

12 Reforming the Humble Pig Pigs, Pork and Contemporary China

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In contemporary China, pigs are pork. While the pig has played various roles in Chinese culture, politics, economy and agriculture for millennia, the pig's highest value today is as a standardized, specialized, industrialized pork-producer. As Harriet Friedmann observes about agriculture in the modern world, 'Plants and animals have been turned into homogenous rivers of grain and tides of flesh, more closely resembling the money that enlivens their movement from field to table, than their wild ancestors.'¹

This is a general statement about the ontology of plants and animals in the current global agrifood system, and the practices, logics and relations that produce them. It is also an apt reflection of pig production in China today. China's modern hog is not the common pig that populated the historical texts Francesca Bray analyses in Chapter 6; nor is it the biological fertilizer factory celebrated in Mao's socialist science that Sigrid Schmalzer identifies in her recent book.² Rather, China's modern pig is a meat machine. It is a pork factory on four legs.

Transitioning from the old *humble pig* to the new *reformed hog* has entailed a suite of material and symbolic transformations. Starting with Reform and Opening (*Gaige Kaifang*) in 1978, policies and investments have greatly expanded the pork sector, transforming millennia of small-scale, dispersed and localized pig farming into a coordinated and concentrated system of industrialized pork production that relies on globally sourced resources and technologies. In the process of changing the spaces and practices of pig production, knowledges and values have also changed. This is partly so because of shifting human–hog proximities. Fewer and fewer people are raising pigs, and both people and pigs are moving out of rural households into modern ways of living; migrant workers or new urbanites in the former sense, and modern hogs in factory farms in the latter. The distance between humans

¹ Friedmann (2000), 481. ² Schmalzer (2016).

and animals has increased in body and in mind, and the pig as pork factory now supersedes the pig as living being.

Although these processes are neither complete nor total, pigs and pork today are big business. China is home to half of the world's pigs, half of the world's pork production and half of the world's pork consumption. It is also home to the world's largest pork processing company (the WH Group) and a host of rapidly expanding pork-related agribusiness firms. In 2016 alone, farmers and companies in China produced 53 million tons of pork from a domestic herd of 671 million pigs: this was twice the amount of pork produced in all twenty-eight European Union countries combined, and almost five times the amount in the United States.³

Given its world-leading scale of production, this chapter asks how China's contemporary pork boom replicates the general practices and logics of the (industrial, capitalist) global agrifood system,⁴ while at the same time enacting and interpreting them in a particular historical and political economic context. Taking the reformed pig as an ideal typical embodiment of new modes of production, value and consumption in the contemporary era, the following sections outline three broad transformations: of the pig itself, of the sites and forms of pig and pork production, and of the shifting nature of pork and pork consumption. For each, I highlight changes in ownership and knowledge, as well as some of the tensions that emerge in the encounter between past and present, global and local, and environment and development.⁵

Reformed Pigs

Pigs have a long history in China. When the Chinese Academy of Agricultural Sciences undertook the first national survey of indigenous livestock in 1960, researchers found more than one hundred native pig breeds with thousands of locally adapted types. They ranged from the extreme northeast of Heilongjiang Province to the Tibetan Plateau in the southwest, and many places in between.⁶ Millennia of admixing between wild boars and domesticated pigs, and genetic selections made through animal husbandry, had produced a rich porcine

³ United States Department of Agriculture, Foreign Agricultural Service (2017). Although China was virtually self-sufficient in pork throughout most of the reform era, pork imports are now increasing.

⁴ E.g. Clapp and Fuchs (2009); McMichael (2009); Weis (2013).

⁵ The study is based primarily on field research in northeast and southwest China during various trips in 2009–16. I conducted interviews about the pork industry and the changing food system with government officials, agribusiness executives, representatives of foreign and domestic industry associations, researchers, farmers and consumers.

⁶ Zheng (1984).

diversity.⁷ Pigs of various shapes and sizes were adapted to specific and changing climatic conditions, terrains and feed resources.

These are not, however, the pigs of the pork boom. Of the millions of tonnes of pork produced each year in China, native pigs account for less than 10 per cent.⁸ Instead, the modern pig is a reformed creature, generated through China's encounter with the technologies, scientific practices and political economy of the global food system. In the early 1990s, the Ministry of Agriculture began importing pigs and semen of the same breeds that dominate industrial pork production globally – principally Duroc, Landrace and Yorkshire pigs⁹ (together, DLY). As animals bred to reach market meat weight and finishing standards in the shortest possible amount of time, these modern pigs turn processed feeds into commodifiable parts in only six months.¹⁰ The industrialized system quickly processes, packages and sells bits and pieces of the pig in a variety of forms at supermarkets and in restaurants – and for other, non-food industrial applications – constantly expanding its range of profit-making opportunities.

This foreignization of the pig herd and corporatization of ownership play important roles in the development of the modern pork production system. Agribusiness firms develop, own and sell genetic technology, often in concert with state agencies, which is protected through property law and trade agreements. Sows, boars, pig breeds, pig semen and associated genetic 'blueprints' are patented as private property. From the 1990s on, world-leading pork genetics firms, including PIC (the Pig Improvement Company) and Hendrix Genetics (which operates as Hypor China), have facilitated these processes, together with the Ministries of Agriculture and Commerce. Chinese firms in the genetics business are also on the rise, operating in concert with international leaders or, increasingly, on their own. In each of these ownership arrangements, not only pigs and their saleable parts, but also pig genetics, are commodities that are bought and sold at international, national and local levels, managed almost exclusively by corporations, in a supportive policy context.¹¹ The knowledge and practice of animal husbandry and people–pig interactions in adapting pigs to local ecological conditions has largely been replaced by interactions between scientists, agribusiness executives, government officials, breeding farm workers and the commodity form.

⁷ On pig domestication and admixing, see Ottoni et al. (2013) and Cucchi et al. (2011).

⁸ Interview No. 58, Ministry of Agriculture, Beijing, 17 September 2010. The native pigs that remain are raised either by small-scale farmers, on speciality 'boutique pig' farms, or on state-funded and largely privately run conservation farms tasked with preserving genetic diversity.

⁹ Gura (2008). ¹⁰ E.g. Holden and Ensminger (2005). ¹¹ Schneider (2017a).

Modern Hogs, Dragon Heads and Rivers of Manure

In her recent work on agriculture, Sigrid Schmalzer identified several important continuities in forms and values of pig production and pork consumption in Chinese modern history. For instance, from the nineteenth century far into the Mao era, Chinese farmers and politicians valued pigs primarily as ‘fertilizer factories’, rather than for their meat.¹² In the nineteenth century, manure was still the product of pigs’ extensive grazing on herbaceous plants and crop residues, in addition to being fed kitchen and food processing scraps. In the Mao era pigs were collectivized, though not industrialized and, as Schmalzer also notes, both ‘traditional’ peasant knowledge and ‘modern’ science were passed on at the time.¹³

In the reform era, pigs and pork reflect discontinuities with the past, as production has come to resemble the organization, science and practices of the global pork industry, while ‘traditional’ methods and knowledges have been marginalized. Decollectivization and the institution of the Household Responsibility System (HRS) in 1981 brought the pig out of the collective and back into the private household, while the emergence of agribusiness firms and private ownership initiated the consolidation and vertical integration of pig production. These changes progressively restructured pork production into operations on three distinct scales, which market analysts describe as a *trifurcation* of the pork sector: (1) small-scale household farms who raise between one and fifty pigs each year in backyard systems that are most like ‘traditional’ farming; (2) mid-scale specialized farms with annual production of fifty to a thousand hogs; and (3) large-scale commercial operations raising a thousand or more pigs per year.¹⁴ Production on specialized and commercial farms has risen rapidly and intensified throughout the reform era, accounting for the country’s massive pork production increases.¹⁵ The smallholder form of production, however, is in rapid decline: in 2006 alone, more than 50 per cent of rural households gave up pig raising.¹⁶

¹² Schmalzer (2002). See also King (1911); Wittwer et al. (1987). ¹³ Schmalzer (2016).

¹⁴ These categories are problematic. A backyard farm, for example, should raise one to ten pigs per year, mostly for home consumption and local trade or sale. At the other end of the spectrum, ‘megafarms’ that produce 100,000 or even one million pigs on a single site should be differentiated from those with a thousand head. I use these categories because they commonly appear in industry and government reports.

¹⁵ Precise figures on production shares for each category are patchy. The Rabobank (2012) estimates that commercial farms in 2015 accounted for about 15 per cent of pork production, specialized farms 57 per cent and backyard farms 27 per cent. Other studies (e.g. Zhang et al. 2017) cite large-scale farms as representing 35 per cent, mid-size as 30 per cent and small-scale as 35 per cent. In all cases, mid- and large-scale production is increasing, while small-scale is declining.

¹⁶ Li (2010).

In small-scale backyard contexts, peasant farmers raise a few pigs a year, along with a mix of crops and other livestock for private consumption. Small surpluses achieved in good years feed into local wet markets.¹⁷ Such pigs can be an indigenous variety, or exotic hybrids produced by small-scale hybridizers. Backyard pigs graze mainly on scraps and weeds, and their manure is used in small amounts for grains and tree crops, although smallholders today typically use chemical fertilizers.¹⁸

Specialized pig farms are something of a black box. Industry analysts consider them a form of household production, based on their relatively small numbers of pigs and the fact that households typically run their own production. But specialized farms – especially the larger ones – often house DLY pigs in barns (with government subsidies) and use commercial feed mixes (provided or dictated by contracts or arrangements with processors) to make meat that accords with market standards. Given their relationship to pork processors and their modern production materials and methods, specialized farms are often part of the industrial system. The pork industry (with state support), however, would like to see commercial farms surpass and replace them, effectively completing the transition from smallholding to factory (farm).¹⁹

Large-scale commercial operations are wholly industrialized. Using the CAFO (Confined Animal Feeding Operation) model of production, they raise exclusively exotic pigs on exclusively commercial feed to produce uniform animals and meat. Agricultural science and industry brought these livestock confinement systems into existence in the United States after the Second World War,²⁰ steadily ‘perfecting’ and globalizing the system through advances in genetics (pigs bred to survive in confinement), animal nutrition (feed mixes and feed additives to speed animal growth) and biosecurity²¹ (prophylactic doses of antibiotics and disciplined labour practices to protect against disease transmission). CAFOs account for the majority of meat production in the world today, and are the fastest-growing form of production worldwide. While Chinese pig operations are not without their innovations, for the most part, a large-scale CAFO in Sichuan looks like a large-scale CAFO in Iowa in the United States.

The CAFO model is a clear expression of how the central government has conceptualized and enacted ‘modern agriculture’ in the reform era. Under

¹⁷ Backyard pigs are typically not lean enough to meet industry standards, so contracting with vertically integrated processing firms is rarely an option.

¹⁸ E.g. Hu and Yang (2015).

¹⁹ E.g. Interview No. 17, industry group, Beijing, 24 March 2010; Interview No. 23, university scientist, Sichuan Province, 14 May 2010; Interview No. 26, CEO, Sichuan Province, 19 May 2010.

²⁰ Foster and Magdoff (2000).

²¹ For an analysis of how biosecurity protocols are remaking labour, see Blanchette (2014).

the leadership of Jiang Zemin, the party-state in 1998 defined modern agriculture as commercialized, specialized, scaled up, standardized and internationalized.²² To lead the process of agricultural modernization, the state assigned an important role to agribusiness firms called ‘dragon head enterprises’ (*longtou qiye*), which act as agricultural integrators (i.e. pork packers) that coordinate with rural households as input suppliers (i.e. pigs). For their role in both economic and rural development, dragon heads receive subsidies, loans and tax breaks from the government. According to official figures,²³ in 2011 there were 110,000 formally registered dragon head enterprises, and the dragon head led model of vertical integration accounted for 60 per cent of China’s crop production, 80 per cent of aquaculture and 70 per cent of livestock (pork and poultry) production.²⁴

Dragon head firms are particularly evident and powerful in China’s pork sector. The WH Group, formerly called *Shuanghui* (or Shineway), is a case in point. Henan Shuanghui Investment and Development Company was formerly a state-owned enterprise that was privatized in 2006, at the same moment that it took its first foreign investment from Goldman Sachs. It became China’s largest pork processor, supported by government subsidies and growing investment from domestic and foreign financial institutions. In 2013, Shuanghui bought US-based Smithfield Foods, changed its name to the WH Group, and became the largest pork processor in the world. This was the largest takeover of a US company by a Chinese company *in any sector*, demonstrating the state’s goal of increasing the global presence and competitiveness of Chinese firms.²⁵

Despite the productivity increases and business successes of the dragon head led pork modernization project, the pork industry also brings environmental and social problems.²⁶ Antibiotics, hormones and heavy metals from livestock feed contaminate industrial meat. The manure flowing out of CAFOs pollutes soil, air and water and, through it, antibiotic-resistant disease-causing organisms are also transmitted into the environment and the food system. In addition to high-profile food safety scandals, CAFO-related water pollution is perhaps China’s most serious pig industry crisis. The first national pollution census (*Zhongguo wuran yuan pucha*) in 2010 identified manure from industrial livestock facilities – mostly pigs, but also

²² Zhang and Donaldson (2008).

²³ From the inaugural speech given by Hui Liangyu, Deputy Prime Minister of the State Council, at the launch of the China Association of Leading Enterprises for Agricultural Industrialization in 2011. The full text of the speech is at <http://baike.baidu.com/view/9676144.htm> (in Chinese).

²⁴ Dragon heads also occupy a growing share of China’s land: in 2012, they occupied 28 million mu (1.9 million hectares), which was 10.3 per cent of all land that changed hands from village collectives and households (Yan and Chen, 2015).

²⁵ Schneider (2017a). ²⁶ E.g. Emel and Neo (2015).

chickens – as the number one source of water pollution in the country.²⁷ Some of the nearly 5 billion tonnes of manure that are produced each year ends up in waterways, causing blue-green algae outbreaks and eutrophication that renders water unusable for the mainly rural households that depend on them. This is an additional challenge to already existing water problems. At least 300 million people lack access to safe water in China, while one-fifth of the country's water is classified as 'toxic', two-fifths is 'seriously polluted' and more than half of all the country's water is considered 'poor' to 'very poor' quality.²⁸ As well as adopting the science and practice of the global pork industry, therefore, China has also adopted its crises: importantly, manure is no longer a value, but a crippling source of pollution.²⁹

Modern Meat, Conspicuous Consumption and Public Health

The value shift from 'fertilizer factory' to 'pork factory' also, of course, impacts on consumption and consumption relations. While *pigs* were much more ubiquitous in pre-reform China, *pork* was a rare treat for most people throughout history. With households raising only a few pigs each year, slaughter was a once or twice annual event. At Spring Festival (Chinese New Year), people ate fresh pork in the form of dumplings, sausages, meatballs and various offal-based dishes as part of celebratory feasts.³⁰ They also preserved pork to eat after the festivities ended, and saved lard for cooking vegetables.³¹ Both fresh and preserved pork could be eaten directly by those who produced it, given as a gift, and/or used to curry political or social favour.³² Pork was diverse, both in culinary form and in social use.

The meat of this historical pig was fatty, very different from the lean varieties that line supermarket meat fridges today. This was because the household pig's diet was composed primarily of carbohydrates (in the form of coarse plants and kitchen scraps), with very little protein. The resulting pork, therefore, was made up of layers of muscle and fat. Cooking methods and dishes were based on this characteristic, and the form and flavours it produced.

Today, the hegemony of exotic lean-type meat pigs, together with the CAFO model of production and its commercial feeds, has changed the consistency and flavour of pork and, for some, has lessened its appeal. Modern lean meat is not the meat that enlivens Chinese cooking, or the taste preferences of especially middle-aged and older Chinese people who have memories of pre-reform

²⁷ China Pollution Source Census (2010). According to the Ministry of Environmental Protection, the second national pollution census begins in December 2017.

²⁸ Xie (2009); Lin (2014). ²⁹ Schneider (2017b).

³⁰ Muslim communities were an exception. See Hsu and Hsu (1977).

³¹ Anderson and Anderson (1977); Spence (1977). ³² Anderson (1988); Hsu and Hsu (1977).

pork.³³ Despite this, the market for pork continues to grow and consumption continues to rise, while the forms and sites for buying and eating pork are changing. Today, processed and packaged pork products are the fastest growing market segments, sold increasingly in super- and hyper-markets, as well as in family-owned shops and other small retail outlets. Urban people eat more and more of their meals outside the home, either as packaged food on the go, or as prepared meals in restaurants.³⁴

One result of these changes is that public health is suffering. In their longitudinal study of the links between lifestyle, diet and disease across more than sixty-five counties in the late 1970s and the early 2000s, Campbell and Campbell describe a shift from ‘diseases of poverty’ to ‘diseases of affluence’ in rural China.³⁵ The former include maladies that result from nutritional inadequacy and poor sanitation (i.e. intestinal obstruction, pneumonia and tuberculosis), while the latter result from ‘nutritional extravagance’, defined in terms of excess caloric and fat intake, particularly the shift from predominantly plant-based to more animal-based diets (i.e. diet-related cancers, diabetes and coronary heart disease). In 2015, cancer, heart disease and cerebrovascular disease (hypertension) together accounted for 69 per cent of deaths in urban China and 68 per cent in rural China; this was an increase from 62 per cent in urban areas, and from 48 per cent in rural areas in 1998 when the National Bureau of Statistics began reporting these data.

While China’s pork has become leaner, China’s people are becoming fatter. A recent study in *The Lancet* found that there are more obese and overweight people in China than in any other place in the world. According to the study, more than 43 million Chinese men and 46 million Chinese women are obese, accounting for 16.3 per cent and 12.4 per cent of the respective global totals. Moreover, 23 per cent of boys and 14 per cent of girls under the age of twenty in China are overweight or obese.³⁶ ‘Diseases of affluence’ cannot be attributed entirely to diet (cancers especially are also related to pollution), nor can the rise of obesity be solely explained by increasing pork (meat) consumption. The pork production boom, however, is also a consumption boom, and an important component of changing eating habits, expanding waistlines and the emergence of diet-related diseases and causes of death.

³³ E.g. Interview No. 76, Chengdu, 10 December 2010.

³⁴ According to the National Bureau of Statistics (NBS) in 2013, urban households consume on average twice as much meat as rural households. Because urban middle- and upper-class people eat more than half of their meals away from home, which are not included in NBS figures, urban meat consumption is three times or more than in rural areas; Xiao et al. (2015).

³⁵ Campbell and Campbell (2006). ³⁶ NCD Risk Factor Collaboration (2016).

Eating pork is about more than diet and health. As a social artefact, pork also carries cultural meanings. In 2007, I visited a ‘Pig Culture Museum’ on the outskirts of Shanghai. Founded by Mr Bu,³⁷ the CEO of a large-scale pork processing firm and a general pig enthusiast, the museum contains displays of pig history, pigs in Chinese culture and pig-related artefacts. Explaining various connections between pigs and society, Mr Bu told me that, even though fewer and fewer people are raising pigs in China today, swine continue to be important cultural and social signifiers. He noted that pigs are a symbol of China as a modern nation, but a nation with enduring and ancient legacies: the modernity is in the industrialization of pig production, while the legacy is in the cultural preference for eating pork. He went on to say that, ‘Meat [pork] signifies wealth. The more money you have, the more meat [pork] you will eat.’ This idealized notion expresses an important changing value in contemporary China: at the same time that pork is a more staple dietary component for many Chinese people, it is also something of a status symbol.

Not all pork is of equal status, and there are important differences among various social groups. For some, imported pork is the highest value, because of food safety scandals in China, and notions that ‘Western’ goods are better products. A recent study of highly educated and largely upper-class consumers who prefer imported pork found that they also want their pork to be expensive, fresh and lean.³⁸ These new *consumer* preferences contradict other political, economic and cultural preferences: they are at odds with the state’s ‘preference’ for developing domestic firms, the industry’s ‘preference’ to market packaged meats, and the historical cultural ‘preference’ for fatty pork.

Concerns over food safety also drive other pork consumption choices, especially for those who can afford to be selective. Research shows that middle-class urban consumers prefer pork from factory farms, which they view as safer than pork produced by small-scale ‘backward’ peasant farmers. They believe that CAFOs are more tightly and carefully regulated by the state to ensure compliance with food safety standards.³⁹ The opposite is also true. Among the blossoming ‘alternative food networks’ in China – including farmers’ markets, community supported agriculture (CSAs), and organic and biodynamic farming – consumers also cite food safety as their primary motivation for participation.⁴⁰

Aside from food safety, there are other registers of value, status, motivation and preference. For instance, a ‘boutique pork’ market has emerged, in which elite consumers buy and eat expensive pork from black pig breeds native to China or other East Asian countries (modern pigs are typically pink or white).

³⁷ All names have been changed to protect anonymity. ³⁸ Xiu et al. (2017).

³⁹ De Barcellos et al. (2012). ⁴⁰ E.g. Shi et al. (2011).

Rather than deriving status from imported pork as in the study cited above, here status is linked directly to China: black pigs elicit nostalgia for an idealized past when pork was flavourful and the countryside was bucolic. At the same time, boutique pork is a niche-marketed commodity, typically containing claims of innovation for environmental sustainability. A telling example of this came in 2016, when a leading Chinese online gaming company called NetEase rolled out its new pig breeding sideline business. Claiming that their technological expertise had created environmentally friendly methods of pig production, NetEase sold three pigs for \$15,900, \$23,150 and \$40,000 each.⁴¹ If China's pig industry in general is big business, these new speciality markets are creating another big, *elite* business.

Conclusion

Pigs in China are a source of profit for agribusiness firms, a symbol of wealth and prosperity for consumers, a source of legitimacy for the state's role in providing a bountiful, modern and regulated food system, and the cause of serious environmental and public health crises. Given its current economic importance, its global–local and past–present dynamics, and its long-standing cultural and political significance, the pig also provides a powerful lens on social transformations. For instance, the shifting consumption 'preferences' described above indicate five key phenomena. First, the pork industry (through media reports and government pronouncements) has convinced consumers of the idea that industrial pork is better and safer than that from smaller producers, despite the fact that problems with tainted meat arise predominantly from factory farms.⁴² Second, these transformations reveal that cultural preference and consumer demand are changing constructions, both of which can be capitalized upon to support further development of the industry, of speciality markets and the pork economy. Third, corporate operations and state regulation are seen as necessary and important values of modern life, and people now trust firms and the state more than they trust the 'backward' peasant farmers. Fourth, consumption is not only conspicuous, but also an important arena within which people are urged to take personal responsibility for their own health and safety. Finally, so-called 'Western' modes of eating and ideas of safe and healthy food are influencing – but not defining – Chinese pork consumption.

While this study has focused on the internal dynamics, it is important to note that China's contemporary pork industry relies on – and is altering – global resources and markets. With 21 per cent of the world's population but only 9 per cent of arable land, feeding China's pigs without starving China's people

⁴¹ Tang (2016). ⁴² Schneider (2015).

has required re-routing international trade, investment and resource flows. In 2014, China imported almost 60 per cent of the total global soybean trade (70 million tonnes) for its livestock feed industry;⁴³ maize imports are also rising, and the party-state increasingly supports Chinese agribusiness firms to 'go out' (*zou chuqu*) to seek access to land, resources and markets abroad. In terms of ramping up pork production while avoiding widespread hunger, the development model has been successful: although food security remains a focus for the state (and a problem especially for poor rural populations), for those who can afford it, modern life means living high on the hog.

⁴³ For more in-depth analyses of China's feed industry and soybean politics, see Oliveira and Schneider (2016); Wang (2013); Yan et al. (2016).