



Re-constructing the origins of modern labor management

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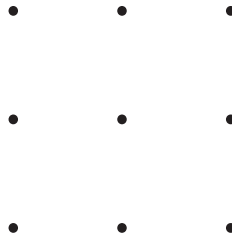
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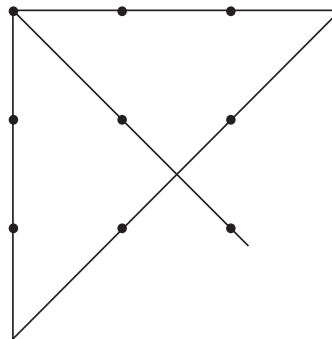
Mainstream history generally assumes that modern labor-management techniques originated in factories in Europe and North America employing ‘free’ wage laborers. The present explorative article argues, however, that important innovations were born outside the North Atlantic region (especially in the colonies), in attempts to control *unfree* workers; that some of these innovations date from long before the Industrial Revolution; and that knowledge about such innovations travelled through all parts of the globe.

1. Introduction

There is an old brain twister: take nine points as given below and connect them with *one* uninterrupted line that has no more than *four* straight segments.



This puzzle is impossible to solve as long as we stay within the grid’s confines. We can only find a solution if we transcend the grid’s boundaries:



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This old puzzle illustrates the starting point for my essay.¹ Most historians situate the origins of modern labor-management techniques in the first and second industrial revolutions in Western Europe and North America. The colonies and unfree labor represent blind spots; they are almost never part of the story. This is not to deny, that during the last few decades very important work has been done in the field of management history and that we now understand many aspects of the way in which employers have dealt with their employees much better than we used to. But despite these significant achievements, the dominant narrative remains deeply Eurocentric.²

Mainstream historiographies usually start by saying that labor management has been around for thousands of years, and that large-scale projects like the Egyptian pyramids or China's Great Wall would not have been possible without the conscious coordination of labor processes. Modern labor management, however, began in the middle of the eighteenth century, with the birth of the factories and their capitalist logic: 'unlike the builders of pyramids', the new managers 'had not only to show absolute results in terms of certain products of their efforts, but to relate them to costs, and sell them competitively'.³ Modern time discipline, technical training, and other innovations were the outcome. During the second half of the nineteenth century further important changes took place, primarily in the USA, resulting in the invention of Scientific Management, etc.

This narrow historiographical perspective broadened when critical criminologists began to pay attention to parallels between prisons and factories.⁴ Building on this trend Michel Foucault and others focused on the rise of disciplinary power in schools, psychiatric institutions, barracks, and factories, and claimed that 'the technological mutations of the apparatus of production, the division of labour and the elaboration of the disciplinary techniques sustained an ensemble of very close relations. Each makes the other possible and necessary; each provides a model for the other'.⁵ An increasing number of studies explored the homologies between monastic, military and industrial discipline.⁶

Despite such revisions and extensions, the approach to the history of labor management continued to be based on two hidden assumptions. On the one hand the model was deeply internalist: the developments in the North Atlantic region were explained through developments in the North Atlantic region; all the big innovations began in Britain, the United States, France or Germany. On the other hand, the emphasis was very much on 'free' wage labor. Few historians paid attention to unfree labor. An exception confirming the rule is Alfred Chandler who, in his great book *The Visible Hand*, of over 600 pages, devotes less than three pages to the slave plantation, arguing that, 'as the first salaried manager in the country, the plantation overseer was an important person in American economic history', though the plantation followed 'a traditional pattern' and 'had little impact on the evolution of the management of modern business enterprise'.⁷

Contrary to the mainstream I want to suggest that (1) important innovations were born outside the North Atlantic region (especially in the colonies), in attempts to control *unfree* workers; (2) that some of these innovations date from long before the Industrial Revolution; and (3) that knowledge about such innovations travelled through all parts of the globe. What I have to say is tentative though, and will need more research.⁸

2. Real subsumption

The management techniques that I will be discussing here are all about what Marx called the *real subsumption of labor under capital*. Let me explain. Somewhat simplifying, there are two possibilities. Either capitalist entrepreneurs incorporate older (pre-capitalist) labor processes into their enterprises without changing the nature of these labor processes. In this case, technologically speaking, 'the *labour process* goes on as before, with the proviso that it is now *subordinated* to capital'.⁹ This so-called *formal* subsumption of labor under capital alters, however, two aspects of the labor process: its endogenous power relations (a new 'relation of supremacy and subordination' is introduced), and the use of labor time: 'labour becomes far more continuous and intensive, and the conditions of labour are employed far more economically, since every effort is made to ensure that no more (or rather even less) *socially necessary* time is consumed in making the product'.¹⁰ The *real* subsumption of labor under capital begins, once the entrepreneur starts to reshape the work process as such, by transforming 'the nature of the labour process and its actual conditions', and by introducing new methods of production, based on 'the direct application of science and technology'.¹¹

This transition from formal to real subsumption changes labor relations fundamentally. Under formal subsumption, work remained volatile. There was, as Werner Sombart already observed, little cooperative 'restraint, discipline, cogency', since effective coordination was absent, and the 'personal lack of discipline of each separate worker' impacted on the collectivity. The work was also interrupted frequently for a number of other reasons: the workers' movement back and forth between agriculture and industry, the seasonal nature of many industrial activities, or stagnant markets.¹² Under real subsumption, the labor process becomes much more continuous, coordinated and uniform.

There are at least two important aspects of real subsumption that deserve our attention: direct supervision and standardization. The best way to explain these aspects is to travel, first, to seventeenth-century Barbados and, second, to early nineteenth-century Sydney, Australia.

First example: seventeenth-century Barbados

Barbados, the small Caribbean island (430 km²/166 square miles), was probably the most prosperous slaveholding society of the seventeenth century. Colonization had begun in 1627, when a London merchant company by the name of William Courten and Associates began the island's colonization. Investments were originally used for the cultivation of tobacco, then for cotton and indigo production, and finally, roughly from 1643, for the growing of sugar cane. By 1680, the sugar industry covered 80% of the island's arable land, employed 90% of its labor force, and accounted for about 90% of its export earnings. This so-called Sugar Revolution would dominate agricultural development in the English West Indies for several centuries.¹³

In the first instance, the planters had mainly used indentured laborers (servants), but for economic reasons they quickly shifted to the employment of African slaves. From the 1650s unskilled labor was increasingly done by slaves of African descent; later slaves took over skilled labor as well, and 'by 1690 servants had a monopoly of

only the overseer functions, most carpenters, masons, sugar boilers, and bricklayers being black slaves'.¹⁴

On seventeenth-century Barbados, the optimum size for efficient sugar production was a plantation of about 200 acres, equipped with a hundred slaves.¹⁵ This was quite a large kind of enterprise at the time. The sugar planter was simultaneously a farmer and a manufacturer.

He had to feed, clothe, house, and supervise his labor force year-round. He needed one or two mills to extract juice from the harvested cane, a boiling house to clarify and evaporate the cane juice into sugar crystals, a curing house for drying the sugar and draining out the molasses, a distillery for converting the molasses into rum, and a storehouse in the nearest port for keeping his barreled sugar until it could be shipped to England. An operation of this size required a capital investment of thousands of pounds.¹⁶

The whole process of sugar production was both labor intensive and required, for biological and ecological reasons, careful planning and supervision. A major difference between a Caribbean sugar plantation and an English farm was the size of the work force. While in England or North America animals pulled plows and harrows, in the Caribbean slaves did such work. A slave field laborer had only three tools: an ax, a hoe, and a bill. The reason for all this inefficiency was to keep the slaves busy at all times.

Cane cultivation, like most farming is seasonal. The planter needs a large labor force at crop time, but not during the slow six months of the year from July through December. Yet the seventeenth-century slave-owning planter had to keep his laborers fully occupied in the slow months, as well as in crop time, to forestall mischief and rebellion. So he put them to work in the fields with hoes instead of horse-drawn plows. The slave's appointed tasks were exceedingly monotonous and degrading, and he executed them unwillingly, unskilfully, and inefficiently.¹⁷

It was under these circumstances that modern labor management, based on the real subsumption of labor under capital, was invented: large numbers of recalcitrant laborers doing monotonous work, and by their very existence threatening the tiny white European elite. If the planters wanted to survive, close supervision of the work force was of the essence. As Robert Fogel has observed: sugar plantations created industrial discipline, 'partly because sugar production lent itself to a minute division of labor, partly because of the invention of the gang system, which provided a powerful instrument for the supervision and control of labor, and partly because of the extraordinary degree of force that planters were allowed to bring to bear on enslaved black labor'.¹⁸

In principle there are two methods to supervise workers: overseeing the effort, or overseeing the result. An example of overseeing the *result* is the so-called task system: slaves were assigned a daily task, like working a certain number of square meters, and if the task, according to the opinion of the overseer, had been orderly fulfilled, the working day was over. Overseeing results becomes easier, the more different workers work independently from each other. Conversely, the greater the interdependence of the tasks, the more difficult it becomes for the overseers to judge the individual result. In overseeing the *effort*, the overseer makes sure that the worker works hard enough. This type of overseeing presupposes permanent control, and is all the easier the simpler the tasks to be fulfilled are. If additional

qualifications and skills are necessary, it becomes more difficult for the overseer to estimate the intensity of labor.¹⁹

Overseers, or others contracted for this work, can punish or reward workers for their efforts. In principle, they have three means at their disposal: compulsion; material and immaterial rewards; and persuasion.²⁰ Compulsion includes threat with or without the application of force, including incarceration, tormenting, mutilation, sale (of slaves), dismissal (of wage workers) or even death. Such negative sanctions may indeed lead to the workers working hard, but not to them doing their work well. And negative sanctions encourage resistance and sabotage (which, in turn, are more effective the more complicated and skilled the labor process is). Compulsion is therefore most effective for very simple labor processes which are easy to oversee.²¹

The gang system was almost exclusively used for unskilled routine labor. That the gang system was very efficient has been confirmed by numerous scholars. About the precise reasons of this efficiency, the experts disagree: was it that the close supervision made the slaves less careless and hasty, thus improving the quality of their work? Was it the 'steady and intense rhythm of work' which it achieved? Or was it the effective utilization of slaves with different physical capabilities?²² From a management perspective, the introduction of effort control was a major innovation. It robbed the individual workers of almost all autonomy and made domination at the work site nearly absolute. Totalizing control and unfree labor went historically hand in hand.²³

From Barbados the method of controlling labor directly through a gang system spread to other parts of the Caribbean and to the South of the United States.²⁴ It transformed work into a machine-like process. Frederick M. Olmstedt, an observer of slave plantations in the US South, wrote in 1861:

[Slaves] are constantly and steadily driven up to their work, and the stupid, plodding, machine-like manner in which they labour is painful to witness. This was especially the case with the hoe-gangs. One of them numbered nearly two hundred hands (for the force of two plantations was working together), moving across the field in parallel lines, with a considerable degree of precision. I repeatedly rode through the lines at a canter, with other horsemen, often coming upon them suddenly, without producing the smallest change or interruption in the dogged action of the labourers, or causing one of them . . . to lift an eye from the ground. . . . a tall and powerful negro who walked to and fro in the rear of the line, frequently cracking his whip, and calling out in the surliest manner, to one and another, 'Shove your hoe, there! shove your hoe!'²⁵

Peter Coclanis seems to be justified in saying that 'agricultural units organized under the gang system more closely resembled factories in the fields, and everything that this nineteenth-century metaphor connoted'.²⁶

Second example: early-nineteenth century Sydney

But now, let us travel to Sydney. After Britain had lost its North American colonies in 1776, it needed a new outlet for its 'surplus' of prisoners. Australia, and more in particular New South Wales, became the new 'open-air prison'. Around 1800 the area counted five thousands British residents, about a third of whom were convicts. The working day of those employed by the public authorities consisted of two parts. In the morning they performed public labour and received public rations, and in the afternoon they worked on their own account, so that they could pay for their

housing, and food. Discipline was enforced with physical punishment; the maximum number of whip lashes was five hundred.²⁷ After several rebellions of the prisoners and destabilizing intra-elite conflict, London sent a new governor in 1810, called Lachlan Macquarie.

As a military man, Macquarie was familiar with formal approaches to work regulation, and in his attempt to reorganize the colony he introduced advanced labor management techniques. His main initiatives were: ‘improving convict supervision so as to tighten the span of supervisor control; reducing negative and increasing positive reward systems to improve convict motivation; rationally matching convict skills with convict employment; transforming work measurement into regular and detailed weekly reports; and in the construction of convict job descriptions’.²⁸

Macquarie’s Regulations for the Police of Sydney (1811) contained the first detailed job descriptions outlining the tasks of individual police officers – the majority of whom were convicts! – and the structure of command. ‘These job descriptions were part of the Governor’s systematic bureaucratisation of colonial administration *and* the labour process generally.’ In June 1813 he designed job descriptions for the workers at the Government Stock (keepers of cattle). Macquarie ‘was still writing and defining job instructions in his final year in 1821, when he wrote a small document of instructions for the Government Dock Yard’.²⁹

These experiments are also remarkable, because the mainstream management histories often tell us, that the first systematic non-military job descriptions were attempted by Frank and Lilian Gilbreth a century later.³⁰

3. Circulation of knowledge

Crucial labor-management techniques were thus invented under colonial, unfree circumstances, long before these methods were applied in Europe as well. Perhaps this in itself does not have to surprise us, because experiments with laborers are always easier when these laborers are extremely subjected. And the colonies had of course also been laboratories for other experiments as well.

The first systematic inventory of population, livestock, crops and landholdings was conducted by Cromwell’s adviser William Petty after the conquest of Ireland. Cadastral surveys were instituted as administrative routine by the British in India long before they came to Britain itself, where they threatened the monopoly on information enjoyed by local solicitors. It was in the colonies, too, that identity cards were first designed and issued; fingerprinting was first used in Bengal, to ensure that only certified pensioners were collecting their monthly remuneration, and collecting it only once. If these field trials were successful, the technique could be repackaged and exported back to the metropole.³¹

The question thus arises: did the same techniques (direct supervision of unskilled labor, and standardization of work processes through detailed job descriptions) develop independently in Europe, have these techniques been transferred, or was there a combination of these two possibilities? I suspect that all three variations are part of the story, but for the moment I would like to focus on the transfer of managerial techniques across continents, a very much understudied topic.

(1) We know almost nothing about the *South–North transfer*. Thus far, we can mainly speculate. According to Robin Blackburn, the notion of the ‘plant’ (i.e. the

industrial complex) is derived from the older notion of the ‘plantation’: ‘By gathering the workers under one roof, and subordinating them to one discipline, the new industrial employers were able to garner the profits of industrial co-operation and invigilation – as it were adapting the plantation model (which is why people came to speak of steel “plants”).’³² It is not entirely certain that Blackburn is right. Chronologically, his hypothesis makes sense, however. ‘Plantation’ in the sense of a large estate where cotton, tobacco, or other cash crops are grown, was first recorded in 1706 in Phillips’ *Dictionary*. ‘Plant’ – in the sense of productive complex – was mentioned for the first time in 1789.³³ But not all etymologists agree. Many of them seem to believe, that ‘plant’ is not derived from ‘plantation’, but that both ‘plant’ and ‘plantation’ are derived from the verb ‘planting’, the activity of putting something in a place. Whether this is testimony of a Eurocentric bias or not, needs to be investigated.

Similarly, Elizabeth Esch and David Roediger point out, that ‘the words “overseer”, naming the manager responsible for superintending and speeding up the labour of slaves, and “supervisor”, naming the manager performing the same roles in industry, have the same literal meaning. Similarly, the word “factories” had named the West African staging areas gathering labouring bodies for the slave-trade, and then for the production of cotton, making possible the textile “factories” of England and New England.’³⁴

More specific instances of circumstantial evidence come from the fact that the ties between elites of the colonies and the metropolises were strong. Eric Williams, in his seminal *Capitalism and Slavery*, has given detailed evidence of the intimate connections between Caribbean planters and the British bourgeoisie and aristocracy. Williams not only gives numerous examples of absentee landlords living in England in great wealth, but he also points out, that the West Indies were sending back annually hundreds of children to be educated.³⁵ It is likely, that members of the West Indian and English elites discussed methods of agricultural management, which were so important in the eighteenth century,³⁶ and that some of the ‘insights’ gained in these discussions spilled over into the ideas about factory management at the end of that century. In this context, we should also not forget, that the first British factories were often built in rural areas.

In addition, it was not unusual for enterprises in the South of the United States, before the defeat of 1865, to employ slaves and free wage earners side by side.³⁷ Transfer of labor-management techniques from unfree to free workers does not seem to be a far-fetched idea under such circumstances. And, more in general: the closely knit networks of US entrepreneurs in the nineteenth century must have stimulated exchange of managerial ideas between slaveholders and managers of free labor.

(2) *South–south transfer* of managerial knowledge (of labor, but also of agricultural techniques) clearly took place on a wide scale, both within and between colonial empires. Two mechanisms seem to have been of special importance.³⁸ First, the migration of planters and managers. The slave revolution of Saint Domingue (Haiti) 1791–1804 initiated an exodus of experts to, *inter alia*, Bengal.³⁹ Especially the abolition of slavery and the decline of the sugar plantations in the British West Indies in the 1830s and 1840s set in motion a chain of migratory movements of

planters to other parts of the colonial world. The decline of the profitability of Caribbean large-scale agriculture stimulated a transfer to Asia.⁴⁰

Sometimes they [the planters] stayed in sugar; often they tried to change their luck by changing their product – and switched to coffee. Planters from the West Indies were employed in Natal and Ceylon. Some also went to Malaya, to the sugar and coffee estates of Province Wellesley; while the difficulties of coffee in the 1850s also caused some of the Ceylon planters to go to Malaya. When Fiji opened up in the 1870s, experienced sugar planters from Mauritius and Ceylon were attracted there (though many of the Fiji planters came from Queensland in Australia). When coffee-growing in Ceylon suffered the disastrous disease which ruined thousands of acres, most of the planters turned over to tea. A few joined the booming tea industry of Assam. Finally, at the beginning of the twentieth century, the rapid expansion of rubber-growing in Malaya started.... The demand for managers and assistants attracted hundreds of British, Dutch, French and Australian planters who had worked in the British sugar colonies, or on plantations in Java, or on the plantations of Queensland and the Pacific islands.⁴¹

Naturally, global circuits like these led to the transcontinental transfer of managerial knowledge. According to historian Patrick Peebles, ‘The plantations of Ceylon were modeled directly on the slave plantations of the Caribbean.’ Extracts from P.J. Laborie’s handbook *Coffee Planter of Saint Domingo* (1798) were published in Ceylon in 1842, ‘without even changing the word “Negro”’.⁴²

Expert committees travelling back and forth between colonies, studying planting methods, workers’ housing, etc. were a second important source of knowledge transfer.⁴³ The history of these committees has yet to be written, but the Dutch example reveals that, especially from the nineteenth century, but perhaps earlier, experts were sent to Cuba, Brazil, or Ceylon, to study agricultural and labor-management techniques. Sometimes this even resulted in a kind of transcontinental debate. In 1885, for example, the expert Van Delden Laërne published a long report on Brazilian coffee cultures, in which he also discussed the problems of slave labor in these cultures. This provoked Brazilian reactions (especially from emigrés in Paris) and a response by the Dutchman.⁴⁴

What all this suggests is, that labor management techniques should not be studied in geographical isolation, but as parts of an ongoing stream of constantly revised, adapted and extended knowledge systems.⁴⁵

4. Conclusion

Modern labor management has many roots. There is no doubt, that the ‘disciplinary revolution’ in European monasteries in the fifteenth and sixteenth centuries played a role, as did the ‘military revolution’ of the seventeenth century. But in the future, we should also take into account the ‘disciplinary revolution’ in the colonial world. It is likely that different practices influenced each other.⁴⁶

It seems obvious that slave plantations and other institutions based on coercion have been important sources for modern labor management. Not only eighteenth-century factory discipline was anticipated in the colonies, but also, for example,

aspects of Scientific Management. In the 1830s, the former slave John Brown told in an interview:

My old master . . . would pick out two or more of the strongest [hands], and excite them to race at hoeing or picking. . . . He would stand with his watch in his hand, observing their movements, whilst they hoed or picked. . . . Whatever [the winner] did, within a given time, would be multiplied by a certain rule, for the day's work, and every man's task would be staked out accordingly.⁴⁷

Contemporaries in the nineteenth century frequently observed the similarities between some industrial production systems and slave plantations. In his *Journal of a Tour in Scotland in 1819* Robert Southey criticized Robert Owen's New Lanark and its treatment of the workers as 'human machines':

Owen in reality deceives himself. He is part-owner and sole Director of a large establishment, differing more in accidents than in essence from a plantation: the persons under him happen to be white, and are at liberty by law to quit his service, but while they remain in it they are as much under his absolute management as so many negro-slaves.⁴⁸

A planter in the US South hinted at the factory-like nature of the plantation, writing in 1833 that the 'plantation might be considered as a piece of machinery' whose successful operation required that 'all of its parts should be uniform and exact, and the impelling force regular and steady'.⁴⁹

Against this background the blind spot of those studying the history of labor management is remarkable. In 1973 Michel Foucault lectured in Rio de Janeiro on 'Truth and Juridical Forms'. In a critical analysis of the three aspects of 'panopticism' (supervision, control, and correction) he emphasized, as he had done in *Discipline and Punish*, the common deep structures of the prison, the factory, the psychiatric hospital, the barracks, etc. By way of illustration he described a factory employing 400 female workers in the Rhône area, in the early 1840s. The women lived in a dormitory and

had to get up every morning at 5 o'clock; at 5:50 they had to have finished washing and dressing, made their bed, and had their coffee; at 6 the compulsory work began, lasting until 8:15 in the evening, with a one-hour break for lunch; at 8:15, dinner and group prayer; retirement to the dormitories was at 9 o'clock on the hour. . . . The residents received no wages but, rather, a payment, a lump sum set at 40–80 francs per year, which was given to them only upon leaving.⁵⁰

The strong similarities between this factory and the earlier coerced labor forms in the colonies jump to the eye. Erving Goffman was justified when he, before Foucault, observed that in some total institutions 'a kind of slavery' existed.⁵¹ But neither Foucault, nor Goffman thought of drawing a parallel with plantations – which is especially remarkable for Foucault, since he was lecturing in the Latin American country that had been the last to abolish slavery, in 1888. Such a huge blind spot can remain undetected for a long time. But once we have stepped outside the grid, there is no way back.

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Notes on contributor

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Notes

1. The puzzle has of course been used before by Frank in his *Latin America*, 231.
2. See, for example, Wren’s influential book *The History of Management Thought*.
3. Pollard, *Genesis of Modern Management*, 6–7.
4. Pathbreaking was Rusche and Kirchheimer, *Punishment and Social Structure*.
5. Foucault, *Discipline and Punish*, 221.
6. For example, Melossi and Pavarini, *The Prison and the Factory*, or Treiber and Steinert, *Die Fabrikation des zuverlässigen Menschen*.
7. Chandler, *The Visible Hand*, 65–6.
8. Support for my contention comes from Cooke, ‘The Denial of Slavery’, a very stimulating essay focusing on a part of the Global North (the United States).
9. Marx, *Capital*, I, 1026.
10. *Ibid.*, 1026–7.
11. *Ibid.*, 1034–5.
12. Sombart, *Der moderne Kapitalismus*, 830–2.
13. Beckles and Downes, ‘The Economics of Transition’, 226.
14. *Ibid.*, 227.
15. Dunn, *Sugar and Slaves*, 96.
16. *Ibid.*, 189–90.
17. *Ibid.*, 200.
18. Fogel, *Without Consent or Contract*, 26.
19. Burawoy and Wright. ‘Coercion and Consent’, 81–2.
20. Tilly and Tilly, *Work Under Capitalism*, 74.
21. Fenoaltea, ‘Slavery and Supervision’, 639–40. Heavy physical punishments can, in addition, have the economic disadvantage that workers become temporarily or permanently unable to work.
22. Gray, *History of Agriculture*, vol. 1, 556; Fogel and Engerman, *Time on the Cross*, vol. 1, 204 (including quote); Toman, ‘The Gang System’. Further reflections in Morgan, ‘Task and Gang Systems’.
23. Although there was a *tendency* toward total domination and control in unfree labor, there probably always remained a marginal manoeuvring space for coerced laborers. Even in Nazi concentration camps the SS ‘needed some minimal cooperation from the prisoners in order to carry out the day’s routine of getting them to the dormitories, feeding them, and making them work’. Moore, *Injustice*, 65.
24. For the trajectory of the North American ‘plantation revolution’, see Berlin, *Generations of Captivity*, chap. 2.
25. Olmsted, *The Cotton Kingdom*, 452. Gradually, many slave plantations in several parts of the Americas made the uniform slave gang the backbone of their agricultural

- labor process. In the nineteenth century, many plantations in the USA used three kinds of work gangs on slave plantations, of which the so-called 'great gang' was the most important. 'It was under the head driver. Composed of the ablest men and women, it sometimes numbered as many as a hundred. . . . The Negroes worked in one or more parallel lines or rows. The head driver, his assistant, and perhaps a "bookkeeper" visited each row and saw that the work was done well. An animating folk song started by one of the Negroes, was sung by the gang, and was encouraged as a stimulus to labor and a relief to its monotony. Such a song, sometimes composed by the African, was sung as a solo, the gang joining in the chorus.' Pitman, 'The Organization of Slave Labor', 599–600.
26. Coclanis, 'How the Low Country Was Taken to Task', 61.
 27. Macintyre, *A Concise History of Australia*, 35 and 43.
 28. Robbins, 'Governor Macquarie's Job Descriptions', 5.
 29. *Ibid.*, 7 (quote), 10, and 13 (quote).
 30. See e.g. Gilbreth, *The Psychology of Management*.
 31. Rottenburg, 'Social and Public Experiments', 434.
 32. Blackburn, *The Making of New World Slavery*, 565.
 33. *The Barnhart Dictionary of Etymology*, 802.
 34. Esch and Roediger, 'One Symptom of Originality', 9.
 35. Williams, *Capitalism and Slavery*, chap. 4.
 36. 'Everybody in eighteenth-century England was interested in farming. Even the distinctly urban minority was acquainted with farms, fields, and trees, and since farming became more profitable as the century progressed, interest in it grew greater.' Fussell, 'The Farming Writers', 1.
 37. See, e.g. Starobin, *Industrial Slavery in the Old South*, or Whitman, 'Industrial Slavery at the Margin'.
 38. Naturally, there have been other mechanisms than the ones discussed here. Jacobs, *Merchant in Asia*, 48, mentions the case of the son of a sugar planter from Guadeloupe who during the late eighteenth century came as a military to Ceylon and was requested by the Dutch governor to found sugar plantations on the island.
 39. See, e.g. Darrac and van Schendel, *Global Blue*.
 40. Kiernan, *Lords of Human Kind*, 79.
 41. Tinker, *A New System of Slavery*, 177.
 42. Peebles, *The Plantation Tamils of Ceylon*, 55.
 43. See, e.g. for an interesting case study: Lobdell, "'Repression is not a Policy'".
 44. An English version of the report was published as Van Delden Laërne, *Brazil and Java. Reactions in Revue commerciale, financière et maritime* [Rio de Janeiro], 73 (21 June–5 July 1885); *La Liberté* [Paris], 7 July 1885; and *Le Brésil* [Paris], 94 (23 July 1885). Van Delden Laërne responded in his 'La culture du café au Brésil'.
 45. The north–south diffusion is probably documented best. In numerous cases in the past and the present engineers and skilled workers were transferred to colonial industries. The Bengal jute industry, for example, or other textile industries in the Global South made extensive use of such experts. This, of course, makes a lot of sense. Nathan Rosenberg correctly observed: 'Where the transfer of technology involved places geographically distant from one another, the reliance upon the migration of trained personnel (at least temporarily) was very strong.' Rosenberg, *Perspectives on Technology*, 154. But also metropolitan labor laws were 'reinvented' in the colonies. When slavery was formally abolished in much of the British Empire in 1834, all slaves of six years and older were redesignated as 'apprentices' who would have to work for their former owners for several extra years. The planters were obliged to provide their workers with 'Food, Clothing, Lodging, Medicine, Medical Attendance' and 'other Maintenance and Allowances.' In exchange, the apprentices were compelled to perform 'forty-five Hours per Week' of unpaid labour to their former owners. This system was later also adopted by several other countries, the last one being Cuba in 1886. The fact that the bondage of ex-slaves in the first years after abolition was called 'Apprenticeship' is no coincidence. The legal status of apprenticeship derives, of course, from the European guild system. Apprenticeship continued to exist, however, long after the guilds had been abolished; it has been

- characterized as a kind of 'industrial serfdom'. McKinlay, 'From Industrial Serf to Wage-Labourer'. See also Steinberg, 'Unfree Labor'.
46. According to Blackburn, *The Making of New World Slavery*, 335, labor management on plantations echoed 'not only shipboard life but also the related revolution in seventeenth-century military training and tactics associated with Maurits of Nassau'.
 47. Brown, *Slave Life in Georgia*, 145, 160. Compare also some observations in Aufhauser, 'Slavery and Scientific Management'.
 48. Southey, *Journal of a Tour in Scotland in 1819*, 263–4. Against this background, the attempt of a Mississippi planter to transplant Owen's practices to a slave plantation become understandable. See Hayek et al., 'Ending the Denial'.
 49. Anon., 'On the Management of Slaves', 283–4, 286. Quoted in Smith, 'Time, Slavery and Plantation Capitalism', 151.
 50. Foucault, 'Truth and Juridical Forms', 73–4.
 51. Goffman, 'On the Characteristics of Total Institutions', 10.

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