

The knowledge cultures of changing farming practices in a water town of the Southern Yangtze Valley, China

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Abstract

This paper presents an oral history of farming in the Southern Yangtze Valley in China, covering the period from pre-liberation to recent market liberalization. Using the stories and observations of 31 elderly residents of a small water town, the paper describes the hard labour of traditional farming practices and the acquiescence of many when, post-liberation, they could leave farming for better-paid factory work. However, in a departure from conventional analyses, these oral histories suggest that the co-dependency culture of traditional farming has broken down, and farmers are unwilling to return to the land and continue farming. The changes in knowledge cultures of local farmers in recent decades are not likely to lead to pathways to working with incoming modern ‘outsider farmers’ on the one hand, nor able to be blended with potential new ‘urbanite’ knowledges of those who might wish to increase organic farming. The current knowledge cultures of these farmers has shifted as needed to the optimization of family unit needs, naturally leading them to urbanization and the relinquishing of their ties to the land. For cultural rather than economic reasons, these farmers see themselves as the last peasant farmers of Tianshanzhuang.

Key Words: Farming practices; Knowledge cultures; Small scale farming; Oral history.

Abbreviations: (none)

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Introduction

There are regions in China where farmers have farmed their land productively for thousands of years (King 1911), following what Fei (1939, p.165) has termed a ‘peasant way of life’ revolving around an ‘... empirical knowledge that enabled (them) to control the natural forces in order to attain human ends.’ At the core of this knowledge was an understanding of the soils, water, environment and family labor commitment that allowed them to maintain the health of their farm at production levels in excess of that common in the West at the time (Ruddle and Zhong 1988; Xie, et al 2009; Shen, et al 2010; Liu, et al 2011; Shi, et al 2011; Van der Ploeg, et al 2014). However, as numerous studies have shown (Qu 1991; Yao 1994; Muldavin 1996; Weng 2000; Xing 2000; Zhu and Chen 2002), changes in farming practices have led to this human-environment relationship becoming rather less balanced over the last 40 years, leading to an array of environmental, social and health issues related to declining crop yields and increasing agricultural pollution.

Explanations for this change in fortunes are well rehearsed in the academic literature, focusing primarily on the multiple impacts of state-led agricultural intensification, the simultaneous decline of farm labour as better paid industrial jobs became available elsewhere and resulting

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rural depopulation (Sanders 2006; McGreevy 2012; Van der Ploeg, et al 2014). Deploying neoclassical economic concepts such as economies of scale and diminishing marginal returns, these explanations suggest that, in a relatively short period of time, many of the peasants observed by Fei (1939) transformed themselves into farmers making apparently rational economic decisions to increase artificially the productivity of their land, even if this was at the expense of its longer term environmental health (Chen 2009; Feng, et al 2009; [Li and Deng 2010](#); Lee 2011). While being a plausible explanation in structural terms – and evidentially so in terms of the increased use of synthetic fertilizers and pesticides (Zhu and Chen 2002) – this focus on economics has tended to miss, or at least downplay, the human stories behind the farming decisions: how deeply and in what sense have farming communities been distanced from the land, and what implications could this have for small scale farming in China? And more broadly, what does this have to tell us about the nature of the competing knowledge cultures (Tsouvalis, et al 2000) informing what it is to be a farmer in contemporary society, whether in China or elsewhere?

In recognizing Van der Ploeg, et al's (2014) caution about premature epitaphs for peasant farming in China, we have stepped away from the conventional agricultural economics focus of such investigations (see Evans, et al 2002; Morris and Evans 2004), to undertake an oral history of farmers in one town in the Southern Yangtze Valley in China. Oral histories involve the collection and analysis of historical information that cannot be found in written sources (Riche 2003, 2012), and are well suited to a study of the lives and times of 'ordinary' farmers who have lived in what has been predominantly an oral tradition (King 1911; Fei 1939). Following the work of Denzin (1989), Riley (2010), Setten (2004, 2005) and Riley and Harvey (2007), we have concentrated on collecting topical life histories 'from the ground,' with the topic being the changing agricultural practices that the farmers have experienced over their life courses.

The life histories that we have collected suggest that what at first appears to be the result of rational economic decisions is actually much more the result of a number of related cultural factors – not least two sudden cultural shifts or fractures - that have undermined, and finally broken, farmers' connections to the land. Consistent with work by Blackstock, et al (2010),

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Hallam, et al (2012), McGreevy (2012) and Tomiyoshi and Kohsaka (2014) on farmers' behaviours, we suggest that the changes in farming practices in the Southern Yangtze River region are as much a social as an economic phenomenon, informed by the challenges that new knowledge cultures have brought to traditional ways of 'knowing from within' (Shotter 1993, p.31). While being reminiscent of similar processes elsewhere (see especially McGreevy 2012, with reference to Japan), the apparent and absolute fracturing of the long-standing connections between farmers and land in this part of China offers new insights into the potential impacts of agricultural and rural development.

Following a review of the literature and the methodological approach to the data generation, the findings are structured around the core themes that emerged from the life histories. These relate principally to the changing social and agricultural practices of rural life in the Southern Yangtze Valley but, as suggested above, indicate a much clearer schism between the past and present than is generally found in the literature, even for China (see Van der Ploeg, et al 2014). This is discussed in some detail, with the paper concluding that the interplay of tacit and codified knowledges emblematic of transformation in many other agrarian societies (Wynne 1996; Morris 2010) has not really been experienced in this case. Rather, following McGreevy's (2012) research in Japan, it is apparent that the farmers in this study occupy different lifeworlds – and knowledge cultures – to those who now seek to develop new approaches to farming. As Jasanoff (1993) has observed, the knowledge cultures of the 'old' and 'new' are not additive, but instead represent different ways of seeing the world. The paper concludes by invoking the work of Tsouvalis, et al (2000) in arguing that a shift from the common expert/lay knowledge forms towards an appreciation and application of knowledge cultures allows us to understand more fully the significance of agricultural change in one part of China than has previously been recognized in the literature.

The knowledge cultures of farming practice in the Southern Yangtze Valley

Hsiao Tung Fei's (1939) study of peasant life in the Yangtze Valley provides a detailed picture of the rich empirical knowledge that farming families built up over generations on the land. At

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that time, less than 80 years ago, two-thirds of households farmed, using almost exclusively human labour and being entirely dependent upon their crops for survival. Their tacit knowledges (Morris 2010) spanned both agronomy and hydrology, in controlling the soil and water conditions necessary to grow their staple diet of rice and vegetables. Fei (1939) describes in some detail the way in which these tacit knowledges combined a mix of practical ‘know-how’ handed-down between generations and externally-acquired scientific ‘knowing-that’ knowledges that informed farmers about how to maintain the delicate balance of soil nutrients and water that their farming required. These composite knowledges are redolent of an established agricultural approach to co-producing what Bourdieu (1985) has termed a ‘feel for the game’ which ‘... continuously links diverse knowing-thats and knowing-hows to one's practical, everyday undertakings ...’ (Tsouvalis, et al 2000, p.912). For Callon and Rabearisoa (2003), this approach to generating a specific knowledge culture lent farmers a particular social identity that defied definition: they were, in effect, both on and of the land, defying conventional boundaries between lay and scientific knowledge (Wynne 1996; Callon 1999).

As others have since argued, the empirical expertise that farmers had amassed in subsistence or peasant farming increasingly came under pressure post liberation (1949), as China needed to expand both its agricultural production and its industrial workforce. As Sanders (2006, p.203) has argued, the new collective economy led to farmers ‘deserting the land’ in the 1950s and 1960s – thereby breaking the established co-production of farming knowledges – and leaving those who remained with an incentive to replace human labour with chemical fertilizers and pesticides (Zhu and Chen 2002; Lee 2011). By the 1970s and 1980s, as political and social reform occurred, this industrialization process had undermined the delicate balance that farmers had previously achieved between nature and human exploitation (Smil 1984), leaving the land in a fragile state (Qu 1991; Sanders 2006, p. 201) and those living on it often in poor health (Smith 1997).

Observers at the time equated the degradation of farmland and decline in health with a systemic failure of agricultural knowledges – both tacit and formal - to comprehend the scale of disaster befalling Chinese agriculture (Qu 1991). In an attempt to restore the balance between farming

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and the environment the Government began, around 1990, to promote a new ‘Chinese Ecological Agriculture,’ although with little impact, given the continued financial incentives to maximize production (Sanders 2006). Indeed, while some farmers developed an understanding of the impacts of the chemicals and the need for the new ecological approach to farming (Shi, et al 2011), it was apparent that most farmers continued to develop their industrialized, chemically-enhanced, production systems.

Given that the ecological approach to agriculture was broadly based on an appeal to ‘rebalance’ agriculture between nature and cropping (Sanders 2000), and that new ‘middle class’ and export markets were emerging for organic and ecologically sound food (Kledal, et al 2007; Shi, et al 2011), questions have been asked about why most farmers have resisted change that would seemingly play to the strength of their tacit ‘know-how’ (Sanders 2006). Indeed, as McGreevy (2012) has observed:

Local knowledge has been linked to various endogenous rural development discourses that see it contributing to growth in multifunctionality, viability of rural livelihoods, and sustainability ... The value of local knowledge rests in its application in maintaining and managing the productive and ecological vitality of agricultural and rural lands and in its revalorization and recombination to create sustainable, economic, and social rural initiatives both on and off the farm.

(McGreevy 2012, p.394)

The dominant thesis to date for why this has not occurred has been largely an economic one: that the net financial benefits of chemical farming still outweigh those perceived to be available from the ecological alternatives, once the cost of restoring nutrients and soil structure is taken into account (Sanders 2006). But, as Shi, et al (2011) have identified, there are also cultural factors to consider, with the development of organic and ecological farming limited to largely serving specialized urban populations far removed from the cultures of peasant agriculture (see also Hao, et al 2004; Zhang, et al 2005; Paull 2007). Furthermore, as McGreevy (2012) has observed, a reserve of tacit knowledges is not enough in itself to foster change: rather, active networks need

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to be fostered through which these knowledges can be communicated to new entrants who are able to bridge the cultural, social and physical divides between the urban and rural (see also Hassanein and Kloppenburg 1995). Thus, a gap remains in our knowledge, about the extent to which the apparent fracture in knowledge cultures experienced by farmers in the Southern Yangtze Valley now prevents them from accessing a new blend of knowledges applicable to ecological or sustainable farming, which would serve them well in accessing new premium markets for their goods, as well as looking after their land and families.

Methodology

In seeking to honour the oral tradition of Chinese agriculture and also to address the call for agricultural research to be conducted ‘from the ground’ (Setten 2004, 2005; Riley and Harvey 2007; Riley 2010), we have used an oral history approach to data generation. Oral history research consists of the collection of a series of stories which, together, describe significant events and explain the meaning of these events to those telling the stories. While being anchored in the past, the stories are shaped by – and shape - contemporary events, with common themes found in multiple stories highlighting shared or common experiences of significance to communities as well as individuals (Walker 2000; Richie 2003, 2012; Riley and Harvey 2007). While being used to research many aspects of history, oral histories of agriculture have a rich tradition:

Oral interviews have been central to the recounting of agricultural history in the twentieth century. In recent decades, historians have discovered that they can fill in the blanks in documentary history through interviews with farm people. Oral history interviews are useful for helping us to understand the daily experiences of farm people, their motivations for action, and the meanings they gave to the larger structural forces transforming their lives. (Walker 2000, p.340-341)

A traditional water town of the South Yangtze River, Tianshanzhuang Village in Jinze Town, was selected for the study. Water towns were common along the southern Yangtze, as hubs for

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the local agricultural communities. Unlike many of the larger water towns that have become tourist destinations, Tianshanzhuang remains primarily agricultural, with a small and ageing farming community (1,229 people). It is located about 60 kilometres from the urban central area of Shanghai, near the boundary between the Shanghai and Jiangsu Provinces. Tianshanzhuang was chosen because it has a long history of traditional farming, a relatively large number of elderly farmers and is relatively isolated from the impact of industrialization and urbanization. It is also located in the drinking water protection area of Shanghai, meaning that manufacturing growth has been strictly controlled, which has contributed to the maintenance of agriculture.

The sampling frame developed for the study was informed by a wish to collect stories from the three main periods of recent Chinese history: pre-Liberation (1949); the Collective Economy (1950s-1970s); and the after-Open & Reform period (post 1980). This meant selecting stories from three age groups: those aged 80+ years; those between 70 and 79; and those between 50 and 69 years old. Access to the older two groups was gained via the Old People's Association of the village. Interviewees in the 50-69 years old category were nominated by the current Vice-Head of the Village Committee. Samples were selected differently for each group. For the 80+ year olds, every candidate who was still living locally and able to communicate was interviewed. This amounted to 15 people, one of whom had been a landlord, 10 had been peasant farmers and four had been hired labourers. Those selected in the 70-79 year old category were involved in collective farming, in roles such as farmer, production team leader, accountant, and commune members. Those in the youngest age group were selected on the basis that they had experience of both farming and industrial work, with two of them also being village leaders (see Table 1).

<<Table 1 about here>>

The interviews with those in the two older age groups focused on five broad topics: what life was like when they were young; how they farmed (and how this has changed); what fertilizer they used, and in what quantities; what they perceived to be the quality of the water; and what they did in their leisure time. Those in the youngest of the age groups were asked slightly different

questions, relating to contemporary farming practices, the impacts on them of regional economic development, and the changes that they have seen in the village.

The oral histories were collected over ten days through late March and early April 2011 and supplemented with return visits through to June 2011. Many of the villagers spoke a local dialect of Chinese known as Shanghaiese, which required local researchers to assist in translating or clarifying into Mandarin. For this reason, the researchers worked in groups of two to three people, taking turns to ask questions and record notes (audio recording was used only with farmer consent). Most interviews took around 2 hours. Field notes were completed immediately afterwards and summary interview reports were completed that evening by the interviewers. The reports and associated quotes were later translated from Mandarin to English. In order to protect the privacy of the interviewees, they are referred to by gender and age in the paper.

Once the fieldwork was completed, codes were created and assigned using a grounded approach (see Charmaz 2006). The main themes were drawn out of the data in an open coding approach by the lead researcher through ‘deep reading’ ten interview reports (the decision to code the reports rather than the interview transcripts was based on three factors: the variable nature of the interview responses; the different dialects; and the need to translate the data). These codes were then used in the closed coding of the remaining interview reports. Sub-themes were added as they were found and all reports coded with them iteratively (see Table 2).

<<Table 2 about here>>

Findings

Changing of rural organization

Traditional Chinese agricultural society was described as “loose sand in a plate” (Sun 1927), which meant that farmers used to be very independent, producing whatever they needed

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themselves. For example, they grew rice and vegetables for their family consumption, and cotton for making clothes, shoes and socks. This independence was balanced by strong village traditions and respect for elderly and reputable people who had done well in farming, or had a tidy and clean house, or were diligent and thrifty. These norms of being seen to take good care of farm land were the driving forces of traditional farming:

(before Liberation...) landlords with more land used to be made the 'Bao zhang' (the village leader). Most of his work was to take charge of business from the government, such as agricultural taxes or land rents. He was also the mediator of neighborhood conflicts. If he was fair enough, villagers would respect him. If he wasn't, then villagers would grumble about him. Elders with the same family surname were also considered to be respectable. The young rarely disobeyed the old at that time. (male, 81)

This way of life in Tianshanzhuang was felt to be the epitome of rural life in the Southern Yangtze Valley. It was described as more a form of moral guidance than institutional governance. Those families with more members, landlords with more lands and those with relatives in government played an important role in the village's self-regulation. Some activities, such as bridge construction or repair, village road management, and deep cleaning of the rivers, were widely regarded as 'doing good and accumulating merit', and were highly appreciated by the local society. It was felt that this culture had endured for thousands of years. Many of those interviewed spoke about starting as a child to learn the ways of their elders, both in the field and in terms of community responsibilities. None of this was written down, but was learned through observation and practice:

Before Liberation, when the farming time came, the whole family including the old and the children all went to the field early in the morning and came back late at night... the children played in the field ... learning by playing ... and automatically forming some basic farming skills. (2 males, 67/ 81)
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Following the Liberation, China's rural areas were dominated by the Collective System, which to completely change how farmers thought, worked and behaved. A People's Commune was organized to cover several Village Teams, with several Production Teams in each Village Team. The autonomy of these organizations was variable. They followed orders and training regimes from higher tiers of government, while they made their own decisions about local implementation through collective actions:

We had meetings in the Commune, and discussed issues for several days. Finally the tasks were distributed with a detailed chart. The leader of each Production Team was responsible for arranging the plant rotation. (male, 81)

And:

Leaders of Production Teams were selected by members of each team, by public meetings in the largest hall. Those with high reputations were often elected. The Commune would send a representative to attend the meeting and ask opinions of the farmers. ... if the leader was reputable he could continue in charge for a long time. Actually the job for the leaders was quite tough and the additional income was small. (male,68)

The collective system clearly had a great impact on the local society. The farmers were well organized by the Production Teams, but they lost their autonomy. Their tacit knowledges were no longer as valued as they had been previously. Instead, each Production Team included a technician trained in new formal scientific knowledge - usually a local farmer who obtained information top-down. In addition, the organizational, institutional and cultural powers created by the traditional family system were completely destroyed. According to many of the older participants, the benefit was that many impossible things came to be realized, such as the digging of thousands of village river-ways, town rivers, and even larger water projects, with thousands of laborers working on these projects when they were not required for farming. The scale and

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quality of the irrigation system peaked at that time, and has continued to contribute to wider society.

Many of the older participants also talked extensively about the labour required to fertilize the land, using a combination of river mud and human and animal manures. They felt that this practice was at its peak at this time. The use of machines was also made affordable because of the uniting of villages, as well as the advance of farming technology. However, as farming efficiency increased, there was reduced demand for labor on the land and – according to many of those interviewed - the fundamental rule of equalitarianism was broken, which destroyed farmers' incentives for hard work. Yet, these developments did not improve the livelihoods of most households.

In later years, in order to release private productivity potential in rural areas, the 'Household Responsibility System' was rolled out across the country, which devolved responsibility of land parcels to individual families. Under this system young people could leave the land for factory or other work, because farming was no longer the only choice. Farmers initially retained their land, but tended to farm it extensively. Later generations grew up without both farming experience and practical knowledge to carry this on. This was in line with a general trend in China that about 90% of the rural hollowing out workforce never received farming training at all, especially those the young (China's State Statistics Bureau 2012). Most respondents felt that rural society changed rapidly at the village level. This began with the institutions of the collective organization losing their hold over farmers, as did the traditional common laws/rules, leading overall to a serious neglect of collective goods and an excessive focus on private interests.

As a result, the most successful and influential men in the eye of farmers were no longer those with the best practical farming knowledges and techniques, but those who were wealthy and good at making money. Besides, economic interests began to dominate farmer's decisions, and as the shadow price of rural labor continued increasing, farmers began to lose interest in heavy or dirty works, such as mud and manure collection and utilization. In more recent times it is felt that many farmers have gradually lost the old culture and association with their villages and

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communities. Farming is no longer regarded as one's destined duty, but is now thought to be a hopeless or even a shaming job. There were many stories about how the young generation in the village do not know how to farm and are reluctant to stay in the village. This has led, according to the older generations, to farming being abandoned locally, with all the farmlands rented to outsiders from inland China.

Changes in farming activities

Many of the interviews focused on the changes that had occurred in farming practices in the village area. Rather than the three periods of history used for the sampling frame, many of the older people offered four periods, breaking down the collective era into pre- and post-mechanization phases, which also coincided with the increasing availability of chemical fertilizers, pesticides and herbicides in the 1960s and 1970s. At the core of the change in farming practice over this period were the related issues of water management and the irrigation and fertilization of the land. Through to the 1960s the traditional practice was to dredge the waterways on an annual basis, by hand, with the river mud combined with clovers and human and animal wastes to create a rich 'natural' fertilizer. Irrigation of the land was initially achieved using foot and wind-powered waterwheels, and later by electric pumps.

Many of those interviewed commented on the poor efficiency of human-powered water wheels, which depended very much on the height above water-level of the land. On average, four people working a whole day could irrigate 3 *mu* (approximately one-fifth of a hectare):

Before Liberation, there was a waterwheel base in every piece of land and a water trench next to the waterwheel. ... Little children started to help treading the waterwheel at about 10 years old... (male,81)

Some peasants could not afford the waterwheel, so they had to share it with neighbors or close relatives, by doing some other jobs (e.g. weeding) in exchange:

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....We didn't have a treading waterwheel, but our relatives got one. Thus it was common to share one for two families. And we helped them doing farm work in return...Usually the waterwheel was inherited over generations, and many poor families couldn't afford one... there were about half of the households that owned a waterwheel. (female, 89)

Wealthier farmers bought wind-powered water wheels, which could triple the area irrigated per day, using half the labour:

We got a wind watermill for the price of six dan¹ rice. Some households would sell cattle for wind watermills. Sometimes we lent it to neighbors [with whom we had a]good relationship, or helped irrigate lands of those who couldn't afford wind watermills and had a good relationship during the irrigation. (female,84)

At one time there were some ox-drawn waterwheels in the village, but this was relatively uncommon because of the high associated costs of keeping cattle. By the mid- 1950s, there was one electric irrigation station in the village, which was able to irrigate about 300 *mu* (about 20 *ha*) of farmland per day:

We started using Electric Irrigation Station in the 1960s—pumping water from the rivers and lakes. There was a master and an electrician at first, but now one man is enough. The main work was checking and repairing the machines before and during the irrigation season. Each Electric Irrigation Station covered parts of farmlands separately. ... The village had about six Electric Irrigation Stations in 1960s. (male, 68)

The shift of fertilizer use played a key role in these periods. While there were some chemical fertilizers available before the Liberation, they were expensive, meaning that most farmers

¹ Dan: a unit of dry measure for grain (about 100 kg)

utilized almost everything that could contribute to the fertility of lands, including human and animal manures. The preparation of river mud fertilizers (known as “*Lan River Mud*” - the process of getting mud from the river bed and into a boat) started about 3 months before planting rice. Once on land, the river mud was dried in the sun for fifteen to thirty days, during which time it would lose 40% of its weight, after which it could be carried to the farm (taking a further 30 days a year) and mixed with other nutrients before being spread on the land:

... human and animal manure used to be the main fertilizer for a long time. There were even some manure ships which carried human manures in from urban Shanghai. ...every household had a large container for collecting manures... other fertilizers included river mud mixed with water, grass, and waste bean-pie²... human manures were easy to use but took a lot of labor, just carrying loads on shoulders. It was mainly for vegetable growing. The waste bean-pie needed to be cut into small pieces, and then carried to the land. The most labor consuming was the river mud. We had to drive the special concrete boat to the lake Afterwards, the river mud had to be left to dry out, and then be carried to the farmland. (male,87)

And:

The fertility of river mud differed from location to location, depending on water grass composition. Usually we made judgments according to the weight of the river mud: if it was light, it tended to be fertile. If you were lucky enough, you could also catch some fish, shrimp or spiral shells - enough for a delicious meal.(2 males,67/81)

It was widely understood that the output of the land depended greatly on the river mud collected in the winter, as other sources of fertilizers had a price tag while river mud did not. It was also regarded as one of the key farm jobs that required cooperation between households, because the

² Bean-pie – a round solid pie highly compressed by dregs left over after pressing soybean, flax, etc. for oil.

collection needed at least four strong men: one holding the boat stable while three others took turns collecting. They also shared the job of carrying the mud from the boat to the land to dry it:

The river mud was always used as the primary fertilizer. Normally there had to be 10 boatloads of wet river mud [approximately 3 tonnes] per mu ... the carrying of river mud on shoulders was very labor intensive. Not all the farm land was near the river. If the distance was 30 meters, then a strong man could manage to carry 30 boatloads per day; if it was over 100 meters, the same river mud needed at least 2-3 strong men working for a full day... there was an old saying: after carrying 18 loads of river mud, you would never prefer smoking to a meal. (male,81)

After Liberation the *Lan River Mud* process was controlled by the Production Teams, because it was regarded as one of the main factors to ensure an increase in output. As one interviewee observed, there was a common saying at the time: “*a carry load of river mud today, a carry load of rice tomorrow*”. The process was overseen by older experienced farmers, largely because it was felt that younger people did not have sufficient knowledge to manage it properly. As with other work, the collection, transfer and application of river mud became organized by the Production Teams at the village level, with young women also involved, which increased the quantities that could be collected:

Our village team had 6 boats for river mud collection. A boat usually had 5 strong young men and also there were 5-6 women or other men for carrying. We often started with the furthest plot, and then moved to the nearest ones. (male, 60+)

Another factor that led to the increased use of river mud was the very significant shift of rice planting practice from single cropping to double cropping. In order to satisfy the huge demand for food, great efforts were taken to plant more rice. The first harvest and the second planting had to be completed in about 10 days, in late July to early August. It was the hardest time of the year for farmers, with heavy labor in hot temperatures and with very limited time. Even half a century later, the farmers still have vivid memories of those years; the phrase “*very difficult*

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time” was commonly used to begin and conclude their stories. Despite their efforts, “*Lan River Mud*” was not appropriate in the summer time, because there was seriously short of labor and time. Chemical fertilizers were thus introduced to support the second cropping in summer, with *Lan River Mud* happening only once per year - in the winter time:

When we began the double cropping of rice, the shortage of fertilizer was obvious. There was no time for collecting and utilizing river mud. Thus we began to use chemical fertilizer as topdressing. (male,61)

As a result, the use of fertilizers peaked in this period, and the application of river mud rose sharply. In addition, more pigs were raised in collective pig-houses, providing an additional source of manure:

Before Liberation, few households raised pigs - because of insufficient food: less than 30 out of total 300 households. It was not until the time of the Production Teams that every household began to raise pigs. There was also a collective pig farm in the village. (male, 81)

By the middle of 1960s, chemical fertilizers became readily available, and their use spread very quickly:

In the period of People’s Commune, chemical fertilizers were under government control, and divided according to the total area of each Production Team’s farmland. It was the same as other production materials. If it was not enough, the Production Team could buy a little more at its own expense from the People’s Commune.... There was a chemical fertilizer factory in Qingpu County, and the chemical fertilizers were shipped by boats. (male, 81)

The most common types of chemical fertilizer at that time were Tan’an (NH_4HCO_3) and An’Shui ($\text{NH}_3\cdot\text{H}_2\text{O}$). The quota per mu was 400 Jin (200 kg) Tan’an. The price

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was only 0.1 yuan per Jin (very cheap). Pesticide and chemical fertilizers had to be bought by the Production Teams themselves. For example, if the standard was 2 liang of pesticide per mu, then by multiplying its farmland areas, that was the total amount the Production Team should buy. (After several years) the procedure of purchase was simplified and you could buy as much as you wanted. (male, 68)

The capacity of the chemical fertilizer factory was increasing rapidly and it didn't take long to meet the demand of these areas. The price consequently dropped, making it affordable for almost all production teams. It soon became very attractive to farmers, particularly because rice crops seemed to do much better using chemical fertilizers than they had done using the *Lan River Mud* system. In addition, the human labor input was significantly reduced. As a result, the application of river mud decreased significantly at this time.

New opportunities beyond farming and the increasing shadow price of rural labor

Many interviewees reflected on how they tended to include all the materials in calculating the financial viability of their farms, but not their labor input. Hard work was regarded as their duty. Labor was considered 'free', especially in the slack season. Before the Liberation, the most important activity during the slack season was *Lan River Mud*. Labor saving was not a big issue back then. Farming was intensive and meticulous; farmers gave it the time that it needed, knowing that if their farm was overgrown with weeds or looked shabby, they would be looked down on by their neighborhoods. Families caught up with other jobs, and there was time to rest:

[at that time] women sometimes did some needlework, and men drank tea and chatted during the farm break. (male, 78)

There were few opportunities for additional work beyond farming in this period. Only a few farmers managed to do some business through selling daily necessities by boat, because breaks in the farming were primarily used for in-door chores, such as clothes and shoe making:

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During the farm break [before liberation], I went to work for the landlord as casual labor. My wife stayed home weaving and spinning for the family. We grew the cotton ourselves. (male, 80)

After the second topdressing for the rice, there was a short period of farm break. Every household would get the boat repaired or maintained. Some went for small business (trading in other villages), such as selling vegetables such as Lingjiao, Shanyu and Jiaobai. (male, 81)

Attitudes changed during the collective farming period, where farm work increasingly became a job rather than a way of life. The Production Teams organized all work, and assigned work to families, including any rare non-farm work. The income went to the collective rather than individuals. The non-farm work was usually welcomed as an alternative to the assigned farm work:

By the late 1970s, the Production Team dispatched members to look for other earning jobs.... Farmers were not allowed to take this 'bywork' themselves. Usually it was by arrangement with the Chair of the Production Team. For example, bywork opportunities would directly come down to the production team (with requirements such as what kind of work, how many people needed, etc.), and the chair of the Production Team would decide who got the job. At that time there were few factories around, thus the bywork opportunities were rare. What's more, the payment of bywork was decided by the Chair of Production Team ... it wasn't until the Open and Reform Policy that more and more farmers took non-farming work outside. (male, 67)

And:

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When our Production Team got some factory working opportunities, we selected by lottery. There was a textile mill, a roller mill, a copper factory, a comb mill, a woolen sweater mill, and a pump factory around the town. Every household might have a chance to get the job on average, while in other Production Teams you had to be in very good relation with the chair in order to make it happen. The workload varied among factories, and the income varied too, but at least it was much better than farming income. (3 females, 67/87/unclear)

According to the current village leader, Ma (age 50), things changed around 1980 as younger people, in particular, began to take non-farm work. At that time they remained part of the Production Team and their income also belonged to the Production Team. According to Ma, before 1981 payments for working in factories were low - about ¥0.8-1.0 per day – not much different to farming wages. This was because the Production Team had to balance the income of farming and non-farming. However, these new opportunities demonstrated how much more could be earned from non-farm work, and what kind of lifestyle could be achieved away from farming. Thus more people wanted to move away from farming. Ma himself was one of them. At first he led a group of young people to find house decoration jobs, and the salary was about ¥30 per day, over 10 times the agricultural income. According to Ma, more than 60% of the young and the middle-aged people in the village followed this lead. Consequently, the average payment for scattered part time work increased quickly, to about ¥50-60 /day in 2000, and about ¥100-110/day by 2010.

I went to work in a factory in Shanghai at 22, and came back to the village as a carpenter. At that time about 40% people stayed in the village, while the other 60% worked outside, mostly in the collective owned factories, such as comb mills and farming mechanic factories. After 1990, the whole village was avidly seeking non-farming work. The grass and weeds - which used to be utilized as fertilizers - were abandoned, and people began to throw this kind of garbage all around. Nobody wanted to waste time on utilizing them—it was not economically cost-effective. You could earn more just by simple non-farm work....(male, 52)

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And:

(now) the large farms also hire people to do the farming, such as weeding, fertilizer and pesticide applying. It costs about ¥80-90 per day. Even for those old women doing weeding it costs about ¥40-50. (male, 67)

As this last quote suggests, the ‘hollowing out’ of the villages had a consequence in that there were not enough people actively involved in locally related work to manage communal areas anymore. Previously maintained by local teams, such work fell to local government to manage:

We used to dig the productive river stretches by ourselves.... the chair of the Production Team would allocate the labor use, without payment....Now it is paid by the Town Government to clear the river mud when it gets too much sedimentation... (male, 68)

This eventually led to many farmers giving up farming and renting their lands to outsiders:

My family doesn't do farming now, neither my son's. My eldest son worked in factories next to the village, and has now moved to an industrial park. The youngest son is in building. Each household has about 1 mu land and all has been rented. I have 2.63 mu land in total...the rent was ¥1000 / mu annually. (male, 81)

In concluding their interviews, many of the former farmers suggested that urbanization and industrialization are now unstoppable, which has led to fundamental changes in agriculture and also rural life. While nostalgic for their previous community-based life and sense of belonging, most felt that the changes had been welcomed by farmers, because life is now much easier than it once was. However, their connections with the land and more generally, the village environment, are lost. They used to regard the community as their common ‘home place’; this is no longer the *Changing farming practices and knowledge cultures in China*

case. Their ‘home places’ have shrunk to private houses and yards, which are kept clean and tidy, but there is no more care for the common parts of the village, even those irrigation systems which used to be treated as the ‘life of agriculture’ (Chen and Davis 1998). Yet, none of them feels now that they wish their families to return to traditional farming; the physical work and requirement to deal with unclean and smelly circumstances is no longer appealing as long as more pleasant non-farm work is available. Indeed, many of them would like to be moved by the government to the city, thus completing their transformation from farmer to non-farmer, and rural dweller to city-dweller.

Discussion

This paper commenced with the observation that, like many other parts of the Chinese economy, farming has modernized from a peasant to an industrial economic model in a very short space of time. Indeed, it has achieved in less than 70 years what has taken many countries twice as long to achieve. In the process, and in contrast to Van der Ploeg, et al.’s (2014) findings elsewhere in China, farming in the Southern Yangtze Valley has moved away from its tacit and largely oral knowledge base to a more remote, modern, scientific one, as well as moving away from a local familial co-dependency farming model to the more remote and mechanized farming system known throughout the developed world.

Yet, in contrast to the observations made about similar developmental processes in other countries, there is remarkably little regret for losing the past, nor dire warnings about the consequences of the loss of the old tacit knowledges and knowledge cultures. Indeed, the dominant response from those interviewed is of cheerful acknowledgement that the old way of farming has passed, and with it the knowledges and cultures that shackled them to the land. Their stories of farming under the *Lan River Mud* system are imbued with an embodied understanding of the hard physical nature of the work and its endless repetition, intensified under the close management of the Production Teams. *Lan River Mud* may have been effective in keeping yields relatively high, but the demand for direct labor input was also high. That they worked cooperatively with other farmers, or with near relatives, is not given a particular value beyond ensuring that the work was done – although there is certainly pride in the work that they

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previously did in caring for their farmlands and common parts of the village, such as cleaning the waterways, a job that they note the Village Committee now contracts out to specialized engineering services.

That non-agricultural economic development was the reported catalyst for the change is no surprise; the move from land to factory, and the consequent hollowing-out of villages such as Tianshanzhuang, has been played out all over the world (Evans, et al 2002; McGreevy 2012). And on the surface the stories told by the elderly of Tianshanzhuang are nothing new. Yet, beneath the surface their stories outline a different history from the migration patterns of many other countries or, indeed, other parts of China: theirs is a collective history in which farming was always a community or communal occupation, even before Liberation. While it might have been the case archetypically that a father would seek to hand farm life down to his son, that message does not come through from the fieldwork interviews. Thus, in contrast to many accounts of farming inheritance (see, for example, Errington 1988; Errington and Tranter 1991; Mc Greevy 2012), where potential impacts of the fracture of knowledges between generations were mentioned, the interviewees in this study did not seem overly concerned. Farming is no longer their problem. Nor is it any longer the problem for the residents of Tianshanzhuang; as far as they are concerned there are no farmers left in the village. While not articulating quite what they mean, this assertion is perhaps tied up with their identity as the last of the peasant farmers in this water town. Given the new technologies available, these ex-farmers know that no-one has any longer to work in the way that they did. That their tacit knowledges will die with them is of no apparent consequence.

Rather, the dominant theme is of the abrupt change that occurred when the collective economy – the People’s Commune System - took responsibility for the lives of the farmers, replacing family and community independence with practices which eventually optimized governmental and political benefits. And when those changes came, and the new scientific, managerial and planning knowledges of the Production Teams took over, many of the farmers seem almost to have relaxed. They submitted to government-organized labor and provision for all, and began to depend on the collective and the government, even though the work was still physically

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demanding and the “*Gongfen*” they earned was small: this even led to oppositions to the Household Responsibility Reform (Zweig 1985, P151) when it arrived. After that reform, when land management decisions returned to households, farmers grew to feel that they had choices, about whether to continue in farming or to focus on new factory work. At that point, any local community needs could then no longer compete with the desires to optimize household incomes on the one hand, and avoid dirty and smelly hard labor on the other – both fulfilled by abandoning farm work.

More recently, with the expectation of being moved to an urban area as part of the national Urbanisation Programme, these farmers are content to let outsiders take over the management of their land – outsiders that have had time and opportunity to make the transition to modern methods via practices of new knowledge acquisition (see Blackstock, et al 2010). Whereas agricultural transformation in the West has thus been characterized by the blending of tacit and new formal knowledges which has kept many farmers in place, agriculture in this water town has experienced no less than a revolution in which the old knowledges have been abandoned to the new; in which community responsibility has succumbed to household priorities; and in which farming identities have been exchanged for urban-in-waiting ones. As such, contemporary farming is very much viewed as something that is undertaken by ‘others’ – often incorporating land rented from ‘retired’ local farmers. And, with the past community identity of Tianshanzhuang dissolving to become little more than another outer-Shanghai neighborhood, the elderly ex-farmers said they are ready to leave for the city, often following their children and younger family members. What is missing from these life stories is any sense of reflexivity about what has happened. Unlike similar stories from elsewhere, in which tensions between tacit and formal knowledges are simmering, if not brought out (Tsouvalis, et al 2000), the knowledge culture of these farmers is very much about meeting recurring drastic societal changes full on, and with acquiescence, and about being positive and trusting about their centrally planned futures.

And here it is that the findings of this study clearly departs from current research, by illustrating why farmers have not responded to the new opportunities emerging with high value, often

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organic, farming. Whereas Sanders (2006) and others suggest that there are new market opportunities for those with the blend of tacit and formal knowledges to exploit them, that idea does not apply here. The narratives of these farmers clearly indicate that they are convinced that a new world of modern life awaits them, with jobs that are not as physically demanding, dirty or smelly, and the vague impressions they have of rumored higher profit margins from growing organic vegetables has no appeal: their traditional knowledge perceive such produce, often small and pest affected, as of low quality. In addition, the low social status of farming relative to industrial work has not changed, because it still requires heavy, dirty and smelly work.

Traditional farming is thus not one, but two, cultural fractures away, and thus what appears superficially to have been an economic decision to leave farming for higher factory wages is in reality a cultural decision, to forsake the rural peasant life of the old China for the routinized and secure urban waged labor of the new industrial China. As Shi, et al (2011) so astutely observe, this has left the door open for social reversal as members of the emergent Chinese middle class seek to impose new ideals and knowledges on farming, in pursuit of a new agriculture that is not necessarily ecological, but certainly must ensure a secure supply of food that is safe to eat – a modern concern in parts of China.

This situation is in contrast to that reported by McGreevy (2012) in Japan, where the arrival of outsiders represented an opportunity to pass on local knowledges and rejuvenate the village. In Tianshanzhuang, this is an unlikely scenario: the farmers in this survey do not see the need for continuity, or rejuvenation, and they do not recognize in their knowledges that which could allow them to produce good food ecologically with good income and without returning to unacceptable work conditions. As they have given up their lands for annual rents, and their sons have left farming, the future of any small scale farming in Tianshanzhuang seems only likely to be created with entirely new players: urbanites driving the market; brokers in internet technology and policy changes to facilitate pathways to new markets; and a new generation of farmers who bring quite new knowledges and techniques. While Polyani (1967) suggests that farmers amass tacit knowledge throughout their lives that they are then able to pass on, that process may be dead, and the future of any kind peasant farming in Tianshanzhuang seems to only be possible with an entirely new model of knowledge.

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Conclusions

In this study we have heard the stories and narratives of tens of ex-farmers which illustrated to us their changing knowledge cultures before and during several periods of significant organisational and technological changes in their village in a water town in China. Their collective story is not just one of fast-moving changes and the need for updating or blending of knowledge cultures to keep up, but of whole-scale fractures in the way that their collective lives and local farming was organized and allowed to play out. From a circular agriculture resource system to a linear one with fertilisers dominating; from historical neighborly co-dependency on farms to governmental central planning across villages; from meeting collective needs to optimizing household incomes, the changes have been very great, culminating to government-facilitated moves to nearby cities to partake of modern lifestyles and higher living standards. But unlike other research, this work reveals a rather different evolution of knowledge cultures. For example, there is little evidence of tension between implicit and formal knowledge, and no regret expressed that the farmers in Tianshanzhuang will not be handing their knowledges down to their sons; indeed they are grateful that their sons have left farming and engaged with the industrialization and urbanization of China. Because these farmers do not consider themselves part of the future of the land, nor their knowledge needed for the land which is now managed by outsiders with proficiency in modern farming, we hear no story of attempts to blend old and new knowledges. Neither does there seem to be of opportunities, as reported in Japan, to blend their knowledges with urbanites who understand potential markets for organic produce: the gap between them seems too great. The changing knowledge cultures we have heard about denote not economic but cultural reasons for leaving farming: the narrators truly consider themselves, happily, the last peasant farmers of Tianshanzhuang.

While this is but one case study of one village in a location relatively close to Shanghai, it does suggest that the dominant continuity model of agricultural succession (see Van der Ploeg, et al, 2014, for example), may not be as ubiquitous as its proponents claim. It is probably the case that farming, in China and elsewhere, is largely carried on by families who have farmed for generations. In remote rural areas there may be few alternatives. But, in some transitional areas

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where there are cultural and economic alternatives, this traditional regime may be fracturing. As we have argued, this fracture may appear to have been driven by economic factors, largely related to better paid non-agricultural work. But, in contrast to many other studies, these factors have come to the fore for cultural reasons: farmers no longer wanting to farm when there are alternatives available to them, and no longer feeling valued in communities that have substituted their voluntary contributions for paid professional services. And furthermore, in contrast to other recent studies, these farmers are not coming back to the land; they and their families are off, and they are abandoning their land, knowledges and traditions along the way.

Given the limitations of data, we cannot be sure about what will happen to the land or the knowledges retained by the ex-farmers. Indications from other parts of China (Shi, et al, 2011) suggest that newcomers are ready to take over land in these transitional areas, precisely because they are transitional, with access to new middle class consumers. While perhaps not eschewing the tacit knowledges of the retiring farmers, there is no evidence in Tianshanzhuang that these incomers have actively sought to acquire these knowledges, certainly locally. It may be that the locals have been unwilling to find common ground with the incomers, but it may equally be that the old tacit knowledges are no longer valued, particular where the incomers have acquired new ecological knowledges related to organic farming. Thus, if there are new networks emerging that are capable of fostering knowledge exchange, the retired farmers are seemingly unaware of them and certainly not part of them.

In contrast to McGreevey's (2012) findings in Japan and Van der Ploeg, etal's (2014) findings from elsewhere in China, therefore, what the Tianshanzhuang case suggests is a new narrative of farming change in which centuries of evolutionary technical and social farming tradition have been halted and, effectively, discarded. And equally in contrast to other studies (Errington, 1988; Errington and Tranter, 1991), there are few regrets expressed by the holders of these traditions and knowledges. For them, farming in the old ways has had its time; it was what they did – and all that they could do – but this is no longer a reason to carry on. Indeed, it is a reason for not carrying on, and for looking forward to an easier future rather than back to a nostalgic past.

Herein lies the benefit of using an oral history approach to what are essentially conventional questions relating to inter-generational succession in farming: that people's voices dominate the narrative, perhaps in contrast to the more structured approaches to data generation usually found in agricultural research. And in the case of Tianshanzhuang, the voices are clear and consistent: traditional approaches to farming, traditional family farming ties and traditional tacit knowledges are all in the past. Perhaps even more striking than this message is the tone of the voices: they remember both the detail and the context of their former farming lives in a manner that is largely devoid of sentiment. Historically, these villagers were farmers; it is what they did, whether on their own account, or as part of the Production Teams. It was hard work, it was poorly paid and it left little time for anything else. But it was life and it was remembered as such; not good, not bad, just life. Asking people to tell their stories, in their own words, allowed them to frame their histories in ways that are not often allowed, or even wanted. Yet, when given the chance, these ex-farmers told fascinating stories that give a really rich insight into rural lives in this part of China. And from this comes this new narrative of farming change, a narrative that belongs authentically in the oral tradition of Chinese rural life, but which tells a starkly different story from more conventional approaches to agricultural research.

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Tables

Table 1: Numbers in samples for each age category

Historical Periods	pre-Liberation (-1949)	Collective Economy (1950-1970s)	the Open and Reform period (1980s-)
Age	≥80	60-80	<60
Male	8	7	5
Female	7	3	1

Table 2: The main themes and sub-themes identified from the fieldwork

Main Theme	Sub Themes
Changing village organization	Traditional, collective economy period (early/late), post open & reform
The impact on farmer's time of changing farming practices	Irrigation, fertilizers and their application
Monetizing farmers' time	
Hollowing out the village	People working away from, and leaving, the village; communal activities replaced with local government labour
Commodification of assets	From the village as home and life, to farms and labour as assets to be exploited