

# An Industrial Revolution in Agriculture? Some Observations on the Evolution of Rural Egypt in the Nineteenth Century

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LARGE-SCALE ESTATE AGRICULTURE appears as a recurrent phenomenon throughout Egyptian agricultural history, as shown by a number of the papers in this volume. We still lack the means for a comparative analysis of such highly contingent historical constructions, which could only be understood in their specific socio-economic context. Yet in any given period—and here we have examples from the Ptolemaic, Byzantine, and late Ottoman eras—the development of large estates tends to correspond to certain elements, such as the adoption of new hydraulic techniques, combined with the installation of new social and political élites. In the end, these trends almost always result in the opening of new lands through the drainage of swamps or the extension of irrigation to dry lands which, in turn, lead to new settlements.

This pattern certainly holds for the nineteenth century. Egyptian agriculture underwent a number of transformations. One of the most significant developments was the emergence, in certain regions, of a new type of farm founded on large landed estates and linked to the cultivation of industrial cash crops. The *'izba*—whose name in Arabic suggests a distant or isolated place—has been studied from three different perspectives by historians and economists. Some have linked the *'izba* to the emergence of private landownership. It is still a widely accepted interpretation today that the Khedives used the concession of

large estates as means to divest tenants of property rights confirmed in Islamic law. Advocates of this interpretation, which gained in popularity in the aftermath of the Nasserist land reforms, maintain that the development of these 'latifundia' marked the appearance of private property.<sup>1</sup>

Marxist scholars have concentrated on the financial resources and the level of investment which such estates required. These farms always coincided with major infrastructural projects such as pumping stations and the rationalisation of irrigation and drainage networks which required significant capital investment. Seen from this perspective, the 'izba appears as a product of an agricultural system taking a capitalist orientation, to the mutual benefit of European investors and the 'Turco-Circassian military aristocracy'. These large estates thus marked the passage from 'feudalism' to 'capitalism'.<sup>2</sup> Others yet have underlined the connections between 'izbas and the development of industrial cash crops such as cotton and sugar cane. These crops were characterised as 'industrial' only because they supplied transformation industries such as textiles or food processing. As the industrial markets were to be found above all in Europe, the 'izba appeared as the typical unit of a colonial economy based on the exportation of agricultural primary products.<sup>3</sup>

While each of these lines of analysis holds an element of truth, none takes into account the transformations of the productive apparatus itself. Here I will attempt to analyse such transformations by treating agricultural history hypothetically in much the same way as industrial history has been approached. If I speak of an 'agricultural industrial revolution', it is because the appearance of this new type of estate seems to me to have generated a transformation in agricultural production comparable to that provoked in manufacturing by the birth of the factory. Thus, the 'agricultural industrial revolution' would represent the specific form taken by the industrial revolution in Egypt.

To test this hypothesis I will examine capital formation and the genesis of wage labour, the rationalisation of production and the organisation of work, and the management of labour.

## Capital Formation and the Genesis of Wage Labour

### *The Origins of Large Landed Estates*

Capital formation and the creation of a labour force are directly related to the juridical and economic processes by which wealth in immovable property is accumulated. Essentially, the formation of large landed estates across the nineteenth century was a product of the various forms of redistribution of lands

<sup>1</sup> Artin (1883); Baer (1962); Rivlin (1961).

<sup>2</sup> Barakat (1977), (1978) and (1982); 'Abbas Hamid (1973).

<sup>3</sup> Owen (1993).

returned to state control either through fiscal reform (e.g. through the abolition of tax farms and the suppression of family or pious endowments) or through cadastral surveys ('ruined' villages of the first cadastral inventories, *matruk*, *ab'adiyya* or *ziyada* lands from periodic updates in the registers). We can thus distinguish four generations of large estates.

*Çiflik*s were estates created in the aftermath of the financial and land reforms which accompanied the abolition of tax farms (*iltizam*) and the regeneration of the land registry (1812–21). These were composed of former tax farms and 'ruined' villages returned to the state. The redistribution of tax farms was conducted according to two distinct juridical procedures: outright confiscation of lands in Upper Egypt reconquered by force from the Mamluks; or by a variety of forms of compensation in Lower Egypt.<sup>4</sup> In both cases, the redistribution was made generally to the benefit of members of Muhammad 'Ali's family or of his direct entourage (e.g. the estates of his son Ibrahim Pasha, or of Ahmad Pasha Tahir). 'Ruined' villages returned to the state were situated principally in Lower Egypt. These were usually communities unable to meet their fiscal obligations, either because the tax farmer who held the concession had gone bankrupt,<sup>5</sup> or because of peasant flight (particularly in troubled areas or zones under Bedouin influence), or because of flooding due to the extension of lakes. These were by definition difficult lands, requiring extensive investment and preparation. State domains were made into model farms (e.g. the estates of Sakha, Kafr al-Shaykh, and Masir in Buhayra province, or Abu Kabir, Mit Yazid, Kufur Nigm in Sharqiyya province), managed by a system of agricultural inspections (*tafatish al-zira'a*) which made them veritable laboratories of agricultural innovation.

The redistributions which followed the annual cadastral revisions were more complex, concerning essentially three categories of land: *matruk*, *ab'adiyya* and *ziyada*. *Matruk* lands were fertile and irrigated properties unduly left uncultivated and consequently expropriated from their tenants. This neglect might be due to a number of causes. Faults in the hydraulic system (cultivation abandoned because the land was too difficult or expensive to irrigate) and insufficient labour seem to have been the most common reasons for leaving land fallow, though it could also be due to a lack of tools or work animals. *Ab'adiyya* were lands too elevated or distant from water to be irrigated and cultivated. Unregistered, because unproductive, they were not assessed for taxes for a period of three to seven years after being brought under cultivation, given the great outlay in infrastructure required to farm *ab'adiyya* lands. *Ziyada* lands resulted from a 'cadastral surplus' such as the 'new lands' (*aradi mustagidda*) created by an alluvium of the river after the flood, or lands fraudulently left out of the cadasters but revealed by fiscal agents in new surveys. These three categories of land were

<sup>4</sup> On the different forms of indemnification see Rivlin (1961), 50–60.

<sup>5</sup> On tax farmer bankruptcies see 'Abd al-Rahim (1974) and (1982).

generally conceded to private individuals, usually dignitaries or high functionaries with the technical and financial capacity to undertake the necessary investments to bring the land under cultivation. Thus engineers or agricultural inspectors were often among the first beneficiaries of these redistributions.<sup>6</sup>

Following a series of agricultural crises,<sup>7</sup> a new form of large landholding known as the *'uhda* began to appear from 1840.<sup>8</sup> Once again this involved villages in difficulty which, for one reason or another, found themselves unable to pay their taxes. Until then, the principle of 'fiscal solidarity' applied to individuals within the community had been extended to the village level, with the lands (*zimam*) of a village in default of taxes shared between solvent neighbouring villages. The beneficiaries of this forced grant, at both the individual and village level, were forced to pay the arrears in taxes on the lands which they received. This practice, which in normal times might prove efficient, could have disastrous results in the context of a general crisis, precipitating the bankruptcy of individuals or communities which, without the extra burden, could have preserved a precarious balance. This system was abandoned at the beginning of the 1840s and was replaced by the *'uhda* system. Thereafter villages in fiscal failure were assigned to dignitaries whose position and financial capacity allowed them to serve as 'guarantors' (*muta'ahhid*) for the settlement of tax arrears. It was in effect a forced loan. Unlike the tax farmers of old, recipients did not have the right to add a margin of benefit (*fa'iz*) to the tax assessment to compensate the risk which they assumed.<sup>9</sup> But, as in *iltizam*, these fiscal attributions came with certain privileges, the most important of which was the granting of a plot exempted from all taxes (*usiya*) over which the 'guarantor' enjoyed usufruct rights. This was matched with the right to requisition a given number of residents from the fiscal circumscription, according to a fixed quota, to work the *'uhda* estate. His workers were also exempted from military service and public works.

As with *ab'adiyya* lands, *'uhdas* were generally granted to high functionaries with sufficient income to make the necessary outlays for the restoration of their financial situation, or who could raise the necessary credit either from 'money traders' (*sarraf*), who had long played the same role on behalf of tax farmers, or from the state itself. Always in a liquidity trap, the public treasury usually paid its personnel only after great delays. The highest functionaries, from whom were recruited the *muta'ahhids*, often found themselves the creditors of their

<sup>6</sup> Mustafa Bahgat, 'Ali Mubarak, Hasan Rasim, Muhammad Thaqib, to name but a few high-level engineers, each made their land fortunes in this way. Their estates were usually in their region of origin or in regions where they were called to serve. See Alleaume (1988) and (1989).

<sup>7</sup> In 1844 the situation in the countryside had deteriorated to the extent that the state was forced to forgive nearly 20 per cent of the tax assessment. Sami (1916), II, 532.

<sup>8</sup> Baer (1962), ch. 2.

<sup>9</sup> Rivlin (1961); Baer (1962); Cuno (1992).

employer. The state thus had every interest in offering such functionaries an 'uhda and applying their arrears in salary as quittance for the taxes assigned on the estates. Nubar, who owed a part of his landed fortune to this practice, was not wrong to underline in his *Mémoires* that these forced attributions could at times prove poisoned gifts. In time, however, this new type of fiscal farm would often prove an excellent opportunity for the large landholding élite.

The last generation of large estates appeared in the 1890s and were a product of a speculative real-estate market fed by property transfers linked to the development of hypothecary credit. In effect, for the length of the century, the evolution of agricultural techniques (notably the acceleration of crop rotations and the intensification of the agricultural calendar) combined with the monetarisation of land taxes (started long before, but becoming widespread only in the second half of the nineteenth century) made the need for credit more pressing. Large and small farmers alike faced increasing difficulty in finding the necessary funds to offset the expense of cultivation or of taxes as they fell due. Only two sources of financing presented themselves: usury, an ancient practice in Egypt which in the course of the century had developed into a plague; and hypothecary credit. Mortgages contributed more than any other source to the formation of a real-estate market and even more to the transfer, to the benefit of real-estate companies (supported for the most part by European banks), of the last generations of large properties.

### *Fiscal Reform and Public Credit*

The mobilisation of credit is always directly linked to fiscal policy and, consequently, to the formation of large estates. The background to the land reforms was a long-running monetary crisis which, for the eighteenth century, is well known to us through the work of André Raymond.<sup>10</sup> Unfortunately, we have no equivalent study for the nineteenth century and do not have access to the data and indicators indispensable to economic historians, such as historical price indices, cash flows across time, and gross production figures. It would appear that the crisis of the eighteenth century persisted into the nineteenth and resulted principally from a shortage of bullion in circulation. This shortage forced the regional economies of the Ottoman empire to draw massively on imported currency, primarily from Europe, from as early as the middle of the seventeenth century. This resulted in a double circulation which encouraged speculation and provoked a continuous devaluation of the weaker local currency. In the nineteenth century, the shortage was all the more severe given the rate of economic growth: monetary reserves were insufficient to cover exchanges, and the pressure on money markets was all the more intense given the enormity of volume

<sup>10</sup> Raymond (1973).

traded. Paradoxically, Egypt was a prosperous country with expanding revenues (the cultivated area doubled between 1820 and 1840, and doubled again between 1840 and 1880) but whose coffers were empty—in spite of a more rational, more efficient system of management (some would say exploitation). As early as 1841 Muhammad 'Ali asked his director of the mint, the Saint-Simonien Charles Lambert, to prepare a report on the subject. The civil engineer proposed a reform of coinage which was accepted, and made a further, revolutionary suggestion that was rejected: to have recourse to borrowing or, in other words, to overcome the shortage of coinage in circulation by the development of paper money. Lambert offered the services of Saint-Simonien banks, which were to play a major role in the development of certain sectors of the French economy under the Second Empire and the Third Republic. The proposal anticipated by more than twenty years solutions which Khedive Isma'il would adopt under much less advantageous conditions. The only immediate consequence of Lambert's suggestion was the creation of Egypt's first bank, a sort of joint venture founded in Alexandria in 1844 in which Muhammad 'Ali was associated with two of his principal commercial partners: the Greek financier Tossitza, who had a partial monopoly on Egypt's eastern Mediterranean trade, and Pastré of Marseille, who played the same role in Egypt's western Mediterranean trade.

The difficulties faced by the public treasury partially explain one of the long-term evolutions of taxation: starting from the transformation of tax farmers (*multazims*) to tax 'guarantors' (*muta'ahhids*), right up to the adoption of the *Muqabala* Law in 1871,<sup>11</sup> fiscal reform was primarily a means for the state to raise credit, while the conversion of pensions and salaries into landed concessions was a means for the state to reduce its debts. This also explains how all fiscal reform resulted, directly or indirectly, in the concentration of landed wealth. This particular dynamic determined the characteristics of what, by the end of the century, would be large-scale, wage-labour agriculture. Excluding state domains (which were liquidated as part of the settlement of the public debt after the bankruptcy of 1876), four groups of large landholders may be distinguished.

Money changers (*sarrafs*) constituted the oldest group of landholders. These merchants/bankers had the means to advance loans to the *multazims* or *muta'ahhids* because they underwrote the commercialisation of agricultural production.<sup>12</sup> Their rise to power in the course of the eighteenth century bore witness to the formation of a proto-banking sector comparable in some of its features to modern European merchant banking, though their activities were based on the exploitation of agricultural rather than industrial production. This sector underwent significant development under the reign of Muhammad 'Ali.

<sup>11</sup> 'Under the terms of this law, those who paid the equivalent of six years' tax on their land would receive absolute title to it and a subsequent reduction of the tax by half.' Cuno (1992), 203.

<sup>12</sup> On the rise in power of the *sarrafs* in the eighteenth century, see 'Abd al-Rahim (1974); on their role in the adjudication of tax farms, see Sicard (1984) on Upper Egypt.

In the second half of the nineteenth century, the *sarrafs* were replaced by land companies and banks for hypothecary credit. The development of these new financial institutions was accelerated by the state's bankruptcy in 1876 and the establishment of a British administration. They reached their apogee in the first quarter of the twentieth century. The colonial order took hold in Egypt through these institutions between 1875 and 1925.

The holders of *'uhdas* fell between these two groups. As already discussed, this group was composed principally of high functionaries and was distinguished by the fact that it was built on a *rentier* economy created by the installation of a modern bureaucracy. Socially, the *muta'ahhids* were linked to the interests of the Khedivial dynasty and were a reliable pillar for the state's agricultural policy. However, they were economically dependent on the other two groups for the financing of the large agricultural enterprises which made up the *usiya* lands. One last group, more modest and less known, consisted of private investors who acquired agricultural properties through the real-estate market. This group seems to have played only a minor role in large landed estates, and was less dependent on financial trends. As a group, such private holders only attracted attention during price rises and booms in the speculative market.

## The Mechanisation and Rationalisation of Labour

### *Land Reclamation*

The emergence of large estates was more than just the manifestation of one form of agrarian capitalism, but was directly linked to land reclamation and the extension of cultivable territory. Both were necessitated by a long-running economic crisis which may be traced back to hydro-agricultural techniques over previous centuries. In essence, the subsistence crises which multiplied in the second half of the eighteenth century, usually attributed to caprices of the Nile or political disorder, stemmed principally from the progressive wear on the highly diversified, ancient hydraulic systems.<sup>13</sup> This slow erosion, the first symptoms of which appeared in certain regions as early as the end of the Mamluk period, had, among other consequences in the long run, accentuated the differences between the Delta and the Nile Valley. The persistence of irrigation systems reliant on the transversal slope of the flood valley in Upper Egypt led to the accumulation of alluvium, accelerating the elevation of the soil. This put a growing area of farmland beyond the reach of the highest floods and led to a progressive reduction of cultivated land and of harvests. This was the origin of the *sharaqi* (drought) crisis which was to preoccupy British engineers in the third quarter of the nineteenth century. On the other hand, the reduction of in the flow of water to the canal system in Upper Egypt meant that too much water flowed into Lower Egypt,

<sup>13</sup> Alleaume (1992).

which resulted in the growth of lakes and swamplands. Land management policy from 1820 to 1850 was preoccupied with reclamation of flooded and fallow lands. Major work was first undertaken in the Delta, with two aims: the drainage of low lands and the regulation of the water level. State intervention came later in Upper Egypt, beginning towards the end of the 1830s. This involved the installation of rows of basin irrigation to which, from Pharaonic to near-contemporary times, the hydraulic system of Egypt has all too often been reduced. Work progressed slowly upriver from north to south which in time made the Nile the exclusive force of hydraulic regulation.

At each phase of its development, this vast restoration of infrastructure was supported by large estates. The geometric rationalisation of space which such hydraulic management schemes called for was all the more efficient and easier to achieve when applied to large surface areas. On the other hand, the new grid which the irrigation network imposed on the countryside favoured the constitution of larger units of production. The property grants generally involved difficult or less productive lands; the larger scale facilitated the intervention of engineers or agronomists, much as is the case today with the reclamation of dry lands. Large estates were thus the best instruments and the first beneficiaries of the hydro-agricultural revolution of the nineteenth century.

The priority given on these vast farms to so-called 'industrial' crops—cotton, sugar cane, and to a lesser extent rice and tobacco—reflects private investors' concern for a return on their capital. In the short run they had to offset heavy investments, and these were the crops which gave the highest financial returns. For the state, which sought to encourage their development, the choice was driven by financial considerations as well: these were the crops which gave the largest fiscal return and offset some of the state's demand for hard currency. This strong outward orientation of the most dynamic segment of Egypt's agriculture was maintained for the length of the century. It has frequently been treated as a factor in the establishment of a colonial economy. It needs to be stressed, however, that this outward orientation predated the main interventions of the European economy in the Middle East and was largely the result of domestic evolutions and constraints. It would be more correct to speak of a dependent economy, or of an unequal integration into a monetary system that was increasingly globalised, homogeneous and hegemonic. In Egypt as in Tunisia, colonisation followed the bankruptcy of the state, which was itself largely the product of evolutions affecting the world economy (e.g. free-trade treaties, the progressive abandonment of bimetallism, adoption of the gold or sterling standard).

### *The beginning of mechanisation*

As well as being the first to benefit from new irrigation works, the large estates were the first agricultural sector to mechanise, with all the implications such a



transformation held for the global management of labour and production. In a countryside now divided by a regular grid of alternate canals and drains, the circulation of water also required organised labour. The industrialisation of production began at the pumping station, installed at the head of feeder canals. The pumping station oriented and commanded the spatial organisation of a large estate.<sup>14</sup> The mechanisation of irrigation was itself an early development, necessitated by the relative failure of the *sayfi* (summer canal) programme, which involved the creation of a vast network of canals (starting in the Delta) of sufficient depth to hold water during the low months of summer. Started at the beginning of the 1820s, the *sayfi* programme, which was to have permitted the transition to perennial irrigation, succeeded in converting the entire secondary network of the Delta (the old branches of the Nile and their tributaries, i.e. all the great feeder arteries) in a period of twenty years. The limits of this form of technology were quick to appear. The *sayfi* canals, whose draft was established at the lowest possible level, had a very weak slope and were more susceptible than any other canal to the silting of their beds. Upkeep on the canals demanded enormous manpower each year, with diminishing returns. Moreover, by the beginning of the reign of Khedive Isma‘il (r.1863–79), not all of the summer canals were equipped with regulating barrages which alone made them truly operational.

The Ministry of Public Works took the role of encouraging the mechanisation of irrigation, favouring the creation of pumping stations.<sup>15</sup> In 1875, ‘Ali Mubarak ordered his corps of engineers to undertake a major statistical study, the results of which are given in volume 19 of his encyclopaedic description of Egypt, the *Khitat*.<sup>16</sup> Here we find the first statistical statement of the results of this policy: 1,320 pumps in the Delta, for a total of 14,193 horsepower (Table 15.1).

**Table 15.1** The mechanisation of irrigation in 1292/1875.

Province	Number of pumps	Steam power in h.p.
Rawdat al-Bahrayn	704	6,622
Qalyubiyya	70	1,104
Sharqiyya	150	2,007
Daqahliyya	199	2,096
Buhayra	197	2,364
<b>Total</b>	<b>1,320</b>	<b>14,193</b>

**Source:** ‘Ali Mubarak, *Khitat*, XIX, *passim*.

<sup>14</sup> See the plans in Lozach and Hug (1930).

<sup>15</sup> The idea was first defended by ‘Ali Mubarak in 1872, in a polemical work which went unpublished for a number of years; cf. Mubarak (1880).

<sup>16</sup> On the connection between the *Tadbir* and the *Khitat*, see Alleaume (1993).

**Table 15.2** Owners of steam pumps in 1875.

Number	Owners	Number of pumps	Cumulative power
58	pashas	197	2,673
71	beys	118	1,183
50	khawagas	70	876
93	efendis	106	872
15	aghas	19	152
49	estates (Çiftlik)	92	1,351
1	Da'ira saniyya	59	882
12	'uhda	17	238
1	Tusun Pasha	18	658
1	Isma'il Siddiq	21	240
1	Tevhide Hanem	17	216
1	Velide Pasha	11	144

Source: 'Ali Mubarak, *Khitat*, XIX, *passim*.

The province of Rawdat al-Bahrayn, which combined Minufiyya and Gharbiyya, came at the head of the list with 704 pumps (6,622 horsepower). Major installations were to be found on certain large private estates, such as those of Tusun Pasha at Kafr al-Shaykh Hasan (near Dayrut) in the Mahmudiyya region, with a pumping capacity of 250 horsepower.<sup>17</sup>

The study also provides a list of owners with some details about them, confirming the part played by new political élites in the development of the most innovative sector of agriculture.<sup>18</sup> The upper echelons of the civil service (*pashas*, *beys* and *efendis*, in all 421 persons) owned some 33 per cent of the total cumulative horsepower in pumps (Table 15.2). Combined with the state domains (*çiftlik*s, *Da'ira saniyya*, or 'uhdas administered by the inspectorates of agriculture), they controlled 51 per cent of the total cumulative power in mechanical pumps.

For the rest of his career at the Ministry of Public Works, 'Ali Mubarak would remain an ardent supporter of mechanisation, not only in irrigation but for the clearing and dredging of canals as well.<sup>19</sup> His reasons were as political as they were strictly technical. The main problem faced by the Ministry of Public Works from the very beginning was the upkeep of the irrigation network. In the course of a half-century, the workload had increased considerably. In 1820, some

<sup>17</sup> Mubarak (1886–1889), 19, 93.

<sup>18</sup> This statistical study was expanded to give rise to a real social and economic overview which resulted in the project of the *Khitat* itself. Much of what we know of the Egypt of Mubarak's time is due to this geographical dictionary, such as notes on villages and biographies of his contemporaries. It seems to me revealing that the first large encyclopaedia of the history of modern Egypt emerged from a technical project which dealt with the transformation of irrigation and agriculture.

<sup>19</sup> Mubarak returned to the full slate of propositions advanced in the *Tadbir* in the report he submitted upon his return to power in 1881; cf. Mubarak (1881).

300,000–400,000 men were needed for three months to ensure the upkeep of the dikes and canals, or some 30 million work-days of labour per year. In 1880, twice this amount of labour was needed, in spite of technical advances which permitted a tripling of the average number of cubic metres of earth moved per man. However, these figures only represent the upkeep of the existing network, without considering the labour needs to undertake new works. Aware that such a state of affairs threatened to paralyse the ministry, 'Ali Mubarak not only promoted the mechanisation of everything possible, he also farmed out to private enterprise those works which demanded the most labour, namely the dredging of canals. To raise the finances to compensate the entrepreneurs, Mubarak resorted to a procedure by which peasants requisitioned for public works could be dispensed from service through payment of a special tax. In time, this practice made possible the abolition of the 'corvée' or forced labour. It also served to monetarise works which until then had been considered within the jurisdiction of the fiscal officers, as participation in public works had given rights to tax reductions, and it contributed to the emergence of agricultural wage labour.

Mechanisation extended beyond irrigation and canal works to include the processing of agricultural products. An agricultural export economy does not necessarily preclude certain forms of industrialisation. For export, raw cotton must undergo a number of industrial processes such as ginning and pressing. The first mechanical cotton gins were installed as early as 1820 by English firms. Their numbers multiplied with the expansion of cotton cultivation, and would form the largest industrial complexes — in 1909, one workshop in Kafr al-Zayyat held 140 cotton gins. Similarly, the numbers of pressing mills, rice-processing plants and sugar mills increased as the output of those crops expanded, and would thereafter be part of the rural landscape. All mechanical installations relied primarily on animal power. While water was used occasionally as an energy source, the weak current, wide seasonal variations and absence of contours permitting a drop in water necessitated a double installation combining a pump to ensure a steady stream through the water-mill. This no doubt explains the early shift to steam power in industrial installations, despite the expense of imported coal.

## **The Management of Labour**

### *The Formation of an Agricultural Wage Labour Force*

The problem of mobilising a labour force coincided with the creation of estates. The considerable area of these large farms required an abundant labour force on permanent duty. Yet there was no proper labour market—landless peasants tended to enter sharecropping arrangements, and the seasonal labour force had been disrupted by the large requisitions of the Ministry of Public Works. In some regions the shortage of workers (or the difficulty of attracting them) appears to

have forced estate managers to resort to servile labour. The census of 1848 may well shed light on this trend.<sup>20</sup> Preliminary findings from the census reveal that the share of slaves in the population of *ab'adiyya* estates was disproportionately large, given their restricted numbers overall. Or, in other terms, the newer the estate, the greater the proportion of slaves. We know that the practice was also in use in state domains at one time.<sup>21</sup> Traces of slave labour persisted in place-names at the end of the nineteenth century, such as Izbat al-'Abid ('the farm of the slaves') in Daqahliyya province, and Ab'adiyyat al-Ma'atiq ('the estate of the freedmen') in Buhayra.<sup>22</sup> This palliative measure was quickly abandoned. The slaves themselves were no doubt too few in number (only three per cent of the total population) and represented an onerous investment since they were needed in great numbers.

And so they turned to the Egyptian peasantry. If these farms came to be called 'distant places' in Arabic, it is because peasants were uprooted from their native lands and regrouped on the estate in housing modelled on workers' villages. The phenomenon is evocative of what historians of industry in Europe call 'the putting to work' of the industrial population. The decision to preclude daily commuting to work—from the source village to the large estate—and the settlement of the labour force at the workplace, was intended to protect the estate from the hazards of an unstable labour market given to strong seasonal variations. To offer housing along with a job might also have been a means to encourage the passage to an agricultural wage-labour force. The population of the *ab'adiyya* estates, to the extent that they appear in the census, seem to have been composed mostly of young households. This would have reflected the limits of the labour pool accessible to recruiters. The census of 1848, which paid particular attention to internal migration, demonstrates that the recruitment of workers for a large estate was conducted over a fairly large area. One part of the work-force was drawn from the source village, but the greater part came from other villages within the province (on average, 74 per cent for the *ab'adiyyas* of Middle Egypt) or from neighbouring provinces (on average, 17 per cent). Table 15.3 presents the findings of a representative sample of the census, drawn from the household level, and sheds some light on the mobilisation of one part of the agricultural labour force used by large estates.

<sup>20</sup> The 1848 census is the focus of a major study conducted by the CEDEJ in Cairo.

<sup>21</sup> A letter from Muhammad 'Ali to the director of external trade (December 1823), ordering him to consult the American government to recruit a doctor for the state domains 'because they have that type of negro [i.e. slaves] in their country and know how to cure them', attests to the working of a plantation model at some point; see Sami II, 311. On the use of slaves in plantations see also Planat (1830).

<sup>22</sup> All these villages have since changed their names, their former appellations deemed defamatory. For a history of Egyptian toponymy, see Ramzi (1968).

**Table 15.3** Distribution of the population of the *ab'adiyyas* of Middle Egypt, by origin.

Province	Number of <i>ab'adiyyas</i>	Slaves	Foreigners	Natives of other provinces	Natives of other villages in the same province	Egyptians Total	Total population
Fayyum	16	21 2%	91 8%	180 15%	921 76%	1101	1213
Minya	28	114 4%	220 7%	827 28%	1807 61%	2634	2968
Bani Suwayf	44	115 2%	266 5%	1036 19%	4080 74%	5116	5497
Bani Mazar	80	268 3%	594 6%	1320 13%	7888 78%	9208	10070
<b>Total</b>	<b>168</b>	<b>518 3%</b>	<b>1171 6%</b>	<b>3363 17%</b>	<b>14696 74%</b>	<b>18059</b>	<b>19748</b>

Source: Census of 1846–1848 (Summary of Middle Egypt).

### *The Beginnings of Social Reform in Agriculture*

Workers coming from outside the community needed to be housed. As already noted, the solution applied from quite early on was to regroup agricultural labourers in workers' villages, usually situated near the head of a feeder canal and dominating one part of the property. The larger estates could hold several such compounds. Their spatial distribution suggests a concern for human resource management and a reduction of time lost in the movement of workers. The same issue was debated extensively in Europe when the first factories were built. In this sense, the 'izbas constituted the social counterpart of the rationalisation of the countryside, through the development of the hydraulic system and the laying of a regular and orthogonal network of canals and drains. In time, some of these estates developed into hamlets ('dependencies' to use the language of the statistics office) and even independent communes. By favouring the dispersion of the rural population, large estates also played an important role in the transformation of the settlement system of modern Egypt.

The parallels with industrial manufacturing are striking at the formal level as well. 'Izbas were rural versions of the workers' compound. They ordered a geometrical and hierarchical world closed in on itself.<sup>23</sup> The first experiments were conducted on state domains, from the early 1830s, following proposals for model farms suggested by the Saint-Simoniens Olivier and Dombasles in 1835. The first plans were drawn up by the French civil engineer, Arnaud, also linked to the Saint-Simoniens, who was commissioned to build a half-dozen villages in 1846.<sup>24</sup> The development of proper rural workers' villages was only formalised in 1883 when 'Ali Mubarak drafted a legal framework which laid out in precise detail the technical prescriptions for the width of roads, sanitation, building mate-

<sup>23</sup> Numerous examples may be found in Lozach (1935).

<sup>24</sup> Arnaud (1848), 278–81.

rials and so forth.<sup>25</sup> Strongly influenced by French legislation promulgated in the aftermath of Blanqui and Villermin's social study of workers in large industry, the law was initially conceived for workers' suburbs in the cities. The preparatory file, held in the National Archives, included a project to create a workers' city in Cairo. The law appears never to have been used towards this end. On the other hand, the displacement of the social project of the working class from the city to the countryside set in motion a debate on the management of housing for the wage-labour force of large estates that would develop right through the inter-war years.<sup>26</sup>

It was also in this particular sector of agriculture that the first projects of social reform were shaped, on the social and moral well-being of the Egyptian peasantry. The debates were marked by theories of social liberalism concerning elementary education, the protection of child labour—so widespread in ginning factories—and the improvement of sanitation, which would only be developed in the first quarter of the twentieth century.<sup>27</sup> Up to the First World War, the discourse on Egyptian agriculture was more concerned with economic efficiency than social philanthropy. In direct line with the Agricultural Law promulgated in 1849, the first major treatise on modern agronomy published in Arabic (1888) assigned more duties to cultivators than rights.<sup>28</sup>

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<sup>25</sup> The text is given in the *Recueil des Documents Officiels* (1883), 1115–19. On the origins of the law, see the original dossier in the National Archives, Cairo, Correspondence of the Council of Ministers, Directory of Public Works.

<sup>26</sup> See Mosséri and Audebeau (1921).

<sup>27</sup> See Alleaume (1995).

<sup>28</sup> Atiya (1888).

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