CHAPTER 1

The Significance of Data Rights to Mankind's Common Life

The Age of Remixing

Remixing is a kind of symbiosis and mutual transformation on internal structure and movement process of the formless and order, which is not the rigid mix of the old way and the new way, but the reconstruction of the integration and arrangement of the constituent elements. The evolution of the world in the formless and order has made people realize the power of remixing, and the interpretation of block data is such a kind of power. From deconstruction to reconstruction, block data is used as a thinking paradigm in the field of remixing, which helps us to better grasp the law and predict the future. We human beings are entering a time of remixing and common life as well. Human beings living together demand order from the nature. And the impact of the right structures from remixing makes people re-examine the society, and the construction of new digital order. Data right is the source of the inner vigor of the digital order, and the proposition of data rights is an important force to promote order reconstruction.

We are in and will be in a time of remixing for a long time. The progress of human society has been being propelled mainly by remixing, such as the growth of civilization, the economy, and the data. "Remixing" is an inevitable change of power, which has brought unprecedented impact on legal rules and order of rights.

Remixing and human society: The formless, order and remixing

The universe was born in no forms. In ancient China, there were legends about the formless, among which Pan Gu's story, dividing the heavens from

the earth, is the most famous one. The formless, in the consciousness of the ancients, represents the vague image of the universe before it is divided into heavens and earth. In the West, the ancient Greeks also believed that the formless was the trans-universe material before the world was formed. According to the Book of Genesis: "the earth was waste and without form; and it was dark on the face of the deep." The world is made up of floods and deep darkness. The formless, in the early cognition of the Ancients, was synonymous with disorder and no form.

In the 1970s, with the great progress of science, people gradually realized the deeper essence of the formless – the combination of disorder and order. The vague notion that had puzzled people for many years was gradually made clear by scientific ways. In a vast land of truth, it is the birth of remixing theory and a complex system that refresh the world. The research of complex systems such as nonlinear dynamics, butterfly effect, fractal theory and so on, came into being, which not only added new ideas and vigor to research, but also brought us wide application prospects, and made people realize that variability, uncertainty, complexity and fuzziness are the essence of the world.

The remixing is often mentioned equally with "entropy." "Once upon a time, a singular point was walking along the street, and suddenly it blew up." This is the vivid description of the Big Bang in physics. In statistical physics, the definition of "entropy" is the proportion of the equivalence state in all possible states. Boltzmann defines "entropy" as the number of equivalence state under certain conditions. In fact, entropy is not used to measure the degree of disorder, but to measure the multiplicity of a state, and the state of high entropy is very likely to be disordered (Hidalgo 2015, p. 18). Before the Big Bang began 13.8 billion years ago, everything was in order. However, after the Big Bang, the universe became more and more formless. As everything becomes dispersed, the particles become formless. As to the universe, the degree of the order has been decreasing and entropy has been increasing until today.

As the product of the Big Bang, time is the one-way direction drawn out by the "law of entropy generation" of the second law of thermodynamics., The irreversibility of the "law of entropy generation," also represents that time is irreversible. The irreversibility of time brings us order from the formless (Hidalgo 2015, p. 29). While order and the formless are in opposition

to each other, they can coexist in harmony. Remixing is a kind of symbiosis and mutual transformation on internal structure and movement process of the formless and order. Remixing is not the rigid mix of the old way and new way, but the reconstruction of the integration and arrangement of the constituent elements. Basically, new values are often created by the combining ideas and elements from different sources, such as labor and capital, technology and brand, hardware and software and the globe and region.

Remixing is innovation

Recombination is the intrinsic mechanism of remixing and innovation. It is a basic way to create and innovate in the future. Jobs once said, "Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things." Thus, innovation is to re-break the stable structure of various systems and processes that have already been built, so that it becomes a formless state, and then the original elements are recombined. The so-called "innovation" is to break and recombine the original model and structure, rather than grows out of nothing. Even the birth of the iPhone and WeChat are the breakthroughs and reconstructions to their original situation, trade, practice, mode, and thinking.

Remixing is a vital disruptive way, from which innovation comes. It is a powerful way to create value by combining new methods. The new value can be created by remixing and allocating resources. Remixing is the essence of innovation. In the natural world, the softest graphite and the hardest diamond are both made of carbon atoms, while their huge difference is that they are combined in different ways. Human beings need to release the intelligence of the individual through remixing, and reconstruct our forms of organization, lifestyles, ways of creation, so as to gain collective intelligence.

There are three principles in remixing. First, to be able to identify the potential shared values. Finding more values created by remixing of resources than values created by using resources alone, that is, to dig out

value pre-judgment of "1+1>2." Second, to achieve a harmonious and unified relationship. The combination must operate as a whole in creating value, which is often referred to as collaborative innovation. When recombination is conducted, the shared value does not automatically generate value creation and distribution, but usually depends on how to combine the establishment and management after the initial agreement was concluded. Finally, to share value. Shared value is the ultimate goal of remixing and one of the most important principles as well. Determining the types of income distribution is as difficult as estimating shared values. If the value of remixing cannot be shared, the unfair types of distribution will make the process of remixing fall short.

Disappearance of boundaries and the advent of the remixing age

Remixing means the disappearance of the old boundary. The Internet brings many disappearances of boundaries, such as the disappearance of the boundary between enterprises and market, disappearance of boundaries among industries, and so on. By rearranging the combinations, the boundaries between the original features are broken. The disappearance of the old boundary, the moving from order towards disorder, is not a random mix with a bunch of coincidence, but an orderly arrangement of the combination; so the disorder is carried out in order. Therefore, the remixing is the pursuit of a state of balance between order and disorder.

The real and the virtual world are remixed. The development of the Internet has created a new spatial domain for mankind – the virtual world. The real space coexists with the mixed state of virtual world & reality in the living space. "The entire global economy is tipping away from the material and toward intangible bits" (Kelly 2016, p. 242). The world is also moving from the real world to the virtual world. The virtual world and the real world are embedded in each other, and human beings are forming a digital logic that transcends virtuality and reality. Compared with the real world, there are several major changes in the virtual world. First, the reversibility of time and the sharing of space; second, the instantaneity of time and the flowing of space; third, the elasticity of time and the compression of space. The advent of the virtual world make people say goodbye to a single physical

space structure, but hello to the two-way space of reality and virtuality. The virtual world reflects the human nature of openness and shareability, and the humanistic implication embodied in the virtual space itself is beyond doubt. But at the same time, it frees people from a kind of bondage, to a certain extent, it also separates the development of people and society from the real world.

The world is moving from the traditional "era of labour division" to "era of labour combination." In a remixing world, where crossover occurs at any time, the resources of one area are rearranged in combination with the resources of another, which may lead to innovation. With the continuous evolution of civilization, the progress of science and technology and the growing cognition of the world, the features of the world in front of us are becoming more and more clear. However, with the advent of the remixing era, the present world is still full of uncertainty, often accompanied by unpredictable risks and changes, in which human beings are still walking alone in the vague cognition. There are times when we cannot measure, predict, and control accurately. Values, laws and rules are uncertain, and so are rights. These uncertainties imply complexity and disorder, which bring formless and confusion to human society, and bring risks and challenges to the common life of mankind as well.

Growth stemming from remixing: The growth of civilization stems from remixing

The development process of human society stems from repeated remixing. In the past tens of thousands of years, the development of human society has undergone a process from diffusion to forming into different groups and to the final merger, but the merger does not meaning return to the original point. "So, over the last 70,000 years, humankind first spread out, then separated into distinct groups, and finally merged again. Yet the process of unification did not take us back to the beginning. When the different human groups fused into the global village of today, each brought along its unique legacy of thoughts, tools and behaviours, which it collected and developed along the way. Our modern larders are now stuffed with Middle Eastern wheat, Andean potatoes, New Guinean sugar and Ethiopian coffee. Similarly,

our language, religion, music and politics are replete with heirlooms from across the planet" (Harari 2016, p. 592).

The evolution of human civilization is merely repeated remixing of thoughts. Around 500 BC the golden age of human thought, also known as Axial Age, saw many great spiritual mentors appeared in various civilization – sages of Ancient Greece, Jewish prophets of Israel, Sakyamuni in ancient India and China's ancient philosophers ... The ideas they put forward have shaped different cultural traditions and influenced human life as well. In the past 2,000 years, every social progress has not been the discovery of new ideas, but the rediscovery and practice of some thoughts in Axial Age, such as the Renaissance bringing the progress to Europe, the Protestant Ethics contributing to the rise of America, the Confucianism, Buddhism and Taoism asserting to the influence of China.

The evolution of emerging technologies is only a remixing of early primitive technology. The emergence of technology is accompanied by the development of human beings, which also originates from the needs of human survival. Larry Downes points out in his *Laws of Disruption* that the development of technology was exponential. Brian Arthur, an economist at the Santa Fe Institute, says, "All new technologies come from a combination of existing technologies." Modern technologies are combinations of earlier primitive technologies that have been rearranged and remixed (Kelly 2016, p. 223), and we can combine hundreds of simple technologies with hundreds of thousands of complex technologies, from which countless possible new technologies are created, all of which are the product of remixing.

The innovative development of new media is the remixing of old forms. The historical origins of "remixing" are also embodied in the re-creation of music. At the end of nineteenth century, the recorder's creation made people able to rearrange the normal listening order, which is the first remix of music. Over the past few decades, the birth of hundreds of new forms of media has been remixed by old forms. The traditional media still exist, for example, a newspaper article or a 30-minute television sitcom, or a four-minute pop song. Now, after being recombined, there have been new and attractive forms of medium, such as Weibo, dynamic diagrams, short videos, and so on. In the future, newspaper articles, novels, TV sitcoms, or a four-minute pop music will be remixed in the form of basic elements, and recombined into other new forms.

Economic growth comes from remixing

Starting with classical economics, the impetus of economic growth has always been the research hot spot of mankind. As to what the decisive factor is in economic growth, there is no consensus in theory circle. In economics, it has a long tradition to describe its nature with factors of production (such as capital, labor force). The explanations by different theories on impetus of economic growth mainly focus on the analysis of the contribution to the factors of production, less attention is paid on other factors. At the same time, because of the different characteristics of the times, the research elements and objects that the researchers selected are not the same.

The theme of *The Wealth of Nations*, written by the originator of economics Adam Smith, is "The Nature and Causes of The Wealth of Nations" (Zhou Yuehui 2015), which is to study "How to achieve economic growth of a nation." Adam Smith broke up the economy into land, labor and machinery, and he equated machinery or fixed capital with the growth of people's production capacity. Thus, he regards the physical capital accumulation as a decisive factor in economic growth, and he argues that "The intention of the fixed capital is to increase the productive power of labor, or to enable the same number of laborers to perform a much greater quantity of work." Adam Smith regards the improvement of machinery as the progress of people's production capacity,

> It is upon this account that all such improvements in mechanics, as enable the same number of workmen to perform an equal quantity of work, with cheaper and simpler machinery than had been usual before, are always regarded as advantageous to every society. (Hidalgo 2015, p. 168)

Moreover, in Adam Smith's theory, he holds that the division of labor promotes economic growth. Division of labor is the best way to improve economic efficiency and promote economic growth. David Ricardo, another classical economist, has also pointed out in his book *On the Principles of Political Economy and Taxation* that capital accumulation and profit growth provide favorable conditions for economic growth, and that the driving force for economic growth include increasing labor productivity, compressing necessary working time and reducing workers' wages, etc.

The theory of modern economic growth holds that economic growth depends not only on capital, labor and the relative effect of capital and labor on production growth, but also on the most important driving factor of technological progress.[1] Joseph Schumpeter, an Austrian economist, put forward a unique theory of economic growth in *The Theory of Economic Development*. In Schumpeter's eyes,

> Nor will the mere growth of the economy, as shown by the growth of population and wealth, be designated here as a process of development. For it calls forth no qualitatively new phenomena, but only processes of adaptation of the same kind as the changes in the natural data. (Schumpeter 2012, p. 67)

Schumpeter holds that only innovative activities are the fundamental force to drive economic development. He identifies five types of innovation: 1. the introduction of a new product or new product quality; 2. the introduction of a new production process; 3. the opening up of a new market; 4. the securing of a new source of raw materials or other inputs; 5. the creation and application of a new organizational structure in an industrial sector. Schumpeter further emphasizes that the new combination of innovation and factors of production and the organizers of economic development are entrepreneurs; and it is the "entrepreneurial spirit" that encourages them to innovate, which could introduce a "new combination" of factors and conditions of production that had never been made into the production system to achieve the "new combination." Thus, in Schumpeter's theory, the impetus for economic growth comes from innovative activities and the "entrepreneurial spirit" that promotes such activities.

In the field of entrepreneurship, Schumpeter holds that business routine can be overturned by a new combination of business. Entrepreneurs have taken out these new combinations – the existing and new manufacturing processes, the markets and new sources of supply, the new products and

1 In his book *Future Shock*, Alvin Toffler, an American futurist, also mentions that, behind these startling economic phenomena, there is a huge incentive for change: technology, but that does not mean that it is the only driving force for social change. In fact, changes in the chemical composition of the atmosphere, in the climate, in soil fertility and other factors can lead to social unrest, but it is undeniable that technology remains a major force in accelerating shocks.

technologies, and even the new corporate structures and strategies – that are the cores of Schumpeter's innovation theory. Schumpeter's conclusion of his observations is still applicable, but the combination is not just the ones that entrepreneurs met. Today, the company's executives are promoting this innovation process. In the past 10 years, the strategy of asset and resource combination from inside and outside the company has been widely implemented and popularized. The implementation details of these combinations are different, either temporary or permanent, lose or strict, exclusive or inclusive. But its essence is to create value by remixing or recycling of sources (Gomes-Casseres 2017, p. 7).

Coincidentally, economist Paul Romer holds that "Truly sustainable economic growth stems not from the discovery and use of new resources, but the rearranging of existing resources to generate greater value." This is in the same way as Schumpeter's "Theory of Technological Innovation," which focuses on "new combination" or "new integration." Kevin Kelly, the founding editor of *Wired*, known as the prophet of "the spiritual godfather of Silicon Valley," mentioned in *The Inevitable* that "economic growth comes from remixing." At this point, the study of economic growth turns gradually from the focus on the factors themselves to the reorganization of the factors, which becomes the only source of power to innovation and wealth in digital society (Kelly 2015, p. 242).

Data growth stems from remixing

The bidirectional evolution of knowledge, information and data is the course of human civilization progress. From the perspective of process of human thinking paradigm, the cognitive system at each stage is different, so are the resulting tools of thought. The first stage, knowledge is power; and the knowledge is the product of human thinking. The second stage, information is energy; and information is the product of computer technology. The third stage, data is variable; and borderless data aggregation cannot be achieved by the thinking paradigm of human brain nor computer. It must be the integration of people, intelligent machine and cloud computing – a cloud-brain thinking. In other words, the human thinking paradigm is divided into three stages, namely the human brain age, computer age and cloud-brain age.

Data is both an independent variable and a dependent variable; at the time of its own change, it will cause the change of the outside world. Besides the process of data change of dependent and independent are simultaneous. Data is an objective existence and a data mapping to the real world. The data itself is in the motion and change, and it is the information communication technology that causes the natural growth from improvement of production efficiency to more advanced intelligence stage according to its own development logic (Key Laboratory of Big Data Strategy 2016, p. 15). In terms of quantity, big data is not only huge, but also constantly changing. *The Digital Universe*, a report published by IDC, provides a quantitative assessment of global data stocks and growth trends. The report shows that the global IP (protocol for interconnection between networks) flow reaches 1EB (AI-byte), which takes one year in 2001, only one day in 2013, and only half a day in 2016, to 2020, the digital universe will grow 10 times, the amount of data generated per year from the current 4.4 trillion GB (gigabyte), growing to 44 trillion GB.

Data transboundary is an important precondition for the formation of large connections. All the people, things, objects are embedded in a huge social network, our interconnected relationship is not only the innate, indispensable part of life, but also an eternal force (Christakis 2017). Albeit data in different fields and industries are separated into strips by social division, the transboundary of various industries is forced by development of Internet technology. In its essence, the transboundary is building up new connections among things, especially establishing effective ones among redundant data, in order to discover new value. For example, China Vanke and Taobao established a cooperative relationship, so as to obtain a large amount of customer information; Alibaba not only focuses on e-commerce, but is also involved in logistics, pictures, artificial intelligence and other fields. The attraction of transboundary is to combine and integrate different elements to discover the potential value.

The recombining of data is critical to the continued growth of data volumes. In terms of nature, transboundary and cross-field association and reorganization are the nature of the development of data itself; it can break the boundaries of time and space to quickly transfer and aggregate, which put the data of the same type, in the same field, into classes, with interaction, and the formation of higher-level, cross-field continuous aggregation, to form

a new dataset in new conditions. Multiple forms of data, multiple sources, and complex connections between data make the data world more mysterious and exciting (Key Laboratory of Big Data Strategy 2016, pp. 15–16). A single data is meaningless, while the real value generates from huge subsets through correlation analysis of the recombined, new data set.

Data growth is at the heart of the growth of the digital society. Ma Yun said in the 4th World Internet Conference that, "in the next 30 years, data will become the means of production, computing will be productive force and the Internet will be a production relations. If we do not embrace digitization, and not connect to the Internet, it will be more frightening than didn't connect to the electricity in the past 30 years." A data set in a "sleepy" state needs to be remixed with other datasets to create new value, so the combination of different datasets is always more valuable than a single dataset. The reorganization of data has become the core of growth.

The legal essentials of remixing: Remixing is a double-edged sword

As far as creation is concerned, remixing creation is different from the traditional forms, for it creates new works on the basis of the original work in the form of audio mixing, mix-and-match and so on. In the era of big data, people can create large works by mixing and collaborating, which was unthinkable in the past. Wikipedia, for example, brings together the wisdom of global netizens in a remixed way, the richness of which was far beyond the creation done by traditional encyclopedias. It can be said that remixing creation contributes to the development of culture. Besides, it involves the right of the public to express freely, and the relationship between copyright and freedom of expression, "which can be regarded as the relative two sides of the same coin, the former is ownership, the latter is the political right of society. They are linked together because both involve the flow of information, one for profit and the other for freedom. It's like the Canal gate, which can facilitate the flow of information and may also hinder its flow" (Patterson & Lindberg 1991, pp. 123–124). The copyright owner in remixing creation enjoys exclusive rights to the work, and the public enjoy the right to freedom of expression. The public has the right to obtain works and make use of them, which of course includes the use of originals to create remixing

works, but the public may not violate the relevant laws in the exercise of the right to freedom of expression.

The threshold for innovation in the era of remixing is lower. Technological innovation has changed the possibilities for invention; and the development of digitalization and the Internet has allowed people to innovate at any time, anywhere. In the past, professionals were the mainstay of innovation, but now, everyone has that possibility; in the old days, only few people were able to publish and become famous; whereas, now, everyone has the opportunity to become famous as long as there are mobile phones, computers, and the Internet. The creative environment has changed, as a matter of course, the way to innovate in the era of remixing is more accessible, as the threshold is lower. And people are increasingly choosing to use remixing to express their innovation and desire. But, because of the lower threshold, remixing brings both value and many legal risks to mankind.

"Remixing culture" faces legal conundrum. Lawrence Lessig, an American scholar, discusses the legal issues brought by "remixing" in the book *Remix: Making Art and Commerce Thrive in the Hybrid Economy* (2008). Wikimedia economic phenomena, data collection and trading of search engine ... the threshold of "remixing culture" is so low and common that brings us both business opportunities and increasing tort disputes. When "remixing" is used to describe cultural phenomena, the boundaries of creativity and copying become blurred. Some of the "remixed" works have gone beyond the level of the primary creation that might step on the boundary of copyright infringement. Like, the trendy works of Fan articles or Fan Fictions,[2] and "the transformation problem" mentioned in Kevin Kelly's book *The Inevitable*. Transformation is another expression of "formation." To accept "transformation" means that the works we create today will and should generate something else in the future. Then, how to define the boundary between "transformation" and "formation" and solve the tort problem involved in fan fictions is an urgent legal issue at present.

2 In China, copyright law does not specify the copyright attribution of the Fan Fictions. In Japan, however, the original author has the same rights as the author of the derivative works (that is, the author of the Fan Fictions).

The impact of remixing on order

In the remixing era, human's coexistence and living together require a rudimentary social order. The core of the social order needs for each social community to address the question of how to use common social resources or wealth to continue its own development. This requires each society choose and establish an order of data rights used by who (individual, collective or other forms of organization) and how to use (what nature of rights, etc.). This order is usually centered on the design of the rights system, which takes data rights as the core.

This system of rights basically includes: first, the allocation or confirmation of the range of rights that social subjects can possess; secondly, the recognition of the right of these subjects and the general rules governing the exercise of rights; and thirdly, the protection of the exercise of the rights of the subject and the prohibition or punishment of acts endangering the order (Gao Fuping 2004). The norms of these three types of rights are the basic content of the system of data rights to standardize the data rights in the remixing era. It is the goal to achieve the common and orderly use of social resources by social subject with the three kinds of norms or rights arrangement.

Data rights are the first order of human society in remixing era, which defines the ownership of data resources and constructs the order of resource utilization of the whole society. Data rights defines the scope of several rights among individuals, giving individuals the autonomy to independently deal with the data they own, thus protects individuals from slavery and exploitation by others and safeguards the equality and free life of individuals. Data rights are the link of social organization. Human beings always have to combine into different social organizations in order to survive, from families with blood ties to other economic organizations such as partnerships and companies that are linked by economic interests or contracts, which are social organizations that achieve various purposes and are based on clear data rights. It is difficult for a single subject in society to become an economic organization with a common purpose. Data rights sustains the survival boundary of a social community, from natural villages and towns to countries, where everyone lives in. They are various communities of all levels of human life. The boundaries of such geographical community will extend

in the future, until being defined by data rights, since the primary order of society is to maintain stability and security and non-aggression against the scope of the activities of individuals, families and various social communities.

The remixing challenge to law

In the remixing between the real and the virtual world, people's rights to data gradually transfer from ownership to the right to use. The right to data is moving away from ownership towards the right to use; it is also moving away from replicating value and towards the value of the web; and at the same time towards a world that is bound to come, where there is an ever-growing remix. Although at a slow pace, the relevant laws will be gradually established (Kelly 2015, p. 241). So, what should the new law support in a remixing world? This is a controversy and conundrum that are facing the digital society.

Remixing is the rearrangement and reuse of existing things, which poses a great challenge and destruction to the traditional concept of property and ownership. If a piece of melody is your property, just like your house, then others right to use it will be greatly limited without authorization or payment of the corresponding remuneration. Early in 1813, Thomas Jefferson recognized that opinions could not be regarded as property, or that even if they were property, they were different from real estate. He wrote: "A man has gained a point of view from me; and he has not done me any loss by accepting this view as a guide; it was like using my candlestick to light his candle; and his harvest of light did not dim me at the same time." For the most part, our legal system is still in the guidelines of the agrarian age, regarding property as an entity, which has lagged behind the development of the digital age.

The current intellectual property system and the concept of ownership also constrain the development of remixing. For the possession of non-physical materials (such as music, text, views, etc.), how to define them properly? Whether it is infringement to completely replicate, or it is not a complete "replica" as long as some addition of transformation and change exist. All these still need further clarifications of the social concept and system. There is always controversy over whether it is legal for people to use music clips

as a sample for remixing, especially when the songs used as samples or the songs borrowed have been reaping handsome rewards. There is also a legal controversy over Google's use of part of books by scanning original ones, which has forced Google to stop its "Book Scanning" program. Intellectual property is such a flux. The remixing creation has led to disputes about copyright issues, that it may endanger the interests of copyright owners, mainly in the following aspects. Firstly, remixing creation may undermine the author's moral rights of original works. The creation of the remixed works may destroy the integrity of the original works with deletions and modifications. Secondly, the remixing creation may harm the property interests of the copyright owner. Some authors of the remixed works plagiarized a large number of prior works in their creations, thus forming a competitive relationship with the prior works. In addition, the remixing creation is not a fair use. Some people believe that remixing creation involves copyright infringement, which is not a fair use of prior works. For these reasons, a considerable number of American remix music creators, fearing involvement in litigation, are afraid to publish mixed music works (Hu Kaizhong 2014). Therefore, although the remixing creation could promote cultural development, there are great contradictions and differences in the legitimacy, if this problem is not properly solved, it will hinder the healthy and orderly development of the remixing creation.

Block Data Paradigm

Remixing means the integration of internal and external resources together to create new values, so the value of data lies in the remixing. Block data, with a specific platform to integrate data resources, plays an aggregate role to make multiple integration and correlation analysis, so as to reveal the nature and laws of things and to create new values. In a way, block data is a kind of thinking paradigm in the remixing field. But, it must be pointed out that, after massive data is aggregated and remixed, the problems such as data disorder, ambiguity of data rights become more and more prominent, which need multi-dimensional governance of "technology & system."

Remixing: Value embodiment of data – the datamation of everything

The development history of human civilization is also the course of vast data generation, iteration and evolution. If the significance of the world is refreshing, then data is the fundamental attribute and existence form of the refreshing. Whether we still have the good memory of the old days and the fear of the new era in our hearts, a datamation age of "everything is recorded and analyzed" has come. "In the world of big data age, all social relations can be expressed in data, and people are the sum of relevant data" (Li Guojie 2014). In this era, virtual digital space and the real world are in parallel existence, accurate mapping, and deep blending. Gary King, a sociology professor at Harvard University, said, "This is a revolution. There is a movement of quantification rumbling across fields in academia and science, industry and government." It is not only the era's characteristic that expressing everything in a quantified way or taking data as the essence of the world. It is only because of the development of technology today that is closer to this essence.

Data defines everything. When all relationships can be characterized by data, all trends can be predicted by data, then the way people view the world may change by datamation means that help to understand human behavior and human society and explore how to reveal the common features of social macro-behavior from the randomness and disorder of social micro-behavior. The social orders, social rules, social behaviors and social governance will be reconstructed under the natural, economic and social change. A new digital society will be born.

Data connects everything. Datamation of everything means the interconnection of everything, and "connection" has become the most basic and important feature of the digital age. The development process of human history is a process of constantly expanding and deepening the connection with all things. With the help of modern information technology such as the Internet, big data and artificial intelligence, everything can be connected, people to people, people to things, things to things, which leads to the arrival of the era of the interconnection of everything; furthermore, the interaction is much more frequent and effective that has transcended time, space, geography and even the boundaries of species.

Data quantifies everything. When everything in the world becomes data, it is the realization of "datamation of everything in the world," that is, the

realization of "quantifying everything." All things in the world can be used as "variables," to accept data analysis, and achieve potential value. Lord Kelvin, a British physicist, said, "When you can measure what you are speaking about, and express it in numbers, you know deeply about it; but when you cannot express it in numbers, your knowledge is a meagre and unsatisfactory kind: it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science." Data, as a new way of expressing the world, is profoundly reforming the human way of communication, organization, production and life, driving mankind into a new era of digital civilization.

The data value lies in remixing

Human understanding on data value can be divided into three stages: first, the small data era pursuing data refinement based on computers; second, the big data era deeply exploring data relation based on systematic data resources; third, the hyperdata era symbolized with data explosion and congestion. Data is everywhere. They hide in the dark and ridicule people who do not make good use of them, and the truth is often hidden in the arrangement and combination of data.

Big data is big not only in its big capacity, more in its big value, and both of them which are based on big integration. Data is a new productivity, but it is fragmented and can only be of real value as long as it is aggregated to allow various data to have an aggregation effect. The value of data does not simply exist in the collection of massive data, but in the correlation between data, and in the rules and principles behind it. That is to say, the value of data is not how big the data is, but how high its relevance is; the law and its value could be found via the analysis of multidimensional and multi-level data and its correlation. The value of data does not exist in static data combination, but in data collisions and aggregation that can release the intrinsic value. A dormant dataset's potential value needs to be released by combining it with other different datasets. Like mineral deposits, the data can also be low-grade or high-grade. As to the dispersed and disordered data, it is necessary to make a combination and integration to come out a fresh analytical logic, so as to reconstruct the traditional industry, social governance, government supervision and legal system.

Integration is the value of big data. The future is an era of cross-border integration in which data creates value and innovation drives the future. Cross-border remixing can realize the "one plus one produces a value far greater than two" which is the essence of data. According to the French post-structuralism philosopher Jacques Derrida, "Each deconstruction manifests itself as the interruption, division, or disintegration of the structure, but the result of each deconstruction produces a new structure." The deconstruction of data, datasets, and data relationships is similar to the deconstruction of the product, that is, each "original," after being deconstructed, will is reassembled with new products to achieve new uses and values. Reconstruction is a kind of overall transformation of the deconstructed data, which constitutes a new set of values different from the past.

Data remixing: Combination, integration, and aggregation

The value of data remixing is the discovery of new rules and new values. The way of data remixing, from the perspective of interaction, can b divided into three levels: data combination, data integration and data aggregation, which is the realization of the deep aggregation of dispersed and disordered data from lower level to higher level (see Figure 1).

The data combination is formed by a simple combination of data from all sides, which can embody the whole characteristics of things. Remixing of such data combination results in a physical reaction, and the nature of the data attribute has not changed. For example, a credit report, including transaction data, communication data, and shopping data, etc., is only a simple collection of information. However, data remixing can realize its value only when multiple data exist and aggregate. Remixing of such data aggregation is a chemical reaction, which create value. Such as, blacklist. It is linked through financial data and communication data to determine whether certain data are blacklisted. For instance, users with abnormal financial behavior and frequently changed mobile phones and times of downtime, can be judged as blacklist users. Data aggregation creates new value from aggregating and incubating on both sides, and the remix of such kind results in a nuclear reaction, thus a new pattern come into being. For example, the installment loan, with the risk control ability of big data, not only reduces the audit

process, but also can carry on the loan monitoring, the post-loan management, and the lost user's location and collection, which is a package plan.

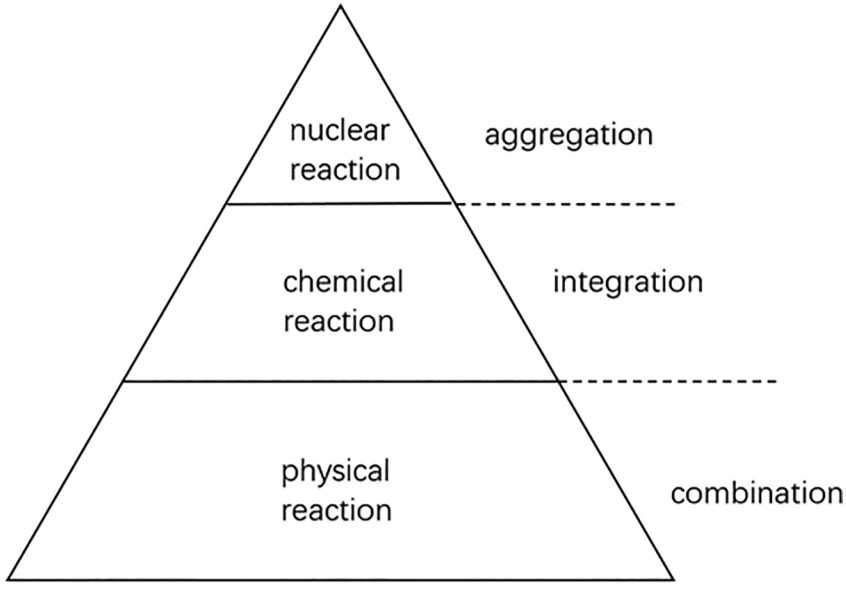

Figure 1. Three Ways of Data Remixing.

The remixing of data is not a simple and easy thing, which cannot be realized overnight. Data dictatorship, data standards, data ownership, data security and other problems remain to be solved. Among them, three problems are relatively more important: first, the problem of data security. How to ensure data security, protect personal privacy and the right to know, and how to guarantee the realization requirements of the legal data subject? Second, the problem of data pricing. The assessment of data property rights and data pricing have not yet formed a mechanism. The problem is how to determine the market price and who has the final pricing rights. Third, the problem of definition of ownership. Questions like how to establish the legal status of data, how to attribute rights, and how to define the distribution of benefits are extremely important problems, and at present they is no final conclusion. The problem of data order is prominent with the increasing number of disputes and cases involving data. In the case of imperfect legal

system, the mining, trading and application of data will bring the data ecosystem into the black hole of infringement, out-of-control and even crime.

Block data: Thinking paradigm in the remixing field

Big data has ushered in a major transformation of the times. Just as telescopes make us to feel the universe, and microscopes make us to observe microbes, big data is changing our ways of lives and ways of understanding the world, which is becoming a source of new inventions and services; and much more changes are coming into play (Mayer-Schönberger & Cukier 2013).

From big data to block data

The booming of massive data has been accompanied by an increase of uncertainty. Data explosion is faced with the potential problem of data waste that is troubling human, which is known as the "Paradox of Massive Data" that needs a new method of data science to solve. It is in such situation that block data came into being. Block data is a sociological paradigm of data taken human as its origin, which emphasizes more on the use of data technology to analyze human behavior, grasp human law, and predict human future. Integration from strip data to block data, and movement from chain era towards block era will lead a thinking mode and behavior paradigm reform of the whole human society fundamentally and subversively.

Point data: Isolated data for discrete systems. With the convergence and interaction of information technology and human production and life, as well the rapid popularization of the Internet, global data presents the characteristics of explosive growth and massive agglomeration. However, large-scale data, without any connections, exist independently, forming various discrete isolated point data. Point data is an important source of big data, which has the characteristics of large volume, decentralization and independence. Point data comes from a discrete system of individuals, businesses, and governments that involves all areas, aspects, and links of people's production and life; such data has been identified and stored in a variety of corresponding systems, but because there are no value correlations

with other data, or the value correlations is not presented, they are not used, analyzed, or even accessed.

Strip data: Data collection under a single dimension. Data, whether the internal data collected by traditional industries, or the department data concerning health, education, transportation, finance, security and other sectors held by governments at all levels, or data of new industries such as e-commerce and Internet finance stored by Internet enterprises, can be defined as strip data that is linked together in an industry and field. At present, the application of big data is mostly presented with strip data. Strip data is a set of data in a certain direction, so it can improve the efficiency of data use, but also made data trapped in the isolated chain, forming various "data islands" and "data chimneys."

Block Data: correlated aggregation on a specific platform. Block data is the aggregation of a variety of discrete point data and segmented strip data on a specific platform, and make it have a continuous polymerization effect. Block data contains a highly correlated mechanism that provides the conditions for continuous aggregation of data. The correlated aggregation of block data occurs on a specific platform and is not limited to an administrative region or physical space. The correlated aggregation of block data can realize the trans-boundary agglomeration of data in different industries, departments and fields. The block data characteristics of platformization, correlation and aggregation promote the development of big data into a new stage of block data fusion, which break the boundary of "strip," and make the realization of strip data integration on the "block" platform. In addition, through the multi-integration and correlation analysis, a faster evaluation and prediction to things can be made more comprehensively, accurately and effectively, so as to uncover the nature and laws of things, and create new values.

Deconstruction and reconstruction of block data

The essence of block data is trans-boundary, integrated, open, and shared. From data to data clustering, from deconstruction to reconstruction, from multi-dimension to shared trinity, they not only promote data flow, establish data connection, but also discover and recreate data value.

From data to data clustering is the starting point for block data. The formation of block data is to put the collected data that is usually in the form of dispersed, isolated, fragmented point data and strip data into a specific platform, that is, via "data clustering" to form the block data. Block data is a multidimensional and infinite variable. Multi-dimension introduces dialectics into the analysis and use of data to form the dialectical thinking of block data; infinity not only represents the huge data quantity of big data, but also reflects the dialectical nature of data in time and space; variables are in the state of unknown, so if we can explore some more fundamental but invisible variables that are not directly perceptible in the multi-variables, and grasp the disturbance factors of the development, the unpredictable may become the predictable that can be given early warning and planning.

The mechanism of block data is the course from deconstruction to reconstruction. Open, shared, connected are the basic mechanism of block data formation. And the open, shared, connected block data will produce a larger block data reticular structure, which is not a simple stacking, but has obvious grids, nodes, skeleton and its own internal logical law. The reason why the existing data should be deconstructed and then reconstructed is that the existing data can generate more value through remixing after deconstruction.

From multi-dimension to sharing is the value presence of block data. In general, the greatest benefit of the big data age is multidimensional and sharing, that is, every person in the age of big data can quickly share the most advanced achievements of human civilization; this kind of multidimensional and sharing is to obtain any information at any time, any place, with anyone, anything, and in any way, that is the charm of sharing. Sharing is the greatest contribution of the big data age to human beings, and what we didn't know in the past can now know; the information we didn't have in the past is now available; what a few people had in the past can now be owned by most. And it is the sharing that is becoming a hallmark of a new era.

Block data: Solutions for the big data age

Block data, accompanied by big data, is the solution of the big data age. Big data emphasizes correlation, while block data emphasizes integration; big data emphasizes technical support, while block data emphasizes platform

support; big data emphasizes informationization, while block data emphasizes self-flow; big data emphasizes number-centric, while block data emphasizes people-centered. These are the differences between block data and big data. Block data, as the core value of big data, is the advanced form of big data development, and a high degree of integration in the era of big data.

Block data is the core value of big data. "Economics, political science, sociology and many scientific disciplines in the age of big data all change and develop essentially, to further affect the human beings' value system, knowledge system and way of life" (Mayer-Schönberger & Cukier 2013). Schoenberg holds that the development of big data is not only to tap the value of data, but more importantly to subvert, innovate and reconstruct the world. Block data combines, integrates and aggregates all kinds of data, to form a shared and open "data pool," so that data and people can fully interact, correlate and integrate with each other, which deconstructs and reconstructs the relationship between data and people, things and things, to create corresponding solutions for business, society and even government, providing a larger value system – block data value chain for industrial development, public services and government governance. The value chain of block data can uncover a brand-new combination of values that transcend the data itself.

Block data is an advanced form of big data development. It is not a branch of big data, nor a replica of big data, but an advanced form of big data development. If big data appears because of "things," then block data is created around "people or organizations." Big data observes and interprets data through human thinking, while block data uses the data thinking to observe and interpret human behavior. Compared with the "4V" features of big data such as large data capacity, wide data types, high commercial value and fast processing speed, the most obvious difference of block data is the upgrade of big data from "4V" to "5V," which added the feature of multidimensional variable. Multidimensional variables of data changed the traditional perspective of data use and analysis, from the original static and isolated state gradually to the state of motion and connection. Just as "the turning point in mathematics is Descartes' variable," the turning point in the big data age is the emergence of multidimensional variables of block data.

Block data is a high-degree integration of big data. Presently, big data applications of human are more of a collection of vast data for particular domain or industry. A series of restricting factors, such as high monopoly,

poor integration ability, difficulty in sharing, low application value and high security risk, seriously hinder the development of big data. It is the significance for block data development to solve the problems of data monotony, data closing and data monopoly. The open, shared, and connected mechanism of block data can realize the high correlated aggregation of data. In addition, block data itself has the characteristics of strong collection, high correlation and high value, which determines that block data can break "data island" and "data monopoly" to solve many difficult problems in the era of big data, and become a new paradigm of data philosophy in the era of remixing.

Data disorder and data governance

The process of block data aggregation includes not only the filling of data space, the reconstruction of spatial data, the configuration of the collection process and the aggregation in the process of configuration, but also the collection of new data and the derivative data from the original combination. By way of aggregating and remixing block data, higher and bigger data value can be exploited. As a result, the security, ownership, order and other issues related to data are becoming more prominent, which requires data governance.

Data security is incomplete. In the process of data opening, data circulation and data application, the problem of data risk is imminent, especially that the weak awareness of risk and security, the poor security and reliability of critical information infrastructure, hacker attacks, data terrorism. Weak technical links and management loopholes, as well as the lack and lag of laws, increase the risk frequency and harm extent. The core of this risk and crisis is subversion, being essential to the "destruction," which directly leads to the change in structure and function, thus exacerbates its social uncertainty, unpredictability and uncontrollable nature. Behind the high risk of data is the loss of human nature, moral abnormality and behavior irregularity. The governance of data security and the construction of external binding mechanisms, such as data legislation, need to be strengthened from a more systematic framework, like technology, ethics, and legal system and so on.

Data utilization is unbalanced. From the perspective of data control, it refers to the imbalance of data control. Some enterprises hold large amounts

of data, in certain markets, forming a dominant position, which will result in the utilization imbalance. From the data flow perspective, it means "not shared data." Data sharing is an important issue, involving multi-stakeholder adjustment. "Not shared data" is an important cause of data island and the data gaps. From the perspective of personal information protection, it refers to "control of personal data." Enterprises collect or share personal information, but do not fulfill their duty to inform or to obtain authorization from individuals; for individuals, enterprises are like black boxes, in which personal information is controlled, "monopolized." From the perspective of data revenue, it is about "exclusive data earnings." How data earning is distributed is a highly controversial issue at the moment (Yang Jianhui 2017). From the perspective of data utilization, the government and enterprises have mastered a large amount of data, but because the technology of development and utilization of data is hard to meet the needs, coupled with absence of personal awareness of big data utilization, the uneven and inadequate data utilization becomes unavoidable.

Data rules are incomplete. With the coming of the big data era, there is a growing consensus on the value of data, and data is widely discovered, unsealed and exploited. On the one hand, human beings are delighted to see the value of data; but on the other, too much useless data is presented to the society. In the age of small data with data scarcity, because of the backwardness of technology in data collection and search, human beings can only obtain limited data. It is difficult for individuals to make accurate judgments and predictions of things, which as people in the dark, unable to distinguish the direction. While in the era of hyper-data, data shortages become data surpluses. The explosion of information and data produces a huge amount of information and data waste, so that human beings are surrounded by borderless data, which eventually lead to the lack of cognition. We define this as "data congestion." In the age of small data, the larger the data is, the more value the data has, while in the hyper-data age, the larger the data is, the smaller the value has. Features of big data, as Viktor Mayer-Schönberger said, such as quantity, value, speed, and so on, will be fatal weaknesses. Borderless data waste can cause cognitive impairment for human beings, and data congestion will be an important problem for future development. As a result, the governance of data congestion will be a major issue in the hyper-data era.

Based on the data view of block data, the new paradigm of data governance is explored through the integration of data science, life science, social science and intelligence science. This kind of organic integration is not a simple integration, but a people-centered one, which aims to achieve the integration of human beings and technology, technology and institutions, rules and order, and then to achieve a comprehensive remixing of human beings, technology and society, so as to provide solutions for human society to clear cognitive barriers, and balance the interests of conflict.

Data Rights and the Reconstruction of Order

Order is a kind of need rooted in the heart of mankind, and the passion for order result from dependence on it. It is an opportunity to rebuild order with the rise of cyberspace that has brought new challenges to mankind. In the new round of order reform, the power of the Internet is highlighted. Data rights has never played such a vital part in the history of order reconstruction like it does today. The essence of human civilization is the establishment of order, while the construction of cyberspace order has become an important proposition in the digital age; and the claim of data rights promotes the reconstruction of this order.

Order and its needs: The essence of human civilization is the construction of order

From the perspective of jurisprudence, American jurist Bodenheimer holds that order "means that there exists a certain degree of consistency, continuity and certainty in the natural process and social process."[3] In short, order

3 "Order" has drawn the researcher's attention since early time, and its specific meaning varied because of the different perspectives of the researchers. To this day, there is still no complete and accurate expression of its meaning. According to Commons, order is "the operating rule of collective action (one of its special examples is 'legal

is the state of association between things. Aristotle wrote in *Metaphysics*, "All things, including fishes, birds and plants, are ordered together in some way, but not in the same way; and the system is not such that there is no relation between one thing and another; there is a definite connection. Everything is ordered together to one end" (Barnard 1972, p. 2). To put it in the abstract, social order indicates that there is a certain degree of stability, continuity of process, regularity of behavior and security of property and psychology in society (Zhang Wenxian 2011). As Maslow points out, "we may generalize and say that the average adult in our society generally prefers a safe, orderly, predictable, organized world, which he can count, on, and in which unexpected, unmanageable or other dangerous things do not happen" (Bodenheimer 2004, p. 239).

Order is a kind of glue to human society, the existence of order and its realization is an important measure to the degree of social civilization. Throughout the process of the development of human civilization, the construction and pursuit of order is the main line. Order is the key word of

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procedure')," "collective action controls individual action," "Sometimes an order seems to be compared to a building, a structure of laws and regulations, in which a person acts like a resident in a house. Sometimes it seems to imply the 'action' of the resident himself. Such operating institutions have operational rules that keep them running; Such organizations from families, firms, trade union and the country itself, are called 'order,'" "they point out what an individual can or cannot do, must or must not do. Dos and don'ts can be achieved by collective action." Hayek believes order to be "A state of affairs in which a multiplicity of elements of various kinds are so related to each other that we may learn from our acquaintance with some spatial or temporal part of the whole to form correct expectations concerning the rest, or at least expectations which have a good chance of proving correct." North defines order as "institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction. In consequence, they structure incentives in human exchange, whether politically, socially or economically." Formal rules, informal rules, and the forms and effectiveness of implementation constitute the three dimensions of order. In philosophy, order is a systematic category, which refers to a regular relationship, in which things exist. In a system, each element of the composing system has its own different existence and operation characteristics. If the relationship between features always shows a constant degree of rule or coordination, that is, the synergy of the system, we say that the system or thing is ordered.

civilization.[4] Order functioned as value guidance and civilization ruler (Feng Fanyan 2016), order is the "Big Dipper" of human society, which guides, but does not explicitly interfere with human society, nor does it make clear provisions on the basic structure of human society. It only delineates a possible space for human society, within which human beings can operate only. In ancient society, witchcraft and religion dominated the whole society, thus mental structure of mankind developed with the reverence to the gods and non-competition that made people pay more attention to divine value in the pursuit of value, which was also an important factor to explain why ancient civilization was still full of divinity and enchantment, despite its material scarcity. After the "disenchantment" of modern society, production and competition have become the core of human life, and the pursuit of interests has become the basic logic. That the indevout and competitive mental structure developed by human beings makes people pay more attention to practical value in the pursuit of value. In a sense, ancient civilization and modern civilization seem to be "lame" civilizations, and the biased pursuit to value is the root cause of the problem. In this sense, the order of value is a "barometer" of the social civilization.

In contrast to order, there is out of order or disorder. "When the state of disorder appears, the stability of the relationship disappears, thus the order of the structure is confused, in which the rules of the behavior and the continuity of the process are broken and the occasional and unpredictable factors constantly interfere with people's social life, therefore the trust between people reduces, leading to increasing insecurity. In order to protect the

4 Liu Zhongjing, a scholar, holds that civilization is the ability to produce the exportation of the surplus order. The primitive tribes were generally self-sufficient in order and entered civilization with the upgrade of the order productivity. The multinational system is the peak of the expansion of the spontaneous order, which corresponds to the time of Confucius and the modern West. The prosperity of civilization is the result of consuming the productive forces of order. If consumption exceeds production, it will decline right after flourish. Decline means that order is in deficit, and correspondingly the unified empire needs to import order from barbarian, while the former multinational system exports order to the barbarians. Barbarians who export order are usually not primitive tribes, but newcomers who have just entered civilization. There is surplus order that can be exported to the declining civilization, which on the surface delays the destruction of the latter, but this may waste its own opportunities and resources to create new civilization.

normal social order, human beings must take measures to eliminate disorder or prevent its occurrence. In a civilized society, law is the primary and often effective means of serving this end" (Zhang Wenxian 2011, pp. 260–261). But the legal adjustment often lags behind, which mainly manifests in the laggard formation of law, the legal norm and the adjustment mechanism.

Classification of order

There are various structures, arrangements and combinations in nature and human society, which form various orders, each of which has its own specific function and value that profoundly affects the life and production of human beings. Order is divided into (Wen Tingxiao & Liu Xuan 2013) natural order and artificial order,[5] real order and virtual order,[6] single order and multidimensional order,[7] simple order and mixed order,[8] explicit order

5 Natural order refers to the law of the universe, the world, all things in nature and the development of human society. It is the object of our cognition. Human beings learn knowledge through the understanding of natural order. Artificial order refers to various kinds of order established by human beings in order to meet certain specific needs, such as rules and regulations, behavior mode, customs and so on.

6 Physical order is a kind of structure formed by arranging the material world and the entity itself. Such as commodity display, book arrangement on the bookshelves, document arrangement, mail classification, etc. Virtual order, away from the physical world or the material world, refers to the conceptual order that exists in our minds, which are the classification system designed through the language and symbol system, such as rules and regulations, the behavior mode, the customs and so on.

7 Single order refers to one-dimensional order, which is formed from a certain characteristic of a thing and satisfies a particular need. For example, the arrangement of books according to the classification number on the bookshelf, and the arrangement of students' seats in class. All matter and entities can only be arranged and combined in a single order. Multi-dimensional order is an order formed from different characteristics of information to meet certain specific needs. For example, the information in the rational order can be arranged and combined in a limited and multidimensional way according to classification, subject, word sequence, time, regions and so on,; and the information in the digital order can be arranged and combined in an indefinite and multidimensional way according to the needs.

8 Simple order refers to the arrangement and combination of only one order at a time, such as a simple numerical or alphabetical order. The mixed order refers to the arrangement and combination of several kinds of order, such as the book classification number

and implicit order,[9] general order and specific order,[10] fixed order and variable order,[11] initial order and derivative order,[12] physical order, rational order and digital order.[13]

In different historical stages of human society, the requirement to order is different. The order model of farming society is a kind of natural order,

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is a mixed order composed of letters and numbers, and the classification system is a mixed order composed of essential characteristics and a series of auxiliary features. Sometimes a simple order cannot effectively distinguish things, and mixed order must be used to gradually cluster things.

9 An explicit order is an order that is visible and detectable. All kinds of order that we can use are explicit order. Implicit order refers to the latent, and hard-to-be-found order. Many natural implicit orders cannot be found and revealed because of the limitations of our understanding.

10 The general order refers to the order which can meet the common needs of everyone, such as the word arrangement in the knowledge organization, the natural number arrangement, and the order of common usage in life. The specific order refers to the order that meets a certain need, such as the arrangement of time, region, literary genre, which are in the knowledge organization.

11 Fixed order refers to an order that cannot be changed, altered, or reversed, and many natural, physical orders are fixed. Such as the movement of the universe, the order of time, and the trajectory of human life, etc. Variable order is an order that can be changed, altered and reversed. Many artificial and virtual orders are changeable, such as mechanical movement, movement of thinking, change of rules, change of system, etc.

12 The initial order is the original and natural order that comes along with things. For example, natural order and physical order are mostly initial order. Derivative order refers to the order derived from the initial order. For example, the rational order is derived from the natural order and the physical order, and the Chinese library classification is the order derived from the arrangement order of the knowledge carrier (books or literature entities).

13 The physical order refers to the order of the material world and things themselves, such as the sorting or arrangement of objects in the family life and work which satisfy their habits (the order of the study, the order of the kitchen, the order of the office, etc.). Rational order refers to the conceptual order that is artificial and reflects the physical order. It is the virtual presentation of the physical order in the human mind, the physical order described by language or symbol, and the derivative order of the physical order. Digital order refers to the disordered state of digital information, and also refers to the diversity, pluralism and multi-dimensional order of digital information, which can be arranged and combined freely according to the needs.

and the simplicity of farming civilization makes all human activities have high certainty that characterizes a kind of static feature, at which time the "natural order" also shows high certainty. After human beings entered the industrialized society, the degree of social complexity increased gradually, and the natural order became unable to adapt to the needs of human production and life. In the late twentieth century, human society began to step into the historical process of post-industrialization, which was accompanied by the rapid growth in the complexity and uncertainty of human society, which posed a challenge to the creation of order. It took only hundreds of years for the industrial society to rapidly promote the complexity of society, pushing society into a highly complex era. Nevertheless, the existing orders and rules faced the dilemma of failure. In the historical coordinates, we can clearly see that the development from farming society to the industrial society presents a complicated process that breaks the natural order of the farming society and puts forward the requirement of rebuilding the order. While in the digital society, with the exponential growth of social complexity, human beings need a new order under the condition of high complexity and uncertainty. A change is needed to build an order that can be adapted to highly complex and uncertain conditions. The historical process of the human development, since the time of separation from live the life of a savage and the era of chaos and ignorance, has evolved in an orderly manner along the spiral from low-level to advanced, from simple to complex, which reflects an inherent "progressive" order.

The creation of order is closely related to the awareness of rights. In the process of industrialization, citizens' awareness of rights is gradually awakened, and the demand for gains of property right and general human rights constantly strengthens the creation of order. The existence of a certain social order is a prerequisite for human activities. In a sense, the creation of rules is the premise of all social activities. When the rules of creation can sustain social development and effectively regulate human behavior, the order of creation of this society is good. Once the creation of rules is not sufficient to sustain social order or regulate human behavior, the creation of order would be seriously challenged. Post-industrialization presents the challenge to this creation of order, making it helpless in the face of the essential requirements of public life, and extremely rigid in the face of the rapidly changing society (Zhang Kangzhi & Zhang Qianyou 2010).

Order demand is the bottleneck demand of mankind

Order is the demand rooted in the heart of mankind. The social biological characteristics of human beings determine that the survival of human beings must process three basic demands, that is, the material goods to meet the biological instinct, the order of rules to maintain the social framework and the meaning construction to perceive the living value. Among them, the demand for the elements of social order is the main content of the whole demand of order. Practice has proved that because "disorder means the existence of fragmentation (or discontinuity) and irregularity, that is, lack of a pattern attainable by our knowledge – manifested in an unpredictable sudden change from one state of affairs to another" (Bodenheimer 2004), order becomes a necessity. The natural yearning for order of human makes people instinctively replace disorder with order; and the main forms of replacement include religious doctrines, moral norms and legal rules. Among them, the compulsion of legal rules is the most complete substitute for disorder and can satisfy the needs of human order. For example, as far as the order in the economic field is concerned, the economic law adjusts it at the macro level, and the contract law and the commercial law regulate the concrete transactions or the market subjects at the micro level; once order anomie occurs, the law is compulsory enough to ensure its continuity.

Order is the need for human beings to live together. Order is decided by various principles, rules and norms formed intentionally or unintentionally by human beings in the practice of production and life, and will change with the changes of various principles, rules and norms. "Therefore, the order of human society must be the historical order, that is, the order in the process of construction, maintenance, deconstruction and reconstruction" (Zhang Shuguang, et al. 2016, p. 130). The pursuit of good order by human beings is the pursuit of "good" way of human life. Human beings seek order "not for the sake of order itself, but for their smooth and peaceful survival and development. Order is only a benign state of orderliness, coordination and sustainability manifested by people's normal living and development, and thus is the embodiment of people's values of living 'a good life.' So, Human beings regard order as an important goal for pursuit and as a standard of conduct for individuals and their mutual relations" (Zhang Shuguang, et al. 2016).

Human demand for order constitutes the basic settings in which the law can be established and operated.

The demand for order is the internal motivation for human development. In a civilized society, law is the first and most effective means to eliminate or prevent disorder (Zhang Wenxian 2011). In the current legislative system of China, big data is in the gray zone of law and supervision, and there are more and more disputes and cases concerning data. These problems stem from the weakness of the legal theory on data rights, especially the lack of dynamic interpretation of the background, the systematic construction of the theoretical system, and the legislative regulation on the order of protection of data rights. Especially with the development of science and technology, the law of data rights protection in our country increasingly shows lagging behind, imperfect and incomplete, so there are difficulties in solving the state of disorder accordingly. Nowadays, the basic problem of food and clothing has been solved. The material and cultural needs are no longer urgent things to meet, but the need for a better life must be satisfied after the demand for order have been basically satisfied. Therefore, the demand for order is the bottleneck one, which is the most urgent demand.

Order Internet and Internet governance

The Internet breaks the limitation of time and space. Virtual space becomes the new space and new field of human life. The boundary between the virtuality and reality is becoming obscured, so does the boundary between data and matter. The virtual world is a unique "living world," its meaning and order are produced in the relatively independent process, and it constitutes a complete human society together with the real society. The Internet has created a new living space–virtual space, on the basis of which "virtuality" has become a new way of human practice, and virtual order is such a way to measure whether the practice is in order or not.

If the Internet is a highway heading to the future, big data is like a car driving on it, while blockchains are the rules and regulations that allow the cars to run legally and orderly on the highway. The Internet has brought us an irregular, insecure and unstable world, while the application of blockchain technology has made the world more orderly, safer and more stable. With

the support and promotion of blockchains, the development of Internet will complete the evolution from the information Internet to value Internet and then to order Internet. Human beings will enter the stage of order Internet. Whatever orders they are, like the financial order, the social order, and the order of people's life, the formation of these orders requires further clarification of data rights on the basis of trust and regulation. If we take it that the information Internet solves the problem of unboundedness, the value Internet solves the problem of invaluableness, then the order Internet solves the problem of data disorder.

Information Internet. Chaos theory holds that "the original state of all things is a pile of seemingly unrelated fragments, but when this state of chaos is over, these inorganic fragments will be organically aggregated into a whole." In the age of the information Internet, massive fragmental information throws the Internet into a state of chaos. In particular, a series of problems, such as invalid information, information overflow and information distortion, which results from obtaining the information freely, would affect people's access to value information, and increasing the difficulty of information analysis and prediction.

Cyberspace order is the projection, reconstruction and transcendence of the synchronic social order in real social space. As an independent social system, cyberspace has the function of regulating the order itself, but it often fails. Since cyberspace has the features of no center, no boundaries, dispersion, virtuality and high changes, it makes the direction of cyberspace target unclear and alters with the change of time and space. An order pointing to freedom is not necessarily the home of freedom, but alienated into the shackles of freedom (Zheng Yefu 2001). This results in the differences of order governance of cyberspace from the real society. At present, the measures taken by governments to control cyberspace in real space have proved to be ineffective. To some extent, the special order of information Internet has already been in a state of disorder in essence, which adds to the public risk of Internet space.

Value Internet. Blockchain is not only an integration technology, a data revolution, an order reconstruction, but a watershed of time. Blockchain has the ability of transferring trust and value, reconstructing value system and rules of order, and is the cornerstone of constructing value Internet. The White Paper Realizing the Potential of Blockchain issued by the World

Economic Forum points out that blockchain technology can generate unprecedented opportunities to create and trade value in society which will lead to a generational shift in the Internet's evolution, from an information Internet to a new generation value Internet. From the perspective of social thoughts trends, the sharing development of value Internet is obviously influenced by *Out of Control*, written by famous sociologist, Kevin Kelly. In his book, Kevin Kelly summarizes evolution in industrial society as evolution based on machine logic, and evolution in information society as evolution based on logic of Bios. Evolution theory based on logic of Bios can be summed up into three words: distribution, decentralization, self-organization. And blockchain is such a true sharing. Sharing is the amplifier of network value and the embodiment of the ultimate value of Internet.

The order Internet. The contractual spirit based on trust is the foundation of order Internet; and trust is the cornerstone and lubricant of network society for the proper operation. Logically, trust and social order can form four types of relations, the fourth type "trust but no order" does not exist in reality; the third type "no trust, no order" means the disorder of social life; the second type "order of trust" is expected to help build a free and prosperous society; the first type is the order in which freedom and prosperous society are sacrificed in the pursuit of order (Zheng Yefu 2001). The blockchain established a low-cost credit mechanism based on technical regulation to realize the reconstruction of order from system to technology. A centralized order does not require a high degree of trust, but a distributed order requires a high degree of trust. Trust is the most important social capital that is a long-term accumulation of ideas, rules, laws, governance, etc. Blockchain helps to build non-personal trust and provide a possibility to evolve a new digital economy and network order. However, trust is not a substitute for supervision. The development of the Internet needs: first, the boundary regulation. The Internet is not an extra-legal space to do whatever a person wants. The healthy development of the Internet requires an orderly market and explicit rules of competition. The freedom of competition and innovation must be bounded by not infringing upon the legitimate rights and interests of others. Second, security regulation. By virtue of its characteristics of decentralization, openness, autonomy, non-tampering with information, and anonymity, the blockchain can solve the network security problems at the technical level, improving the security of network operation. However, it is

far from enough to rely on the technical regulation alone. Construction of a completely credible network environment requires design at the institutional level, especially at the legal level. Third, protection regulation. We must adopt effective technical measures and institutional procedures to re-examine the rules and order on personal data protection, formulate strict personal data protection laws and regulations and supervision system of big data safety.

Information Internet shows people the advantage of the Internet for facilitating communication and reducing information asymmetry; value Internet shows people the potential of blockchain in adding value to material, service and capital, and reconstruct social value system. Order Internet shows people the prospect of innovating social organization, governance system and operation rules by means of technology such as blockchain. Sovereignty and security is the advanced stage of the evolution of Internet from information Internet, to value Internet to order Internet, which is the bottom line to ensure the realization of order Internet. The essence of the order Internet is to maintain the national network security, deal with various non-traditional security threats, and effectively realize the protection for more complex and sensitive data based on national sovereignty and security. Sovereignty is the core and the commanding point of data rights. Only when the data rights are clarified can the data sovereignty really be realized. Therefore, at the time of emphasizing the data sovereignty, better protection of individual data rights of citizens, including data personality rights, data property rights and so on, is the milestone of the arrival of order Internet era (see Figure 2).

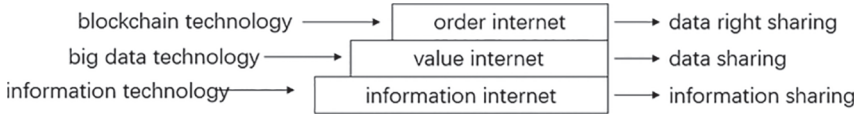

Figure 2. Gradient Leap Model of Information Internet, Value Internet and Order Internet.

Data rights and digital order

Laozi said, "Man follows the earth, the earth follows heaven, heaven follows the way, and the way follows nature." The Stoic School of Greece also put forward the ethical thought of "living according to nature." It can be

seen that human beings have their common ideas and rules, and the future development of human beings will depend, to a great extent, on the creation and convergence of the rules of order of mankind. "Nothing can be accomplished without norms or standards." Mencius said this more than 2,000 years ago, which later became a well-known maxim in China. This shows that Chinese people have long realized that the rules, norms and laws that have been established intentionally or unintentionally in the process of production, life, and survival are of decisive significance to the formation and maintenance of social order.

Order: The foundation of human beings' common life

Order is the premise of human existence and social development, and the respect of highly regularized behavior can provide order and stability for social life. "History shows that wherever human beings have established political or social organizational units, they have tried to prevent uncontrolled chaos and to establish a form of order suitable for survival. This tendency to establish an orderly model of social life is by no means an arbitrary effort or effort 'against nature' made by human beings" (Bodenheimer 2004, p. 228). Human's need for order is deeply rooted in the entire natural and social structure; and human common life is an important part of this structure. Hayek believes that there is a made order and a grown order in society:

> The made order which we have already referred to as an exogenous order or an arrangement may again be described as a construction, an artificial order or, especially where we have to deal with a directed social order, as an organization. The grown order, on the other hand, which we have referred to as a self-generating or endogenous order, is in English most conveniently described as a spontaneous order. (von Hayek 2003, p. 37)

The formation and development of the digital spatial order also exist in, as Hayek calls, the made order and the grown order: "it is just like the free market, the 'invisible hand', as Adam Smith says, is the so-called spontaneous order; and the government interferes with the 'visible hand', that is artificial order" (Que Tianshu 2014). However, the digital age has a high degree of uncertainty." For every moment of the day there is a thrilling modern drama,

and the network order is always under threat and destruction from people, consciously or unintentionally" (Wei Guangfeng 2000), which results in the failure, invalidity and disorder of the spontaneous order of the digital space, while as a remedy for spontaneous order failure, the subsequent order has not been constructed or relatively chaotic.

The different stages of the development of human society accordingly need to construct the appropriate order. In *Power of the New Digital Order*, David Weinberger creatively puts forward three levels of order. He holds that the order of the first level is the physical order – our conventional order, that is, the arrangement of the material world and the things themselves. The second level is rational order, which is based on the order or classification system that we designed in advance, and then the information about things is put into corresponding and fixed positions according to order or classification system. This is an artificial, and virtual order, in which we extract information about the physical world and things themselves according to the need and the pre-designed classification system to arrange and combine in some way. We realize the order of the first level through the order of the second level, and effectively link the two kinds of order together. The third level is digital order, which is a kind of chaos, that is, disorder. Without pre-designed order, beyond the limits of the classification system, it just makes use of rearrangement and combination data to create a particular new order that meets individual needs (Weinberger 2017, p. 4).

Data rights: The core of human common life

The establishment of order is based on data rights. Data empowerment promotes order transformation. Furthermore, the complexity of data empowerment makes order transformation more complex. From data to data rights, this is the inevitable outcome of the digital civilization. The data rights are the greatest realization of value on common divisor of sharing data, including the data right centered on individuals and the data sovereignty centered on countries. We are entering a fresh "era of the right to use" that based on shared concepts. Kevin Kelly, a Silicon Valley thinker, proposed with clarity, "I can pay for them (goods or services), but I won't possess them ... To a certain extent, the right to use became ownership" (Kelly 2012, p. 111). The

same is true to the data, but the limitless use or disposal of data rights will destroy the orderly common life of mankind.

Data rights are the source of internal vitality of digital order. In ancient times, individual interests were always the object of exploitation and suppression, and the small-scale peasant economy could not produce the order concept of "comprehensive and free development of human beings." In modern times, people began to liberate themselves from backward traditional concepts and rigid dogmatic shackles that negate individual interests. From the perspective of system theory, if the elements of the system, that is, individual thinking, are not active, then the overall consciousness and spiritual vitality of the system will gradually decline. In the two ways in which law regulates social relations (rights and obligations), rights are the corroboration of individual initiative and creativity. Therefore, the life of order comes from rights. Take the phenomenon of queuing to buy tickets as an example, there are about three types: first, the police use sticks to maintain the queuing order. Although the order is good, the personality and dignity of the queuers are beaten away by sticks along with the queue jumpers. Second, an atmosphere and strength between the queuers to reject the jumpers are formed. Not only is the order good, but the queues are all proud. Third, the order is chaotic. Everyone is fighting for strength. Women, the elderly and the weak curse and sigh. There is no doubt that the second type of order is the most ideal one, and its formation is precisely due to the extension of rights and the emergence of a concerted force (Xie Pengcheng 1992). Although this is the daily order in the ethical category, it contains the laws and rules of social governance, in which the claim of rights can lead to order. In the digital age, the data subject's concern to the data interests is the eternal theme, so the right to advocate and protect the interests is the source of the digital order's inexhaustible strength.

The rivalry between data rights and digital order. First, the ambiguity of rights versus the certainty of order. The significance of order lies in the elimination of uncertainty, which indicates the realistic data order is identical to actual data order. It is just because the ambiguity of the data rights is in opposition to the certainty of the digital order that it is necessary to legislate on the data rights. Second, the conflict of rights versus the consistency of order. The diversity and conflict of interests determine the diversity and conflict of rights, which are the potential factors to destroy order. If

the conflict between rights surpasses the consistency of rights, order will disappear. The higher the human civilization is, the higher the demand for consistency between rights will be. This consistency in the age of agricultural civilization is only the right to survival, and this consistency in the era of industrial civilization extends to the right to freedom, property rights and other areas. In the age of digital civilization, it is difficult to construct and maintain the digital order if the consistency of data rights required by the times cannot be maintained. Third, the imbalance of rights versus the balance of order. The imbalance of data rights is inevitable in the common life of human beings, and the digital order is essentially the sign that the imbalance can be maintained. Order maintains imbalanced content (that is, the data rights) in the form of balance. If there is no balance, there would have no order, and it is difficult to maintain unbalanced data interests.

Sharing: The future of human common life

Remixing is an inevitable trend. As mentioned earlier, it is the rearrangement and reuse of existing things, which is the integration of internal and external resources to create new value. Remixing has caused unprecedented "destruction" to the traditional concept of property and ownership. In the age of remixing, big computing, big data and big intelligence become the "digital organ" for human understanding of the complex world. The ideological trend of granting rights to data is more active than ever. The real-time flow of data and the sharing of data constitute a digital ecological circle, in which data force and data relation affect social relations. As a result of the mutual influence of this force, the whole social relations of production are branded with the data relations, which will lead to the unprecedented transformation and reconstruction of the social development model, the pattern of benefit distribution and the mode of maintenance of order. The claim of data rights makes the data in chaotic state clear gradually; and it is in here the significance of data rights.

The reconstruction of value and order, as an inevitable requirement of social development, are vital to the establishment of civilized rules and codes of conduct in all society, as well as to the expansion and promotion of the moral and spiritual world, featuring the dual property of "humanity value"

and "social rule." "Every new order sums up all the original ones, and nothing is omitted. However, the new order has been created, and the behavioral patterns brought about by the new phenomena need to be understood and explained at a new level" (Russell 2004). At present, we are in the midst of an unprecedented era of great change and great transformation. This time, the order transition is like a storm, cleaning up all the old ecology, forming a subversive change to the social existence and development. The claim of data rights is not only the result of the transition of civilization, but a new order for the transformation of human beings from industrial civilization to digital civilization.

Data is a kind of shared resource, and the essence of data rights is sharing right. Following the agricultural and industrial civilization, data right has drove human beings to construct a new form of order – digital order, a new civilized form – digital civilization. Digital order is a shared order, and digital civilization is a shared civilization. Shared civilization has three basic properties: first, shared civilization is a new form rising in the development of human society in the twenty-first century; second, shared civilization is the most dynamic and creative civilization; third, shared civilization is a state of modern social civilization, which takes informationization, intellectualization and digitalization as important symbols, with intelligent large-scale production as the dominant mode of production. Human civilization is essentially a process of integration and development, which is possible to build consensus in the process of integration and to find common values from value collisions. The twenty-first century will be the century of shared civilization, and the trend of sharing is the shared future of the development of human civilization.

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