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# China's New-Age Small Farms and Their Vertical Integration: Agribusiness or Co-ops?

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## Abstract

The future of Chinese agriculture lies not with large mechanized farms but with small capital-labor dual intensifying family farms for livestock-poultry-fish raising and vegetable-fruit cultivation. Chinese food consumption patterns have been changing from the old 8:1:1 pattern of 8 parts grain, 1 part meat, and 1 part vegetables to a 4:3:3 pattern, with a corresponding transformation in agricultural structure. Small family-farming is better suited for the new-age agriculture, including organic farming, than large-scale mechanized farming, because of the intensive, incremental, and variegated hand labor involved, not readily open to economies of scale, though compatible with economies of scope. It is also better suited to the realities of severe population pressure on land. But it requires vertical integration from cultivation to processing to marketing, albeit without horizontal integration for farming. It is against such a background that co-ops have arisen spontaneously for integrating small farms with processing and marketing. The Chinese government, however, has been supporting aggressively capitalistic agribusinesses as the preferred

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mode of vertical integration. At present, Chinese agriculture is poised at a crossroads, with the future organizational mode for vertical integration as yet uncertain.

### Keywords

food consumption, capital-labor dual intensifying, horticulture, economies of scope, vertical integration, differential optimums, agribusiness, co-ops

Where has Chinese agriculture come from and where is it going? Does the future lie necessarily with large-scale farms, American style, with greater mechanization to allow for economies of scale and higher labor productivity? Are Chinese peasant-farmers doomed to low incomes until further urbanization removes enough cultivators from the land to allow for such farms, as many assume? If not, then where is Chinese agriculture headed?

This article begins with the dramatic transformation of Chinese food consumption patterns in recent decades. Those have meant a market demand for much more meat-poultry-fish and vegetables-fruits. That market demand, in turn, has brought into being new kinds of Chinese agriculture, still small-scale family farms, but with considerably greater intensity in both capital and labor inputs per unit land. Such new-age small-scale farms are much better suited to Chinese realities and in fact enjoy economies not available to large-scale farming.

The fact that there has been no economic imperative for “horizontal integration” into larger farms to attain economies of scale, however, has not meant that there is no need for “vertical integration” from production to processing to marketing. Those needs have thus far been met by determined state efforts in support of “dragon-head enterprises” (*longtou qiye*), capitalistic firms except that they are based on small family-farming. Despite the strong government preference and support for them, however, co-ops have emerged as an alternative mode of vertical integration. In addition, there has been vertical integration by government-run specialty markets. At the moment, Chinese agriculture seems poised at a crossroads, about one half capitalist and the other half more “socialized.” The future, perhaps, lies crucially in choices yet to be made. Those will determine whether the slogan of “building new socialist villages” (*jianshe shehuizhuyi xin nongcun*) might or might not carry real substance, in actions rather than words.

The topics of new-age Chinese small farming and their vertical integration have as yet received little focused attention in scholarly research. The few relevant studies there are will be taken up below in the course of the discussion.

**Table 1.** Estimates of Potential Rises in Per Capita Annual Food Consumption: 2005 Data

	National per Capita (kg)	Rural per Capita (kg)	Urban per Capita (kg)	Urban Middle-Upper 40% per Capita (kg)	Potential Rise to Urban per Capita (%)	Potential Rise to Upper- Middle 40% per Capita (%)
Aquatic products	8.21	4.94	12.55	15.62	53	90
Meat	25.95	20.75	32.83	37.32	27	44
Pork	17.57	15.62	20.15	22.16	15	26
Beef and mutton	2.43	1.47	3.71	4.24	52	74
Poultry	5.95	3.67	8.97	10.92	51	84
Eggs and related	7.16	4.71	10.40	11.06	45	55
Milk and related	9.34	2.86	17.92	24.23	92	159
Edible vegetable oil	4.90	9.25	9.13	6.77	37	24
Fruits	34.17	17.18	56.69	70.6	66	107
Vegetables	109.29	102.28	118.58	124.64	9	14
Grain	152.14	208.85	76.98	73.97	-49	-51

Source: TJNJ, 2006: tables 10-13, 10-29; Huang and Peng, 2007: 507.

Note. A large proportion of vegetables by weight are not actually eaten, because of storage and spoilage problems and such. In 2005, only an estimated 26 percent of vegetables produced were actually eaten (Huang and Peng, 2007: 508).

## Changes in Food Consumption and Agricultural Structure

The food consumption patterns of the Chinese population have changed dramatically in the past three decades. Professor Yusheng Peng and I have made some detailed calculations and estimates to arrive at the following conclusions: meat consumption rose by one third between 1980 and 2005, and this has been a change that cuts across different income groups, from new urban elites to rural villagers (see Table 1). Using the current consumption pattern of the upper 40 percent urban income group in China as an approximation of the end point of the present tendencies, we estimate that meat consumption will rise by another 44 percent before leveling off. Consumption of fish and other aquatic products doubled in the same period and, using the same method to estimate future trends, will rise by another 90 percent before leveling off. Consumption of fruits about doubled between 1990 and 2005, and should rise by another 107 percent before leveling off. The rise in consumption of milk and eggs has been even more dramatic, increasing three- to fourfold

by 2005, and will likely increase a good deal more (an estimated 159 percent for milk, and 55 percent for eggs and related products). Consumption of vegetables, finally, rose first in quantity and then, in the most recent years, more in variety and quality. Along with the above, human grain consumption declined by a third between 1980 and 2005, and will decline by another half before leveling off (Huang and Peng, 2007).

An oversimplified and very rough representation is that the standard old Chinese food-consumption pattern of 8:1:1, or eight parts grain, one part meat-poultry-fish, and one part vegetables-fruit (hence the Chinese conceptual distinction between the main staple, *zhushi*, as opposed to supplementary foods, *fushi*), has been changing rapidly toward a 4:3:3 pattern, of four parts grain, three parts meat-fish (and eggs and milk), and three parts vegetables-fruit.<sup>1</sup> With the new pattern of food consumption, it no longer makes much sense to speak of the old division between staple food and supplementary foods. The transformation is already well advanced and, if incomes continue to rise (though at a reduced rate compared with the past 30 years), should be completed some time during the decade 2015 to 2025 (Huang and Peng, 2007: 510, diagram 5). This will bring Chinese food consumption patterns much closer to those of the developed countries.

Such a basic and thoroughgoing transformation in food consumption patterns, and hence of market demand, has of course driven an equally dramatic change in Chinese agricultural production, itself also a cause of the altered consumption patterns. The biggest changes have been increased livestock-poultry-fish raising and vegetables-fruits cultivation (horticulture), rising by four- to fivefold. The production of meat (pork, beef, mutton) has risen from 12 million tons in 1980 to 62 million tons in 2005 (TJNJ, 1983: 178; TJNJ, 2007: 462). Acreage sown under fruits expanded from 41 million mu in 1985 to 150 million mu in 2005, and under vegetables from 71 million mu to 266 million mu in the same period (TJNJ, 1987: 169; TJNJ, 2007: 461). Acreage sown under grain crops has shrunk from 1.76 billion mu in 1980 to 1.56 billion mu, a rising proportion of that now going for animal feed rather than human consumption (TJNJ, 1983: 154; TJNJ, 2007: 461; cf. Huang and Peng, 2007: 511). This is the altered agricultural structure that underlies the altered consumption patterns.

## The Economic Logic of New-Age Small Farming

Despite these dramatic changes, the predominant production unit remains the small family farm. In part, this is a consequence of the responsibility land system, by which use rights have been apportioned per capita equally village

by village. In the absence of a social security system for the countryside, as many have pointed out, the responsibility land system has also served as something of a social safety net for rural folk. Although economists of neo-classical leanings have called repeatedly for the establishment of private property rights in land and for unrestrained exchange in a free land market (e.g., Wu Jinglian, 2005: esp. chap. 3; cf. Wu Jinglian, 2002, and n.d.; Dang Guoying, 2007; Feder, Lau, Lin, and Luo, 1992), the Chinese leadership has thus far held firm to the responsibility land system, under which use rights belong to the households, and ownership to the village as a collective entity, while the state reserves the prerogative to requisition land. Needless to say, such a property structure has been one major reason for the predominance of small farms.

But we must look deeper to explain the economic vitality of (what by Western standards are) farms of miniscule size—at an average of seven sown mu (1.167 acres) per farming labor unit, and thus generally less than fourteen sown mu (less than 2.5 acres) or one hectare (15 mu) per household (Huang 2007 [2006a]: 472–73)—when farms during the eighteenth-century English agricultural revolution averaged about 100 acres, and those in present-day America (2007) 449 acres (2,694 mu) (“The Average American Farm,” 2009). Indeed, it has been a fundamental assumption of most neoclassical Chinese economists that a truly modernized Chinese countryside can only come with greater urbanization and the removal of much of the present rural population into the cities, in order to allow for large-scale farms (whether family farms or agribusiness farms) and the economies of scale. Then and only then, they believe, could the productivity and value of labor in farming rise, to bring up the floor of farm incomes. Until then, they believe, the farm population can only continue to bear the burdens of low returns to farming and low values of farm labor. The future, in other words, is seen as lying with large-scale mechanized farming, much as in the experience of the United States and the rest of the West.

The belief in scale economies has been the key not only to neoclassical economics of the Adam Smithian tradition (to wit, his analysis of the production of pins—Smith, [1775–1776] (1976), v. 1: 8–9) but also to classical Marxist political economy. Indeed, that was a core belief of Chinese agricultural collectivization, especially of the subsequent drive to enlarge the village collectives, ending ultimately in communes and the “bigger is better” dogma of the Great Leap Forward. The factory-image of agriculture, with labor-saving machinery, was simply an article of faith. Scale economies were seen to be the essence of modern production. It lay, for example, at the core even of the vision of someone who knew agriculture and China as well as William Hinton (1983).

But such a view is based in fact on a fundamental misunderstanding of the history of Chinese farming. Under mounting pressures of an expanding population on the land, the defining characteristic of Chinese farming in the past six centuries became the need to absorb an ever-expanding supply of labor into small family farms. Existing technologies allowed a certain amount of growing inflation of yields in response to increased labor input (most especially through increased frequency of cropping, such as of winter wheat), accompanied by increased capital inputs (such as beancake fertilizer), without diminished marginal returns (and in rare instances perhaps even at a proportion greater than the increased intensity of labor input). But the mounting scarcity of land quickly brought forth the classic logic of the family farm pointed out by A. V. Chayanov: as a unit at once of consumption and production, with a “fixed” supply of labor, the family farm could be pushed by land scarcity to ever greater labor intensification to meet subsistence needs, even when the marginal product drops well below that of the market wage for labor. The reason is simply that a family farm, unlike a wage labor-based capitalist enterprise, is not able to adjust its supply of labor to attain an optimal combination of land and labor (in which additional labor input will cease when its marginal output sinks below the market wage). It will continue to intensify labor input so long as the marginal product contributes to the survival of the family unit, logically until it reaches zero (Chayanov, [1925] 1986; Huang, 1985, 1990; Lipton, 1968).<sup>2</sup>

Yet, it was precisely for such a reason that the family farm was historically able to outcompete the wage-labor-based and profit-oriented “managerial farms,” as, for example, on the North China plain and in the Yangzi delta. In the former in the 1930s, “managerial farms” were limited to less than 10 percent of the cultivated area, despite the superiority of those farms when seen in terms of output per unit labor (labor productivity). The family farm could bear lower returns to labor and therefore sustain higher rents and hence higher land prices than managerial farms. It also resorted to periodic hiring out by family members to supplement returns from its own farm. (Indeed hiring out part-time was the very definition of the Land Reform category “poor peasant,” seen as constituting the majority of the rural population.) It was thus more persistent than the managerial farms (Huang, 1985: 79–81, 195–99). In the Yangzi delta, the competitive advantage of the family farm vis-à-vis the managerial farm was even more striking. Here a high degree of commercialized production of silk and cotton allowed for a fuller degree of (what I termed) “familization of production” than on the North China plain, such that the elderly, the children, and the women came to absorb large amounts of the

work of cotton yarn spinning and silk thread reeling, at “wage” “returns” far below those of grain cultivation (spinning “paid” about a half to a third as much as grain cultivation—Huang, 1990: 84–86; Huang, 2002: 512). The result was again that the family farms could sustain higher rents. Already by the late Ming–early Qing, managerial farms using hired labor were no longer viable, doing less well than the family farm, or barely the same as the leasing landlord living off rents paid by family farms, as documented in detail in the agricultural treatise *Shenshi nongshu* of ca. 1640. By the twentieth century, managerial farms had long been extinct in the delta (*Shenshi nongshu*, [ca. 1640] 1936; Huang, 1990: esp. 63–65).

Such a historical background set the basic preconditions for the modernization of farming to come in the 1960s and after. Capital intensification, like the use of modern farm machinery, did not so much save labor as allow for further labor intensification. Thus were tractors used to permit the raising of cropping frequency, of more growing of a second crop, and even of a third crop. In the Yangzi delta, for example, the coming of tractor plowing in the late 1960s was what made possible widespread triple cropping, of early rice followed by late rice, followed by winter wheat. Tractors made possible the completion of plowing within the ten-day rush period in May, when the winter wheat (or barley) had to be harvested and the early rice planted (by about May 25), in August, when early rice must be harvested and late rice planted (by about August 10), and in November, when the late rice must be harvested, the land plowed, and the winter wheat planted (by about November 10). What had been exclusively one crop of rice (followed by winter wheat) thus became almost exclusively two crops of rice, driven by the slogan that came in 1969: “wipe out single-cropped rice” (*xiaomie danjidao*). The basic pattern of “involution” (i.e., of labor intensification for diminished marginal returns, each additional cropping yielding somewhat less, relative to its labor and fertilizer input) continued (Huang, 1990: 225).

It was only at the turn of the new century that the basic pattern of involution finally showed signs of a potential reversal, with the conjuncture of three broad tendencies. The first was the declining birth rate that came with rigorous pursuit of a one-child policy from the 1970s on, which meant, finally by the 1990s, a significant drop in new additions to the rural labor force from population increase. The second was rapid urbanization, at the rate of about 1 percent of the population each year since the 1980s, along with the stunning urban employment of migrant workers from the countryside (nearly 200 million by the turn of the century). The conjuncture of the two meant that by the early 1990s, the number of labor units engaged in farming, after peaking at about 340 million, began to decline steadily, and since the year 2000, has been

declining by about 2 percent (or about six million) each year, to drop below 300 million by 2005. (For detailed numbers and graphic representation, see Huang and Peng, 2007: 502–3 and diagram 1.) The third broad tendency, finally, has been the altered food consumption patterns outlined at the beginning of this article. The intersection of these three tendencies of separate origins made up what we term “the conjuncture of three historic tendencies” to set the stage for possible de-involution in Chinese agriculture in the next few decades to come (Huang and Peng, 2007).

But that de-involution will not come with American-style mechanization and scale economies, but rather with capital-labor “dual intensifying” (my term) small farms for horticulture and livestock raising. One example is “hot-house” vegetable-growing. At the highest end, there is a temperature-controlled permanent structure, but in China today, such very high-investment horticulture remains quite rare and is really required only for extreme temperatures in the colder climate zones in the depth of winter. Much more common are shorter-lasting and cheaper plastic tents, which come in three sizes: small, medium, large. Such plastic-enclosed vegetable “plots” typically require four times the labor of open-air vegetable cultivation—a single labor unit needs only one mu to be fully occupied, compared to four mu for open-air cultivation—and generate equal proportion or more in returns (Huang and Peng, 2007: 509).

New-style small farms that combine cultivation with animal breeding are another example. The old pattern was for a farm household to raise just a pig or two, using some of the farm’s grain plus table scraps and such to feed the animal. One new pattern, termed “raising by stalks” (*jiegan yangzhi*), uses what today are mostly unused stalks (which had been the main material for fuel, increasingly replaced by coal), fermented with decomposing agents (biological enzymes), as the main feed. The difference is that when grain is used, one full mu of maize can feed just one pig, but when stalks are used, one mu can feed five pigs. In the old method, as the saying goes, animals competed with humans for feed (*ren chu zheng liang*); in the new method, they do not. The new method is, of course, both capital-intensifying (for the new decomposing agents) and labor-intensifying (because more pigs are raised) (“Lun jiegan fenjieji zai yangzhiye zhong de yingyong,” 2006; cf. Huang, [2006] 2007b: 492).

Given the severe scarcity of land relative to population, the economies that come with capital-labor dual intensifying agriculture to maximize productivity per unit of land are obvious. It has been the main pattern in the development and modernization of agriculture in East Asian economies like those of Japan, Taiwan, and Korea, as well as in China during recent decades.



It differs fundamentally, of course, from the standard Western pattern, whether it be in the eighteenth-century English agricultural revolution, in which increased use of human labor-saving animal power played a major role, or the similarly labor-saving modern American mechanical and chemical agricultural revolution.

As for horticulture, it had even in premodern times been both labor- and capital-intensifying when compared to grain cultivation. In the Netherlands, its spread had in the period 1400–1650 played a major contributory role in that country's early economic development (Maddison, 2001: 20, 78–79). In China, even in the collective era, vegetables had been grown mainly on private plots, requiring two to three times more labor input per unit land than grain, for roughly two to three times the market value when not home-consumed (Huang, 1990: 51, 203–5, 272).<sup>3</sup> Its greater capital (fertilizer) and labor requirements had been well met through the private plot organization, lending itself readily to frequent and small increments of intensive attention, a form of gardening really, as suggested by the term “horticulture.” The Great Leap Forward's attempt to push vegetable cultivation (as well as pig raising) into factory-like large-scale organizations of course proved to be a complete failure. The plastic-tented horticulture of today may be seen in some sense as the new-age successors and development of the private-plot production of yesterday.

It operates with what we might call the economies of small-scale production. What labor-intensive vegetable growing requires are small increments of frequent and variegated hand labor, which do not lend themselves readily to the classic Smithian division of labor and consequent economies of scale. This is all the more so with cross-seasonal high-end vegetables grown under tents. Organic “green” agriculture, similarly, is mainly by hand and does not lend itself to mechanization nor, of course, chemicalization. Gardening-like hand labor is the norm, not mass production with economies of scale.

Finally, pig-raising combined with grain cultivation in the “raising by stalks” method tells about another economic logic, that of “economies of scope” (*fanwei jingji xiaoyi*), in which certain economies are attained through the production of more than one product by the same production unit, as opposed to “economies of scale” (*guimo jingji xiaoyi*). Such economies have a long history, shown already, for example, in the old methods of using farm refuse and grain to raise the scavenging pig, which pound for pound was in turn the best provider of good fertilizer for the farm. Or the old sericulture, in which mulberries were grown to solidify the embankments of wet-rice fields (polders) lying below the water level at high tide. Or the Pearl River delta's “mulberries around the fish ponds” method, in which mulberry leaves

fed the silkworms, the worm droppings fed the fish, and the fish droppings and mud at the bottom of the ponds fertilized the mulberry trees. It was also evident in the English agricultural revolution, in which the newly enclosed farms permitted close coordination of animal husbandry (which had been done on the commons fields) with farming, using the crops (mainly clover and turnips, in the classic Norfolk rotation pattern of wheat-turnips-barley-clover) to feed the animals, and the animals to power and fertilize farming (Allen, 1992: 111; Overton, 1996: 3; cf. Huang Zongzhi, [2002] 2007: 231; Huang, 2002: 503). All combined two or more mutually supportive economic activities within a single productive unit, benefiting thereby from economies of scope, a very different logic from economies of scale.

## **Vertical Integration by Differential Optimums**

But the economies of capital-labor dual intensification, of small-scale cultivation, and of scope are not sufficient to account for the viability of current new-style Chinese agriculture. Production for urban, and even long-distance domestic and international markets, requires yet another kind of economy, that of “vertical integration,” which in developed Western capitalist economies has generally been provided by “the firm.” This is where Ronald Coase’s analysis has relevance. According to Coase, the firm exists to minimize “transaction costs”—namely, costs that would be incurred by contracting for different parts of a production and marketing process on the market. There would be costs for information, contract negotiations, enforcement, and so on. Seen in those terms, an agricultural production enterprise might need to contract separately for transport, storage, processing, and marketing. Agribusiness enterprises, therefore, might be seen as organizations that exist to bring such different parts under a single firm, in order to minimize such transaction costs, with the size of the firm being determined by relative marginal costs for further expansions of the firm as opposed to separate contracting on the free market (Coase, 1990: chap. 1; Coase, 1991).<sup>4</sup>

In the economic history of the West, such “vertical integration” from production up through processing and marketing, by a firm, was generally accompanied by what might be termed “horizontal integration” by the same firm, in which large farms are organized to accomplish, once again, the classic Smithian economies of scale. What is happening in China, however, is quite different. As we have seen, the small farm remains the main productive entity, justified by its own economic rationalities for livestock-poultry-fish raising and fruit-vegetable cultivation. But the small farm, clearly, is faced with very high “transaction costs” if it has to contract separately on its own

for transport, storage, processing, and marketing. It requires, in other words, some kind of “vertical integration” comparable to that provided by the capitalist firm if it is to deal effectively with the “big market.”

The process is conceptualized by Chinese agricultural officials and economists as integrating (*yitihua*) the activities of production-processing-marketing (*chan-jia-xiao*) and of trade-industry-agriculture (*mao-gong-nong*). It is expressed mainly with two terms, *zongxiang yitihua*, literally vertical integration, or *chanyehua*, literally “industry-ization.” The main methods of integration at present are supposedly through the so-called dragon-head enterprises, specialty co-ops, or government-run specialty wholesale markets, each to be considered in greater detail in the next section.

Unlike vertical integration under a capitalist firm, the Chinese conception may be seen as embodying a vision for “differential optimums,” not in the common understanding of different scales of production for different products, but rather in the sense of different scales at different levels of vertical integration.<sup>5</sup> At the cultivation level, it is to be the small family farm; there is to be no “horizontal integration” of small production units into large-scale entities for scale economies. At the next level, on the other hand, many kinds of food processing (and other related activities such as cotton yarn spinning and silk reeling) lend themselves more readily to factory-like production and conventional scale economies. This aspect of the Chinese food industry, however, remains rather underdeveloped (more below). Finally, perhaps most important and not as readily apparent is that marketing too benefits from economies of scale. Given the increasingly discriminating demands of Chinese and foreign consumers, a well-known brand name (*pinpai*) covering considerable scale brings obvious economies not available to the smaller individual producer. What local governments in China have done is to engage actively in the planning and development of brand names by locales, even more than by firms. There have been systematic efforts to identify villages and towns with a single product, as will be seen in more detail below. The combination of these different scales (and modes of organization) at different levels makes up the current, distinctive pattern of Chinese vertical integration, by differential optimums.

## The Available Data

Since the notion of vertical integration was first used in China in the 1990s, it has gained the stature of official sponsorship, and the two terms (*zongxiang yitihua* and *chanyehua*) are now used to represent the present and future direction of China’s agricultural modernization. As such, they are in definite

danger of a certain degree of ideologized representation in which an ideal construct or policy intent comes to be substituted for reality. The Ministry of Agriculture has established an entire bureaucratic apparatus in support, called the Office for the Vertical Integration of Agriculture (Nongye chanyehua bangongshi), with branch offices in every province. The Office has been trying to gather systematic statistical information under the rubric of “vertical integration of agriculture” and issued its first full-length report in April 2008 (Zhongguo nongye chanyehua fazhan baogao, 2008; hereafter cited simply as Baogao).

The data remain inexact and even suspect, since the terms for “vertical integration” are never precisely defined. Included are all farms that have supposedly been “brought along” (*daidong*) into vertical integration, by “dragon-head enterprises,” “specialized cooperative organizations” (*zhuanye hezuo zuzhi*) and other forms of “brokerages” (*zhongjie zuzhi*), specialized markets (*zhuanye shichang*), and “others,” including “rural brokers” (*nongcun jingjiren*). What is not made clear is just what is excluded. It is ambiguous, for example, whether farms that sell their goods mainly through old-style rural middlemen, working individually or in groups, are included, but those who sell goods themselves in traditional periodic markets are presumably not. It is also not clear whether farms that sell their products to government-run wholesale markets, only to have those taken over by small itinerant peddlers and stall-operators, qualify as having been vertically integrated. Presumably so.

There is something of the false representation here that characterizes the new categories used by the National Statistical Bureau (NSB) for tallying “the service sector” or “tertiary industry.” Driven by the ideology of modernizationism, the notion that the tertiary sector represents the most advanced economic development (Fourastié, 1949; cf. the discussion in Huang, 2009, and Huang Zongzhi, 2008b), and the wish to represent China as a more modern economy than it really is, the NSB has been fronting the most modern-sounding groups of the service sector, such as “Information Transmissions,” “Computer Service and Software,” “Finance and Insurance,” “Leasing and Business Services,” “Scientific Research,” “Culture, Sports, and Entertainment,” and so on, downplaying in effect the much larger numbers of migrant peddlers, domestics, restaurant help, street cleaners, residential community guards, and other such migrant workers (*nongmingong*) who are also grouped under the service sector. The result has been a serious distortion of the realities and dimensions of China’s now immense, irregular, underpaid, and underprotected “informal economy” (TJNJ, 2007: 135–37, 131; cf. Huang, 2009: 424–25). The same goes for the data on “vertical integration.”

## Different Kinds of Vertically Integrating Organizations

Nevertheless, there is still clearly sufficient substance to the growing body of data to warrant serious attention. By the Ministry of Agriculture's data (though possibly exaggerated), by 2005, fully one half of the nation's cultivated area (about one billion mu) and 36 percent of farm households (87 million) have been vertically integrated, either by dragon-head enterprises or by specialized co-ops (and other brokerage organizations) and specialty markets (Baogao: 309). We turn below to look at each of those in turn.

### *Capitalistic Dragon-Head Enterprises*

The integration of production-processing-marketing by dragon-head enterprises is readily illustrated with the following example drawn from Guangdong province. The Wen Family Food Conglomerate Company, founded in 1986, provides chicks (at five yuan per chick), feed, drugs, and handbooks to participating households on fixed dates at fixed locations for breeding through a well-organized network with a computerized database. The company follows up with provisions of information and services against disease, repurchases the grown chickens on a fixed schedule, and pays for those following delivery of matured chickens. It then processes the chickens at its plants for sale. In 2005, the company had gross sales revenues of 6.5 billion yuan, and is classified a national-grade (*guojiaji*) "dragon-head enterprise" (Baogao: 16).

The integration of trade-industry-agriculture, on the other hand, is perhaps better illustrated with the following example from Nanyang city in Henan province: here 35 carpet companies are credited with integrating farms covering 340,000 mu under sericulture, 17 silk-reeling enterprises, and more than 100,000 peasants hired for carpet-weaving, with a total output in excess of two billion yuan (Li Qingbiao, 1997).

There can be no doubt as to the central and local governments' determined preference for such capitalistic dragon-head enterprises. The efforts to lend them special support began with the central government's provision, in the period 2000–2005, of a total of 11.9 billion yuan to subsidize select large-scale national grade dragon-head enterprises (Baogao: 30). The provinces followed suit. The Shandong provincial government, for example, one of the nation's leaders on this front, has reportedly since 2002 spent 50 million yuan each year in direct subsidies to select "dragon-head enterprises" (switching in 2005 to subsidizing interest on loans extended to the enterprises by state banks). This was augmented by more than 100 million yuan of subsidies

each year from the municipal and county governments of the province (Baogao: 219). Subsidies of the same dimensions were provided by the governments of other advanced provinces, like Jiangsu and Zhejiang, and Shanghai municipality; those subsidies were given over and above the extension of special terms in tax and credit and in the provision of land and electricity (Baogao: 219, 194, 179; in Jiangsu, the sum was increased to 80 million in 2006—Baogao: 188). Most of the reports from the vertical integration offices of the different provinces/municipalities contain concrete specifics on subsidies to the dragon-head enterprises. By contrast, only Shanghai's and Guangxi's reports mention specific subsidies to cooperative organizations;<sup>6</sup> the others do not give any concrete information about support at all. Poorer provinces, such as Hunan, are evidently not able to boast of direct subsidies to dragon-head enterprises in the manner of Shandong, Jiangsu, Zhejiang, or Shanghai, and speak instead of waiving and reducing taxes for these firms—in Hunan's case, to a purported total of 10 million yuan a year (Baogao: 236).

The vertical integration of agriculture by means of dragon-head enterprises, in other words, has been completely incorporated into local governments' highest priority concern, namely, to "draw in businesses and investment" (*zhaoshang yinzi*), which has in fact been the key standard by which local officials are evaluated, measured in terms of quantified GDP growth. (China's top leader-to-be, Xi Jinping, in his 2001 PhD dissertation, "A Study of Rural Marketization in China," submitted to Tsinghua [Qinghua] University, had indicated serious reservations about dragon-head enterprises and advocated support for co-ops [Xi, 2001: esp. 37, 125, 127–29, 144–45]; nevertheless, actual governmental actions in the new century have one-sidedly favored dragon-head enterprises.)<sup>7</sup> The central as well as the local governments are both well aware that GDP growth is the "hard logic" (*ying daoli*), something that must be observed by local governments, whereas other avowed concerns such as social equity or environmental protection represent soft logic that can be fudged. As others have pointed out, centrally allocated funds for something like "reforestation" are often redirected to infrastructural construction (roads, electricity) in order to draw in businesses and investments (Wang Hansheng and Wang Yige, 2009; Zhou Xueguang, 2010; Huang, 2010).

### *Cooperative Organizations*

Despite the strong support from the government for the capitalistic dragon-head enterprises, an alternative form of organization, the specialty co-op, has emerged rather spontaneously and today commands a sizable part of vertically integrated agriculture. Concrete information available on specific cooperatives suggests that their activities have concentrated mainly in the following

areas: in cooperative purchase of needed materials both in order to reduce costs and in order to maintain certain given standards and/or uniformity of product; in processing, either arranged through the co-op or by incorporating processing entities into the co-op itself; in providing technical information and advice; in obtaining credit; and in marketing, by organized efforts on the part of the co-ops, or by co-operation among several so-called “big” farming entities (*dahu*), or even by a single entrepreneurial person. All are predicated on small farms and not on large-scale, horizontally integrated farming.

One organizational mode is to bring together into a single co-op’s membership entities stretching across the entire chain from production to processing to marketing. Thus, for example, the Chicken Breeding Association (Yangji xiehui) of the Wutongqiao district of Leshan city (Sichuan province) includes in its membership five production and sales co-ops, a company producing feed, a breeding farm, and a company selling drugs for animals-poultry. Like Guangdong’s Wen Family Conglomerate, the association furnishes to individual households the chicks, feed, and drugs, provides information and technical advice and assistance, and undertakes the marketing. What is different is that it is owned by the members and not by the enterprise, and it conducts divisions of profits for the members, including an arrangement for a “second division” (*erci fenli*) after actual sales. It also furnishes something of a cushion against an adverse market environment by providing at such times additional discounts for feed and such. With such an integrated system, the association has grown to just under 500 members, with a total stock of 1.32 million laying hens (Baogao: 13).

As another example, the Northern Shandong Beef and Cattle Production and Marketing Co-op in Yangxin county was founded in 2004, mainly through the support of eight meat processing and marketing companies, with 231 members and an initial capitalization of 300,000 yuan. It took up the burdens of coordinating between farm households and butchers, and rearers and sellers, standardizing and facilitating the contracting agreements between them. It also set up a specialized technical advice organization, even providing training to prospective breeding households in different locales and villages. It purchased en masse necessary feed, drugs, and such at discounted rates for small family-farm members, and set up a specialized sales division to make marketing contacts and established uniform standards and prices. On such a format, the co-op grew by 2006 into 530 members, doing an aggregate business of 248.8 million yuan (Baogao: 103–4).

Yet another example comes from Jiufeng town of Lechang city in the mountainous area of northern Guangdong province. Here the co-op brought together mainly so-called “big” vegetable-fruit farms (again, *dahu*, though still small by American standards) with “big” vegetable-fruit sellers, 54 of

**Table 2.** Numbers of Vertical Integration Entities by Organization Type, 2000–2005

	2000		2002		2004		2005	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total integrating organizations	66,688	100	94,432	100	113,953	100	135,725	100
Dragon-head enterprises	27,276	41	41,905	44	49,709	44	61,268	45
Brokerages	22,146		32,076		41,430		62,914	
Specialty co-ops	9,552	14	20,245	21	30,546	27	48,473	36
Specialty markets	7,674	12	9,163	10	10,565	9	11,543	9
Others	9,592		11,288		12,249			

Source. Zhongguo nongye chanyehua fazhan baogao, 2008: 309.

the former and 48 of the latter. Today it accounts for a total of 3,900 mu of vegetable-fruit fields, with an average grower farm size of 72 mu (12 acres, compared to the average American farm of 449 acres), and an average income per farm of 200,000 yuan (Baogao: 244).

While it is no surprise that, by the official tallies of the Office for Vertical Integration of the Ministry of Agriculture, the favored dragon-head enterprises accounted by 2005 for 45 percent of the total of 136,000 vertical integration entities, it is somewhat surprising that vigorous government subsidies brought only a meager increase in the proportions occupied by those from 41 percent of the total in 2000 to 45 percent in 2005. It is still more surprising that the proportion of cooperative forms of organizations, despite the lack of substantive government support, have risen more, from 14 percent in 2000 to 36 percent in 2005, as shown in Table 2.

To judge by another dimension of the data supplied by the Office for Vertical Integration, contractual terms based on cooperative principles have also shown considerable vitality. The typical contract between dragon-head enterprises and individual farm households is an advanced order for purchase (*dingdan*), whereas those between the co-ops and the individual households are mostly in the form of profit distribution by ownership shares (*angu fenhong*) or by payback-from-profits (*lirun fanhuan*). The latter two forms have grown in tandem with the increase in the number of cooperative entities (Baogao: 309, table 2).

We do not have far to look for an explanation. In the simple purchase-order arrangement, even at a guaranteed price, most of the profits from processing and sales go to the enterprise and not the cultivator. In the distribution



**Table 3.** Sales Revenues of Different Forms of Organizations of Vertical Integration

	2002		2004		2005	
	Revenues <sup>a</sup>	Percentage	Revenues	Percentage	Revenues	Percentage
Total	164.0	100	250.3	100	306.2	100
Dragon-head enterprises	94.6	58	142.6	57	184.5	60
Brokerages <sup>b</sup>	13.4	8	21.1	8	27.3	9
Specialty markets	56.0	34	86.6	35	94.4	31

Source. Zhongguo nongye chanyehua fazhan baogao, 2008: 311.

a. In billions of yuan.

b. No separate data for co-ops.

of profits by shares or agreement, on the other hand, the cultivator benefits from the gains related to processing and marketing. There is thus definite interest on the part of the small farm cultivators to be linked to a co-op rather than an enterprise.<sup>8</sup>

On the other hand, dragon-head enterprises are on the whole bigger and more profitable than the co-ops, the more so with state subsidies and privileges. They can therefore be expected to account for a much larger number of farms. The present official data do not permit a breakdown by actual numbers of households “brought along,” but they do allow for an approximation of such on the basis of dimensions of sales revenues: as Table 3 shows, in 2005, the dragon-head enterprises accounted for 184.5 billion yuan of sales revenues out of a total of 306.2 billion, or 60 percent, far more than the 27.3 billion yuan attributed to “brokerage organizations” (the bulk of which were co-ops, as shown in Table 2). While co-ops may account for a third of the organizations classified as vertically integrating, they account for a far smaller proportion in terms of actual numbers of farms involved, less than 9 percent, to judge by the data in Table 3.

Even at those proportions, however, the degree of development of co-ops still seems to me surprising. During the period 2002–2005, co-ops managed to double their sales revenues, to result in a slightly higher rate of increase than the dragon-head enterprises, this despite the vigorous state sponsorship and preference for the latter. One wonders: what would happen if active state subsidies and special terms like what have been given to dragon-head enterprises were granted to the co-ops instead? This is a question to which we will return at the end of this article.

## Open-Ended Government-Run Specialty Markets

The third major form of organization for vertical integration is government-run specialty wholesale markets. They may be seen as intermediate between the capitalistic dragon-head enterprises and the more “socialized” (*shehuihua*) co-ops. The local governments have in fact engaged actively in the building and organizing of such markets. Shandong province, for example, boasts of no fewer than 750 specialty markets that are large enough to do more than 5 million yuan of business (Baogao: 215). The municipal and county governments have been the key. Shandong’s Shouguang city is famous for its vegetable markets. The city has invested a total of no less than 40 million yuan to develop six large specialty wholesale markets, including vegetables, fruits, and animals-poultry (Qin Xiyao, 2000). The vegetables market had begun in 1984 as a kind of glorified periodic market with just 10 mu of land, under the management of the municipal government’s Bureau for Commerce and Industry (Gongshang guanliju). In the twenty years following, however, that market was expanded nine times, with the bureau forming a partnership in 2003 with a large food firm from Shenzhen. Today the market has reached a scale of 600 mu and deals in 300 varieties of vegetables. Its chives (*jiucaï*) market commands the reputation of being number one in the nation. Together the city’s specialty markets claim to have brought along under vertical integration fully 840,000 mu of small vegetable farms, with 300,000 “large tents” (*dapeng*), reaching 80 percent of all (vegetable) family farms in the city (Baogao: 14). Today, with a fleet of 200 vehicles, Shouguang supplies fully one fifth of Beijing city’s vegetables (Qin Xiyao, 2000).

The local governments have also deliberately promoted local products for marketing. There has been frequent resort to brand names by locale, not by firm, summed up by the expression “one village, one brand name” (*vicun yipin*) (attributed to the example of Japanese agriculture) or “one town, one brand name” (*yizhen yipin*). Thus, Shouguang city today boasts of 587 specialty villages and towns, including “the number one township for chives in China” (*Zhongguo jiucai diyi xiang*), “the number one town for carrots” (*Zhongguo huluobo diyi zhen*), and “the broad-bean specialty village” (*douban shengchan zhuan ye cun*) (Baogao: 14). Such deliberate sponsorship by local county governments of locale brand names, along with the construction of local specialty markets, has been a major cornerstone of local government vertical-integration policies. Jiangxi province has been especially aggressive in the pursuit of this approach and boasts of 2,000 specialty villages (Baogao: 14, 19).

Such institutions are of course very different from one's normal image of capitalistic economies. Government-run specialty markets can be expected to be more equitable on the whole in setting prices and regulations than giant food companies that have small cultivators at their mercy. Yet, at the same time, they are merely one link in the chain from cultivation to processing to sale. They could be a part of a chain linked variously by a capitalistic enterprise, or a co-op, or just individual retailers. They are in that sense open-ended, with a direction of development that is perhaps not yet completely clear.

By contrast with the development of markets, local government engagement in food processing seems much less developed. According to the Office for Vertical Integration's report, the output value of processed food remains at a meager level of about 40 percent of value added in farm output, this compared to the 300–400 percent in the developed economies. Another indicator is proportion of food-and-drinks consumed that are processed: 25 percent in China, compared to more than 90 percent in the developed countries (Baogao: 23). Local governments, it seems, have yet to enter vigorously into the provision of food processing as a business and/or a service to cultivators. Shouguang city, which reportedly invested 80 million yuan in food processing geared for a national and international market, is an exception. Therein, perhaps, lies room for much more expansion, as well as for choices of direction that are yet to be made.

## **The Role of the Property Rights System**

Even without looking to the “alternative” modes of cooperative organization or government-operated wholesale markets, it is clear that the present landownership system in China has made for a distinctive mode of vertical integration. We have already discussed the fact of vertical integration without horizontal integration. That is probably the biggest and most obvious difference made by the current property regime.

In addition, as Zhang and Donaldson (2008) have shown in their study,<sup>9</sup> the current property rights system has enabled many small-farm households with responsibility land to bargain with the companies. Typically, they or their village negotiates to lease their use rights to the company in return for a paid wage position working the same farm, generally implying a substantial improvement in their financial position. Others retain the responsibility land in their home village as something of a safety net and hire out to the companies to work on other fields. These two types of workers still own their use rights, and should be distinguished from those who are completely landless,

who give up their responsibility land, establish residency in the new locale (but without responsibility land rights), and simply hire out to the companies.

On the basis of their empirical evidence, Zhang and Donaldson argue strongly against simple privatization of land and in favor of sticking to the responsibility land system. In their analysis, simple privatization will lead to land engrossment and the displacement of many peasants from the land. The responsibility land system, on the other hand, has seen to a measure of social equity by lending the small cultivators an important bargaining chip against agribusiness. In Zhang and Donaldson's view, "semi-proletarian" status is preferable to a completely proletarianized condition. I concur on the whole and view the land rights they spotlight as one consideration in addition to the economic rationales favoring small-scale farming that have been outlined above.

## **Whither Vertical Integration of Chinese Agriculture?**

We might finally ask: where is the vertical integration of Chinese agriculture going, in light of the recent developments and directions of change? It should be clear from the above that small-scale family farming is here to stay for quite some time, despite the entry of big business into the food industry, on account of the distinctive Chinese institutional environment and also the multiple economies related to small farming when it comes to livestock-poultry-fish raising and vegetables-fruits horticulture.

What remains an open question is whether the cooperative form of organization might yet prove to be a viable alternative to capitalist agribusiness. There can be no mistaking past favoring of agribusiness by the Chinese government, in actual practice if not in words (as, for example, in the current slogan to "build a new socialist countryside," or the "Law of Specialty Cooperative Organizations of the People's Republic of China" promulgated October 31, 2006).<sup>10</sup> Yet, given the vitality that co-ops have shown in recent years, perhaps the "socialist" ideological representation might yet provide an impetus toward alternative possibilities for the future of Chinese agriculture.<sup>11</sup>

The motivating force for cooperative organizations, from the point of view of the small cultivator, is obvious. Most importantly, as mentioned earlier, such co-op organizations allow the cultivators to share in the profits gained from processing and marketing, rather than to see those devolve entirely to the dragon-head enterprises or merchant brokers. That has been the driving force behind such organizations.

A crucial weakness of the co-ops has been their lack of active government support. In the institutional environment of China, the lack of such support has been tantamount to being ostracized.

In addition, there is the question of whether such co-op organizations would be able to compete with the organizational form of the capitalist firm for effectiveness in processing and marketing, which raises questions both of entrepreneurial/managerial initiative and incentive. Might not cooperative sharing detract from both initiative and incentive when compared to a capitalist firm?

In this connection, an example of a cooperative enterprise from Zhejiang province is suggestive. The Donglin Fruit-Vegetable Co-op of Linhai city is known especially for its mandarin oranges and “Western orchids” (*xi lanhua*), about 40 percent of which are exported abroad, the rest marketed mostly in the northern parts of China. The key person involved in a managerial capacity is one Wang Shunhai—reportedly able, knowledgeable, and well-connected, a member of the provincial Political Consultative Conference, and someone with numerous schoolmates in the municipal government—the kind of person with the qualities making for a successful entrepreneur in the Chinese institutional environment. His talents, however, have gone instead to serve the co-op. The co-op began with 40 members, all drawn from among the so-called “big” farms (dahu again, of 100 mu or more) who joined on a shareholding basis. For Wang’s talents and services, the co-op pays him 5 percent of the profits, much more than that to its individual members, plus a monthly salary of about 2,000 yuan. Wang takes special pride in having hired a college graduate as an assistant, paying her 50,000 yuan a year in salary. The co-op’s membership has now grown to ten times its initial size, with 438 members (Wang Shunhai interview, 2007a; 2007b). Such a form of organization may be seen as combining cooperative features of shared ownership with the managerial and incentive features of a capitalist firm.

Appropriate combinations will have to be searched out through actual practice. But one could imagine an arrangement whereby, within the framework of cooperative ownership, management is allowed sufficient remuneration and share benefits for incentive and sufficient decision-making power for creative initiative. That would combine the distributive strengths of cooperative ownership with the management strengths of the enterprising firm. Such a firm could perhaps be called a cooperative firm (*hezuo gongsi*).

At the levels of processing and marketing, perhaps we can imagine a members- or workers-owned organization, in which a kind of “responsibility system” is used to link production to the workshop/factory floor, the office,

or even individuals. Such a system might actually be superior to a wage-based firm in terms of incentives and stability.

By the statistics of the Office for Vertical Integration, there were in 2005 (the most recent data given) a total of 48,473 vertically integrating co-op entities, accounting, we have seen, for possibly just under 9 percent of all sales revenues. This is despite the lack of government support, so critical in the Chinese institutional environment. Wang Shunhai (2007a), for example, speaks of the co-op's inability to obtain loans from banks and having to resort strictly to informal loans to raise capital. In addition to the co-ops, there are the open-ended government-run specialty markets that are responsible for integrating farms, which account for 31 percent of all sales revenues. Again, this is despite aggressive government sponsorship of dragon-head enterprises. One wonders: is there not more room for expansion of the more equitable form of vertical integration that yields greater benefits to its members?

If one recalls the stunning effectiveness and growth of collective rural enterprises managed by rural cadres in the 1980s (including especially the so-called southern Jiangsu model), it is perhaps not too much of a stretch of the imagination to think that similar governmental commitment could generate impressive dynamism in such a form of organization. For co-op members, they would be more beneficial than capitalist firms. And, we might observe in addition, such a direction is probably necessary if there is to be any real substance to the current slogans of building a "new socialist countryside" and "socialism with Chinese characteristics."

## Conclusion

Regardless of what one might think of the pros and cons and likely prospects for alternative forms of vertical integration, it is nevertheless clear that the present and future of Chinese agriculture lie very much with small labor-capital dual intensive farms, not big mechanized labor-saving ones. The mode of vertical integration seems pretty much set as far as the basic principle of vertical integration without horizontal integration goes, and to that extent differs fundamentally from classical Western experiences. It is and will be based mainly on small-scale farms for vegetables-fruits cultivation and livestock-poultry-fish farming. Chinese agriculture to that extent will remain, we might say, much more a "petty-bourgeois" "industry" than the classic "capitalists cum proletarians" mode we normally associate with urban industry. Indeed, one might say that it will remain predominantly a "small peasant-farmer" activity.

What is unknown is the extent to which an alternative cooperative (or “socialized”) type of organization for vertical integration might or might not figure in Chinese new-age small farming. To date, it has not yet had an opportunity to truly test its potential. The question as to whether co-ops will be given a genuine opportunity to compete against dragon-head enterprises on the open market can only be answered by future choices of the Chinese government.

Choices made in agriculture in fact affect crucially the entire political-economic system. Today, that system comprises at once capitalist market-economy components and planned-economy socialism components, with sharp contradictions between the two, most especially between GDP growth and social equity. In the face of such a situation, what seems essential is not a simple choice for one or the other, but rather a search for a third way that can transcend both—not in a wishy-washy compromise, but a combination going beyond both that starts by acknowledging the necessary coexistence of the two. The given preconditions would be both market dynamics and social equity. We might ask: in the face of the present massive collapse of rural community, social bonds, morality, and culture, might co-ops be able to serve the purpose of integrating anew rural society?

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### **Notes**

1. This is of course only a very rough representation. The present ratio might be closer to 5:2:3. Existing data do not permit accurate computations of the relative proportions of these categories. Data on output value are categorized in terms of agriculture, forestry, animal husbandry, and fishery. While they can show the increase in meat, they can say nothing about vegetables-fruits. Data on sown

acreage, on the other hand, can show the increase in vegetables-fruits, but not meat. As for data computed in terms of calories, they cannot tell about the altered food consumption structure that is our concern here. For now, the simplest method may be by weight, as shown in Table 1, taking into account the fact of varying proportions actually eaten, lowest for vegetables-fruits, next for meat-poultry-fish, and highest for grain.

2. See also my discussion of the errors in Theodore Schultz's insistence that there was no such thing as overpopulation in "traditional agriculture" (Huang Zongzhi, 2008a).
3. A difference from collective grain fields that must not be confused with greater incentives and productivity on private as opposed to collective land, as some have been wont to argue.
4. This part of Coase seems to me much more important than his observations on "social costs," conventionally dubbed the "Coase theorem," 科斯定理. Most Chinese economists have chosen to emphasize especially what they understand to be the need for laws on private property rights in order to minimize transaction costs (Kesi dingli, n.d.), quite different from the focus here.
5. "Differential optimums" is Chayanov's term. For the latest discussion, see Shanin, 2009.
6. Shanghai's report speaks of subsidies to co-op organizations to the tune of 21 million yuan in 2005 (Baogao: 179).
7. I am grateful to Zhiyuan Cui for calling my attention to, and finding for me, Xi's dissertation.
8. Another way to think of this is that given the fact of rather isolated small farms, which stand in sharp contrast, for example, to workers on the factory floor, cooperative organization is the nearest thing to a labor union for the protection of collective interests.
9. Mainly of outside-invested firms such as Kentucky Fried Chicken, Nestlé, a Japanese horseradish company, and a Taiwanese flower company.
10. Article 8 of which provides that the government shall "through fiscal support, tax breaks and financial, technical, and skilled personnel support, and industry guidance policies, seek to promote the development of peasants' specialty co-ops." But we can see from the Report on Vertical Integration of Agriculture that little has actually been done.
11. See the reference to Xi Jinping in Note 7, above.

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### **Biography**

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