

Fragmentary embeddedness: Challenges for alternative food networks in Guangzhou, China

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ABSTRACT

Alternative food networks (AFNs) have been viewed as being more deeply embedded in the fabric of places and the social relations of their food systems than conventional food networks, and have been regarded as ‘spaces of hope’ for addressing sustainability challenges associated with global food systems. This paper argues that embeddedness, however, is contingent and shifting rather than an intrinsic quality, and is shaped by the cultures of production, trade, and consumption in particular places. This paper evaluates challenges that emerging AFNs in Guangzhou, China, are confronting relating to their embeddedness in place. The paper is underpinned by research involving interviews and focus groups with key food system actors and stakeholders in Guangzhou, including government officials, organic farmers, retailers, and non-governmental organizations. It demonstrates that AFNs in Guangzhou achieve only ‘fragmentary embeddedness’ in local cultures and systems of production, retail, and consumption. Despite strong social relationships established by a few successful farms and their loyal consumer groups, AFNs more broadly have struggled to embed themselves in the social and cultural fabric of the city and its commercial foodscapes. In terms of territorial embeddedness, the association of AFNs with western values, which do not always translate into Guangzhou’s production and retail systems, can limit their embeddedness and scaling up in this context. The split between ‘new’ farmers (i.e., educated and urban-rooted producers ‘returning to the land’) and common farmers (i.e., local peasants) further exacerbates the difficulty of integrating AFNs in rural communities. Regarding social embeddedness, AFNs struggle to meet local consumer preferences regarding food appearances, quality, and taste, and therefore consumer trust in them is limited. In terms of institutional embeddedness, AFNs lack government policy support, despite the alignment of their missions with national strategies. More efforts are needed to deepen the embeddedness of AFNs in Guangzhou’s food system and cultures if they are to respond effectively to China’s food crisis and wider sustainability issues.

1. Introduction

Alternative food networks (AFNs) over the past few decades have been regarded as ‘spaces of hope’, representing forms of resistance to industrialized and globalizing food systems (Hughes, 2005: 497; Leyshon et al., 2003). AFNs include models and initiatives often centered on more localized food supply chains with closer links between producers and consumers than their mainstream counterparts achieve. They include organic farms, farmers’ markets, community-supported agriculture (CSA), and food box schemes (Goodman and Sage, 2016; Watts et al., 2005). Studies suggest that AFNs in western contexts provide differentiated food choices, offering consumers more autonomy and

greater food knowledge based on rekindled trust and unique values of redistribution against the logic of bulk commodity production (Bernardi and Tirabeni, 2018). Focusing on concepts of territorial, social and institutional embeddedness, social scientists have argued the various potentials of AFNs for addressing the global food system crisis (Sonnino and Marsden, 2006). These three dimensions, discussed more fully below, refer to the rootedness in a given locality and its food system, the closeness of social ties and strengths of social networks, and the thickness of accumulated links with institutions respectively. “Embedded” AFNs in the Global North are regarded as potential pathways to sustainable food systems where food security, environmental protection, and animal welfare are well balanced (Goodman et al., 2012). Studies of

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food system transformation suggest a need to increase the embeddedness of food systems and see AFNs as a vehicle for so doing (Maye and Kirwan, 2010). However, an examination of the role of AFNs in fostering more embedded food systems must be placed in specific socio-cultural and political-economic contexts. The vast majority of current research has focused on AFNs in the Global North, marginalizing the impact of food system characteristics, social structure, and consumer culture on the potential embeddedness (or lack thereof) of AFNs in the Global South.

Embeddedness is a lens through which not only to view the difference between AFNs and conventional food networks (CFNs), but also to reflect on the achievements and limitations of AFNs themselves. The emergence of AFNs in China has received increasing research attention in recent years as bottom-up initiatives to ease food safety problems and enhance food system sustainability (Martindale, 2021; Scott et al., 2012). This paper rethinks the nature of embeddedness in AFNs. We argue that the embeddedness of AFNs is not given, but rather is constantly generated and changing. In that sense, the forms of embeddedness are contextually dependent and contingent. We use Guangzhou, China, as a case study, to discuss how complex and entwined sociocultural factors shape the shifting embeddedness of, and multifaceted challenges for, AFNs. Those challenges lead us to characterize AFNs in Guangzhou as having achieved only fragmentary embeddedness, as we shall show they often have to trade off different ways of being embedded against each other, and often can build only fragile links and are often left struggling to create a growing, resilient sometimes even viable network under current conditions.

2. The study

The research underpinning the paper involved fieldwork in Guangzhou from September 1, 2018, to June 30, 2021. Guangzhou has a population of 18,676,605 by 2020, ranked the third among Chinese cities (The People's Government of Guangzhou Municipality, 2021). Guangzhou is also the fresh food distribution center for southern China and has become one of the most significant locations for AFNs in the country (Leung, 2021; Martindale, 2021). AFNs in China involve complex production, distribution, and consumption networks that do not always involve face-to-face connections between producers and consumers (Si et al., 2015). We traced the various actors involved in these alternative food networks, starting with small local producers and following the trading links to consumers, which sometimes intersect with conventional food networks. We observe both the connections and disconnections between AFNs and the food cultures and systems of Guangzhou.

In-depth interviews with 30 institutions associated with AFNs were conducted and included alternative producers (P1-14), retailing platforms and restaurants (R1-8), non-governmental organizations (NGOs) (N1-6), and governments (G1-2). We also interviewed 16 institutions in conventional channels (C1-16), including retailing store chains and supermarkets to find out whether or not AFNs' produce reaches conventional channels. In addition, we held two focus groups, the first for consumer groups with six participants (Co1-6) to explore their multiple understandings of alternative food and food safety, and the second for six owners of alternative farms (coded among P1-14) to discuss experiences and relationships with consumers.

Additionally, members of the research team conducted participant observation at alternative farms by helping to pack and deliver agri-foods and physically living on the farms. We visited many farmers' market fairs and assisted vendors in selling products. We often participated in workshops organized by local NGOs, discussing sustainable agriculture and ethical consumption. Our research team also served as volunteers at the Harvest Festival in Guangzhou, the most significant event of the year for alternative initiatives. Such deep involvement not only established a rapport with informants, but also generated numerous insights beyond the information collected from interviews.

3. Embeddedness of AFNs

Embeddedness has been widely explored in the AFN literature (see Oñederra-Aramendi et al., 2018). It is considered the key concept describing the characteristics of AFNs and helps to illuminate the differences between AFNs and conventional food networks (CFNs) (Maye and Kirwan, 2010). There are three key dimensions to the current understanding and application of embeddedness. First, explanations following a sociological perspective emphasize *social embeddedness*. In early attempts to link embeddedness with AFNs, Hinrichs (2000) argued that social embeddedness should be understood concerning two concepts: market-ness (i.e., price consideration and the pursuit of profit maximization) and instrumentalism (i.e., the nature of individual motivation). Food producers at farmers' markets and in CSAs balance their economic goals and self-interest with community concerns involving close social ties, shared relationships, and civic bonding, an effect Friedberg (2003) referred to as a "politics of reconnection". Sage (2003) used the notion of relations of regard to explore the social embeddedness of AFNs. This regard not only manifests itself in transactions through shared recipes, but also extends to the post-transaction period via food sharing and the strengthening of consumer loyalty. Additionally, producers have developed relationships of regard in order to build stable alliances with those they deem trustworthy. Through channels such as farmers' markets and community-supported agriculture, people share and exchange alternative food, strengthening trust and social interaction. AFNs can become the glue that holds communities together (Migliore et al., 2014).

The second dimension involves *territorial embeddedness*, demonstrating the deep association of AFNs with specificities of local food systems. As Hess, 2004 suggests, territorial embeddedness:

"... considers the extent to which an actor is 'anchored' in particular territories or places. Economic actors become embedded there in the sense that they absorb, and in some cases become constrained by, the economic activities and social dynamics that already exist in those places (p.177)."

The territorial embeddedness of AFNs tends to involve localized, short and transparent supply chains (Dansero and Puttilli, 2014). In this sense, AFNs contrast with dominant de-localized food systems. Mainstream food consumption tends to involve a distanced relationship between consumers and producers, with consumers having limited knowledge of food production (Goodman et al., 2012). Being embedded in place often means cutting out many intermediate links in the food chain, bringing food producers closer to consumers, and facilitating the process of placemaking (Costa and Besio, 2011). Territorial embeddedness can also mean emphasizing local varieties of foods associated with characteristics of particular *terroir* and natural environments and thus drive a quality turn in consumption. At the same time, the producer's skills and local culinary traditions can become carriers of the meanings and values of alternative foods (Krzywoszynska, 2015).

The third dimension concerns *institutional embeddedness*, referring to the ways in which AFNs are politically linked across spatial scales. In contrast to territorial embeddedness, institutional embeddedness goes beyond the local scale and can involve interaction between AFNs and external institutions at a range of spatial scales. Sonnino and Marsden (2006) put forward a theoretical framework including both horizontal and vertical embeddedness of food networks. They suggest geographers see territorial and social embeddedness aligned with horizontal connections and a bottom-up consideration of local conditions and agency (Qi et al., 2021). The vertical dimension involves "the political, constitutional, and regulatory context in which alternative food networks operate" (p. 189), such as national and regional policy support and trust-based collaborative business associations. For instance, food certifications are authority-based endorsement of alternative food and promotion of consumer trust, which assist in expanding sales. (Higgins et al., 2008). Institutional embeddedness involves not only social

meanings between individuals, but also how AFNs connect to and get support from governmental and other organizations to embed themselves in the food system (Manganelli et al., 2020).

Embedded AFNs and dis-embedded CFNs have become a commonly accepted dichotomy, with AFNs often highlighted as a beacon of hope for improving the sustainability of global food and dietary systems by remedying the “problems” caused by CFNs (Maye and Kirwan, 2010). Embeddedness portrays a small but beautiful utopia, closely aligned with localness, community, and enlightened consumer groups, but it can hide the limitations of AFNs associated with challenges of scaling-up, conventionalization, and an association with middle-class markets and attributes (Fourat et al., 2020). Complete embeddedness is only an abstract state of theoretical existence, and Hinrichs (2000) has already pointed out that in reality AFNs cannot completely exclude economic rationality, but rather the operation of various forms of AFNs’ activities still depends on the exchange of economic interests as an internal driving force. We note that AFNs themselves are transforming, for instance, developing in ways that resist simple conventionalization. AFNs have for example developed mega-box schemes as a form of scaling up. In other words, the embeddedness of AFNs is not given, nor is it somehow naturally placed in all social contexts. In fact, it is the AFN as a performative ordering that generates embeddedness by mobilizing the social, economic and cultural factors that enable and constrain it.

Rich empirical studies in recent years have demonstrated the importance of AFNs’ embeddedness in place (Fourat et al., 2020). There are two key issues. First, forms of embedding are diverse and constrained, and shaped by specific social fabrics. Therefore, we cannot use the stereotypes of embedding from Western countries and apply them directly to Chinese contexts. Second is the evaluation of AFNs’ embeddedness in terms of impacts on the food system and its stakeholders. The indicator of embeddedness can be considered valid if AFNs effectively respond to the urgent concerns of local food systems. In Global North contexts, the urgent food issues faced include the distancing of consumers from production and the detrimental impacts of industrialized agriculture including environmental damage. Most studies have examined the more mature AFNs in Global North settings, arguing how they become embedded as innovative forms of food institutions to address these urgent concerns regarding food system sustainability. However, different regions experience different challenges and have different food system priorities (Béné et al., 2019). In China, food safety has been placed at the top of the list of public concerns. Using the lenses of social, geographical, and institutional embeddedness, we ask: How is the embedding of Guangzhou AFNs different from that of Global North counterparts? And how does such embedding affect the role of Chinese AFNs in addressing urgent issues of local food systems, particularly in mitigating food safety? Given the food safety crisis in China, there is much that AFNs can potentially offer when compared with other solutions, namely the increasing importation of food deemed to be safer from overseas (see, for example, Woods et al., 2021), which carries sustainability challenges associated with increased food miles. Appreciating the embeddedness or otherwise of AFNs in particular places is key to understanding the ways in which AFNs respond successfully or not to food system challenges and priorities for sustainability.

4. Emerging AFNs in China

AFNs in China burgeoned from the late 2000s, following the establishment of the first CSA farm, Little Donkey, and first farmers’ market, Beijing Farmers’ Market, both in Beijing (Si et al., 2015). After more than a decade of development, more than 20 cities now host local farmers’ markets (Zhang 2018). AFNs in China are composed of a complex group of producers, intermediaries, and consumers. In Guangzhou, for example, as shown in Fig. 1, the producers in AFNs mainly include so-called new farmers (e.g., educated and urban-rooted farmers) rather than common farmers (e.g., local peasants) (Si et al.,

2019). The differences between the two are described in detail in the next section. New farmers are involved in both small-scale organic farms and CSA farms. Small-scale farms are the most common, and most of their products are distributed through the WeChat¹ groups formed by the farm owners. Some products go to online intermediate retailers, specializing in alternative agrifood products, who are not involved in production but their sourcing, distribution and sales. Such online retailers regularly visit the farms to ensure food quality.

CSA farms are characterized by individual consumers sharing the risk by subscription. Similar to small-scale farms, CSA farms also sell extra products via intermediate platforms and WeChat groups. We use the term ‘alternative farm’ to include both CSA farms and small-scale organic farms. The number of common farmers involved in AFNs is very small, and where they are involved, it was initiated by NGOs in the villages. The products are distributed through WeChat orders. Guangzhou’s ethically-minded consumers have also organized buying groups that scour the country for reliable ingredients from sources that also include small organic farms and common farmers in Guangzhou.

It is difficult to estimate the total number of alternative farms in the nation because of the high turnover rate. Professionals from Beijing Farmers’ Market said that the number could be more than a thousand. Our fieldwork found more than 20 alternative farms in suburban Guangzhou. According to a confidential report of the CSA Network of China (2019), which collected 308 samples, geographically 61% of alternative farms were distributed in the Mideast and Midwest of China, and 45% in the third or lower tier cities away from concentrations of middle-class consumer groups. Most alternative farms (63%) have less than a five-year history, and 69% were household-based with fewer than five employees. In 2018 the retail sales of certified organic food in China reached 63.6 billion CNY, ranking fourth in the world in terms of the scale of national-level sales. Organic food sales increased by 18% in 2018 but in total they accounted for only 0.8% of all food retail sales of the year, much lower than the 5% seen in the UK (Young et al., 2010). However, this counts only certified organic food and thus undercounts production by other alternative actors for whom formal certification is an unsuitable strategy as we shall show later in the paper.

Existing research has summarized some of the characteristics distinguishing AFNs in China from their counterparts in the Global North (Si et al., 2015). First, food safety is the most important part of the context in which AFNs emerged and developed (Scott et al., 2014). At the time of writing, in China food safety constitutes one of the most urgent social concerns (Kang, 2019). Incidents of poisonous food have been regular features of the past two decades, news of which is disseminated through domestic and international media and elicits fierce public criticism (Yasuda, 2017). Food safety issues include the overuse of chemical fertilizers, pesticides, and antibiotics in food production, chemical contamination, poisonous additives, food adulteration and fake food, and food hygiene problems inside and outside of production plants and restaurants (Yan, 2012). Complicated congeries of policies and regulators mean that different governmental departments at various scales can shirk their regulatory responsibilities, and there is unwieldy bureaucracy making the enforcement of common food safety laws difficult (Yasuda, 2017). The long, complex layers of distribution with little transparency in conventional food networks increase the opportunities for unscrupulous traders to breach rules. Against this backdrop, direct links between producers and consumers within AFNs offer a potential corrective. With greater transparency in shorter supply

¹ WeChat is a prominent instant communication application in China. It is the most commonly used instant messaging software in China, similar to WhatsApp. By 2022, WeChat has over 2 billion registered users and over 1.1 billion daily users. That means that almost every Chinese person with a smartphone will use WeChat. Farmers can launch their consumer groups via WeChat, post daily production updates, and links for buying products, and instantly interact with consumers.

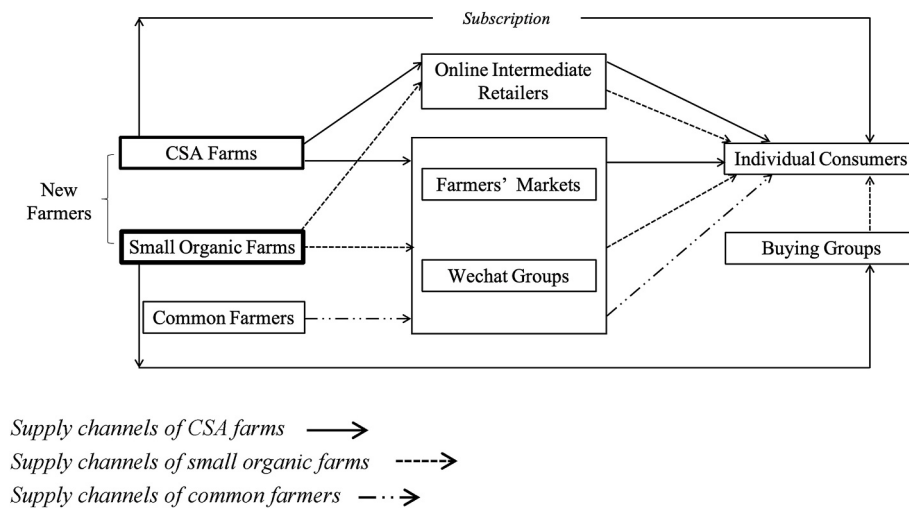


Fig. 1. Alternative supply channels in Guangzhou.

chains, food safety can be more easily monitored. Thus, AFNs are seen as offering a potential solution to food safety problems (Scott et al., 2018).

Another important characteristic of Chinese AFNs is that they are strongly consumer-driven (Si et al., 2015). Ongoing food safety incidents have eroded consumer trust, and a large group of consumers constantly seeking safe food sources seems to offer a market opportunity for AFNs. However, AFNs face cautious, discerning and pragmatic consumers who, whilst concerned with food quality, especially food safety and freshness, are less concerned with environmental protection, food sovereignty, social justice, and political demands (Martindale, 2021), the latter representing core values of Global North models of AFNs. Therefore, from the very beginning, Chinese AFNs have gone through an arduous process of trust-building (Wang et al., 2015). Thus, the key to the development of Chinese AFNs is unlikely to lie in the extent to which they can cultivate an 'alternativeness' resembling their Global North counterparts because Chinese consumers do not see them as social movements pursuing social justice but as safe retail channels. Our investigation returns to the ways in which satisfying the material preferences of consumers creates challenges for AFNs in Chinese contexts.

5. Dividing producers: new farmers and common farmers

As noted by Scott et al. (2018, 99), "The inclusion of 'real' peasants in the construction of AFNs in China is minimal, although there are a few exceptions." The literature implies a clear division of producers between new farmers and common farmers. Common farmers are peasants rooted in rural areas and have always been involved in agriculture. New farmers (*Xinnongren*) constituted the majority of AFN producers. New farmers are different from common farmers in the following aspects: first, they typically have urban backgrounds and are highly educated. The CSA Network report (2019) showed that 77% of new farmers had benefitted from either college or higher-level education. Second, they typically give up well-paying jobs in the city and resolutely return to the countryside to pursue a rural, idyllic life. Some, because of a sudden life experience (serious illness of themselves or a family member), realize the power of healthy ingredients and are determined to participate in agriculture (P1, P5, P6). Some are tired of the busy city life and want to return to their hometowns to create a quiet, down-to-earth, and more reclusive lifestyle (P3, P4, P9). Others see a business opportunity in the organic food sector (P2, P7). Third, new farmers have more financial strength than common farmers and can rent more land.

New farmers tend to start from scratch, learning agricultural techniques from videos shared on WeChat and workshops organized by NGOs, intended as "exemplary agriculture" (Cody, 2019). Our fieldwork found that new farmers embrace different schools of foreign agricultural

thought, including permaculture, Japanese natural farming, and Australian dynamic farming (P1, P7, P8, P12). They also benefit from the rich and specialist agricultural knowledge associated with traditional farmers in China, who can recall sustainable production techniques before the recent massive use of chemicals. One serious challenge is adapting different farming techniques to the local natural environment; unfortunately, many new farmers struggle (Martindale, 2021).

The successful transformation of agricultural techniques in practice requires two foundations, time and capital investments. New farmers first need to spend abundant time learning basic farming methods due to a lack of prior agricultural experience. The focus is on improving the soil, as new farmers face land that has been abandoned for years or has lost fertility due to the impacts of conventional farming. It takes at least three years to see improvement from converting infertile soil. In the meantime, yields are generally poor, but maintaining significant investment in infrastructure, seeds, organic fertilizers, and labor is essential. Interviewee P3 was a devoted follower of permaculture, though he also incorporated some indigenous farming techniques. However, he had virtually no harvest in the first two years and found weeds rampant in the humid climate of Guangzhou. The yield improved in the third year, but was still less than half that of conventional farming. By this point, he had invested over three million yuan in the farm, depleted his savings, and was forced to close the farm. The process of adapting farming techniques to the local soil is thus challenging, and many new farmers lose the race against time and money and eventually withdraw.

Local social relationships at times become a dis-embedding force for these new farmers and AFNs. New farmers who have grown up in cities have to deal with the challenges of forging new local relationships that are not always positive (Born and Purcell, 2006). Coming from Hunan province and graduating from a reputable university in Guangzhou, P7 and his partner began a CSA farm in suburban Guangzhou in 2014. He experienced a frequent need to deal with the village committee. Chinese law stipulates that rural land is owned by the village committee, from whom individual farmers receive contracting rights. There are also some villages where the village committee gathers the farmers' contracted land and packages it for transfer to the actual farming operators, and share the revenue. Therefore, for new farmers, there are two ways to rent land, either by subletting from individual farmers or by signing a contract directly with the village committee.

P7 chose the latter approach because the location he selected was controlled by the village committee. In addition, the village committee is responsible for enforcing agricultural regulatory policies and serves as a bridge between the new farmers and the state. P7 said that the village committee was initially wary of him and was reluctant to lease him land

because his team was treated as outsiders. Villages in South China are typically ruled by a patriarchal lineage with a shared surname, where outsiders like P7 can engender hostility in the local authority. In addition, their farm plan does not convince the village committee as CSA is a novel idea that challenges conventional farming in the village. In the end, P7 was able to lease the land through the endorsement of an acquaintance in the village. So, new farmers like P7 are caught in a double whammy of unfamiliar villages with respect to both personal relations and alternative agricultural practices.

The new farmers born in rural areas usually choose to return to their hometowns to start their own farms to reduce the resistance of village social relations. P4 was born in a small village on the outskirts of Guangzhou, and after obtaining a bachelor degree in marketing, he worked for a foreign-owned company and settled in urban Guangzhou. In 2016 he resolutely resigned to return to his home village to start an alternative farm. He endured significant psychological pressure initially as many village folks teased on him that he returned to the farm only because he failed in the city. Farming is seen as inferior to white-collar work in the city. The organic farming practices he pursued also brought disdain as nobody believed that he could grow something without chemical inputs. He did not earn respect from villagers until his farm started making profits after five years of endeavor.

Some new farmers occasionally hire local farmers in busy seasons, but aside from that, communication is very limited. Organic production appears alien to common farmers, though it is common to see “one family, two systems”, where some farmers differentiate their production by using large amounts of pesticides and fertilizers for market-oriented produce, but retain a small plot of land to produce safe food for their own consumption (Si et al., 2019). It is very difficult for common farmers to completely switch to organic production because they lack the appropriate production technology, capital, and knowledge (P11). In addition, switching to organic production is risky, yields are unstable, and marketing is difficult. Persuading common farmers to join organic production has become a rural experiment led by prominent scholars such as Wen Tiejun. Scholars and NGOs have launched production co-operatives in several villages in an attempt to empower common farmers (Qi et al., 2021). We found that after more than a decade of work by residential social workers, a remote village on the outskirts of Guangzhou has managed to mobilize a dozen farmers in cooperative organic production, even though most of the village's farmers still maintain conventional production methods. But such examples are still rare around Guangzhou, as this painstaking process involves many challenges such as product knowledge transfer, organizational nurturing, and market-making.

The urban background of new farmers means that they face the challenge of re-rooting their knowledge and resources in rural communities to achieve territorial embeddedness. Even so, alternative farms offer territorial embeddedness for consumers but at the cost of not embedding with common farmers and local traditions. The production relies on the imported practices and technologies of new farmers and is isolated to individual farms, and it can lead to low yields when the technology is unable to adapt to the local terrain. As small pockets of varied, often imported alternative cultivation techniques, sometimes maladapted to local environments the new farmers seem more fragmented than embedded in a holistic network.

6. Complex networks of distribution

Products from alternative farms are distributed through four main channels, including membership, direct online self-sales, farmers' markets, and online platform sales (see Fig. 1). These sales models lead to different embedding effects. Theoretically, CSA is characterized by de-commodification, where subscribers invest in the producer based on trust and receive products in return (Vail, 2010). However, we have not found any farms that can fully survive on memberships. Currently, Chinese consumers are receptive to “benefit sharing” but not to

“risk-sharing”. In the event of a short yield due to extreme weather, the reserved quantity needs to be replenished in the future (P6). Even with a core membership, farms need to distribute excess products through other channels.

Most alternative farms in Guangzhou do not rely on the CSA model but have adopted online self-sales as their main marketing channel. Farms organize groups on WeChat to recruit scattered orders from individual consumers. Considering the land price, most alternative farms are currently clustered in fourth and fifth-tier cities rather than around the concentration of richer consumers in major cities. Therefore, a megacity like Guangzhou is an important market rather than a production hub of alternative food close by. Due to the small size and irregularity of the orders, farms use express companies as their carrier rather than professional cold chains. During transportation, problems with waste and over-packaging may occur. Some farm owners complained that express costs can occupy more than one-third of profits (P10).

As WeChat sales are soliciting distanced consumers, social embeddedness is difficult to form. A ‘relation of regard’ (Sage, 2003) is also rare. P4 suggested that “few consumers care about the life of our producers, and we do not wonder about the daily lives of consumers. We only talk about food”. Moreover, farms in AFNs tend to concentrate on their own individual marketing channels rather than forging a shared market with other farms in the network. P1 says that “It feels like everyone is selling their own stuff, and it's hard to break the circle. The real union has not been made, and it is still at the stage of worrying about stealing customers from each other”. At the moment alternative producers are all too often fragmented into many farm-specific WeChat groups rather than fostering closer alternative trading networks to build an effective bridge to create a broader community.

Farmers' markets can play a huge role in creating social embeddedness and markets for products produced through ‘alternative’ modes of agricultural production in many different cultural settings (Oñederra-Aramendi et al., 2018). In China, the Beijing farmers' market is successful in terms of trade volume and regular activity, which can be attributed to a well-established operations team and strict quality control (Wang et al., 2015). In contrast, the Guangzhou farmers' market has a much smaller impact. In 2019, the Guangzhou farmers' market insisted that it hold a fair once a month in the downtown, with some twenty vending stalls. In 2021, as the COVID-19 pandemic impacted, only four fairs were held. The organizer is called “*chengxianghui*” (urban-rural connection), a Guangzhou-based NGO. The organizer only collects minimal rent from participating farmers and cannot generate sufficient income for marketing. Farmers explained that they make no profit from the fairs because of the high cost of travel and the low consumer footfall. They come to the market in an attempt to gain publicity and to develop a reputation rather than to generate earnings (P2, P8). The market is a valuable opportunity for farmers to communicate with consumers who are not knowledgeable about alternative food. However, it is challenging to transmit the values of organic and sustainable diet to general consumers, especially to price-cautious older consumers who consider alternative food unworthy of the cost (N2).

Some alternative food circulates through intermediaries such as online organic retailers before they reach consumers (see Fig. 1). Because the supply from each farm is limited in terms of volume and variety, online retailers in Guangzhou have to collect commodities nationwide, and even from southeast Asia (R1). Some online organic retailers admitted that the demand for food diversity in their loyal and committed consumers has motivated them to search for more and more suppliers, despite their distance (R2, R3). In addition to produce from alternative farms, retailers have taken certified organic goods from wholesalers and intermediaries in CFNs to supplement their stock; in this scenario, the provenance information can be blurred because of transactions of multiple trade levels. Complicated sources of goods indicate a long supply chain and both physical and social distance between producers and consumers. In some cases, online retailers counter

this disconnection with personalised stories offering connectivity to distant producers, alongside traceability and quality assurance. In an article marketing organic dry date, the intermediate retailer specifies the producer, Ms. Liao from Xinjiang Province, and wrote,

When we visited Liao's farm, we cannot tell what she is growing, red dates or grass? (followed with a picture of the farm). Wild conditions like this ensure the safety of the red dates, meaning avoiding any chemical inputs. During the harvest season, the red dates naturally ripen and dry on trees, retaining more natural flavor and nutrition ... Liao faced countless difficulties on her determined road of ecological agriculture, such as sudden dramatic production decrease, and worries on sales ... (followed with a picture of the family)

The marketing articles often describe life stories of farmers in detail, as well as their processes of production, agricultural techniques, and social issues such as poverty alleviation, rural development, and environmentalism. Consumers we spoke to (below) claimed that good stories can induce first-time buying but continued purchase will be based on the product quality.

Guangzhou AFNs form a multi-level, multi-channel supply chain stretching beyond the city and proximate, and not so proximate, rural areas. The physical distance creates many difficulties in linking with urban consumers. Individual farms and their core consumer groups rely on frequent online communication to build and sustain robust markets. The ongoing WeChat exchanges and sales may, with effort, foster social embeddedness but they are delocalized and not territorially embedded. Furthermore, such farm-centered circles are relatively constrained and this hinders the formation of larger social interactions. The farmers' market performs well in social embeddedness as well, but can only be successful at a relatively small scale and the distances farmers must travel means they are not commercially viable. Online intermediaries assist the flow of alternative food, but the de facto long supply chain can obscure traceability information and lead to the distancing of consumers and producers, resulting in territorial dis-embeddedness.

7. Food materiality-driven consumption

While AFN producers strive to fit consumers' priorities regarding food qualities (i.e., food that is judged to be safe and fresh), they often find it difficult to satisfy consumers (Martindale, 2021; Zhong et al., 2020). The gap concerning food values between alternative actors and general consumers constrains the social embeddedness of AFNs. Many actors in AFNs adhere to an ethical code emphasizing the human-nature connection, the environment, and sustainability, in accord with Western models. However, our research found that only a small number of consumers, typically middle-class, well-educated young mothers, echo this (Co1-6). Most consumers are distanced from producers' ethical concerns (see also Scott et al., 2018). Alternative actors expressed difficulties with communicating their concerns to consumers who in turn are fastidious about alternative food, using their own criteria to judge the quality (P8, N1). The quality assessment is accomplished by people's taste and dietary preferences, incorporating a "visceral approach" (Hayes-Conroy and Hayes-Conroy, 2010). Based on the feeling of the texture, smell, and flavor when bodies meet and digest food, as well as bodily reactions after consumption, consumers make judgments on the "goodness" of food. The emphasis on food materiality as a bearer of quality is a key to understanding Chinese consumer cultures, and alternative producers actively strive to show it is something they deliver. As one respondent explained:

"Food safety is still our number one marketing slogan because it's the biggest pain point for consumers. Only a very small number of people's need is to protect the environment. But when we tell consumers that our produce has the added value of being environmentally friendly in addition to being safe and delicious, they are still happy. (AFN) practitioners don't necessarily shout slogans very high,

because most consumers currently care more about food quality than other social meanings." (P8)

Consumers' perception of food safety is also closely tied to the appearance and taste of food. The phrase "I will know it when I taste it" illustrates consumers' confidence on their visceral judgments (Martindale, 2021). Many alternative actors have expressed the difficulty in gaining consumer trust. An alternative farm owner said:

"Helping a farmer or environmentalism is an additional benefit rather than the ultimate purpose of buying our products. Consumers' need for tasty, safe, and healthful food comes first. When they see that alternative food has an ugly appearance, the variety is limited, and the taste is not necessarily better than locally-based conventional food, consumers are unwilling to constantly buy [the alternative food]" (P9).

Meeting consumers' expectations for excellent food quality is a fundamental prerequisite for building trust. Although alternative producers agree that ecological farming contributes to the accumulation of unique flavors and textures, the perception of such nuances is subjective (P6). Coupled with the limitations of different farm production techniques, it is difficult to distinguish alternative food from conventional produce at the level of perceived materiality, such as visual appearance, texture, and flavor. This means that it also has to be valued for being environmentally friendly if it is to solidify a preference for alternative food compared to conventional routes such as wet markets that are local, easily accessible and offer culturally valued attributes such as the frequent purchase of fresh produce. A core member of a buying group on WeChat shared her story.

"Our buying group picks alternative food from all over the country. Once I bought Shanxi cabbage, a share of ten kilograms. It took a long time to eat and had to be put in the refrigerator. My family didn't understand and didn't support me, they felt as if I was helping the poor. The ingredients I bought did not look as good as the ones they bought at the wet market, which were fresh and good-looking. I'm one of the leaders of the buying group, and I've been supporting eco-products for almost ten years. But I can't even influence my family, I think I am quite a failure. (Co1)"

P5 owned one of the few successful farms in suburban Guangzhou, with a WeChat buying group containing about 280 loyal consumers. The farm covers an area of about 70 mu (11.5 acre) and has nine staff, four of whom are the owner and his family. The farm mainly grows vegetables and achieves annual production of around 35,000 kg (77,000 lb). The farm's turnover in 2021 was about 1.1 million RMB (137,000 GBP). The owner says that sales have been rising slowly over the years and the farm can maintain operations and make a small surplus, enough to support the family. The farmer says he is "satisfied that after all, this is a business hard to make a lot of money. It supports the lifestyle I want, and that's the most important." In China, alternative farms that maintain operations can be considered successful; with acreage similar to P5's farm, 62% of farms have an annual turnover of less than 0.5 million RMB and 46% of farms are loss-making (CSA report, 2019).

P5's success can be attributed to several factors. First, since 2013, he has improved his farming skills, the priority, and the quality of his food has been recognized by more and more consumers. Second, in the WeChat group, he often posts vegetable fields, free foraging chickens and other production videos and photos, and stands ready to answer consumer questions, while consumers share their cooking tips. The farm is open to all and can be visited anytime without an appointment. One consumer (Co-3) explained, "I buy his vegetables because I trust his (the farmer) personality, and it doesn't matter if they are more expensive." Finally, he maintains good relationships with various NGOs, and his story has been reported on various public websites, which also helps unfamiliar consumers get to know him.

The case of Interviewee P5 suggests that frequent online interactions,

necessary face-to-face interactions, and appropriate information sharing can deepen consumers food value perceptions and facilitate the formation of long-term and stable social relationships between consumers and producers (Wang et al., 2015). However, unlike the findings of Zhang and Barr (2019) in Nanjing, he is one of the few in Guangzhou to create this level of social embeddedness through online communication. If his farm is one of the successful ones, its peers fail to foster such connections. Not every producer has the skill, confidence, or time for the communicative work of P5. Some work behind closed doors and rely on the product itself to communicate rather than use personal interactions. The resulting transaction process based entirely on food quality is essentially an instrumental calculation of economic interests with weak social embeddedness. The connection disappears when consumers terminate their repurchase because they are not satisfied with the food quality. The current price of alternative food is usually more than three times higher than that of conventional produce, and price-sensitive consumers translate price differences into escalating quality expectations, so they are unlikely to be satisfied.

For individual farms or retailers, social embeddedness is dynamically generated. WeChat groups serve as the basis for interaction, but the link needs to be consolidated with continued farm visits and farmers' markets and other onsite communication (Wang et al., 2015; Zhang and Barr, 2019). The obvious challenge is to make the links between producers and consumers to form a broader social connection that will drive the sustainability of AFNs.

8. Relations with governments

Institutional embeddedness examines the dynamics of how AFNs anchor in the wider regulatory systems beyond the local terroir. Institutions can be understood as a collection of social norms and rules, and as regulatory bodies that shape collective action (such as governments, civil organizations, and corporations). Institutional relationships are "at the heart of social-ecological metabolism in which AFNs are embedded" (Manganelli et al., 2020). This paper focuses here on the interactions between AFNs and local-to-national governments and examines the institutional embeddedness of two dimensions including official recognition by food certification, and policy supports.

In response to the food safety crisis, the Chinese government has developed three levels of food quality standards - 'hazard-free', 'green food', and 'organic'. The most stringent of these standards is organic food, which can be summarized as a path to "zero," meaning that no synthetic pesticides, fertilizers, growth regulators, feed additives, or genetically engineered organisms or their products can be used in the production process (Scott et al., 2014). As Henson and Reardon, 2005, the system of certification and labeling is actually "a dominant form of governance" that has the effect of increasing conventional retailers' control over the food value chain. Alternative producers have shown little interest in obtaining organic certification for two reasons. First, the certification process is complicated and expensive. Alternative producers need to apply to a qualified certification institution and then undergo multiple on-site reviews over approximately two years. Currently, they need to certify each crop, there is no plot certification, and the cost of certification for each variety can be as high as 20,000 RMB, which is beyond the reach of most alternative farms, when some 57% were under 100 mu (16 acre), and only 7% were larger than 1000 mu (CSA Report, 2019). Second, familiarity and recognition of organic food labels is low among most consumers, who do not purposely select labeled products when choosing food (Wang et al., 2015). Alternative producers believe that organic labels have a limited effect on promoting trust (P1, 2, 5) (an assessment supported by Zhang et al.'s (2016) study in Beijing).

Being outside the organic certification system brings some negative effects for alternative producers. Although some state that their production standards are higher than the national one, the lack of certification means that they cannot market their products as organic and can

only use terms such as 'safe' or 'ecological' instead. Alternative retailers also need to be very careful about the labels and descriptions on their products. If a product is found to be advertised as organic without certification, the retailer can be fined by the Food and Drug Administration. In addition, the policy requires that only certified plants can produce processed food. Therefore, many handcrafted products (e.g., noodles and fruit wines) from alternative producers do not meet regulatory requirements. To avoid the frequent inspections by Food and Drug Administration, an alternative Retailer (R4) is effectively located in an informal settlement (a *chengzhongcun* or village in the city). At times alternative actors were haunted by so-called "professional fake hunters" who extort money from them with the threat that otherwise food that mistakenly made organic claims and uncertified processed goods will be reported to the authorities (R8). Therefore, alternative food can be deemed, ironically, as 'unsafe' by government bodies due to the lack of certification, despite its positioning as a response to a food safety crisis. Moreover, alternative farms cannot circulate products through conventional channels like supermarkets because of the absence of labels. Supermarkets can only sell certified food from explicitly delineated sources to fulfill strict governmental regulations (C1, C3).

The relationship between AFNs and national policy is complex and delicate. The development of AFNs is in line with current national strategic aspirations, including the New Rural Reconstruction Movements of the 2000s and the Rural Revitalization Movement² of the 2010s (Day and Schneider, 2018). In terms of objectives, AFNs were supposed to play an important role in guarding food safety, linking rural and urban areas, and achieving common prosperity for farmers (G1). In practice, however, AFNs have not received policy support. One producer, for example, lamented that, "Our farm was overlooked when we tried to claim benefits of preferential policies, because our volume was too small to meet the requirements." (P3). Existing research also argues that the government pitches a lot of support, including land rental concessions, tax incentives and financial subsidies, towards leading, large-scale, capital-intensive "dragon-head enterprises" (*longtouqiye*) (Si and Scott, 2016). The government intends to guide the leading agricultural corporations to turn millions of independent farmers into workers in modern farms. The underlying logic is one of productivism, the elimination of small farmers and the transformation of the countryside into a backyard of urban consumerism (Day and Schneider, 2018). The lack of policy support for AFNs is therefore not only due to their small size, but also to the fact that although both national policies and AFNs seek to improve food standards and rural livelihoods ultimately, they hold very different values and visions of the food system.

Despite the difficulty in securing substantive policy support, some AFN initiators have been keen to seize the opportunity to align themselves with the government discourse of rural revitalization in order to expand their viability. Since 2017, AFN actors in Guangzhou have collaborated to organize the annual "Harvest Festival", which has now become a major gathering of AFNs in South China, including a farmers' market, performances, seminars and various workshops, connecting small-scale ecological farmers and livelihoods in South China and across the country. The 2019 Harvest Festival was themed "Rural Revitalization, With You and Me". Finding an alliance with mainstream political discourse helps to establish a 'common ground' (Si and Scott, 2016). The organizers also felt that emphasizing AFNs' strong link to rural

² In 2005, the Fifth Plenary Session of the 16th CPC Central Committee proposed to promote the New Rural Reconstruction (NRR), whose initiatives include production development, affluent living, civilized countryside, neat and clean village, and democratic management. 2017, the 19th CPC National Congress report proposed to implement the Rural Revitalization Movement (RRM), whose principles include priority development of agriculture and rural areas, integrated development of urban and rural areas, and harmonious living of people and nature. NRR and RRM are national strategies for China's rural development that are in line with each other.

revitalization would be a good opportunity to gain more external resources. It would help to maximize the legitimacy of the event, attract official media coverage, and promote understanding among the general public (N6). The 2021 Harvest Festival showed good social impacts, with support from 33 NGOs, 38 producer vending stalls, several thousand visitors, and more than ten thousand readers of the online news reports.

Overall, the institutional embeddedness of AFNs in Guangzhou has not yet been achieved. The examples of certification and the rural revitalization movement have commonalities. That is, the identity of AFN is clearly in line with government initiatives, but without national recognition or policy support. It is this gap between ‘desirability’ and ‘reality’ that has led to AFNs struggling in the grip of government control. The government’s tendency to support standardised, large-scale agriculture, while AFNs are too small and fragmented, and the government currently is unable to see the importance of AFNs and, in some cases, to see them as a management risk, has severely limited their role in the food system.

9. Conclusion

If the discursive ideal of AFNs is a socially, locally, and environmentally embedded economy (Galt 2013) those in Guangzhou exhibit a more ‘fragmentary embeddedness.’ We have shown that fragmentary embedding in three senses. The first sense of fragmentation is that Guangzhou AFNs are only partially embedded at the level of single producers, or a distributor, and have not yet formed a network of different actors with a broad social impact. The second sense of fragmentations is the geography of a few scattered successfully surviving farms and their loyal consumers, that are largely disconnected from the local area and lack the appropriate institutional support. The third sense of fragmentation is that the Guangzhou AFNs are unable to pull together actors through all of the three dimensions we outlined. Whilst we note that we should not fault AFNs in the Global South, in different contexts for not meeting a discursive ideal created in the west (and not often achieved their either), and that we might see different configurations, in Guangzhou we have highlighted how tradeoffs between territorial, social and institutional dimensions produce fragmented outcomes.

We have outlined that last sense of fragmentation for each of territorial, social and institutional embeddedness. In terms of territorial embeddedness, the new farmers associated with AFNs have yet to adapt to local *terroir*, evidenced by the struggles of translating foreign agricultural ideas into production efficiency. New farmers also require more effort to integrate into local social relations. Interaction and cooperation within the new farmer community are weak, with rare exchanges of knowledge and resources. Furthermore, the participation in AFNs of common farmers is extremely limited. There are 0.12 billion traditional small farmers in China, and their role is crucial to the potential scaling-up of AFNs. Without common farmers, AFNs will be reduced to a game for the social elite. Moreover, a multi-level, multi-channel supply chain spanning locations far beyond Guangzhou is a desperate attempt to survive, but further distances producers from consumers and obscures the traceability of product information. Overall, producers and distributors involved in AFNs are not sufficiently anchored in the local.

In terms of social embeddedness, the few successful farms and their loyal consumer groups have built tight social networks but are not expanding to form broader connections. For most producers, it creates gaps between themselves and mass consumers owing to different values and priorities. Due to a strong emphasis on the material qualities of food on the part of the majority of consumers, it is difficult for them to resonate with values such as environmental care. Both producers and retailers are currently trying to meet consumers’ expectations for alternative foods regarding appearance, taste, and price points, and therefore trust cannot be built by online communication alone. While WeChat groups dominate interactions, social embeddedness appears limited.

In terms of institutional embeddedness, AFNs have not received sufficient policy support, and instead some farms have fallen into the grey zone of food safety regulation because they lack state certifications. Although the intrinsic motivation of AFNs is aligned with national strategies such as Rural Revitalization, authorities have missed the significant potential of AFNs. Currently, AFN initiators need to approach national policymakers proactively to justify their presence and seek more development opportunities. In many respects, we might expect AFNs, as civil society bodies, to run counter to Chinese state imperatives and as a result would not expect them to be deeply embedded in Chinese state institutions and government-controlled certifications. However, we argue that stronger state support for AFNs holds potential for addressing food safety challenges at scale and in ways that are more environmentally sustainable than, say, importing more food products from overseas.

It is important to note that these three dimensions of embeddedness are not independent but rather are intertwined and influenced by each other. Factors such as the low production efficiency at the production end, and the geographical distance separating producers and consumers, lead to a complex supply chain, creating barriers to inter-personal interactions, which limit the construction of social embeddedness. The constraints of territorial and social embeddedness mean that Guangzhou AFNs remain a small circle of social elites, whose modest size is not sufficient to attract endorsement from government authorities. This constrained institutional embeddedness has in turn restricted the development of AFNs.

The fragmented nature of Guangzhou’s AFNs has led them to create only a niche market that serves a very small number of consumers. The AFNs in Guangzhou have not brought sufficient social impact or significant changes to the food system. Despite the fact that AFNs in Guangzhou were meant to be a bottom-up solution to the food safety challenges, their role is constrained by the limited participation of common farmers, the cognitive gaps between producers and mass consumers, and the lack of governmental endorsement. To play a more important role, it is crucial that AFNs become more socially, territorially and institutionally embedded. However, we are not encouraging an exact replication of the Global North experience. This study reflects on possible ways of embedding in developing settings, and approaches such as farmers’ markets, which are popular in the global North, but which prove to be less applicable in the Guangzhou case. For the initiators of AFNs in China, they need to align more closely with local traditional agricultural experiences, quality-driven consumer cultures, and policy initiatives such as rural revitalization. At the global scale, AFNs have the potential as a reliable medium for linking rural and urban areas, nature and society, places and people. Future research needs to consider how AFNs can be innovatively embedded in developing contexts to cope with the prioritized food challenges of the region.

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Author statement

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Declarations of competing interest

None.

Data availability

Data will be made available on request.

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