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Urbanization's mediator: Reassembling rural Tibetan lives through pig breed changes

Dan Wu [a,*], Yang Zhan [b]

[a] Department of Applied Social Sciences at The Hong Kong Polytechnic University Address: The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong, China

[b] Department of Applied Social Sciences at the Hong Kong Polytechnic University and a Member of the China and Global Development Network at Hong Kong Polytechnic University, Hong Kong, China

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ABSTRACT

This is a study of the reasons underlying the disappearance of a local Tibetan pig breed, as well as pigs' role in driving urbanization. It is based on immersive participant observation in a Tibetan village in Sichuan, China. Villagers' transition from raising local Tibetan pigs to hybrid breeds has detached pigs from households due to a decline in pig rearing duration. Simultaneously, as pigs had previously played a crucial role in connecting humans to the land, the change in pig breeds also led to a loosening in the relationship between humans and the land, stimulating population mobility and liberating time and labor for villagers to engage in urbanization. The change in pig breed has led to the continual reorganization of human life in response to urbanization, a process that involves not only human participation but also the agency of various non-human actors. Through reexamining the concept of urbanization through changes in human-nonhuman relationships, this paper speaks to the material turn in anthropology, which has provided a new theoretical perspective for the study of urbanization in China.

1. Introduction

Crossing a small bridge over the rushing blue Yak River, one continues upward along the mountain slope and enters Sunshine Village.[1] Encompassed by forest-covered mountains, along a path beside a valley stream and scattered across the verdant mountains are traditional Tibetan houses built of logs and stone, and adorned in red and white colors. Positioned midway up the mountainside, Dorjee's dwelling awaits. Upon entering his house through the main gate and passing through the pen, one ascends the wooden ladder to reach the upstairs area. On the left-hand side is the living room, where a traditional Tibetan table adorned with the eight auspicious symbols is covered by various dishes. The main ingredient among them is preserved pork.

Seated around the Tibetan table, the scent of canola oil and preserved pork wafts into the room. "Eat this, it's *xiangzhutui* (香猪腿, tasty preserved pork leg)," Dorjee recommends as he points to one of the plates. On a red and white enamel plate is stir-fried dark lean meat and a few strands of green chili peppers. "Take more", he picks up the plate of stir-fried fragrant pork leg and hands it to one of the authors, encouraging her to scoop some into her bowl of rice. This happened during one of the authors' fifth visit to Sunshine Village in 2022.

One of the authors' initial visit Sunshine Village took place in autumn 2008, and then she volunteered for eight months as a teacher for an early children education NGO project in Sunshine Village's school in 2009. As a 24-year-old from an urban area in Northern China, her attention was drawn to the conspicuous presence of pigs with ebony coats roaming freely throughout the village. Every household raised their pigs to range freely, and ultimately slaughtered them and preserved their pork on an annual basis. Proudly referred to as *Zangxiangzhu* (藏香猪, Tibetan pigs) by the villagers, their delectable taste was a point of emphasis. Tasty preserved pork leg originally was produced from the cured leg meat of the Tibetan pig. It is a local delicacy within Danba County, where Sunshine Village is located. The *xiang* (香, tasty) of tasty preserved pork leg was from the *xiang* in *Zangxiangzhu* (藏香猪, Tibetan pigs). During her time at the school, she visited every family, and was regularly offered meals featuring preserved pork as a gesture of hospitality. The village head also gave her preserved pork as a measure to improve her standard of living.

* Corresponding author.
E-mail address: dandan.wu@connect.polyu.hk (D. Wu).

[1] All names have been replaced by pseudonyms, including the name of the village.

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In 2022, the villagers' hospitality had remained unchanged, and the dish featuring preserved pork had also remained consistent; however, the Tibetan pigs had disappeared from the village landscape. The pigs' disappearance raises several questions: When and why did Tibetan pigs disappear from the village? From where is the preserved pork now sourced? How did the changes in pig breeds interact with the way of life in the local community? What has been the impact on the lives of the key pig breeders —- the *niangnaings*[2] (孃孃, aunties)?

2. Urbanization and Pig-human Relations

Returning to Sunshine Village after thirteen years, the authors found that apart from the disappearance of the pigs, the population living in the village had also decreased along with the process of urbanization. Urbanization, defined as the growth in the proportion of a population residing in urban areas, is one of the most significant social changes shaping the modern world (Chen, 2007). Since the initiation of its economic reforms in 1978, urbanization has proliferated in China (Shen, 2006; Zhang, 2002). Scholars have investigated the social transformation of rural spaces into urban spaces (Garcia, 2011; Jankowiak, 2004; Kipnis, 2016), alienation among migrant workers (Yan, 2003; Pun, 2005), as well as anomie (Liu, 2003), individualization (Yan, 2010), marginalization (Zhan 2018), and urbanization policy (Whyte, 2010; Wu, 2018). While urbanization research has understandably focused on urban areas, Brenner and Schmid (2015) introduced the concept of "planetary urbanization" to challenge traditional notions of the urban as a fixed, bounded, and universally generalizable settlement type (in contrast to the "rural"), and to emphasize the relationships among different spaces, such as rural–urban relations, in urban studies. Lefebvre (2003) demonstrated that urban is a pure form: a place of encounter, assembly and simultaneity; the sheer proximity of people to other people, the sheer simultaneity of activities, of events and chance meetings is the definition of the urban itself (Lefebvre, 2003; Ruddick et al., 2018). However, research has overlooked the role of non-humans in urbanization.

With the recent material turn in social theory, research on the role of non-human actors in the social sciences has been on the rise. Latour et al. have coined actor network theory (ANT), seeking to understand social phenomena by examining the interactions and relationships between human and non-human actors within a network, while emphasizing the agency of non-humans (Callon and Latour, 1981; Latour, 2007). Sayes (2014) considers nonhumans as a condition for the possibility of human society and as acting in three further senses: as mediators, as members of moral and political associations, and as gatherings of actors of different temporal and spatial orders. These relationships are seen as multispecies "assemblages", an approach that views worldmaking or life as a process of becoming through complex assemblages involving humans, other species, and things (Ingold, 2021; Ogden et al., 2013). Smits and Martín (2019) have reconceptualized the "village" as a multispecies assemblage produced by various relationships. Donna Haraway has furthered this perspective by arguing that whether they are human or non-human, all entities take shape in encounters or in practices, and that any object or person can be reasonably thought of in terms of disassembly and reassembly (Haraway, 1994). She engaged the bodily dimension and conceptualized the human-nonhuman as located within embodied, human subjectivities that led her to question "what counts as human?" (Haraway, 1994; Roe, 2009).

There has been some overlap in the discussion of assembly and the encounters of everyday life in the context of planetary urbanization and multispecies research under the ontological turn. Välimaa et al. (2023) employed the concept of the assemblege to examine how the identities and networks of relations among actors—and among actors and spaces—are reassembled following the arrival of large groups of new residents into a rural town. However, research examining the interaction between humans and non-humans in driving urbanization has been limited.

Pigs, one of the first animal species to be domesticated by humans, have long been associated with the urbanization process (Dong & Yuan, 2020; Trentacoste, 2020). Pigs play a pivotal role in this process by providing both protein for human consumption and manure for agricultural cultivation (Chauhan, Patel et al., 2016). Furthermore, Simon (2015) has demonstrated that pigs are mediators with the spirit world, as ancestor spirits respond to regular pig sacrifices by providing prey to hunters within indigenous communities. However, under the influence of urbanization and marketization, traditional pig-related rituals may have waned or been transformed (Veeck, Yu et al., 2017). From premodern agrarian settings to the contemporary era, pigs' role has evolved from being mere livestock to becoming a valued commodity in the form of pork (Nemeth, 2017). In China, as much as 95 percent of all the pork was produced by smallholder farmers who raised fewer than five pigs per year on household plots until 1985 (Li, 2010). As the structure of China's pork sector shifted with the Reform and Opening, pork production and consumption skyrocketed, transforming domestic agriculture and meat consumption, as well as global meat markets and resource flows (Oliveira & Schneider, 2016; Schneider, 2019). Miles (1997) has also noted the enduring symbolism of pigs in politics as preindustrial societies undergo change over time. Schneider (2017) noted the government's project of separating people and pigs, wherein people are brought together in "modern" apartment buildings, while pigs are congregated in "modern" pig barns. Nevertheless, these studies often overlook human-pig relations and pigs' agency in social change.

This article will explore how pigs shape human beings and their role in driving social change, particularly in the context of a form of urbanization marked by population shrinkage and social transformation within a village. The research commences with an introduction to the research field and methodology. It then addresses the phenomenon of the disappearance of native pig breeds from a Tibetan village, influenced by the force of urbanization. The fifth section of the research investigates the relationships between pigs and humans within households, pigs' role in the transformed relationship between humans and the land, as well as how pigs may play a significant role in releasing labor to urban areas and reshaping human societies. The conclusion extends the concept of urbanization to encompass broader implications.

3. Research Filed and Methodology

Sunshine Village is approximately one hour by car from the county seat of Danba County.[3] It is located at the foot of snow-capped mountains, amidst the valley between the Hengduan Mountains[4] and the eastern fringe of the Tibetan Plateau, between Han and Tibetan areas. Nestled at altitudes spanning 2,600 to 3,200 m, the village boasts around 60 households and 5 administrative groups within its valley terrain, from the side of the road to the top of the mountainside. Administratively, the area falls under Danba, which is recognized as the core of Gyalrong Tibetan culture (Yi, Zhao, & Zhong, 2018). It borders a neighboring county characterized by Kham culture. Consequently, the villagers identify as both ethnically Kham and Gyalrong Tibetan.

Villagers speak their local Tibetan dialect, referred to as "*Dijiao hua*" in Chinese, which differs from the dialect spoken in the township, the

[2] *Niangniang* is a term in the Sichuan dialect for "aunty". In this paper, it refers to women aged between 50 and 70.

[3] Danba is a county within Ganzi Autonomous Prefecture, Sichuan Province, China. Sunshine Village is under the administration of Danba.

[4] Sunshine Village is located in the "Tibetan-Yi Corridor", a term coined by Fei Xiaotong (1980). This region has historically seen significant migration and interaction among various ethnic groups from Northwestern and Southwestern China. Due to its geographical location, the villagers exhibit language, customs, and clothing distinct from those of pastoral areas and Central Tibet.

county seat and more distant villages, and lacks a written form. Due to the diverse and complex range of local languages among Gyalrong Tibetans, influenced by terrain fragmentation and the complexity of ethnic origins, Chinese—particularly the Sichuan dialect—has become the lingua franca among various Tibetan groups in Danba. It is known as "*Danba hua*" (Li, 2007; Jinba, 2013). Most residents of Sunshine Village, except for the elderly, can speak "*Danba hua*." Both "*Danba hua*" and "*Dijiao hua*" are considered their own dialects.

Villagers' livelihoods are diverse due to the area's biodiversity. The village's economic sustenance emanates from the collection of caterpillar fungus and other non-timber forest products (NTFPs). Caterpillar fungus, known as *dongchong xiacao* (winter worm, summer grass) in Chinese, is a unique and valuable medicinal commodity sourced from the wilds of the Qinghai-Tibetan Plateau (Liang, 2011; Winkler, 2009). Due to its unique appearance and the fact that it comes from the Tibetan plateau, caterpillar fungus has created a hype space on the market. Its price increased 1,000 % between 1997 and 2012 (Winkler, 2013). Caterpillar fungus has become the new main resource of cash income contributing to the livelihoods of the Tibetans from the production area. Since the 1980s, from the end of April to mid-June, villagers venture to higher mountain areas to harvest caterpillar fungus, which accounts for 50–80% of their annual household income. In the summer, many male villagers gather other medicinal materials such as *qianghuo* (Notopterygium franchetii Boiss), Gastrodia, Rhodiola rosea, and Chinese Angelica. Since 2016, mushrooms have been commodified, providing a new source of income, primarily for the women who pick them. As household income from caterpillar fungus has declined over the past decade, more and more people aged 30–50 who reside in the village, especially males, have also chosen to migrate for temporary work during the winter.

The villagers primarily engage in agricultural activities, cultivating crops such as corn, potatoes, rapeseed, highland barley, turnips, and radishes on terraced fields. These crops serve both for personal consumption and as fodder for livestock, including cows and pigs. In 1983, land reform was implemented in Sunshine Village, and land was distributed to households, with each household receiving 10–20 *mu* of land. However, after the implementation of the Grain for Green policy[5] around 2000, each household's land allocation was reduced to 5–10 *mu*. Ever since, the majority of the grain produced, particularly the corn and potatoes, is used as feed for pigs. The villagers primarily purchase rice and flour for consumption, while cooking oil is produced by pressing rapeseed grown by themselves in the county seat. From May to October, most villagers cultivate vegetables for their own consumption. During winter, they consume dried and pickled vegetables, dried mushrooms, or purchase fresh vegetables.

Pigs in Sunshine Village are primarily raised for preserved pork for personal consumption, rather than as a source of cash income. Preserved pork has long been the predominant meat source in Sunshine Village due to historical transportation constraints. Every family traditionally slaughters their pigs at the end of the lunar month of November to prepare preserved pork for the entire following year. According to villagers, each household consumes approximately two to three pigs, totaling around 250 kg to 450 kg, throughout the year.

Due to the rich biodiversity, there were development projects from two different international NGOs, running back-to-back from 2006 to 2010. One of the authors' initial visit Sunshine Village took place in autumn 2008, when she was on a guided tour of where she would eventually be a volunteer teacher in a preschool for an early children education NGO project. Then in 2009, she volunteered for eight months as a teacher. As the only outsider, she familiarized herself with the village by visiting and getting to know each student's family through a comprehensive survey of every household. Through gathering data on population, family relationships, sources of livelihood, and other relevant topics, she became well-acquainted with every family in the village and learned the local Sichuan accent the villagers used, as well as took pride in integrating as a member of the community. A wealth of information through journals, surveys, project reports, and photographs constituted the basis of research data.

In 2022, she returned to Sunshine Village and embarked on seven months of fieldwork to explore the changes of the village between 2009 and 2022 through non-human actors. During this time, she resided in a farmer's home and immersed herself in rural daily life and farming activities. Gyatso's household served as her host family. On the weekdays, only Gyatso's mother, 64-year-old Niangniang Yangchen, was at home, doing the domestic work. The one of the authors regularly assisted Niangniang Yangchen with farm work, cattle herding, and pig feeding. She took charge of cooking and washing dishes daily, often preparing meals with preserved pork. She also participated in the entire pig-rearing process, from procurement to slaughtering. Apart from Gyatso's family, she visited other households for casual conversation and observed their activities, including pig feeding. Additionally, she participated in collective village events such as assisting in temple repairs, funerals, and sutra recitations. The villagers recognized her ability as a laborer and invited her to assist with pig slaughtering and partake in pork feasts. These activities grounded her in both the farmers' experiences and their cultural system (Geertz, 1973). In the villagers' eyes, she was a familiar guest, a volunteer teacher contributing to the village, and a semi-laborer from Gyatso's family. Within this context of daily life, they collected all of their data through immersive participant observation and engagement in flexible conversation, which constituted their "thick description" of ethnographic work (Geertz, 1973).

4. The Missing Taste of Tibetan Pigs: The Transition from Tibetan Pigs to Hybrid Breeds (2010–2020)

Lhamo, one of the few farmers still engaged in commercial pig rearing, was a neighbor of Gyatso's family. She would frequently pass her home and would often engage in conversation with one of the authors. When she inquired about the disappearance of the pigs from Sunshine Village, Lhamo kindly showed her a group of eleven ebony piglets in the pigsty while explaining:

The breed of the pigs has changed. We used to raise *Zangzhu* (藏猪, Tibetan pigs), but now we raise the *Dunaoke* which love to dig in the ground. If they are not confined, they tend to root others' crops.

Literally, *Dunaoke* means "single braincase". These pigs appeared large and healthy. In addition to the black pigs, there were more white pigs. One of the authors was confused about the name of the pig breed and sought clarification based on the pronunciation in Sichuan dialect. This led to the discovery of the "Duroc[6]" breed, which had been developed in the United States. In the local Tibetan language, pigs are called "*vy*" (not written, pronunciation similar to "*Y*"). Domestic pigs are called "*you vy*," and wild boars (pigs in the forest) are called "*na vy*." The Duroc or hybrid pigs do not have a local Tibetan translation. In the village, they are referred to as *dunaoke* or *zajiaozhu* (杂交猪, hybrid) in the Sichuan

[5] In response to extensive droughts in 1997 and severe flooding along the Yangtze River in 1998, China implemented the Grain for Green policy to increase forest cover and prevent soil erosion on sloped cropland (Yeh, 2016; Uchida et al., 2005). The Grain for Green policy, tested since 1999 in Gansu, Shaanxi, and Sichuan provinces, has been implemented nationwide across 25 provinces with a total budget exceeding 40 billion USD (Feng et al., 2005; Yeh, 2016). Enabled by national grain surpluses, the program provided farmers with subsidies for seedlings, grain, and cash for five or eight years (Yeh, 2016).

[6] The Duroc pig breed was developed in the United States and has been improved to increase its lean meat percentage. From Lonergan SM, Huff-Lonergan E, Rowe LJ, Kuhlers DL, & Jungst SB. "Selection for lean growth efficiency in Duroc pigs influences pork quality." *J Anim Sci*. 2001 Aug; 79(8): 2075–85. https://doi.org/10.2527/2001.7982075x. PMID: 11518215, Lonergan et al. (2001).

dialect. The villagers had shifted from raising the local Tibetan pigs which had previously been their pride and joy, to importing crossbred Duroc pigs. The pigs' disappearance from the village had been due to a change in feeding practices from free range to captive breeding triggered by a change in pig breeds. The following question arose: when did the hybrid pigs replace the local Tibetan pigs in Sunshine Village?

Gyatso's husband, who had moved to Sunshine Village from a neighboring county upon marriage in 2012, remarked, "Duroc pigs have been present for 20 or 30 years, since I was a teenager. Duroc and Landrace pigs have always been here." Initially, one of the authors assumed he might have been from a different county, with its own unique pig-raising conventions. However, his statements aligned with the records from *Danba Xianzhi* (丹巴县志, *Danba County Gazetteer*): "Neijiang Yorkshire, Landrace, and Rongchang Duroc pigs were introduced to improve crossbreeding with local pigs in Danba County in the 1970s. A hybrid of Landrace and Duroc pigs then emerged among pigs in the county (Danba Xianzhi Bianzuan Weiyuanhui, 1996, p. 223)." Despite the introduction of hybrids in the 1970s, one of the authors vividly recalled encountering Tibetan pigs in 2009, and even took several pictures related to them, but strangely had never heard of the hybrids at that time in Sunshine Village (Fig. 1).

To gain further insight, one of the authors visited her former neighbors, the elderly couple Mr. and Ms. Yang, whose house was adjacent to the school where she had previously volunteered. When she had lived at the school in 2009, she regularly saw their black pigs roaming around. Uncle Yang proudly indicated, "They are *Zangxiangzhu* (藏香猪, Tibetan pigs)." In 2022, they had raised three pigs in the pen since the beginning of the year. Uncle Yang mentioned, "*Zangzhu* (藏猪, Tibetan pigs) haven't been raised for years…When you (one of the authors) were here, Duroc, Neijiang, and Tibetan pigs were all here. The free-range pigs were Duroc or Landrace." Pinpointing the exact year when Tibetan pigs disappeared from the village is challenging, as the villagers described the transition from Tibetan pigs to Duroc, Landrace, or hybrids using terms like "previous" and "now." When asked when hybrid pigs had arrived in the village, villagers would say, "They have been here for a long time," or "The pig breeds have been changing for several years." Villagers were vague about the specific time. From the numerous black Tibetan pigs roaming the village in 2009 to the disappearance of the pigs from the village's landscape in 2022, it can be concluded that the local Tibetan pigs had vanished during the previous decade. But the hybrid pigs were introduced in the county in 1970s, prompting the question of why it took until a decade ago for the Tibetan pigs to be replaced in Sunshine Village.

Furthermore, it is worth noting that the villagers did not use the term "*xiang* (香, tasty)" when referring to the Tibetan pigs at the time of the research. Instead of using the well-known name "*Zangxiangzhu* (藏香猪, Tibetan pigs)," they used the term "*Zangzhu* (藏猪, Tibetan pigs)," omitting the term "*xiang* (香, tasty)." The omission of the word "*xiang*" indicates that the villagers' previous praise for the Tibetan pig has now turned into criticism. The villagers provided two main reasons for the abandonment of the local Tibetan pigs during the previous decade.

The first reason stemmed from concerns over the diminutive size and sluggish growth of the local Tibetan pigs. As expressed by Gyatso's husband:

Raising Tibetan pigs is difficult. They grow slowly and won't reach a significant size. They only grow to around 50 to 100 kg, a measurement deemed insufficient for our needs. Feeding them more would require an excessive amount of grain, which our labor cannot support.

This sentiment prevails across the community. McOrist, Khampee et al. (2011) mentioned that the native pig breeds have rarely been involved in recent expansions or consolidations of concentrated animal feeding operations due to their lower prices and slower growth rates. Thus, the villagers have pursued larger pigs with a shorter timeframe and all households now buy *jiazi zhu* (架子猪, hybrid feeder pigs) to feed for a shorter period (normally 1–6 months) before slaughter. In short, the local Tibetan pigs have not aligned with the villagers' pursuit of efficiency and productivity in recent decades, principles championed by modernity, even in secluded rural minority areas. Chen et al. (2017) argued that concentration in the pork sector in China reflects the productivist and environmental logics that recur in official party-state discourse around rural projects. This refers to freeing land and labor in the countryside for capitalist production through processes of smallholder incorporation and dispossession.

This is also related to the context of urbanization and the decline in rural labor. The release of the National New-type Urbanization Plan (NUP), which emphasized people-centered urbanization (Chen et al., 2018), marked a decade of rapid urbanization that involved Sunshine villagers in urban realities during the 2010s. Sunshine Village now faces a challenge common to many rural villages in China: a shortage of laborers under the age of 30. Zhang and Wu (2017) have mentioned that as smallholder's livelihoods have become commodified, they have had to allocate family labor to maximize labor income, which in most cases means shifting the younger, more productive family labor from agriculture to non-agricultural jobs. Young people prefer to work and engage in urban life after receiving long-term non-peasant education (Kipnis, 1997). Rural people are increasingly giving up pig raising and migrating to cities, where they provide China's booming economy with poorly paid laborers (Lander et al., 2020). Li's (2010) research corroborates the finding that rural–urban migration has increased the costs of rural labor, culminating in a national decline in household swine husbandry. At the same time, the villagers insist on using the grain which they grow to feed their pigs, since they believe that grain-fed pigs are healthier and tastier. Most of the crops they cultivate are intended for pig feed. Raising small Tibetan pigs requires raising more animals, which in turn requires more grain and additional labor, for both feeding the pigs and for crop cultivation. The reduction in labor over the past decade has made it difficult to grow more food in order to feed additional Tibetan pigs. With these factors in mind, hybrid pigs have been shown to be more adept at satisfying the villagers' desires. The rapid urbanization during the 2010s led to a population decline, which caused

Fig. 1. A local Tibetan sow (left) and her piglets in 2009, and the hybrid pigs (right) in 2022. Photos by Dan WU.

an agricultural labor shortage, impacting production. This, in turn, might have led to the replacement of local Tibetan pigs with hybrid pigs, which are larger and more productive, over the past decade. Thus, new hybrid pigs, intertwined with urbanization, have reshaped rural production and life.

The second main reason is the preference for lean meat, which has been influenced by urban values. During a journey from the county seat to the village, one of the authors revisited this query: why are Tibetan pigs no longer being raised? A villager from the neighboring village sitting next me responded, "Local pigs tend to be excessively fatty, as thick as the palm of your hand," demonstrating with hand gestures. She continued, "Fatty meat is no longer appealing; the preference now veers towards lean meat." The driver also chimed in, "Now we raise the *shourou zhu* (瘦肉猪, pigs with a high percentage of lean meat), a delectable amalgamation of fat and lean layers." In Sunshine Village, when Mr. and Ms. Yang showed their three pigs in response to the question "Are they Duroc?" they emphasized that their pigs were *shourou zhu,* instead of using the terms Duroc, Landrace or hybrid pigs. Their assertion that they specialized in lean pigs echoed the pride with which they had proclaimed regarding rearing Tibetan pigs thirteen years before.

The preference for lean meat also reflects how the villagers' standards and awareness of bodies, from pigs to humans, have been reshaped by the social transformation of urbanization and marketization. One study has reported that the demand for pork products in China derived from lean Western breeds has been growing steadily in the 21st century, with a predicted annual growth rate between 4 % and 7 % (McOrist, Khampee et al., 2011). This preference for lean meat as an urban value has percolated from urban to rural areas, infiltrating even the hinterlands and influencing remote rural enclaves. Guldin (1992) emphasizes that urbanization does not simply mean more and more people living in cities and towns; it is also the process in which the urban and nonurban areas of a society increase communication and ties; people lived urbanized lifestyles. The villagers favored lean meat, with some women even selectively picking lean portions from dishes, while eschewing fatty components, reflecting their acute awareness of their physiques. The same demand for a high percentage of lean meat in pigs also extends to the human body, particularly among women. The appraisal of others' svelte legs or lamentations about their own stomachs is also routine during gatherings.

Pigs play a key role in translating urbanization into rural reassembly (Haraway, 1994; Smits and Martín, 2019). Over the past decade, villagers have been engaged in rapid, people-centered urbanization. The shift in pig breeds reflects rural–urban relations (Brenner and Schmid, 2015) and a dynamic mindset among villagers, who have been influenced by urban values as they encounter urban realities. This transformation is characterized by a relentless pursuit of efficiency and productivity, and a preference for lean meat. The shift in pig breed has also reshaped the methods of obtaining and feeding pigs, marking a significant change in the village's practices. Additionally, it has influenced human-pig relations.

5. as a Mediator of Urbanization: How Pigs Make the People Urban

5.1. The detachment of pigs from the household

Following the shift in pig breeds, a noticeable change in the village has been the sight of empty pigpens and the absence of sows. Villagers have transitioned from year-round pig rearing to purchasing mature pigs starting in the middle of the year. Each family then cares for these pigs for 1—6 months, raising them for eventual slaughter before the Spring Festival. Some villagers even acquire entire pigs directly from small farms near the county seat, slaughtering them and bringing the pork back to the village. Consequently, many pig pens remain empty for extended periods, and sows are no longer present in the villages for significant durations. This shift has reshaped the dynamics of human-pig relationships within households, particularly in terms of acquisition, spatial arrangements, and emotional ties to the animals.

The shift from maintaining sows for breeding purposes to the annual purchase of *jiazi zhu* has commoditized the relationship between humans and pigs. Gyatso's husband elucidated:

Maintaining a sow is arduous, especially during winter when there is a shortage of pigweed for their sustenance. Furthermore, our commitments to harvesting caterpillar fungus leave us with no capacity to care for the sows.

After the caterpillar fungus harvest each year, villagers determine the size of their labor force and the demand and price of pork. With this information, they begin purchasing hybrid feeder pigs one after another.

The act of purchasing pigs has become a significant event for households due to their expense. Discussions among villagers center on where households buy pigs, their price, quantity purchased, and weight. Purchasing decisions are influenced by factors like price per kilogram and the pigs' weight. For instance, in late June 2022, Gyatso and her husband drove to a village near the county seat to buy pigs. They had chosen this pig farm over the pigs from their neighbor Lhamo because Lhamo's pigs were still small. Gyatso's husband explained their intent:

They won't be big enough to raise by Spring Festival. It's appropriate to buy pigs that weigh about 100 kg, raise them for half a year, and then they will weigh 150 or 200 kg before the Spring Festival, so it's just right to slaughter them.

Their aim in buying pigs was clear: to produce pork before the Spring Festival. Eventually, Gyatso and her husband selected two pigs weighing 125 kg total and one weighing 150 kg, and were pleased with the price they had negotiated: "4 *yuan* a kilogram, which saved more than 1,000 *yuan* compared to last year. A big achievement this year…It does not matter whether pork prices rise again.".

Acquiring pigs has morphed into a market-oriented behavior. Some households now buy pigs only one month before slaughter. Increasingly, families procure whole pigs directly from pig farms, slaughtering them on-site and bringing back only the pork. A villager said, "We have not raised pigs for ten years. It is comfortable (easy) to buy the whole pigs (to kill directly)." This phenomenon is similar to that observed in Taiwan's indigenous communities, where the practice of women fattening ritual pigs has shifted to purchasing pigs from the breeders just before sacrifices (Simon, 2015). Moreover, the villagers preferred grain-fed pigs. Consequently, price, size, and the feeding method became significant factors in villagers' purchasing decisions. The goal is to produce 150 to 200 kg of pork from each pig before the Spring Festival.

Access to pork has shifted from the year-round breeding of sows to purchasing hybrid feeder pigs for the purpose of producing pork. Meanwhile, the relationship between pigs and humans has been commoditized and marketized. Lander et al. (2020) discussed that while the relationship initially began as a partnership, the rise of industrialized pork production has led to a dynamic where humans now raise pigs in a manner that could be described as exploitation. Villagers now encounter pigs only as a pork "product" (Cook, 2015), rather than as members of their household. The shortened pig rearing duration has weakened the bond between humans and pigs.

Additionally, the relocation of pens away from homes reflects the detachment of pigs from households. In the traditional Gyalrong Tibetan houses of Sunshine Village, pigs have been raised on the ground floor of the traditional three-story houses, symbolizing the care given to sows and pigs as integral household members. However, as a result of the absence of sows and the reduced rearing time, pigpens remain empty for longer periods every year. In newly built houses, separate livestock enclosures have been built, away from the human living areas. Xie and Chen (2022) have shown that housing has an effect on the expression of identity among rural residents who have urbanized in situ. As such, the relocation of pig pens has led to changes in the social meanings of people's lives.

Alongside spatial alterations, the emotional interactions between pig

breeders from various generations also mirror shifts in the human-pig relationship. Govindrajan (2019) delves into this sense of connectedness in her book *Animal Intimacies*, emphasizing the intimate relationship forged through daily caregiving between humans and animals. While middle-aged and elderly women share similarities in their daily care routines, such as preparing pig feed, distinctions in emotional attitudes across generations were evident during the pig slaughtering ritual[7] before the Spring Festival. In Sunshine Village, the slaughtering of pigs from house to house usually begins in the second half of the eleventh month of the lunar calendar, also known as the Winter Month. After the fifteenth day of the Winter Month, 64-year-old Niangniang Yangchen (breeder of three pigs) would often chant, "Pigs are going to suffer, people are sinning. There is no way out because people have to eat pork. People need pork.".

She exhibited empathy towards pigs. On the day her family slaughtered the pigs, as the breeder of the three pigs, Niangniang Yangchen chose to isolate herself in her room and ate only *tsampa* (a Tibetan staple foodstuff). Even during the evening meal prepared for neighbors who had come to help, she refrained from joining, expressing discomfort, and abstaining from eating meat for the following week. Similar to Taiwan's indigenous people, they empathize with the pigs, saying that the pigs are "pitiful" because they must face death as a result of human actions (Simon, 2023).

However, during one of the authors' participation in the pig slaughtering process in another household, the 40-year-old mistress focused on providing tools, arranging meals for neighbors assisting in the process, and organizing the freshly-cut pork. She was also involved in caring for the pigs, but did not exhibit as strong an emotional connection during the slaughtering process as Niangniang Yangchen had. Her emphasis lay more on efficient labor arrangements and the outcome of pork yield. Finally, she invited the neighbors who had helped slaughter the pig to enjoy the feast of pork dishes. Her emotional responses appeared less pronounced than Niangniang Yangchen's, emphasizing efficiency and the final product. These middle-aged women expressed happiness at the amount of pork they had produced.

Niangniang Yangchen's expression of discomfort during the pig slaughtering process highlights a connection forged through the daily intimacy of care between humans and pigs (Govindrajan, 2019). Her well-being is entangled with that of her pigs, resulting in a sense of relatedness between human and non-human animals. This might be related to her more extensive sow care experience, which built a sense of relatedness. With the shortened pig-raising time, the younger generation had disembodied from pigs, and weakened the sense of relatedness. Niangniang Yangchen observed:

More and more young women in our village work outside the home, leaving no one in their houses. In the future, the elderly like us won't be able to engage in farming anymore. The younger generation works outside, except for digging caterpillar fungus in the village. They won't raise cattle and pigs, but instead buy pork directly. It is cheaper, and they don't have to work so hard.

[7] Slaughtering pigs is a significant event for a household in Sunshine Village, typically taking place in the second half of the eleventh month of the lunar calendar. A household would invite 3–5 male laborers to help with pig slaughtering. Most of these men would be relatives or neighbors who assist each other during each household's pig slaughtering process. The slaughtering process starts early in the morning and includes the following steps: catching the pig, slaughtering, inflating, scalding, scraping hair, cutting, salting, and making sausage. If a family has three pigs, the entire process can last a whole day. When a pig is being slaughtered, villagers light an oil lamp outside the pigsty to bid the pig farewell. Throughout the process, there are two or three women, including the hostess, whose main tasks are cleaning the utensils, preparing a simple lunch and the dishes for the evening pig slaughtering feast, and arranging the processed pork. In the evening, when the process is finished, the host family prepares fresh pork from that day, including pig blood and liver, to cook about ten dishes to treat those who helped.

The intimate relations between pigs and humans weaken with urbanization and the change in pig breed. The fact that purchasing pigs has become an annual event for every household foreshadowed the commodification that has overtaken the relationship between pigs and people. As mentioned by Simon (2015), the human–animal relations have undergone change due to the integration of indigenous people into new markets, the state, and legal regulations about both hunting and animal husbandry. Pigs have been physically and emotionally removed from human households, transforming pig' relations with humans from that of household members to mere products. As such, pigs have become increasingly disembodied from households. Across the generations, there has been a shift in human-pig relations. Originally virtual members of the household, they have now become market commodities, and in the process, have reassembled human lives.

5.2. How pigs facilitated humans abandoning farming

In rural areas, pigs have served as a crucial resource, not only providing protein for human consumption, but also serving as a valuable source of manure for crops (Chauhan, Patel et al., 2016). Mao Zedong once referred to pigs as "a fertilizer factory on four legs" (Schneider, 2011). The practical benefits of pigs to human societies extend beyond their role as food, playing various roles in the evolution and ecology of local agricultural systems (Veeck, Yu et al., 2017). Non-humans, like anything else placed between two actors, continually modify relations between actors (Latour, 1999). Pig-derived fertilizer nourishes the land, contributing to crop production and facilitating a crucial link between humans and the land in agricultural systems. However, this ecological link is now weakening, and in some cases, collapsing.

In Sunshine Village, pigs play a significant role in agricultural engagement for humans. The primary crops cultivated are primarily intended for livestock, including cattle and pigs, rather than for human consumption or sale. Essential food items like rice and flour are purchased from the county seat. The village's cash income primarily stems from activities such as collecting caterpillar fungus and other NTFPs, while livelihoods from crops and pigs serve a secondary role, mainly for self-consumption.

Unlike cattle, pigs eat many of the villagers' crops, such as corn, potatoes, and radishes. The villagers follow a traditional agriculture recipe, combining steamed potatoes or radishes, maize powder, chopped pigweed, and leftovers from human meals to feed the pigs two or three times a day, aligning with human mealtimes. Pigs, along with land and human production, form a self-sufficient production chain that has long sustained this village. As Gyatso's husband mentioned, feeding more Tibetan pigs would require additional grain, which the available labor force could not support. Therefore, pigs play a crucial role in driving crop cultivation, and serve as a vital link between human activity and the land.

The change in pig breed has influenced how much land is cultivated as well as the resulting production. As Tashi said:

We grow corn, potatoes, rapeseed, and radishes, but most of it is used to feed the pigs. Because the pig-raising period is shorter now, nowadays, we only cultivate about two or three *mu* (亩, unit of area equal one fifteenth of a hectare) of land, and the rest of the land is left uncultivated and abandoned. We bought the pigs in September, it would be enough to feed our pigs for a few months.

Tashi's household has five to six *mu* of land. She had abandoned half of their land since the grain from cultivating two to three *mu* is enough to feed pigs for the shorter duration. As the practice of raising pigs for shorter durations or abandoning pig-raising altogether has become more common, the pigs' consumption of grain has declined. This has led to a slackening of the production chain, reducing the necessity of farming. The decrease in pigs' grain consumption has diminished the connection between humans and the land. In the wake of this process, farming, originally a necessary food source for grain-fed pigs, has been losing its importance to agricultural life.

Further, pig manure serves as the primary fertilizer for crops in Sunshine Village. The practice of moving manure from pig pens to fields after slaughtering, especially in the winter, is a labor-intensive endeavor that often involves labor exchange between villagers. Mr. and Ms. Yang had been feeding three pigs since the beginning of the year. This could produce 10 tractor-loads of manure from their pen for the year. Mr. Yang said:

With pigs, there is fertilizer, which is the benefit of pig raising. Farmers cannot grow crops without fertilizer. Now there is scientific farming with chemical fertilizer. We used to relay on pig manure. 'More pigs made more fertilizer; more fertilizer produced more grain.' The cattle's manure is not as good as pigs'.

The ecological link between pig manure and land has been critical for crop production. However, the trend towards shorter pig-raising periods and the increasing direct purchase of pork has weakened this connection. Some households no longer keep pigs, leading to a shortage of pig manure, which had previously been the primary source of fertilizer for the land. For example, Dorjee's household did not feed pigs in 2022 and bought two pigs directly, totaling around 250 kg, and taking the pork back to the village. One of the authors asked Dorjee how he had procured his fertilizer, and he mentioned that he had used what little remained from before and from the cattle pen. This weakening of the link between pigs and the land has posed challenges to the village's agricultural system.

Moreover, the "Grain for Green" policy has led to a reduction in each household's farmland of between 1/3 and 1/2 over the past two decades. In recent years, the infestation of wild boars and the destruction of crops have also disincentivized the villagers' from growing crops. This decreased reliance on farming has had a significant impact on the relations between humans and the land in rural areas. The changes in pig breeds, arable land, crops, policies, and wild boar infestations create complex interactions and entanglements, potentially diminishing the role of hybrid pigs as a link between humans and the land.

In conclusion, both the role of pigs and their relationship to the land in Sunshine Village have undergone significant changes due to factors such as shorter pig-raising periods, urbanization, and changing policies. Schneider (2017) used Marx's concept of metabolic rift to argue that commodity pork under an industrial meat regime represents accumulation rooted in processes of concentration (of pigs, people, production, profit, and power), which are also processes of separation (of farming from agroecological specificity, of people from land and the means of production, of humans from nature). While many villagers continue to raise pigs, albeit for shorter durations and driven by the belief that grain-raised pork is not only tastier but also healthier, the ecological link between pigs and the land, once crucial for crop production, is weakening. As such, hybrid pigs have facilitated humans' separation from their land.

5.3. Pig breeders, niangniangs and mobility

As mentioned earlier, pigs play a key role in diminishing the human-land connection. This includes the shorter pig farming durations, increased abandonment of farmland, rural depopulation, and the intimate intertwining of pigs with arable land and people's lives. Urban development absorbs human, natural, and land resources from rural areas (Anagnost, 2004; Driessen, 2018). Not only do the young people leave their land, but the middle-aged villagers have also become mobile, residing between rural and urban areas. Given the migratory trend of the younger populace to urban centers for educational or vocational pursuits, middle-aged and elderly women increasingly depart from the village to care for their grandchildren in townships and county seats. The transformation in pig breeds has precipitated the liberation of temporal and spatial dimensions, thereby fostering mobility.

Pigs tether labor to agrarian expanses and households. Considering the deployment of traditional agricultural methodologies, the villagers dedicate three seasons – spring, summer, and autumn – to their fields. Corn, potatoes, and radishes, sourced from the villagers' own fields, comprise the principal dietary intake for the pigs. Subsequent to harvesting, corn necessitates manual threshing followed by mechanized milling. Potatoes, from the ground, necessitate steaming before integration with maize powder, finely chopped *zhucao* (several types of wild grasses that can be used as feed for pigs), and residual human fare. In the context of feeding pigs, laborers must harvest two big baskets of wild grass, subsequently reducing them into smaller segments for amalgamation with feed every day for two or three pigs. Rearing pigs necessitates, at a minimum, one laborer remaining at home.

Rural women have an integral role in the agricultural economy (Si et al., 2021). Judd (1994) pointed out the "feminization of farming". In Sunshine Village, *niangniang*s comprise the primary labor force for pig husbandry, and domestic duties as a whole. Feeding pigs is embedded within the domain of domestic work, encompassing tasks such as farming, livestock rearing, childcare, and culinary responsibilities. Morning and evening are the busiest times for the women in the village as they tend to the pigs. When encountered during these times, they often hurry home, saying, "I have to go home to feed the pigs." Within ANT, non-human actors are seen as essential parts of social networks, influencing (and being influenced by) human actions (Montenegro & Bulgacov, 2014). Since *niangniangs* are the pigs' primary caregivers, pig breed changes mainly affect women. This includes the reflections on urban standards and pig-human relations mentioned previously, as well as mobility and reassembled life.

In recent years, *niangniangs* have undertaken a new role: accompanying students, an extension of their caregiving duties. With the loss of young people and the declining student population, the only remaining pre-school in Sunshine Village and the neighboring village's primary school had merged into the township's central school in 2021. During a car ride with the secretary of the neighboring village's committee, he mentioned:

The young folks who leave for the city rarely return. Even if they don't pass civil service exams or other establishment jobs, they opt not to come back and take on temporary jobs (*dagong*)…Last year (2021), our village primary school closed due to a lack of students. In the end, there were only six children. All students now study in the town; the younger ones rent rooms there, while the older ones board at the school.

The secretary had highlighted a new trend in the village: preschool and school-age children traveling to the town to study, living in rented apartments or rooms while being accompanied by their grandmothers. Families in Sunshine Village with children aged 4 to 10 rent homes in the county seat or township, and grandmothers shoulder the bulk of the responsibility of caring for them. They accompany their grandchildren to study in the township or county seat and care for their daily needs. They return to the village together on weekends and return to school together on Sunday afternoons or Monday mornings.

This trend had no precedent in 2009. At that juncture, children aged four to six participated in a preschool established by an NGO. Once they reached the elementary school age bracket (6–7 years old), they began boarding at the township's primary school, only returning to the village on weekends. A contingent of children inhabited the abodes of kin adjacent to a primary school within an adjacent village. Mothers and *niangniang*s invariably, were immersed in domestic responsibilities. As a *niangniang* whose husband had a cadre position in the county government avowed: "In the past, our dwelling accommodated four to five related children. Today, all *niangniang*s reside alongside their grandchildren in rented accommodations within the county or township.".

Most *niangniang*s in Sunshine Village overseeing grandchildren reside in townships or county seats. Some rent lodgings within townships, while others lease apartments in county seats, at monthly rents ranging from 200 to 800 *yuan*. Their role as companions to their grandchildren continues from age four until the conclusion of second-grade in elementary school, as boarding starts at the beginning of third grade. Most families have two children, which means that they may need to rent a room to accompany them for an even longer period.

Actually, these *niangniang*s used to be, or have been, the primary caretakers of the pigs in the household.

Niangniang Wangmo, Xue, and Chodron had secured accommodations in the same building facing the school's entrance in the township, allowing them to serve as guardians for their grandchildren. Their adult children were either tending to yaks in the village or engaging in temporary work, often after the caterpillar fungus season. When one of the authors inquired about why they were accompanying their grandchildren in the township, they responded, "It's what every family does nowadays." Niangniang Xue's family purchased whole pigs directly in 2022.

Niangniang Metok shared her concern that there was no longer a preschool in the village. Her twin grandchildren, age 4, had begun attending kindergarten in the county seat in September 2022. This decision had been made because Metok's eldest son, who is the children's father, had worked as a law enforcement officer in the county. Metok's husband was in frail health, and it was determined that the grandfather would move to the county seat to care for the children, while Metok assumed responsibility for domestic affairs. This included looking after the cattle and pigs, as well as fulfilling agricultural duties in the village. In 2022, she raised three pigs.

Mr. Ying, residing solitarily in the village, bemoans an analogous semblance to widowhood. His wife, Niangniang Ying, sojourns at the county seat to attend to their daughter's children. Their daughter serves as a teacher in another county. Subsequently, Niangniang Ying only returns to the village during the summer and winter hiatuses, periods coinciding with her daughter's vacation. Mr. Ying expounds that his responsibilities encompass swine husbandry while remaining entrenched in the village. The modification in pig breeds necessitates fewer laborers tending to the household, and thus Niangniang Ying can stay at the county seat.

Niangniang Yeshe had to move to Kangding to care for her grandchildren because her daughter worked there. However, she expressed her dissatisfaction: "I am not used to life in the city, it is not as comfortable as in the village". Niangniang Yangchen shared similar sentiment. In 2020, she had also undertaken the responsibility of looking after her granddaughter in another county where her son was employed. This pattern is widespread among the village's *niangniang*s, aged between 50 and 60, who live in the city for varying durations or commute with their grandchildren between the village, county seat, and town every weekend based on their adult children's job locations.

The shift in pig breeds and shorter feeding times had created opportunities and freed up time for *niangniang*s to care for and accompany their grandchildren to school in the town or county seat. Tashi mentioned reducing their farmland by half due to the shorter pig-raising period. She recalled:

It used to be frustrating. Previously, mother pigs would give birth to piglets every February or March, requiring constant care and feeding. At that time, more crops that were planted were consumed early. Throughout the year, there was a continuous need to feed the pigs, which required a lot of work. In winter, with no *zhucao* (several types of wild grasses that can be used as feed for pigs), we had to cook turnips every day, keeping the fre burning. That was the past.

The change in pig breeds has brought about a reduction in pig rearing times, an increase in pig rearing efficiency, as well as a decline in the demand for labor. Consequently, the pigs' primary caregivers, *niangniang*s, now have more free time to travel to the city to be with their grandchildren, enhancing their mobility between urban and rural areas. However, *niangniang*s also lamented the "boredom" of renting a room in the township and feeling unfamiliar with city life without companions or friends. *Niangniang*s have to adjust themselves to adapt to urban life, transitioning from a pig-centered domestic rural life to being caregivers in urban life. This in turn shows that their lives and consciousness have been, or will be, reassembled differently than they would have been in the village.

Sayes (2014) stated that non-humans are both changed by their circulation and change the collective through their circulation. As urbanization progresses and rural depopulation continues, local Tibetan pigs are now considered too difficult to raise and too fatty, leading to their replacement by hybrid pigs. The new hybrid pigs and shortened feeding periods have allowed older women, previously the main pig feeders, to accompany their grandchildren on the way to school in county and township schools, or to assist their adult children with childcare in cities. Thus, pigs have further facilitated the urbanization of middle-aged and older women. This highlights how pigs' agency as mediators (Sayes, 2014) has liberated humans from their ties to agricultural land, drawing them into urbanization processes. Simultaneously, human lifestyles and social relations have been reassembled.

6. Conclusion

This article highlights the importance of non-human entities, specifically pigs, in the process of urbanization and the reassembly of human life. It highlights how humans are shaped by the non-human entities they encounter in their daily lives. People's lives and production in rural areas previously revolved around a network of land-related relationships centered on pigs. The change in pig breed has facilitated people leaving their lands, disconnecting from rural life and integrating into urban society. When viewed as mediators, non-human entities are seen as offering unique contributions to a chain of interactions or associations (Sayes, 2014). The transition from local Tibetan pigs to hybrid pigs, and then to market pork, represents a shift from rural to urban society, with pigs acting as mediators in this reassembling process (Haraway, 1994). Thus, humans have undergone the process of reassembly through their interactions with pigs.

This research incorporates non-human actors into urbanization studies. Unlike previous urban research which has focused on urban space within social structure (Kipnis, 2016; Pun, 2005) or top-down governance policies (Wu, 2018), this research tackles the changing trajectory of the interaction in human-pig relations under urbanization. Urbanization should not only be viewed in terms of urban spaces for human encounters, but also in terms of relations with the overshadowed rural areas and among different spaces where humans and non-humans interact in everyday life. Non-human entities play a pivotal role in developing and bridging these relations. The concept of urbanization as a reassembly involving non-human actors, humans, and the land challenges traditional dichotomies such as urban/rural and city/village.

CRediT authorship contribution statement

Dan Wu: Writing – review & editing, Writing – original draft, Resources, Project administration, Methodology, Investigation, Funding acquisition, Data curation. **Yang Zhan:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization.

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Data availability

The data that has been used is confidential.

References

Anagnost, A., 2004. The corporeal politics of quality (suzhi). *Public Culture* 16 (2), 189–208.

Brenner, N., Schmid, C., 2015. Towards a new epistemology of the urban? *City* 19 (2–3), 151–182.

Callon, M. and B. Latour (1981). Unscrewing the big Leviathan: how actors macro-structure reality and how sociologists help them to do so. *Advances in social theory and methodology: Toward an integration of micro-and macro-sociologies* 1.

Chauhan, A., Patel, B., Maurya, R., Kumar, S., Shukla, S., Kumar, S., 2016. Pig production system as a source of livelihood in Indian scenario: An overview. International Journal of Science, *Environment and Technology* 5 (4), 2089–2096.

Chen, J., 2007. Rapid urbanization in China: A real challenge to soil protection and food security. *Catena* 69 (1), 1–15.

Chen, M., Liu, W., Lu, D., Chen, H., Ye, C., 2018. Progress of China’s new-type urbanization construction since 2014: A preliminary assessment. *Cities* 78, 180–193.

Chen, J.C., Zinda, J.A., Yeh, E.T., 2017. Recasting the rural: State, society and environment in contemporary China. *Geoforum* 78, 83–88.

Cook, G., 2015. ‘A pig is a person’or ‘You can love a fox and hunt it’: Innovation and tradition in the discursive representation of animals. *Discourse & Society* 26 (5), 587–607.

Danba xianzhi bianzuan weiyuanhui [Danba County Gazetteer Committe].(1996). *Danba Xianzhi [Danba County Gazetteer]*. In. Beijing: Publishing House of Minority Nationalities.

Dong, N., Yuan, J., 2020. Rethinking pig domestication in China: regional trajectories in central China and the Lower Yangtze Valley. *Antiquity* 94 (376), 864–879.

Driessen, M., 2018. Rural voids. *Public Culture* 30 (1), 61–84.

Feng, Z., Yang, Y., Zhang, Y., Zhang, P., Li, Y., 2005. Grain-for-green policy and its impacts on grain supply in West China. *Land Use Policy* 22 (4), 301–312.

Fei, X., 1980. Guanyu woguo minzu de shibie wenti [Issues on China’s Ethnic Identification Project]. *Chinese Academy of Social* Sciences(1), 147–162.

Garcia, B.C., 2011. *Small town China: Rural labour and social inclusion*. Taylor & Francis.

Geertz, C., 1973. *The Interpretation of Cultures*, Vol. 5019. Basic books.

Govindrajan, R., 2019. *Animal intimacies: Interspecies relatedness in India’s central Himalayas*. University of Chicago Press.

Guldin, G.E., 1992. An Urbanizing China. *Urbanizing China* 223–231.

Haraway, D.J., 1994. A game of cat’s cradle: science studies, feminist theory, cultural studies. *Configurations* 2 (1), 59–71.

Ingold, T., 2021. *The perception of the environment: essays on livelihood, dwelling and skill*. Routledge.

Jankowiak, W., 2004. Market Reforms, Nationalism, And The Expansion Of Urban China’s Moral Horizon. *Urban Anthropology and Studies of Cultural Systems and World Economic Development* 167–210.

Jinba, T., 2013. *In the land of the Eastern Queendom: The politics of gender and ethnicity on the Sino-Tibetan border*. University of Washington Press.

Judd, E.R., 1994. *Gender and power in rural North China*. Stanford University Press.

Kipnis, A.B., 1997. *Producing guanxi: Sentiment, self, and subculture in a north China village*. Duke University Press.

Kipnis, A.B., 2016. *From village to city: Social transformation in a Chinese county seat*. Univ of California Press.

Lander, B., Schneider, M., Brunson, K., 2020. A history of pigs in China: From curious omnivores to industrial pork. *The Journal of Asian Studies* 79 (4), 865–889.

Latour, B., 1999. *Pandora’s hope: Essays on the reality of science studies*. Harvard University Press.

Latour, B., 2007. *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.

Lefebvre, H., 2003. *The urban revolution*. U of Minnesota Press.

Li, J., 2010. The decline of household pig farming in rural Southwest China: Socioeconomic obstacles and policy implications. *Culture & Agriculture* 32 (2), 61–77.

Li, L., 2007. *Xunzhao wenhua shenfen: yige jiarong zangzu cunluo de zongjiao minzuzhi [In Search of Cultural Identity: A Religious Ethnography of a Gyalrong Tibetan Village]*. Yunnan University Press.

Liang, Y., 2011. Making gold: commodification and consumption of the medicinal fungus chongcao in Guangdong and Hong Kong. *Hong Kong Anthropologist* 5, 1–17.

Liu, X. (2003). Space, mobility, and flexibility: Chinese villagers and scholars negotiate power at home and abroad. In *Ungrounded Empires* (pp. 101-109). Routledge.

Lonergan, S.M., Huff-Lonergan, E., Rowe, L., Kuhlers, D., Jungst, S., 2001. Selection for lean growth efficiency in Duroc pigs influences pork quality. *Journal of Animal Science* 79 (8), 2075–2085.

McOrist, S., et al., 2011. Modern pig farming in the People’s Republic of China: growth and veterinary challenges. *Revue Scientifique et Technique-OIE* 30 (3), 961.

Miles, W.F., 1997. Pigs, politics and social change in Vanuatu. *Society & Animals* 5 (2), 155–167.

Montenegro, L.M., Bulgacov, S., 2014. Reflections on actor-network theory, governance networks, and strategic outcomes. BAR-Brazilian Administration Review 11, 107–124.

Nemeth, D.J., 2017. Space, Time and Pig. In: Meijaard, E., Melletti, M. (Eds.), *Ecology, Conservation and Management of Wild Pigs and Peccaries*. Cambridge, Cambridge University, Press, pp. 49–58.

Ogden, L.A., Hall, B., Tanita, K., 2013. Animals, plants, people, and things: A review of multispecies ethnography. *Environment and Society* 4 (1), 5–24.

Oliveira, G., d. L., & Schneider, M., 2016. The politics of flexing soybeans: China, Brazil and global agroindustrial restructuring. *The Journal of Peasant Studies* 43 (1), 167–194.

Pun, N., 2005. *Made in China: Women factory workers in a global workplace*. Duke University Press.

Roe, E.J., 2009. Human-Nonhuman. In: Kitchin, R., Thrift, N. (Eds.), *International Encyclopedia of Human Geography*. Elsevier, pp. 251–257.

Ruddick, S., Peake, L., Tanyilidiz, G.S., Patrick, D., 2018. Planetary urbanization: An urban theory for our time? *Environment and Planning d: Society and Space* 36 (3), 387–404.

Sayes, E., 2014. Actor–Network Theory and methodology: Just what does it mean to say that nonhumans have agency? *Social Studies of Science* 44 (1), 134–149.

Schneider, M. (2011). *Feeding China’s pigs: implications for the environment, China’s smallholder farmers and food security*.

Schneider, M., 2017. Wasting the rural: Meat, manure, and the politics of agro-industrialization in contemporary China. *Geoforum* 78, 89–97.

Schneider, M., 2019. China’s Global Meat Industry: The World–Shaking Power of Industrializing Pigs and Pork in China’s Reform Era. Social and Environmental Consequences of the Expanding Meat Industry, Global Meat, pp. 79–100.

Shen, J., 2006. Understanding dual-track urbanisation in post-reform China: conceptual framework and empirical analysis. *Population, Space and Place* 12 (6), 497–516.

Smits, F., Martín, R.I., 2019. ‘The Village’as a Site for Multispecies Innovation. *Etnofoor* 31 (2), 67–86.

Si, R., et al., 2021. Risk preference, health risk perception, and environmental exposure nexus: evidence from rural women as pig breeders. China. *Social Indicators Research* 1–28.

Simon, S., 2015. Real people, real dogs, and pigs for the ancestors: the moral universe of “domestication” in indigenous Taiwan. *American Anthropologist* 117 (4), 693–709.

Simon, S.E., 2023. *Truly Human: Indigeneity and Indigenous Resurgence on Formosa*. University of Toronto Press.

Trentacoste, A., 2020. Fodder for change: animals, urbanisation, and socio-economic transformation in protohistoric Italy. *Theoretical Roman Archaeology Journal* 3 (1).

Uchida, E., Xu, J., Rozelle, S., 2005. Grain for green: Cost-effectiveness and sustainability of China’s conservation set-aside program. *Land Economics* 81 (2), 247–264.

Välimaa, M., Vähä-Savo, V., Hiitola, J., 2023. Enroling around—Reconfiguring place and space in the wake of a new reception centre in a small rural town. *Population, Space and Place* 29 (3), e2623.

Veeck, A., Yu, H., Veeck, G., 2017. The transformation of pig feasts in rural Northeast China. *Gastronomica* 17 (3), 58–67.

Whyte, M.K., 2010. The paradoxes of rural-urban inequality in contemporary China. *One Country, Two Societies: Rural-Urban Inequality in Contemporary China* 16, 1–28.

Winkler, D., 2009. Caterpillar fungus (Ophiocordyceps sinensis) production and sustainability on the Tibetan Plateau and in the Himalayas. *Asian Medicine* 5 (2), 291–316.

Winkler, D., 2013. Steps towards sustainable harvest of Yartsa Gunbu (caterpillar fungus, Ophiocordyceps sinensis). In: In *Proceedings of the 7th International Medicinal Mushroom Conference*, pp. 635–644.

Wu, F., 2018. Planning centrality, market instruments: Governing Chinese urban transformation under state entrepreneurialism. *Urban Studies* 55 (7), 1383–1399.

Xie, S., Chen, J., 2022. Housing and identity expression among in-situ urbanised rural residents in China. *Population, Space and Place* 28 (5), e2548.

Yan, H., 2003. Neoliberal governmentality and neohumanism: Organizing suzhi/value flow through labor recruitment networks. *Cultural Anthropology* 18 (4), 493–523.

Yan, Y., 2010. The Chinese path to individualization. *The British Journal of Sociology* 61 (3), 489–512.

Yeh, E.T., 2016. The politics of conservation in contemporary rural China. *Rural Politics in Contemporary China* 258–281.

Yi, W., Zhao, Y., Zhong, R., 2018. Geographical Investigation of Gyalrong Tibetan Costume Culture: between Nationality and Modernity. *Collections* 2, 40–50.

Zhan, Y., 2018. The urbanisation of rural migrants and the making of urban villages in contemporary China. *Urban Studies* 55 (7), 1525–1540.

Zhang, K.H., 2002. What explains China’s rising urbanisation in the reform era? *Urban Studies* 39 (12), 2301–2315.

Zhang, Q.F., Wu, J., 2017. Political dynamics in land commodification: Commodifying rural land development rights in Chengdu, China. *Geoforum* 78, 98–109.