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The Evolution of the Metaverse and the Futuristic Presentation of Classic Social Statistics Thought

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Abstract: *The emergence of generative agents heralds the metaverse's potential to evolve into a new type of mimetic society, and the new world beyond the real dimension — the meta-society — is getting closer to humanity. The classical social statistical thought of statisticians led by Quetelet and Durkheim has been long recognized and used. But what kind of tests they will face in this new society is worth our consideration. Based on generative agents, this article depicts the possible social forms of future metaverse development, studies the practicality and challenge of applying classic social statistical thought in different future societies by imitating the classic statistical approach in "Le Suicide", and summarizes the affinity between collective types and mirrored meta-societies and the affinity between the average man and customized meta-societies, the latter of which has commercial potential.*

Keywords: *Social statistics; Meta-society; Collective types; Average man*

1. Introduction

Where is the limit of the metaverse? The "generative agents" research by Harvard University in the United States has shown us a different possibility - the construction of one or more meta-universe spaces with a societal character (referred to as meta-societies in this article), a space that is like another dimension different from the world we live in. In this new kind of society, how will traditional social statistical thought evolve?

The history of social statistics is long, and the empirical trend has dominated the basic paradigm of social research for an extended period. From Quetelet's "average man" to Durkheim's "collective types," the logic of social statistics is basically determined, and the abstraction of so-called "constant factors" using mean and discrete values is their commonality. This article posits that whether the statistical thoughts of Quetelet and Durkheim can continue to influence the methodology of social statistics for future generations depends on the development trend of the meta-society. Since Quetelet, mean and discrete values have gradually fermented in the social statistical thought of depicting the individual to the collective. The collective is seen as a basic concept for expressing or manifesting individuality, and the individual is seen as a collection of many social orientations[1]. However, in the new metaverse view, the traditional statistical logic may be broken, possibly rebuilt, or inherited. Exploration of this point needs to be based on the societal forms developed by the societal-style metaverse.

Therefore, it is crucial to study the meta-society based on generative agents and discuss the practicality of classical social statistical thoughts in the new meta-society. This paper establishes different meta-society models by hypothesizing and tries to establish universal statistical methods in the models using traditional statistical thoughts and then tests their practicality. This paper found that referring to academic predictions about future societal development, putting generative agents into different application directions will shape different types of meta-societies, and these different types of meta-societies are suitable for different social statistical logics.

There has been much research on the development of traditional statistical thought domestically, and the famous sociologist Professor Ye Qizheng has summarized, inducted, and critically considered the entire empirical development of social science[2]. Gao Yong reflected on the statistical methodology involving social realism, believing that changes in statistical methods should follow the inherent characteristics of the research object[3]. There is relatively a lack of thinking about the social form of the metaverse. Zhang Xianli and Gao Qiqi analyzed the possible development of the metaverse

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from Durkheim's theoretical perspective, arguing that the metaverse is very likely to exacerbate social anomie issues[4]. Under the premise of metaverse development to meta-society, what kind of challenges will traditional social statistical logic face? Based on the research of these scholars, this paper attempts to further draw a future picture of social statistics under the metaverse perspective.

2. New Possibilities of Meta-Society under the Background of Generative Agents

The traditional concept of the metaverse will undergo significant changes with the development of generative agents. Generative Agents is the latest research from Harvard University in the United States, which is a significant breakthrough based on language models - the interactive AI intelligent body experiment of ChatGPT. The core of its architecture is a database that comprehensively records agent experiences, where agents retrieve records in memory streams and reflect appropriately on the environment. The research successfully created an agent capable of achieving credible human behavior, and it provided AI power to complete the construction of a virtual society by training agents in a virtual sandbox world to handle rare and difficult interpersonal relationships and test social theories. After setting up the architecture, self-organization can take place within the system without external stimulus input, and effective and reasonable social interaction can be achieved between individuals. This means that the real "non-player character (NPC)" has appeared, that is, the so-called electronic person can think and act like a real person in society, and through effective combinations of electronic people, different virtual societies can be built, not just a metaverse in the micro sense. Yu Guoming and Geng Xiaomeng pointed out that the metaverse is an ultimate digital medium, which integrates all digital technologies. It can complete the space revolution from reality to virtual, and then become a new world beyond reality with higher dimensions[5]. This forms the new metaverse thinking under the background of generative agents. In this article, this new type of metaverse is referred to as meta-society, defined as a large virtual society of human interaction and interpersonal interaction created by selectively embedding generative agents in a mimetic environment supported by advanced media technology.

By applying electronic people built with generative agents to different spaces, the societal forms they construct will differ, and the appropriate social statistical logic based on this will also differ.

2.1. Single Dimension Meta-Society — Mirrored Meta-Society

When computational power reaches a certain level, the new type of electronic person based on generative agents can fully simulate believable behaviors in the real society. In this paper, this high-intelligence product is referred to as a "credible agent." When virtual reality technology reaches a certain level, we can make the following assumptions: the meta-society is a virtual electronic self-organizing system, consisting of interrelated elements and subsystems with attributes, and the existence of its individuals is based on a rational feedback mechanism given in advance. Unlike the real society, the individuals here will be divided into two types: the projection of humans in virtual reality — natural persons in the secondary reality, and credible agents. This virtual society can self-organize and operate efficiently without the entry of natural persons, and the entry of natural persons merely means a simple increase in the interaction objects of credible agents. In this type of society, there are three kinds of social interaction relationships: interactions between credible agents, interactions between credible agents and humans, and interactions between humans (In Figure 1, the three interaction arrows represent cases of three forms of individual interaction).

Based on this architecture, in theory, the number of natural persons and credible agents can continuously expand to the highest capacity of the model. This implies that this form of virtual society has the potential to accommodate all natural persons who want to settle in, and therefore, this virtual society will become a mirror of the real society, allowing natural persons from the real society to settle in. Under the premise of dual reality, as natural persons enter, they also gain dual identities.

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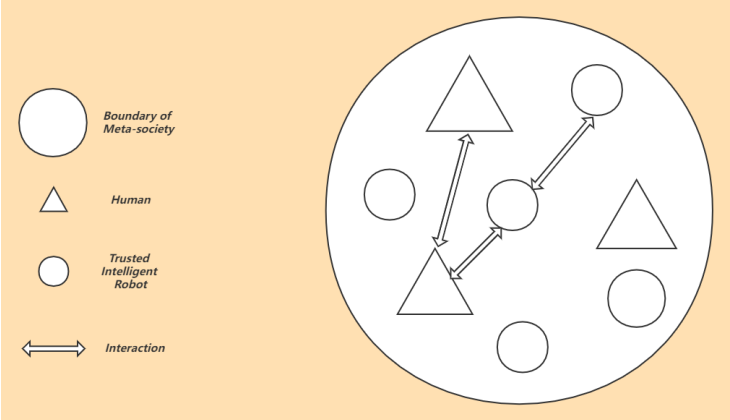

Figure 1: The Architecture and Individual Interaction Relationships in Mirror Metasociety

2.2. Multi-Dimensional Meta-Society — Custom Meta-Society

The diversity of credible agents, the diversity of their combinations, and their corresponding system environment configurations are very likely to construct meta-societies with different characteristics and personalities. These types of meta-societies are generally smaller in scale, able to accommodate at least one natural person and multiple credible agents. For a single natural person entering this meta-society, from the perspective of credible agents, this could mean a simple increase in interaction objects, or it could mean a change in the focus of the society — a few natural people could customize the type of meta-society they will settle in before entry, as well as the general reality of the meta-society after settling in. In this type of society, there are two types of social interactions: interactions between credible agents and interactions between credible agents and humans (Figure 2).

Different, independent, small-scale meta-societies complete self-organizing operation under the pre-control of a few natural people, providing the corresponding settlers with their expected social experience. Based on this, different individuals can construct different forms of small-scale meta-societies through different combinations, which can be "customized" through pre-set element combinations, parameter adjustments, and in conjunction with virtual reality technology.

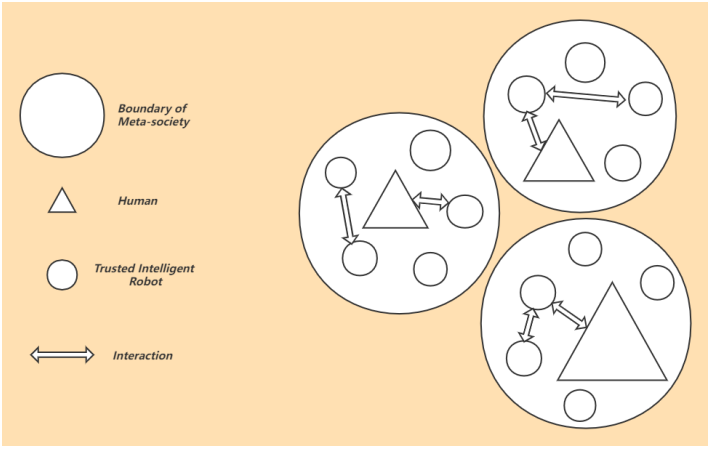

Figure 2: The Architecture and Individual Interaction Relationships in Customized Metasociety

3. Classical Social Statistical Thought: From Quetelet to Durkheim

From Quetelet to Durkheim, the emphasis has always been on the concept of the mean. The mean describes the central point of a sample set. Modern statistical analysis methods tell us that the information the mean can provide is quite limited. It characteristically obliterates outliers and the description of the data distribution, giving us a constant that attempts to represent the general situation of the sample. However, it should be affirmed that, until today, the mean and the statistical concepts derived from it continue to be the darlings of social statistics. Basic statistical concepts such as the median and the mode can't have the far-reaching influence of the mean, in terms of either their meaning

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or method.

The advantage of the mean lies in its complicity with social realism. After the mid-19th century, moral science began to consider "society" as a whole, similar to an organism. Led by Quetelet, statisticians started using the concept of the "average man" to describe society. From then on, statistical concepts based on the mean became the mainstream thought in Western society for examining social phenomena[1]. Social realism (also known as positivism) believes that society can be observed and measured as a real existing object, i.e., society is measurable. In a specific measurement system, it can provide a reliable "expression", and this a priori logical premise ingeniously bridges the "natural monopoly" between social realism and the mean. The "descriptive genius" of the mean comes from its ability to "homogenize". Its description focuses on reflecting the collection of homogeneous individuals. Therefore, under the premise of the mean, real equality can be achieved. It abstracts the collection of individuals into another "individual" (the social community) to complete the description of society, which is in line with the need for social realism to measure society as an organism. Statisticians of social realism, led by Quetelet, attempted to abstract the "constant factors" of society with the mean to describe the so-called social organism, that is, the average type of moral science expression, thereby building a bridge for people to understand the whole of society.

Durkheim's critical thinking improved the use of the mean. While searching for universally relational statements, Durkheim maintained sensitivity to "exceptions" and "anomalies"[3]. Quetelet's background as an astronomer led him to focus excessively on the mean while neglecting outliers. Durkheim identified the biggest issue with the "average man" as the judgement of outliers as errors in societal morality, thereby proposing the famous concept of "social types". The difference between this concept and the average man lies in that outliers derived from the mean are no longer viewed as an "error" in social morality, but rather an important indicator showcasing some kind of collective mentality in society. On this basis, Durkheim completed the writing of "Le Suicide", in which through data analysis he found that while suicide rates in different societies were generally low, they maintained a relatively stable level. Therefore, Durkheim added the component of stable outliers into the "constant factor". The stable outliers, together with the mean, are used to describe "social types".

Nowadays, some criticize the social statistical paradigm represented by mean description, arguing that while traditional societies could indeed be judged by homogenization, modern societies do not possess the same characteristics. People's consciousness is mainly shaped by selective molding through mass media, and the validity of the collective representation of individuals is being questioned, indicating that the logic of homogenization in statistics will no longer be useful. So, how will the explanatory power of individual collections change in metasocieties? In other words, can the processing of individuals' means still play a role in describing the whole? This must be determined based on the specific form of the metasociety.

4. Pseudo-statistical conception of social anomie issues

Durkheim's concepts of "social solidarity" and "social types" will encounter dilemmas in metasocieties. The issue of social cohesion in metaverse has been extensively researched domestically, with general consensus being that the development of the metaverse will lead to the disintegration of social cohesion and the collapse of collective consciousness[6]. Individual freedom will reshape the existing social form, where anarchy may become the basic form of a generic society[7]. Durkheim believes that social cohesion can be mechanical or organic, with organic cohesion being a modern form of cohesion. Compared to mechanical cohesion, collective heterogeneity is stronger and individuals form a kind of cohesion through division of labor. However, in the case of metasocieties, the bonds relied upon for interaction are not necessarily professions[8], and individuals may interact due to factors such as culture and interests. On this basis, the proposition of organic cohesion will be overthrown, the consciousness of cohesion between individuals will be broken, so will Durkheim's "social types" analysis still hold? Social types are Durkheim's critical thinking based on Quetelet's average man theory, which can be understood through microstatistical methods, where samples within the confidence interval and external outliers show long-term stability, both describing a constant endogenous social morality. Although this concept has reformed the average man, its core is still the mean, only after extracting the homogeneity of the group can the possibility of seeing the heterogeneity part be realized. However, a metasociety is a space of "heterogeneity cohesion", it is difficult for individuals in a metasociety to have a collective consciousness like that in a traditional society, this is a key contradiction in the process of collective formation in metasocieties[8], it means that the social types built on the extraction of "homogeneity" will lose their original connotations.

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Different types of metasocieties face different statistical problems. (It should be clarified that trustworthy intelligent entities can reshape the metaverse under hypothetical conditions, resulting in multiple forms of metasocieties. The mirror-type metasocieties and customized metasocieties described in the third section are two extreme forms, akin to the two ends of a ruler. Actual conditions will be more in-between these two, but this study is targeted at these two extreme forms.) Both mirror-type and customized metasocieties are self-organizing systems. The collective is composed of natural persons and trustworthy intelligent entities. Assuming that social anomie issues can arise in such systems, the statistical methods for these anomie issues in the two systems will be drastically different. The statistics of anomie phenomena in mirror-type metasocieties are similar to the statistical model of collective types but face the risk of the collapse of collective consciousness. The statistics of customized metasocieties conform to the assumption of the "average person," while the collective type will appear in another conceptual form.

4.1. The Continuation and Improvement of Collective Types

In "Le Suicide", Durkheim first categorizes suicide, then combines different social integration factors (such as religion, family, etc.) with suicide rates and specific types of suicide to obtain a linear relationship between suicide and social integration (where the degree of social integration is x and the suicide rate is y). The lower the level of social integration, the more prone individuals are to egoistic and anomie suicide. Conversely, the higher the level of social integration, the more likely individuals are to commit altruistic suicide (Figure 3).

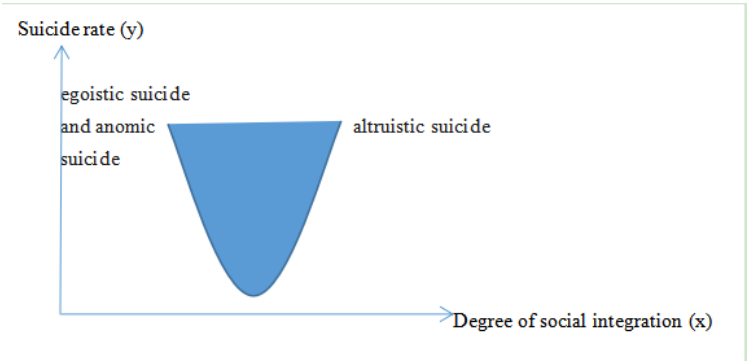

Figure 3: Statistical Analysis in "Le Suicide"

The mirror-type metasociety contains multiple natural persons and multiple trustworthy artificial intelligences, equivalent to a projection of real society. How to statistically analyze norm violation issues also depends on what kind of society this is. Assuming the future development status of humanity, the future mirror metasociety should belong to a communist society, which has eliminated various social ills and alienation phenomena. Individuals think completely independently, are completely free, and are not controlled by the media, thus achieving liberation in four dimensions. It can be said with certainty that the degree of integration in all areas of such a society is very high (family, economic income), so there is no obvious difference in the overall integration level, but there are differences in the types of integration. For example, different groups in the metasociety will be formed through different interests or different cultural attributes.

Therefore, the statistics of suicide in the mirror metasociety should be adjusted based on Durkheim's basis. What remains unchanged is that y is still the suicide rate and the need to distinguish suicide types. What changes is that different types of social integration are x, and the values of x do not represent size. By statistically analyzing different societies, different integration types, and suicide situations, we can see the different suicide rates and distributions of suicide types under different integration types, and summarize the moral types under different social integration modes, that is, collective types. (In Figure 4: the abscissa of each point (x, y) corresponds to a point on the x-axis, and the x-axis is not continuous).

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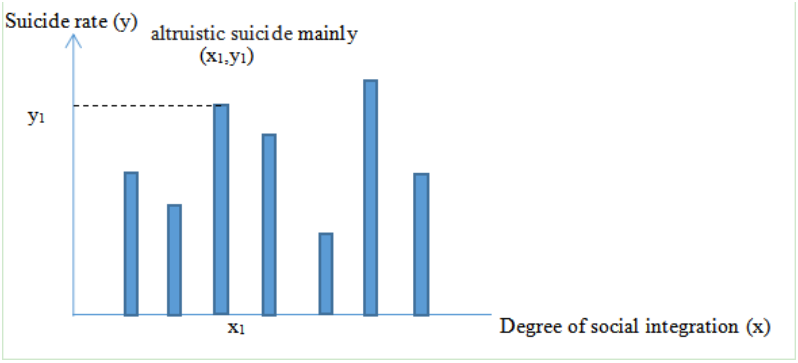

Figure 4: Simulated Statistics on Suicide in the Mirror Metasociety

Due to the high degree of integration in the mirror metasociety, the variable of social integration in Durkheim's statistical method needs to change, but the theory of collective types is still applicable. In the statistics of social norm violation issues, different integration methods of the group give it different group traits, which is also emphasized in Durkheim's collective types. By summarizing homogeneous groups, and then calculating the probability of heterogeneous phenomena occurring and the proportion of different types of heterogeneous phenomena, the homogeneous characteristics and level of heterogeneity of a group can be abstracted. This can be used to depict the "collective type" in the metasociety.

4.2. Postmodern Average Man

Customized metasocieties consist of a minority of natural persons and a majority of trusted intelligent entities. Its characteristic is that it can meet the social experience needs of a few natural persons after settling in through different individual combinations. It is a mimicry space that meets individual or multi-person requirements through prior allocation and placement. Such a metasociety does not have a fixed general form, and elements of the social system, subsystems, feedback mechanisms, and other factors can all be influenced or adjusted from outside the space.

The form of a customized metasociety is similar to a controlled society. How a customized metasociety statistically accounts for deviant behavior depends on what kind of society it is. On this point, the Western postmodern theoretical school provides a direction. In Western postmodern theory, the controlled society is characterized by strong capital and high technology leading to the puppetization of individuals. The prediction of a controlled society is relatively pessimistic, believing that individuals will be completely manipulated by capital and mass media, unable to have their own thoughts, and are completely unfree, spending their lives on a predetermined track. The views colored by postmodernism generally believe that individuals will be completely controlled by society, which is negative. In fact, this kind of "control" is not necessarily negative. The trusted intelligent entities in the customized society have been pre-adjusted and dominated. Their general ideology is almost the same as that of the individuals described in a controlled society. It is unclear whether this control is negative for them. For natural persons, both the mimicry space they inhabit and the behavior of the trusted intelligent entities satisfy the situations imagined before settlement. Once the pre-set expectations for the social experience are met, this control manifests as positive. Therefore, a customized metasociety is a kind of "positive" controlled society.

Based on this, the statistics of social deviance in customized metasocieties depend on its three basic characteristics: dominance, stability, and human-orientation. Customized metasocieties are dominant. Their general operating mode is determined by the personalized mimicry spaces, trusted intelligent entities, and the personalized combination of the two. They are pre-designed and pre-adjusted, so the social experience of natural persons in them is primarily satisfied through the expectations and desires before settlement, and the feedback on its expectations from the metasociety that has been accordingly designed and adjusted. Customized metasocieties have stability. The operation after personalized design requires a high level of stability. Natural persons need a long-term and stable personalized social experience to meet their needs. Customized metasocieties also have human orientation. They may not revolve around natural persons, but the experience of natural persons is the most important indicator of this society. Therefore, any deviance that is detrimental to natural persons should not occur.

The average man is of extraordinary significance in customized metasocieties. Quetelet was an astronomer who tended to see statistical results outside homogeneous groups as errors. He advocated a

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kind of negative induction of deviant issues with the "average man", that is, using the average to depict the "constant factors" of society, while deviant issues are viewed as outliers and considered errors. A customized metasociety is a "positive" controlled society. It needs to use a large number of controlling measures to maintain various social indicators at a relatively stable level to provide natural persons with a positive experience. If deviance occurs, then this society will fail to meet the three basic characteristics and may lead to widespread deviance. Therefore, not only does a customized metasociety need to use the concept of the average man extensively in measurement, but it also has to strive to maintain the stability of the average man. In this case, deviant issues as outliers should undoubtedly be treated as errors for ease of correction and elimination. The average man can guide social statistics and serve as an important reference indicator to maintain social stability. Once an abnormal deviation from the average occurs, timely correction to maintain the stability of the average man is the operating guarantee of this society. In summary, the statistics of social deviance in customized metasocieties treat them as errors.

5. Commercial Potential of the Average Man

Societies can transition to a product-user model, similar to the interaction between natural persons. The future development prospects of customized metasocieties can be inferred from the American TV series "Westworld", which depicts a theme park built with trusted AI robots, bringing video games into the real world. Customized metasocieties can meet the social experience needs of a few natural persons through different individual combinations. From a market perspective, this is to meet the specific user's experience needs of metasocieties according to market demands.Metasocieties enter the market in the form of products, and natural persons settle in the metasociety products as users. There are various types of products, and private customization is allowed. This represents the commercial potential of customized metasocieties. The "average man" plays an important role in dividing metasociety product types. According to the requirements of different "average men", the market provides users with products that meet different social experiences. When a situation "contradicting the average man" appears, improvements are made to the product (as shown in Figure 5).

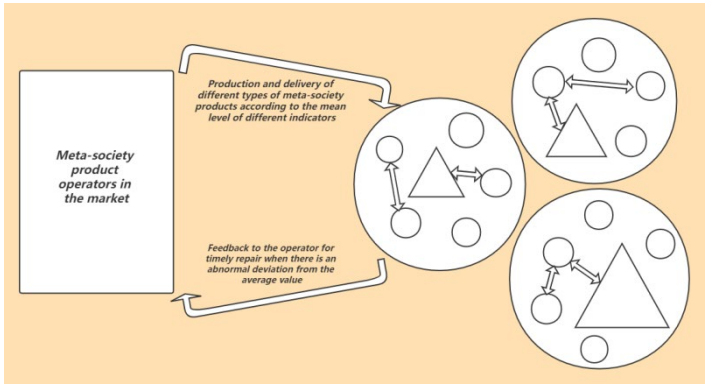

Figure 5: Market Operation of Metasociety Products

Through the commodification of the customized Metaverse, the concept of the average man can be extended into its operation mode, indicating that the application of classical social statistics may undergo qualitative changes in the era of rapid development of metasocieties.

6. Conclusion

Based on existing metaverse research, this paper introduces the latest research from Harvard University — generative agents and proposes a new possibility for the metaverse combined with artificial intelligence — metasocieties. It summarizes two extreme forms of metasocieties: mirror type and custom type. In these two social systems, traditional social statistical thinking can continue to be used and slightly improved. Under the premise of focusing on changes in measurement indicators, Durkheim's collective types can still play a statistical effect in mirror metasocieties. Recognizing the existence of "positive control", Quetelet's average man can be used in the social statistics of custom metasocieties and maintain social stability. In addition, the commercial potential shown by the custom metasocieties may lead to the market operation mode of metasociety products by the idea of the average man. Through these changes, we can see the future possibilities of traditional social statistical

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