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### Multiple Rationality: Peasant's Motivation of Self-Protection During Food System Transformation in China

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#### Abstract

This paper is focus on One Family Two Systems (OFTS) behavior of peasant households, featuring in differential production, and their rational logic behind, in the background of food system transformation. The current assumption of economic man is not enough to explain the motive of OFTS. Based on the multiple case studies of 134 households in six provinces and autonomous region, the households' motive of OFTS at least contain survival rationality, social rationality and economic rationality. With the analysis on the structural relation between the radiation area of an individual and the motive from the three rationalities, and the transition and transformation among those three rationalities, we found out two different but related mechanisms, "Distance Decay" and "Reasoned Scrutiny", can facilitate those three rationalities into Multiple Rationality. Thus, it is Multiple Rationality, instead of Single Rationality, that dominates the OFTS behaviors of peasant households. This paper aims at proposing a production behavior interpretive framework of small-scale agriculture and peasant households with Multiple Rationality as the start, and provides an epistemological basis to understand the production practice of peasant households.

**Keywords**: Multiple Rationality, One Family Two System, Distance Decay, Reasoned Scrutiny, Food System Transformation

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#### **1** Introduction

In the economic studies on peasants, a hypothesis of single rationality, which is the Economic Man, often occurs (Popkin 1979). In fact, in the traditional Chinese food system, peasants are the unity of production and consumption (Chayanovan 1996), and they have two kinds of production behaviors, for house-holding and for mutual benefit (Wallerstein 2013). Due to the pressure of survival, the peasants produce is firstly to meet the food consumption of the family. On this basis, peasants' production behavior is "embedded" in the social interaction of the village community, they are performing "incidental production" for the acquaintance society, which then reflected the rational behavior motive characterized by mutual benefit (Polanyi 1944).

Since the 1980s, the Chinese food system has undergone a profound transformation, along with the changes of the peasants' production behavior motives. The deepening of market economy leads to the increasingly close relationship between peasants and the anonymous market, the weakening purpose of family consumption, and money making gradually becomes the main motivation for production. Meanwhile, the accelerated development of anonymous market makes itself "disembedded" of the community (Wang 2008). This food system transformation from the embedded social market to the disembedded market society gradually separated the production and consumption of the peasants. Basically, the anonymous market sales food with the purpose of money-making, which cause food safety threats gradually spreading in the community (Zhou et al. 2012).

During the period from 2012 to 2016, our research group has conducted 12 surveys on peasant households. In those surveys, it was observed that an obvious "One Family, Two System" ("OFTS") behavior featured by differential production: in order to ensure the food quality safety of their own families, and earn profit from the market, peasant households consciously differentiated in the food production, storage, processing and others, for different consumers. They adopt the Logic of Capital (Model A) in the food production for anonymous markets, and implement the Logic of Life (Model B) for family consumption and the exchange in the face-to-face society. With "OFTS" phenomenon, peasants and urban consumers, as separate and independent social groups, has achieved a union that is similar to collective unconscious, but this "union" is actually a "Combination Without Cooperation" (Xu et al. 2013).

The historical process of the transformation of Chinese food system provides important empirical material for understanding the motives of peasants' production behavior. In fact, in the process of food system transformation, survival pressure (food safety threat), social interaction (mutual benefit in faceto-face society) and market economy (exchange in anonymous market), all have impact on the rational choice of peasants simultaneously, so that peasants' production behaviors express profound differences in different conditions. Thus, the peasant households' behavior of "OFTS" poses a challenge to the Economic Man Hypothesis in the perspective of Neoclassical Economics. From the economic hypothesis, which is "using the minimum production costs to pursue the maximum monetary income", is insufficient to understand peasant's production motivation. Further, "OFTS" constitutes a self-protection mode (individual self-protection) of peasants under food safety threat. However, such a state will cause a significant negative impact, which may further aggravate the contamination of the of food source and the damage to the agricultural production environment (Yan 2012). Therefore, how to understand the production motive of peasants, and promote the individual self-protection (self-protection) to social co-protection (social co-protection, similar to the social coordination advocated in the Food Safety Law, which was revised in 2015), is the realistic concern of this paper.

In the context of the transformation of Chinese food system, this paper will study "OFTS" phenomenon, discuss the motives of peasant households' production behavior, focus on analyzing the process of correlation between specific field and rational motives, and the conversion and interaction processes between various rational motives. The structure of this paper is as follows. First of all, from the epistemological perspective, the dialogue with the single economic rationality, and put forward an

analysis framework multiple rationality. Then, with the surveys on peasant household and the multicase study, reproduce the production scenes of Chinese peasants to understand the peasants' multiple production motivation expressed in practice. Ultimately, answer the key question: how peasants make "reasonable" production behavior trade-offs with the domination of multiple rationality?

### **2** The Insufficient of Single Rationality Hypothesis: The Observation on "OFTS" Phenomenon

In the research on social science, Weber first regarded rationality as a reasonable behavioral motive (Weber 2013). In his view, rationality is a common characteristic of mankind, so that we can understand the motives behind the behaviors, or identify what kind of rationalities govern those behaviors. Thus, from the epistemological level, rationality becomes the basic concept of understanding behavioral motives.

Hypothesis of Economic Man in neoclassical economics is derived from this understanding. With the promotion driven by Marshall, Cambridge School learned from Weber's presupposition of Purpose Rationality in its development. However, they are difference from Weber's understanding of rationality, the key difference is they are more emphasis on rationality as a hypothesis, in order to complete the reasoning, and ultimately find out some specific economic laws. This idea promotes the axiomatic proof of rationality. Becker's introduction of the concept of economic man into social behavior analysis made the economic man hypothesis to be the logical starting point of modern social science research (Becker 1976). It reinforces the "hardcore" of the rationality concept, and influences broader field along with the development of market economy.

However, when we examine the economic rationality from a broader level of social science epistemology, there is a question arise, why the gap with the real-world experience becomes wider when the rationality analysis method is more refined? One possible reason is the concept of rationality has undergone a key transformation: emphasizing the rationality of human behavior from the epistemological level, gradually turning to the elaborate mathematical reasoning and quantitative test based on the hypothesis of economic man. This change helps rationality to enhance the explanation on individual's profit-seeking behavior and logical self-consistency, but narrows the scope of the concept of rationality itself, which makes the conflict between theoretical interpretation and practical experience fiercer.

In order to ease this conflict, it is necessary to recognize the insufficiency of economic epistemology based solely on the hypotheses of economic man. In fact, at least two key questions are needed to be considered in the process of recognizing the real world: (1) whether it conforms to the historical background ("historical sense"); and (2) whether it conforms to basic practical experience ("realistic sense") (Huang 2005). Therefore, epistemology should be consistent with the practice, as a coordinate system, taking the sense of historical and realistic into account. We study the OFTS phenomenon of a Chinese households in the background of food system transformation, and intent to start from the practice to discuss the peasant's motive of rational behavior of differential production and consumption.

The rationality, referring to in this article, is peasant's motives with reasonable meanings. In the context of food system transformation, peasants' production involves three different fields, namely within the family, in the face-to-face society and in the anonymous market. In this process, their economic behavior is inevitably embedded in their natural instinct and social interaction (Granovetter 1985). Therefore, the motive, which is governing peasant's behaviors, is not Single Rationality, but Multiple Rationality (Zhou et al. 2015). Among those, there are at least three types of rationalities:

The first type is Survival Rationality, that is peasants' motive of production behavior to meet their own survival needs. Face the threat of food safety, peasant's production will first ensure that family

members can consume safe food. The second type is Social Rationality, that is peasants produce to meet the needs of social interaction. Peasants' production is not only to increase monetary income, but also to satisfy the function of diverse information exchanges, as well as the pursuit for prestige, honor and other social capital (Anderson 1988). The third type is Economic Rationality, that is peasants produce for the needs of earning money (Schultz 2007). Economic rationality, although appeared the latest, with the rapid development of anonymous market, has become the main motive for the production of peasants.

As of December 2016, our research group has completed the analysis on the data of 827 households in six provinces. Among those, more than 62.4% of the households chose OFTS in production, this figure increased by 5.8% comparing which in December 2015. The analysis of 134 peasant households, who had accepted in-depth interviews since 2013, showed that only two households were completely dominated by Survival Rationality, and 96.3% expressed Survival Rationality and Economic Rationality. More than 64.2% of the households showed production motive governed by Multiple Rationality, which is the coexistence of three kinds of rationalities. See Table 1.

	Survival Rationality	Social Rationality	Economic Rationality
Frequency (ratio)	134 (100%)	86 (64.2%)	132 (96.3%)
Consumers	Families	Face-to-face Society	Anonymous Market
Main Production	Seasonal Vegetables, Poultry	Seasonal Vegetables, Poultry	Field Crop, Livestock
Operation Mode	Traditional Household Production	Traditional Household Production	Modern Market Operation

 Table 1 Overall Characteristics of Production Motives of Peasants

Source: Case study database of peasant households conducted by our group in 2013 - 2016. If it is not specified in the following, those materials are consistent with this source.

Without doubt, it should be noted that apart from rational behaviors, there are also traditional habits and emotional behaviors. In this paper, we will not study behavior motives other than rational choices, but we also believe that the motives of these two behaviors are more or less moving closer towards rationality. This movement is reflected in the long-term repeated production practice of peasants, thus extending the understanding of rational behaviors of peasant households in this paper (Xu 2010).

#### **3** Multiple Rationality: A New Understanding of OFTS

It can be concluded that Multiple Rationality, rather than Single Rationality, should be treated as an important concept to understand peasant's production behaviors. Three types of rationalities can well explain differential peasants' production behaviors of OFTS. But even so, the following two issues remain to be resolved:

(1) In the context of food system transformation, how the three specific fields relate to the three types of rational motives, and bring about OFTS of peasants,

(2) In the peasants' micro practices, how the three types of rational motives switch to and interact with each other, and change the behaviors of OFTS?

In fact, these associations and conversions often occur. Behind OFTS, complex choosing processes of Multiple Rationality are contained. Thus, the following part will discuss the two issues through the social interaction mechanism of Distance Decay and the behavioral selection mechanism of Reasoned Scrutiny.

#### Social Interaction Mechanism of "Distance Decay"

Social interaction mechanism of "Distance Decay" means, with the widening of the gap of different fields, the awareness of responsibility of households decreases accordingly. The concept of "decay" is derived from Fei Xiaotong's introduction to the basic characteristics of traditional Chinese society: people are treated themselves as the circle center, the further from the center, the relationship with them is thinner (Fei 2005).

In the initial process of agricultural production, peasants' economic activities were "embedded" in their social interaction. More precisely, based on principles of relationship differences, different fields of food interaction were formed. Along with food production and consumption, peasants and consumers have formed an interactive relationship, and "bargain" with each other in different fields in different ways, based their own interests and needs, and finally rationally complete food production and supply.

In the traditional rural society, peasants produce to meet their families' own living needs first. In the face-to-face society with reciprocal exchange principle, peasants value the social capital accumulation function in the food exchange. Along with the food system transformation and the emergence of market society, earning profits from the anonymous market gradually become the main purpose of peasants' production. Comparing with families and face-to-face society, the interaction between peasants and anonymous market has new characteristics, including long chain of market organization, information exchange, warehousing and logistics. Thus, there is a clear boundary existing between the new anonymous market, and the families and face-to-face society. In the anonymous market exchange, there is no direct social link between peasants and consumers. Currency has replaced the reciprocity, making the responsibility based on family and village, no longer has great significance in anonymous market, a new field.

Different food exchange fields correspond to different social responsibilities. In the traditional "decay" society, peasants gradually formed different treatment towards "insiders" and "outsiders" (Yang 2008). "Insiders" can be relatives or local rural folks. Together with the food system transformation, agricultural products cross the village boundary, towards the regional, national, and even global market. Consumers in anonymous market are "outsiders." Different moral values for insiders and outsiders, making the peasants adopt lower level of responsibility at "outsiders" than "insiders." (Yang 2009; Chen 2016) According to this, this paper put forth Proposition 1: With the distance increases between different fields, peasants show less sense of responsibility in the food production, and OFTS easily appears.

Proposition 1 is a description of the social interaction mechanism of "Distance Decay", which gives empirical significance for understanding how different fields and three types of rationality are interrelated. Food produced by peasants will be consumed in different fields, including their own families, relatives and neighbors from face-to-face society, and urban consumers, who are thousands miles away at the other end of the supply chain in the anonymous food market. These different fields are laying closely but different for each layers. In the different fields, peasants choose different rational motives because of "Distance Decay": stronger motives of Survival Rationality for the consumption closer to them, and stronger motives of Economic Rationality when closer to the anonymous market.

Therefore, in the historical context of food system transformation, it is the role of social interaction mechanism of "Distance Decay" that makes specific fields and different rational motives interrelated.

With the existing conditions, peasants need to produce for all fields. Dominated by different types of rationalities, peasants have differential production behavior in difference fields. Thus, these differential rational behaviors gradually reflected in peasant individual's practice of production, which is OFTS, what we have observed in empirical evidence.

Firstly, Survival Rationality dominates peasants' production behaviors for their own families' consumption. In the daily interaction, peasants know what their families need. Considering the factors of family life and physical health, peasants have responsible management in seed-selecting, planting, product processing and other links, to ensure that the food safety and meet families' consumption demands.

Secondly, Social Rationality dominates peasants' production behaviors for the face-to-face society. In this particular field, reciprocity is the principle in people's interaction. Long period of agrarian social life makes peasants accumulate social capital in the exchange process consciously, one of the important expressions is to provide acquaintances with their own food production (Blau 1964). The returns of this accumulation is asymmetric because of time lag and in non-equivalent ways (Bourdieu 2012). For example, peasants can continually provide vegetables for the acquaintances that are no longer involved in agricultural production, while the latter introduce a job for the child of the former as return.

Finally, Economic Rationality dominates peasants' production behavior for the anonymous market. At this time, peasants show their characteristics of profit-making, and with the decrease of the awareness of responsibility and the increase of profit-making, governed by the price of products, peasants will tend to pursue the number of products during the production process. This agricultural production method of profit-making may cause both food safety and environmental pollution (McMichael 2014; Wen et al. 2010).

It is worth noticing that Multiple Rationality behavior, in turn, has a solidification effect on the distance between fields, thereby further enhancing the social interaction mechanism of "Distance Decay". With the guidance of Multiple Rationality, peasants choose OFTS as food safety self-protection, causing a gap of quality in food supply between fields, which is within family, face-to-face society and anonymous market. To some extent, it enhances the mutual distrust between producers and consumers, thereby further solidify, and even widen the distance between different fields.

#### Behavioral Selection Mechanism of "Reasoned Scrutiny"

"Reasoned Scrutiny" behavior selection mechanism means in accordance with the changes of actual situation, peasants will rethink and judge rationally among different types of rational motives, and consequently affect the selection process of actual production behavior. In understanding the concept of rationality, Weber has suggested that people have an inner consistency in their choice of behavior (Su 2016). Amartya Sen further proposed that people have the ability to evaluate and judge their own behavioral goals. There are four principles among rational choices, namely, self-centered welfare, self-welfare goals, self-goal selection and self "reasoned scrutiny". Among them, the fourth principle is the core to evaluate the rationality in people's behavior, and it is affected by external conditions, allowing people to choose the process and correct the expected goals rationally, and change the practice behavior (Sen 2004).

Therefore, the concept of "Reasoned Scrutiny" was introduced in this article, which is intended to emphasize that "self-scrutiny" corrects the inverted relationship between reasoning, introduced by treating rationality as truth, and existence. In reality, rationality is not a motive of metaphysics, of which external social existence is an important source. Moreover, it is also affected by the knowledge acquired by the subject. As Marx said, "at any time consciousness is the existence when being aware of, and the existence of people is their real life. (Marx 2009)" If there are no pre-existing agricultural production habits and rural social thinking, peasants' rationality could not complete the judgment of

"rational". Thus, it is unrealistic to talk about rationality without the influence of external conditions (Hodgson 2002). "Self-scrutiny" behavior selection mechanism makes peasants "have the ability of reconsideration to weigh the pros and cons, regain the freedom of reasoning to examine what they should pursue, and these are the fundamental right of behavior subjects. (Sen 1995)"

From the perspective of history and structure, "Distance Decay" mechanism explains the rational motives of peasants in face of different fields. In practice, peasants have the ability to judge the rationality of behavior, and this ability will form a "Reasoned Scrutiny" mechanism in the repeated selection process. According to the actual scenario changes triggered by the interaction between different fields, "Reasoned Scrutiny" mechanism has been driving different types of rational motives to promote new conversions and interactions. Therefore, in OFTS behavior, peasants' motives of Multiple Rational, and the behavior governed by it are not invariable. In the following, I will analyze the impact of "Reasoned Scrutiny" mechanism through a discussion of three real situations.

Firstly, family interacts with anonymous market. In the long-term and repeated production and exchange, peasants receive a wide range of information from the anonymous market. For example, under the prevailing threat of food safety, peasants may learn the dangers of excessive use of pesticides in cultivation through a chat with acquaintances; and may be aware of the negative effects of improper use of hormones on food safety from media. These daily information exchange seems inadvertent, but it will make peasants, both as producer and consumer, to rethink continually, and gradually affect their own rational choices. Initially, "Reasoned Scrutiny" mechanism would trigger peasants to be aware of the seriousness of the food safety threat. When the food that they supply contains potential security risks, the food purchased from the market may have security risks as well. Therefore, peasants began to convert Economic Rationality to Survival Rationality, by using of low toxicity pesticides or even give up using pesticides, to increase their own food safety. With the influence of "Reasoned Scrutiny" mechanism, peasants' Survival Rationality will interact with Economic Rationality, and dominate new production behaviors. When stimulating by enough profits, peasants will try to extend the more secure production behavior governed by Survival Rationality to the anonymous market. At this moment, the public goal of ensuring the food safety for consumer, and the private goal of making profit will both be achieved.

Secondly, family interacts with face-to face society. Peasants can maintain their social relationship in the village with providing food to the anonymous society. In face with food safety crisis, "Reasoned Scrutiny" mechanism allows peasants' Social Rationality gradually convert to Survival Rational. For instance, when giving food as a gift to friends and relatives, the food grown in traditional way will make them more proud. Therefore, peasants will pay more attention to this production behavior that make them proud. This further promotes the interaction between Survival Rationality and Social Rationality. Under normal circumstances, peasant households often produce food more than what their need, and this part of the food will be sold in the village market. When peasants have the sense of food safety, they begin to consciously adopt traditional and safe way to plant and breed in the production process. They sell the food to the face-to-face society consumers in the village market, especially with familiar customers, and stress that the food is grown in a safe way, having the same quality as for the peasant families themselves. This will let peasants feel proud in food production and exchange, and gain satisfaction in morality and responsibility.

Finally, face-to-face society interacts with anonymous market. By providing safe food to anonymous societies, peasants can also expand their social relationships and build new face-to-face society. Peasants will maintain such social relations by providing safer food for new "familiar customers". This will also allow more consumers to believe the safety in peasants' production behavior, which will speed up the establishment of face-to-face society in anonymous market based on the transactions, and add more new "familiar customers." As mentioned earlier, peasants tend to provide safer food for acquaintances comparing for anonymous markets. Therefore, in the integration process between face-to-face society and anonymous market, "Reasoned Scrutiny" mechanism will promote the transformation from Economic Rationality to Social Rationality. Peasants gradually realize that every

"outsider" is likely to become an "insider" by one transaction. On this basis, the interaction of Social Rationality and Economic Rationality begins. If the anonymous market consumers believe in the safety in food produced by peasants, and offer a reasonable price as return, then peasants will think that providing safe food for anonymous market is a meaningful and reasonable choice.

It can be seen that, in practice, the "Reasoned Scrutiny" mechanism is essential to the understanding of OFTS behavior. The food system transformation caused a profound impact on the production motives of traditional agriculture. The process of interaction based on food safety emerges among the family, face-to-face society and anonymous market. With the deepening of this interaction, peasants' three types of production motives transform and interact with each other, and differential production behaviors will be changed. The most important change is that peasants may take the initiative to provide safer food for the anonymous market under the conditions of receiving reasonable payment and social recognition. Thus, this paper put forward Proposition 2: As the degree of interaction between different fields increases, food production motives of peasants will converse and interact more frequently, and OFTS behaviors will more likely to have a positive change.

#### 4 Brief Summary

To sum up, this paper argues that the three types of rationalities and the specific field of these rationalities faced with "Reasoned Scrutiny" are given by social interaction mechanism, "Distance Decay". Therefore, to some degree, the realization of "Reasoned Scrutiny" mechanism is based on "Distance Decay" mechanism, and its social interaction. "Reasoned Scrutiny" mechanism is also the supplement and transcendent of "Distance Decay" mechanism. With the impetus of the "Reasoned Scrutiny" mechanism, Proposition 2 provides the basis for the transformation and interaction of different types of rationalities, even by dominating new behaviors, to in turn deepen the degree of interaction between fields. Peasants' rational choice process reaches to a higher level, which is the emergence process of Multiple Rationality behavior, and this is precisely beyond the original "Distance Decay" mechanism.

Thus, "Distance Decay" and "Reasoned Scrutiny" together constitute the inherent logic of Multiple Rationality. In the context of food system transformation, peasants can express self-protection with OFTS food production behavior, based on Multiple Rationality rather than Single Economic Rationality. Peasants can also continually balance between different rationalities, in the conditional circumstances, realize the co-protection of collective, and even a wider range of social co-protection. The above discussion found peasants' different types of rationalities were influenced by two interrelated main conditions:

- (1) The distance between peasant and consumer in different fields
- (2) The degree of integration of peasants and consumer in the fields

The conditions above correspond to Proposition 1 and Proposition 2, and lead us to focus on the following specific questions: When the interactive parties are from different fields, what is the boundary of different fields where the Multiple Rationality is located and what is the interrelation? How will Different scenes, composed by integration and interaction of different fields, change the OFTS behavior of peasant households? In the next chapter, we will answer those questions with multiple cases study, to understand in the context of food system transformation, how the peasant households conduct differential production.

#### 5 Historical and Realistic Sense: Multiple-case Study in Six Provinces and Autonomous Region

#### *Empirical Evidence: A Survey Based on Peasant Households' OFTS Behavior of Food Safety*

The empirical evidence of this paper is from the case study database of our research group. From September 2013 to December 2016, our research group selected county-level research areas in six provinces and autonomous region of the eastern, central and western regions of China, using the method of theoretical sampling, questionnaire and interview to record the food production and consumption behavior of 134 typical peasant households, and establish a case database.

In the above, we demonstrate peasants choose differential production behavior in the context of food system transformation is based on the different fields and rational choices. This process embodies the conversion and interaction mechanism among Survival Rationality, Social Rationality and Economy Rationality.

In the following, we will discuss the social interaction mechanism of "Distance Decay" and the interrelationship of three types of rationalities in Multiple Rationality, in order to start the discussion of the correspondence of the distance between peasants and consumers in different fields and OFTS in the context food system transformation: (1) Survival Rationality and the production within families; (2) Social Rationality and the production in face-to-face society; (3) Economic Rationality and production in anonymous market. With this, we can prove Proposition 1.

Then, this paper will analyze the specific changes of OFTS under the "Reasoned Scrutiny" behavior selection mechanism, and discuss the transition and interaction process of the three kinds of behavioral motives in the practice of peasant households. The specific scenes include: (1) the interaction and integration of family and anonymous market; (2) the interaction and integration of family and face-to-face society; (3) the interaction and integration of face-to-face society and anonymous market. With this, we can prove Proposition 2.

#### Historical Sense of "Distance Decay" Social Interaction Mechanism

#### Production for Family Consumption Governed by Survival Rationality

Food consumption within peasants' families are generally from their own production. In our case database, we visited peasants from six provinces and autonomous region, and most of them said that near their houses they had reserved a small "plot", with the size generally less than 0.5 mu (equal to  $333m^2$ ), and output basically only for their own consumption. By observing the changes in peasants' production behaviors in the "private plots", it can be seen that Survival Rationality is the most basic motive for peasants' production.

When the profit-driven food market is not yet fully established, peasants use "private plots" to produce for family survival. The emergence of "plots" can be traced back to collectivized agriculture. Such as Lu's family (No. LA-HL-3) opened up a "private plot" in the early 60s. While producing for the collective, this piece of "plot" allowed him to provide more kinds of food in the difficult days. Although this "plot" was occupied due to road expansion a few years ago, Lu's family still retains the tradition of producing for their own, planting vegetables at the balcony and garden. The original garden of Li's family (No. XT-XF-1) was occupied earlier, and he re-developed wasteland as a "private plot" and used it for more than 20 years.

Faced with the food safety threat brought by food market's "disembedment" from the society, peasants chose to hold on to their "plots", and turn them into "small gardens", giving their own production the meaning of individual self-protection. Take Qiu's family (No. CH-CK-2) for example, there is a garden about the size of 3 fen (equal to nearly 200m<sup>2</sup>) around his house, supplying vegetables for his family all the year round. In the production, his family use chicken manure and other organic fertilizer, rather than chemical fertilizer and pesticides. The cost is one of the reasons, but the taste and safety of food are what they concern more. The peasant believes that "we are planting our own food, no need to use fertilizer and pesticides." It can be seen that, for peasants, self-protection behavior for food safety

is easy to achieve. Land, labor and production technology facilitate peasants to produce safe food for their own more convenient than urban consumers.

On the other hand, the gap between different fields in the "Distance Decay" hinders peasants from providing their own food to the anonymous market. Hu's family (No. XT-RH-1) told us they wanted to take full responsibility for their own food, but he had no ability to track and supervise the transport and processing, "the journey of food from the field to the urban customer's table is too long and complicated after all, you can't be familiar with the people in charge for all the links." Therefore, "actually we are powerless, only can do our best in the production part."

Survival Rationality has explained the peasants' motive of producing for their own families to a certain extent. With the effect of "Distance Decay" mechanism, the influence scope of production governed by Survival Rationality is confined within the family. This interrelation between food exchange fields and rational choices constitutes the basic core of "Distance Decay", which means the peasants' behaviors governed by Survival Rational can only take the peasant household's food consumption into account.

#### Production for Face-to-face Society Governed by Social Rationality

The production way of food that peasants provide for the face-to-face society are basically the same as for their own families. Because the natural conditions and production history are similar at the same area, peasants' production behavior and varieties are also alike. It should be noted that in the traditional way, food produced in the garden or "private plot" occupies small in the family's total food consumption, the part as gift from acquaintances accounted even smaller.

However, with the condition of similar varieties and low outputs, widespread of reciprocal behaviors still exists, which indicates the food produced by households will facilitate in the interaction in the face-to-face society. Liu's family (No. WQ-DT-1) is a common household in Henan. Most local peasant households have the traditional habit of planting vegetables in their own gardens. She is no exception, planting seasonal vegetables in her own garden. In the planting process, she chooses the traditional ways such as applying farm manure, and not using pesticides, etc. These vegetables are mainly for her family, with the remaining part she will dehydrate those and send to relatives and neighbors. In the process of giving vegetables, they will also engage in some "chitchat." Thus, food exchange plays an important role in the communication between peasant households. This communication can be viewed as using food exchange as the media to maintain social relations and accumulate social capital. Therefore, it is an important reflection of Social Rationality.

In a small-scale face-to-face society, relatives and neighbors, who live closely, are the closest social relations for peasant households are whose living spaces are very close. Reciprocal behavior in this field is very natural. Liu's (No. WQ-DT-1) daughter-in-law said, "when our own vegetables are finished, we'll go to our neighbors' to pick some without asking for their permission. We are neighborhoods, this is very common." From that we can see that peasants' reciprocal behaviors on food exchange is very common, sometimes "too natural". It can be seen that as a motive for peasants' production in face-to-face society, Social Rationality will continually exist in the traditional agricultural production mode.

When the scope of face-to-face society extends to the scope of the village, the reciprocal behaviors among peasants begin to become more "formal". Social Rationality' request for social capital acquisition from reciprocity is appearing (Skinner 1998). Taking Wang's family (No. SG-HW-4) in Shandong as an example, they have some relatives in the village but no longer engaged in agricultural production, most of whom are left-behind elderly. Therefore, householder of Wang's takes the obligation to take care of them, regularly sending them vegetables. Reciprocity in this way is common in the rural life. In this kind of reciprocity, peasants will not gain their returns immediately, but the long time accumulation social capital, such as good reputation for taking care of elderly people, will gain him returns in other ways sometime in the future.

In the wider range of face-to-face society represented by the village market, motives and mode of production of peasants are different from the previous two. Take the Huang's family (No. CH-GB-1) in Guangdong as an example. Householder's mother uses their plot with the size of 1.5 mu (equal to 1000m<sup>2</sup>) to grow vegetables, with the main purpose to supply the village market, and the remaining for their food. In the production process, peasants use fertilizer and pesticides with a proper amount, but stop using pesticides before picking. In addition, she usually weeds manually, because she is free and knows herbicides is bad for health. The mother will harvest timely based on the growth of vegetables, and brings to the market to sell. The main consumers are local residents. When selling vegetables in the market, she often tells the local residents who she is familiar with, "It is the same as what we eat, not using chemicals."

Peasants' supply behavior for the village community market has three characteristics. Firstly, the purpose of production is to maintain the balance of input and output. From the aspect of the source of family income, the income of selling vegetables accounted for only a small part of the entire family income, while the main income is from migrant workers. Secondly, while providing food for a wider range of face-to-face society, they also consume the same product. In addition, the peasants and the village consumers maintain a certain degree of social connection. These characteristics show that the production behavior of supply for village market is also under the control of Social Rationality.

In the case study it is not difficult to find that in the face-to-face society, three different food exchange fields can still be divided. From the observation of reciprocal behavior of peasants, we can see that with the distance increased gradually between the fields, the relationship between peasants and consumers is becoming relatively alienated. In the production, the purpose of profit-pursuing is also increasingly clear, until this exchange steps out of the scope of face-to-face society and to the anonymous market. At this time, peasants begin to choose a different production motive, emphasizing on the monetary income from the food supply, and thus lead to a completely different production behavior.

Social Rationality to some degree explains the behavior motive of peasants' production for acquaintances. With the influence of the "Distance Decay" mechanism, the production mode influence led by Social Rationality is not likely to step out of face-to-face society. This interrelation between fields and the rational choices constitutes a middle layer of "Distance Decay" which is, peasants' production behavior led by Social Rationality generally only take the internal food consumption of face-to-face society into account.

#### Production for Anonymous Market Governed by Economic Rationality

Food that peasants provide for the anonymous market has a more significant difference with the one for their own in the production. With the deepening of the agricultural marketization, traditional agricultural production methods cannot meet the consumption demand of the anonymous market. Industrial production methods represented by specialized and large-scale agriculture, has gradually become the mainstream of agricultural production (Van der Ploeg 2009). At the moment, the characteristics of OFTS become more obvious.

In the evolution process of greenhouse production in Shouguang, Shandong Province, this OFTS trend appears very early, and exist till today. Take Sun's family (No. SG-SJ-2) as an example. His family has been operating greenhouses planting for more than 15 years, experienced three greenhouse technology changes. The operating area in 2015 is 1.2 mu (equal to 800m<sup>2</sup>), is one of the typical "family greenhouse" in the local, with the annual output of cucumber and balsam pear 1500 kg, price at 0.5-1 yuan per kilogram, receiving nearly 40,000 yuan of income at the end of year.

The labor and capital input required for operating the greenhouse are large. Like "dipping flowers", peasants need to dip all flower stamen and pistils with growth hormone, make it turn red. Because every flower in the greenhouse needs to be taken care of, so it is a heavy and detailed work, at least 8

hours a day. In fact, from the choice of insect-resistant seedlings, to the intercropping of cucumber and balsam pear, from the use of chemical fertilizers, pesticides and growth hormone, to the greenhouse temperature control, these production activities share a clear economic purpose: to maximize the production of the greenhouse. Eventually, almost all the vegetables produced from the greenhouse are sold to the market. The main process is the dealer acquire those vegetables in the village, and gather to the local wholesale market, and then the consignor transport them to other places. Shouguang also allocates vegetables shipped over from different regions, and this mode is called "buy from and sell to the whole country."

Although the greenhouse vegetables are popular, peasants themselves are rarely consumed those vegetables. Family's demand for vegetables are from their own "small vegetable garden", which is mainly to facilitate the cultivation and consumption. For example, peasants in Shouguang, Shandong Province planted cabbage, for it can be stored for a long time, but mostly because it is easy for planting and cooking, which can save time for the greenhouse operation. Winter is the key time for greenhouse production, " it is convenient to eat cabbage in winter, when we are busy making money, how can we have time to shop in the market."

Thus, governed by Economic Rationality, peasants' production behavior for the anonymous market has even changed the views of peasants on their own food consumption. To maximize the income from the market, has become the main motive for professional and large-scale production.

To some degree Economic Rationality explains the behavior motive of peasants' production for anonymous market. In the field of "Distance Decay", Economic Rationality is in a dominant position. The interrelation of the field of anonymous market and the rational choice constitutes the outermost layer of "Distance Decay".

The above three levels of analysis illustrate the interrelated process existing between different fields and rational choices. In this process, the role of "Distance Decay" mechanism is that with the increase of the distance between different fields, the less responsibility consciousness of the peasants in the food production, the more likely appear OFTS phenomenon.

It is worth noting that this interrelation is not only the distance between the fields have on the rational choices, but also includes the latter's reaction to the former. In the context of the food system transformation, peasants also produce food for different fields. At this time, rational behaviors governed by different types of motives together constitute peasants' OFTS. Under common circumstances, production processes governed by Survival Rational and Economic Rationality are remarkably difference. Production governed by Economic Rationality might pose a treat to the food quality and safety, also to the natural environment for agricultural production. This situation enhanced the mistrust between peasants and urban consumers. The mistrust led to the adverse selection in the food market, and the "Markets for Lemons" phenomenon of food supply has emerged. In this way, Multiple Rationality extends the distance between different fields, solidifies the social interaction mechanism of "Distance Decay", and may lead to a vicious circle of food supply. It is necessary to introduce a new behavior selection mechanism to explain the rational choice and interaction mechanism between different fields.

#### Realistic Sense of "Reasoned Scrutiny" Behavior Selection Mechanism

"Reasoned Scrutiny" behavior selection mechanism can explain the transformation and interaction among three different types of rationalities, and change the process of peasants' production behaviors. In the following we will introduce two typical household case. One is Sun's family (No. SG-DY-1), who operate greenhouse of eggplant in Shouguang, Shandong Province. Another household is Wen's family (No. XT-JG-1) in Xiangtan, Hunan Province, operating integrated family farm. Their production behaviors have their own different characteristics, being complementary for each other. They provide us an important empirical material to understand the "Reasoned Scrutiny" behavior selection mechanism.

The first case is Sun's family in Shouguang, Shandong Province, which can describe the influence of "Reasoned Scrutiny" mechanism in the process of interaction between the family and the anonymous market. Sun's family has six members, the whole family net income was 80,000 yuan in 2014, 50% of which was from the greenhouse operation, and the other part mainly from transport in town by the householder.

The greenhouse eggplants are mainly planted by the wife of the householder (hereinafter referred to as "Sun's wife"). The actual planting area in the greenhouse is only 1 mu (equal to  $667m^2$ ), and almost all products are collected by the dealer to Shouguang, and then directly transported by the consignor to the three northeastern provinces for sale. The family seldom consume those products.

From mid-July to the end of the following June, Sun's wife carries out very complex and detailed field management almost every day. This process requires the use of a large number of modern agricultural inputs, including fertilizers, pesticides and growth hormones. According to her estimation, only fertilizer spending for one year is about 3,000 yuan, pesticide spending about 1,000 yuan. Sun's family's behavior is clearly governed by Economic Rationality: by controlling the water and temperature in the greenhouse in the most suitable range for the growth of eggplant, to maximize the yield of eggplant, ultimately to obtain more benefits from the anonymous market economic.

There are about 0.5 mu (equal of 333m<sup>2</sup>) open space between the greenhouses, which are used to grow vegetables for their own consumption. Comparing with the single species and complex manual work in the greenhouse, the area is small, but has variety of vegetables and enjoys natural condition for growing, including cabbage, spinach, scallion, garlic, leek, cucumber, round eggplant, totally more than 10 kinds of local common varieties. The production process is simple and natural, no fertilizer, almost no use of pesticides, and no use of growth hormone that is commonly used in the greenhouse. All the inputs are some seeds and organic fertilizer. This motives behind OFTS behaviors are worth us thinking.

Back in 2000, Sun's family had completed the greenhouses for planting eggplant. At the beginning of the operation, the family did not plant crops specifically for their own. The "private plots" that was developed, because of heavy labor in the greenhouse and lack of proper management, almost did not have any output.

The turning point happened when Sun's wife noticed the potential threat of the pesticide to the health. In round 2008, she wanted to have a second child, but never succeeded. When she went to the hospital for examinations, the doctor asked if she was continuously exposed to pesticides, as this may affect the pregnancy. "I was scared at the time," she said.

Since then, she has been paying special attention to food safety in food production. In the planting behavior, the most obvious change is that she began to invest time for their own food. Besides turning abandoned "plot" into a "small vegetable garden", she also plants vegetables around the greenhouse. In the planting process, she rarely uses fertilizers and pesticides for this part of vegetables. "There are only several cucumbers, when you see insects on them, you can pinch off by hand, this is not a problem." Although the output is not many, but it is able to meet their own needs. As for the motive, she said the most important thing is "not about the quantity, but to let the family eat safely."

It can be seen that, "Reasoned Scrutiny" mechanism of Sun's family began with the gradually enhancing food safety awareness after the pregnancy event in 2008. The increase of the consciousness seems accidental, but with reflection and trade-offs, they have transformed the Economic Rational into Survival Rationality. Survival Rationality has a clear and reasonable purpose, which is to ensure that

peasants' health, rather than to improve economic incomes. This motive governs her to conduct the series of conscious self-protection behaviors.

Subsequently, Survival Rationality began to interact with Economic Rationality, and affected the behaviors that were governed by Economic Rationality. Peasants began to reconsider their own production behavior in anonymous market. Sun's wife mentioned in the interview that she also began to pay attention to food safety and environmental protection during the greenhouse production now. She said, "we will pay great attention to the withdrawal period for the part sold to the market, and especially for our own food. In fact, when using pesticides, it is not only need to concern how much the dose is, but also better with low toxicity. We are using low toxic pesticides, so you can eat them after peeling on the next day. If the spray interval is more than two days, you can wash and eat".

The case of Sun's family can be divided into three stages, showing the process of "Reasoned Scrutiny" mechanism of the conversion and interaction among different types of rationalities. Firstly, when Economic Rationality plays a dominant role in production, profit-making behavior is obvious: the food production is mainly for the anonymous market, seldom for the household's own consumption. Meanwhile, it is not common to see Survival Rationality of the production for their own families, and Social Rationality of the exchange with neighborhood. Secondly, after the pregnancy event in 2008, Sun's Wife began to realize the importance of food safety. The importance of Survival Rationality rose, and led to the emergence of OFTS, and characteristics of differential production were obvious. Thirdly, with the increasing effect of Survival Rationality, behaviors of the peasant households that were dominated by Economic Rationality began to change in later production. Peasants are paying attention on potential food safety issues on the food for anonymous markets. Thus, the gap between the production for their own production and for anonymous market begins to narrow.

Another case is Wen's family of Xiangtan, Hunan Province, which can describe the process of integration between family and face-to-face society, and the integration of face-to-face society and anonymous market, and further discuss the process of the "Reasoned Scrutiny" mechanism. The householder is about 40 years old. In early 2014, his family operates family farm with the area larger than 50 mu (equal to 33,333m<sup>2</sup>), with watermelon as the main cash crop, about 12 mu (equal to 8,000m<sup>2</sup>). In addition, according to the characteristics of different varieties, he opened up small scale of "experimental fields" (a total of 5 mu, equal to 3,333m<sup>2</sup>) in the farm, to try ecological agricultural production.

The goal for Wen's family to conduct professional and large-scale production operation is to improve household income. Watermelon is the main income source of Wen's, with more than 5 years of planting history. The main variety is Kylin, with the output of more than 5,000 kilograms per mu (equal to  $667m^2$ ).

At the beginning of production, Wen's family has a sense of ecological production. The householder believes that ecological agriculture has a huge profit margin. "I am aware of the advantages of organic agriculture, but had also experienced numbers of small-scale failures." He did not use compound fertilizer in the beginning, but for watermelons grew only with farmyard manure, "even insects won't bite." This failure made him realize "when the scale reaches 30 mu (equal to 20,000m<sup>2</sup>), it is unrealistic not considering the output." So, he worked out a way of mixed use of compound fertilizer and farm manure in the experimental field, and use of low toxicity pesticides as possible. The purpose of these behaviors are trying to "find a balance between meeting consumer demand for healthy food and maintaining output."

There are three ways for watermelon selling: the first one is the roadside sales. As the family farm is close to the national road, about 70% can be selling to the passing-by customers in July to September, at 3 yuan per kilogram. The second one is wholesale, which is occupies 20%, to the local melon vendors at 1.6-1.8 yuan per kilogram. The third one is selling in the community. He will leave a few for acquaintance in the village, and sometimes also sell in the village market. Watermelon output per

mu can bring net income of more than 5,000 yuan, and the annual net income of at least 60,000 yuan with his 12 mu of watermelon.

In fact, the third type of sales behavior can bring very limited income to the family, but it reflects the interaction between family and face-to-face society, which is beyond the behavior motive of Single Rationality. When the householder visits relatives and friends, he usually brings the watermelons from the experimental field for people to taste. "If the watermelons planted in traditional way are accepted by acquaintance, it will obtain recognition from more people." The motive of Survival Society concerning about the food safety gradually interacts with Social Society. For example, the watermelon produced by the householder enjoy a good reputation, attracts and keeps a lot of "regular customers", some of which are very "experienced". He will reserve the watermelons which are planted in the experimental field in the traditional way for them.

In the interviews we found that with the increase of the specialization degree, peasants' position and bargaining power has risen, making the householder's judge of the future food market more advanced than other peasants. He has started to upgrade his family farm to an ecological farm. This change of operation mode is promoting the interaction between face-to-face society and anonymous market.

In fact, the change from peasants' self-protection to collective's co-insurance and society's coprotection is because of the deepening interaction between face-to-face society and anonymous market, causing the interaction between the dominant Economic Rationality and traditional Social Rationality. In the process of marketization, peasants, on one hand, maintain long-term and frequent contact with the demand market, which allow them to obtain information about food safety and ecological agriculture, enhancing their understanding on differential production and target customers. On the other hand, enhance in market participation will increase the specialization degree, resulting in the single production variety of householder's own production, and he will more dependent on the anonymous market. This creates a strong contrast with Shouguang's Sun's family (small household). At this moment, his own expertise may make him realize that it is important to produce safe food for his own family and face-to-face society, and even for the anonymous market. Although "Distance Decay" still exists, a larger social co-protection is necessary.

Thus, "Reasoned Scrutiny" mechanism promotes the interaction between Social Rationality and Economic Rationality, reflecting in the increasing of householder's ability of understand the market and seize the opportunity, which drives him to provide safe food to the anonymous society. It triggers his reflection on the modern mode of production, which is the traditional food production way of can also supply in anonymous market. Specifically, peasants want reciprocal exchange in the anonymous market, which is peasants provide safer food, and urban consumers are willing to accept it and pay a reasonable price. Besides, the interaction has caused the improvement of the traditional production mode. The householder does not reject the inputs of modern production factors, and achieves the balance of quantity and quality of the product through reasonable proportion, which makes the difference production indifferent. Food for their own family and acquaintance are the same as for the market.

Under the "Reasoned Scrutiny" mechanism, the influence of the behavior governed by Social Rationality is expanding. Whether different types of rationalities in different fields can transform from one to another, the interactive effort of the actors is necessary to a large extent. Peasants' own awareness of food safety and market are both needed. In essence, food exchange in anonymous market is based on the logic of market profits. Only when peasants can feel the benefits of producing safe food for an anonymous market, are they likely to provide food of good quality for the society, under the control of both Social Rationality and Economic Rationality, from the vicious circle (individual self-protection) of the food system, to the virtuous interaction (collective co-protection and social co-protection).

The above two cases help us to understand the process of "Reasoned Scrutiny" mechanism: on one hand, peasants' "Distance Decay" mechanism makes different types of rationalities in Multiple Rationality distinct, each dominated for the differential productions of OFTS in different fields. On the other hand, the "Reasoned Scrutiny" mechanism allows different types of rationalities to interact with each other and act together, to guide and change the OFTS behavior driven by "self-protection".

#### **6** Conclusion: Multiple Rationality in Practice

This paper discusses the emergence of the disembedded market society in the process of the food system transformation, which leads to the growing food safety threat. In this context, Chinese peasants conduct OFTS differential production, with Multiple Rationality as a logical start, revealing the hidden mechanism of rational choice.

From the OFTS case study of the peasant households in six provinces and autonomous regions, we found out that it is difficult to correctly explain these behaviors only from Economic Rationality. Therefore, we try to introspect from the epistemological level, and focus on Rational, Social and Economic Rationality existed in the production of peasants, to reconsider the concept of rationality, and thus start to understand the peasants' behaviors OFTS. This paper analyzed the structural association between different fields and motives of three kinds of rationalities, together with the process of transformation and interaction of motives among three rationalities.

We summarized the explanatory framework of peasant's motive of OFTS as Multiple Rationality. The key question would be: in what context, with what kind of mechanism, and influenced by what conditions, rationalities could converse and interact with each other, to complete the "reasonable" explanation of behavior? This study analyzes the association between different fields of food exchange and Multiple Rationality, and the dynamic process of Multiple Rationality in practice.

On the one hand, "Distance Decay" mechanism is the macro factor that contributes to Multiple Rationality. The existence of "Distance Decay "mechanism makes peasant households choose different production methods rationally according to the differences and distances in specific fields in the context of food system transformation. At the same time, however, OFTS creates a gap of food quality and safety between face-to-face society and the anonymous market, and increases the mutual distrust between peasants and consumers. Peasant individuals intend to protect themselves, but it widen the distance between the social field.

On the other hand, "Reasoned Scrutiny" mechanism is a micro principle to balance Multiple Rationality. In face of interaction among different and specific fields, peasants can take the initiative to determine its meaning to the production behavior, and trade-off among three different types of rationalities. With the mutual transformation and interaction among those three, and ultimately form a combination of acts that satisfy the principle of "Reasoned Scrutiny".

"Distance Decay" and "Reasoned Scrutiny" respectively reflect the sense of history and realism from epistemological aspect. And the close relationship between those two mechanisms is indispensable for the re-understanding of peasants' motives of OFTS. We should not simply emphasize on the "Distance Decay" role, and ignore peasants' rational choice of Multiple Rationality based on "Reasoned Scrutiny"; nor only emphasize the rationality of behavior, and deduce a peasant's behavior of OFTS mechanically, but in the close interaction between, by both considering the structural effects of "Distance Decay" mechanism on rational choices, and the reasonable behavioral motives formed with "Reasoned Scrutiny" mechanism in the practice on the micro level. On the basis of the above, this paper puts forward the hypothesis of small scale agriculture and peasant household's production behavior in developing countries with Multiple Rationality as the start of analysis, and constructs the explanatory framework of household's production behavior in line with the logic of practice.

From the perspective of epistemology, Multiple Rationality proposed in this paper is an explanation of OFTS behavior of peasant households from the understanding of behavioral motives. It is significantly different from the Economic Rationality of neoclassicism, which is trying to derive some kind of micro-behavior law from the Economic Man Hypothesis. Peasants' specific behaviors of OFTS are dominated by Multiple Rationality. Comparing with Single Rationality, with the explanation framework of Multiple Rationality, the real motives and social significance contained in those actions can be categorized more clearly.

Thus, we hope the discussion in this paper can enlighten the future research on the behavior of peasant households, stepping out of the theoretical Single Rationality, to the practical Multiple Rationality. The threat of food safety in the context of food system transformation has led peasants to present self-protected behavior of OFTS. This paper discusses the transition and interaction among those three types of rationalities, and giving priority to ensure that family members and acquaintances can acquire safe food is only a forced temporary choice of peasants. The creation of conditions such as food safety awareness, social identity and reasonable payment, peasant's Multiple Rationality may also dominate themselves to provide safer food to the anonymous market, and complete the new attempt of the construction social co-protection and co-governance of food safety.

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#### New Extractivism, Peasantries and Social Dynamics: Critical Perspectives and Debates

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