitally disadvantaged is not the responsibility of a single entity but a systematic and complex undertaking requiring the coordinated efforts of multiple stakeholders. A mechanism for connection, coordination, prevention, and feedback should be established among digital application providers, relevant government departments, relevant social organizations, and digital subjects. A good social environment for the digital survival and development of the digitally disadvantaged can create a more inherently harmonious social order for the development of their combined capabilities.[80]

First, an advocacy and assistance mechanism for digital applications should be optimized. The publicity mechanism for digital applications is an easily overlooked condition that is crucial for improving the combined capabilities of the digitally disadvantaged. In real life, many cases of digital disability stem not from an inability to use a particular digital device, but from a lack of awareness of its existence. Therefore, a standardized, targeted, and timely publicity

[80] Jiang Bixin and Wang Hongxia, "Study on the Structure of Modern Social Governance: The Substance, Basics and Key of Co-construction, Co-governance and Co-sharing," *Law Science Magazine* 2 (2019): 57.

mechanism for digital information, products, and services should be promoted at the social level, with personalized assistance plans developed based on individual needs and capabilities. Specifically, the content of advocacy and assistance should be planned by the government, with enterprises providing technical support and communities and grassroots organizations participating in publicity and mobilization. Government planning should focus on content that aligns digital technology applications with the capabilities of digital subjects, establish publicity and guidance organizations for the provision of digital skills, and coordinate various social stakeholders in a progressive, individualized, and practical manner to promote digital applications. Enterprise technical support should ensure the personalization and scalability of technical content and assistance, with standardized skills training and visible rights protection. Community and grassroots organizations can establish a specialized publicity and mobilization mechanism, as well as a feedback mechanism for digital subjects, equip themselves with corresponding personnel, and work together with government departments, technical organizations, communities, and families to promote the launch of digital applications.

Second, a dynamic digital capability assessment mechanism should be established. A dynamic digital capability assessment mechanism is crucial for digital providers to accurately understand the digital capabilities of digital subjects and provide accurate services. Relevant government departments should collaborate with technical providers and platforms to conduct assessments based on individual characteristics, digital usage, digital needs, and digital development of digital subjects. These assessments should include at least digital competence, digital self-discipline, rights protection capabilities, and digital development capabilities. Through dynamic assessment of digital capability, technology, and knowledge providers, government departments, and professional technical platform organizations can accurately understand the individual differences in digital subjects' digital capability, enabling targeted assistance. From the perspective of actor-network theory, the dynamic digital capability assessment mechanism also transforms the one-way empowerment by government or technical platform organizations into a two-way or even multi-way interaction between the supply/assistance party and the receiving digital subjects, helping them better utilize their internal capabilities and foster the development of combined capabilities, thereby acquiring the capabilities for digital survival and development.

Third, a mechanism for collaboratively promoting digital literacy development should be established. For a long time, support measures for the digitally disadvantaged have effectively bridged the digital access gap.[81] Going

[81] Laws such as Article 55 of the *Law on the Protection of Persons with Disabilities*, Article 9 of the *Regulation on Protection of the Right to Network Dissemination of Information*, Article 45 of the *Telecommunications Regulations*, and Article 62 of the *Interim Measures for Social Assistance* all regard equal access to, exchange, and sharing of information as core components of digital provision. National

forward, the focus should shift to addressing the second-level digital divide - insufficient digital usage and knowledge, and limited digital development — helping the digitally disadvantaged develop their digital application capabilities. Overall, the collaborative mechanism for digital literacy development requires the joint participation of multiple stakeholders of government, society, families, and individuals by leveraging their respective strengths and forming a multi-faceted digital capability enhancement system and development mechanism led by the government, cultivated by digital platforms, and participated by enterprises, families, and individuals. The content should focus on enabling practical capabilities. This means establishing internal capabilities encompassing digital mindset, digital ethics, digital awareness, digital knowledge, and digital rights protection, and a multi-faceted collaborative cultivation plan for improving digital literacy that includes preferential rights regulations, empowering technological participation, and obligatory state guarantees. An operational system with a lasting effect and mechanism support should be established. In the course of promoting such a mechanism and plan, the individual differences of the digitally disadvantaged should be respected, and a tiered and phased approach should be adopted based on the root causes of digital disadvantages.

Fourth, regarding the subject actions based on the state-led, socially-involved advocacy and assistance mechanism, dynamic capability assessment mechanism, and digital literacy development mechanism outlined above, normative legal documents should be formulated with clear authority and unified responsibilities, ensuring comprehensiveness. These regulations should provide detailed provisions on the obligations of government regulatory bodies and skills providers/training institutions in offering digital literacy training, as well as the content and procedures for individuals to apply for relevant assistance. In particular, the regulations should specify the content of rights realization and capability enhancement, and develop targeted solutions for alleviating the weakened rights, insufficient internal capabilities, and weak combined capabilities of the digitally disadvantaged, taking into account their individual differences. Through such detailed regulations, it will be possible to clarify the responsibilities of relevant entities, establish appropriate supervisory and remedial mechanisms, and ensure the effective alleviation of rights weakening and digital disability for the digitally disadvantaged.

3. Obligatory state empowerment: political and legal protection for the development of combined capabilities

The state is the primary player in protecting the digitally disadvantaged. Amartya Sen and Martha C. Nussbaum both emphasized the importance and obligation of the state in the development of individuals' core capabilities. The core requirement of capability justice is that “the state creates conditions that

initiatives primarily focus on expanding the infrastructure for universal internet access.

allow citizens to expand their functionings, including the capabilities to escape poverty, have full employment options, enjoy security, and create value."[82] The capabilities approach illustrates the inherent and necessary connection between capability realization and the obligatory actions of the government. [83] Government actions to foster the development of combined capabilities for the digitally disadvantaged primarily involve the following three aspects of empowerment:

First, general and preferential regulatory protections for rights realization and rights quality should be formulated and optimized. The rights protection of the digitally disadvantaged is based on constitutional and legal provisions and promotes corresponding rights protection based on the phenomena of weakened digital rights and digital disability. Laws and regulations such as the *Personal Information Protection Law*, the *Data Security Law*, and the *Cybersecurity Law* provide the basic legal basis for protecting personal data and information. The concrete application of these laws in practice should clearly define technical power and personal rights, the responsibilities of various stakeholders, and corresponding supervision and remedy regulations. This plays an overarching role in alleviating the rights protection problems caused by the digital divide.

The content shall mainly reflect rights enjoyment, rights quality assurance, and rights remedy. First, stipulate preferential regulatory content that promotes the timely realization of the rights of the digitally disadvantaged. Establish technical standards that encourage the development of personal information and data rights protection. Standardize the cultivation of awareness of personal information and data rights protection, and formulate normative documents for the development of digital rights. Second, establish special regulations for addressing the capabilities and rights poverty of the digitally disadvantaged. For example, the Swedish government passed the *Act on Accessibility to Digital Public Services* in 2018, explicitly requiring that digital services, or information provided by public organizations, must be perceivable, operable, understandable, and complete, while also using specific practical cases to promote the development of relevant standards, thereby fostering an administrative system for digital rights protection and capability development. Third, regulate the allocation of responsibilities to ensure the quality of digital rights. On the one hand, the behavioral patterns and procedural actions for the realization of digital rights content should be determined. On the other hand, the allocation of responsibilities among regulatory departments, publicity departments, and digital capability providers that are obligated to protect the rights and enhance the capabilities of the digitally disadvantaged should be regulated.

Second, the state and government should offer active support and protection

[82] Amartya Sen, *The Idea of Justice*, translated by Wang Lei and Li Hang (Beijing: China Renmin University Press, 2012), 252-270.

[83] Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge: The Belknap Press of Harvard University Press, 2011), 63-64.

to deepen public services for digital rights protection and digital capability enhancement. It is the government's duty to offer protection when the rights of the digitally disadvantaged are harmed or their capabilities are weakened.[84] The government has an obligation to foster the development of combined capabilities through institutional design and concrete actions and ensure that everyone can practically exercise their digital capabilities. The government's obligatory actions constitute the necessary content of individual core capabilities,[85] ensuring that everyone lives with dignity and respect. First, we should continue to eliminate the first-level digital divide by deploying public service platforms and new intelligent terminal facilities that are accessible to all types of information and equipment. The *Report* indicates that currently there are more than 46.6 million people in China who lack digital devices and are unable to achieve digital survival and development. Further progress should be made in digital network access, information, and service acquisition hardware facilities, etc., which are necessary for the digital survival and development of digital subjects. Second, we should establish progressive and systematic digital knowledge and skills provision services. The focus is not on whether services are provided but on how effective, systematic, standardized, and developed the digital public services provided are. The progressive development of public services is aligned with the progressive elimination of the first and second-level digital divides. At present, China has effectively bridged the first-level digital divide of digital or network inaccessibility, but the second-level digital divide, characterized by insufficient equipment use, knowledge, and limited development, has become prominent. Therefore, it is necessary to focus on improving digital application skills and literacy, particularly the systematic improvement of the digital capabilities of the digitally disadvantaged. Specifically, the government should establish a general digital literacy content system at the macro level, and develop it step by step according to the degree of difficulty, user needs, and digital technology development. At the micro level, various government functional departments, based on the differentiated characteristics and functionings needs of digital subjects, should lead the establishment of a diversified public service mechanism for digital knowledge and skills improvement, and establish a standardized mechanism for interaction between supply and demand, allowing the digitally disadvantaged to participate in the cultivation mechanism of digital development.

Third, the boundaries of state action should be regulated to ensure that public power does not negatively infringe on the digital rights and capabilities of digital subjects. If the positive actions of the state are the main driving force for the acquisition and exercise of digital rights and capabilities by digital

[84] Gong Xianghe and Liu Yaohui, "On the State's Duty to Protect Its Fundamental Rights," *Political Science and Law* 5 (2009): 59-65.

[85] Martha C. Nussbaum, *Frontiers of Justice: Disability, Nationality, Species Membership* (Cambridge: Harvard University Press, 2007), 168.

subjects, then curbing state power is crucial for preventing interference with or harm to the rights of others when fulfilling its protection obligations. Therefore, defining the scope of government action and establishing accountability mechanisms, clarifying the government's obligations and values regarding the quality of rights and capability enhancement, should be reflected through rational legal norms or government regulations and other normative legal documents. The negative list of government actions and their effects should be clearly defined, and corresponding responsibilities for actions that infringe on individual rights should be clarified. For example, using a responsibility list to determine the responsible party, content, duration, and effectiveness of digital provision. Clear responsibility regulations should be established to ensure that digital subjects have the opportunity and conditions to access networks, obtain information, use digital products and services, and realize rights protection and the development of digital capabilities through the positive actions of various stakeholders.[86]

To summarize, the legal protection of the capabilities of the digitally disadvantaged seeks to achieve the following objectives: (a) Normative guidance and support cultivating digital subjects to maintain and realize their digital rights, enhancing their internal capabilities, such as awareness, knowledge, and skills for accessing networks, obtaining information, and using digital facilities. (b) Normatively constraints on commercial organizations, platform companies, and other social (technological) powers to prevent the exclusion of individual rights, clearly defining the responsibilities and empowering technological power. (c) Collaborative empowerment by multiple stakeholders is a key pathway to improving the capabilities of the digitally disadvantaged. This involves establishing mechanisms and norms for rule-of-law-driven digital application advocacy and assistance, digital capability assessment, and digital literacy development. (d) State and government involvement through preferential policies and public services to raise the internal capabilities of the digitally disadvantaged, ensuring and optimizing the environments and conditions where internal capabilities can be practiced and combined capabilities can be formed.

Conclusion

In the digital age, digital subjects' proficiency and capability in utilizing digital technologies directly determine their development and its extent. When an individual lacks digital capabilities and thus cannot achieve development, his or her life falls short of embodying the value of human dignity. Yet, we are living on the cusp of digital civilization's eruption. The dignity of some individuals is being challenged, as issues such as weakened digital rights and digital disability become increasingly prominent. Their digital survival and development are severely constrained, culminating in a scenario of inequality and the Matthew Effect, where "the strong do what they can and the weak suffer what they must."

[86] Zhang Wenxian, "Not Digital, No Human Rights," *Journal of Cyber and Information Law* 1 (2020): 5.

This encapsulates the core plight of the digitally disadvantaged.

Dignity, rights, and capabilities form the core of human survival and development. At the heart of the capabilities theory lies the emphasis on human dignity and human flourishing, the realization of rights, and the exercise of capabilities. Human life derives its value from dignity, and the core ability to adapt to and control the environment is rooted in a life imbued with the concept of human dignity. These core capabilities align closely with the human rights system, serving as the foundation of fundamental rights.[87] Confronted with the pressing realities of digital disability and weakened rights, it is imperative to adopt the capabilities approach. By adhering to the rule of law, we must institutionalize, standardize, and enhance the effectiveness of ensuring the rights of the digitally disadvantaged, unleashing their internal capabilities, and fostering the development of combined capabilities. Therefore, the legal construction of the "capabilities" of the digitally disadvantaged neither duplicates nor replaces the rights-based approach to their protection. Instead, it supplements and deepens this approach by emphasizing the realization of rights and the exercise of capabilities inherent in the capabilities approach. This framework aims to ensure that every individual can achieve survival and development in the process of digital transformation.

(Translated by *JIANG Yu*)

[87] Zhu Zhen, "Capabilities and Rights: Prerequisite Thoughts on the Rights Index in the Evaluation of Rule of Law," *Journal of Henan University (Social Sciences)* 2(2019): 67.