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# Engels, Marx, Malthus, and the Machine

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JOHN M. SHERWOOD

HISTORIANS HAVE BEGUN OF LATE TO NOTE the influence of Friedrich Engels in his early writings on Karl Marx and on Marxism in general. Gareth Stedman Jones and Terrell Carver have traced the origin of many of Marx's ideas to the works of his colleague.<sup>1</sup> They have shown that Engels provided part of the theoretical foundation on which Marx built his view of the capitalist exploitation of labor. What has not been noted, until now, is that Engels developed in his first work, *The Condition of the Working Class in England*, theories of technological determinism and unemployment from which Marx derived his concepts of the industrial reserve army and the inability of a capitalist economy ever to improve the conditions of workers. Engels's book, furthermore, provided the original empirical foundation for the Marxist belief in the inevitability of revolution. What has also not been noted, until now, is that Engels espoused a theory of population growth derived from the much-denounced population theory of Thomas Malthus.

Engels published *Condition of the Working Class in England* in 1845, when he was only twenty-four. Born the son of a German textile manufacturer, Engels witnessed as a youth the changes wrought by early industrialization. In 1842 he was sent to Manchester to work in a British textile firm in which his father was a partner. He arrived "at almost the worst period of what was certainly the most catastrophic economic slump of the nineteenth century."<sup>2</sup> As one contemporary noted in 1843, "Never has the distress in the manufacturing towns been so severe, so penetrating, or so prolonged, as during the last two years. Never has

I am indebted to the Social Sciences and Humanities Research Council of Canada and to the Queen's University Advisory Research Committee for financial assistance that enabled me to carry out the research on this project. For references in the essay to works by Marx and Engels, see Karl Marx and Friedrich Engels, *Collected Works*, 22 vols. (New York, 1975-) [hereafter, *CW*]. Engels's *The Condition of the Working Class in England* is in volume 4. Unless otherwise noted, all quotations from Marx and Engels were taken from this collection; citations by volume and page number appear in parentheses immediately following each quotation.

<sup>1</sup> Jones, "Engels and the History of Marxism," in Eric J. Hobsbawm, ed., *The History of Marxism*, 1 (Bloomington, Ind., 1982), 316, and "Engels and the Genesis of Marxism," *New Left Review*, 106 (1977): 102; and Carver, *Marx and Engels: The Intellectual Relationship* (Bloomington, Ind., 1983), 50. For brief comments about the state of the literature on Engels, see Cecil L. Eubanks, *Karl Marx and Friedrich Engels: An Analytical Bibliography* (2d edn., New York, 1984), xiii, xxxvii–xlii.

<sup>2</sup> Eric Hobsbawm, "Introduction," in Friedrich Engels, *The Condition of the Working Class in England: From Personal Observations and Authentic Sources* (London, 1969), 14.

employment been so scarce, subsistence so scanty, destitution and disease so rife.”<sup>3</sup> Precise statistics are difficult to obtain, but Sidney Pollard has reported that, in the manufacturing districts in 1842–43, 36 percent of the workers over the age of twelve were unemployed, 43 percent were employed part-time, and only 21 percent full-time. Some 20 percent of the population in industrial areas was considered to be destitute.<sup>4</sup> In Manchester in 1842 about one-third of the families had pawned most of their personal possessions and required private charity as well as poor law aid in order to survive.<sup>5</sup> The impressions Engels formed in Manchester of large-scale unemployment and of the degraded conditions of the workers colored his entire vision of the Industrial Revolution. For him, Manchester was the model of what was happening or would eventually happen to all workers.

Franz Mehring, Marx’s biographer, called Engels’s *Condition of the Working Class* “one of the foundation stones of socialism,” “an epoch-making work, the first great document of scientific socialism.” Lenin reported, “Everywhere Engels’s book began to be referred to as presenting the best picture of the conditions of the modern proletariat; and indeed, neither before 1845, nor after, has a single book appeared that presented an equally striking and true picture of the misery of the working class.” In 1969 the Marxist historian Eric J. Hobsbawm concluded, “Engels’ book remains today, as it was in 1845, by far the best single book on the working class of the period.” More recently, David McLellan, in fundamental agreement with Hobsbawm, wrote that “Engels’ descriptions can be taken, by and large, as probably the best piece of contemporary evidence that we have available to us.”<sup>6</sup> Nonetheless, considering the place the book occupies in the development of Marxist theory and in Marxist historiography, *Condition of the Working Class* has received remarkably little scholarly attention.

In 1958 the social historians William O. Henderson and William H. Chaloner wrote an introduction to a new translation and critical edition of Engels’s work. They criticized its many factual errors and dismissed the methodology as faulty. “Engels was a brilliant political agitator,” they said, but “he was no historian.” His book was “a brilliant political tract, . . . a furious indictment of the English middle classes.” But Henderson and Chaloner’s critique is also flawed. Their chief focus

<sup>3</sup> W. R. G., “Resources of an Increasing Population: Emigration or Manufactures,” *Westminster Review*, 40 (1843): 101–22, reprinted in J. M. Goldstrom, ed., *The Working Classes in the Victorian Age*, 2 (Westmead, Farnborough, Hants, 1973): 111.

<sup>4</sup> Pollard, *A History of Labour in Sheffield* (Liverpool, 1959), 39. Also see Pollard, “Labour in Great Britain,” in Peter Mathias and M. M. Postan, eds., *The Cambridge Economic History*, volume 7: *The Industrial Economies*, pt. 1 (Cambridge, 1978), 123–29.

<sup>5</sup> Joseph Adshad, *Distress in Manchester: Evidence of the State of the Labouring Classes in 1840–42* (London, 1842).

<sup>6</sup> Mehring, *Karl Marx* (London, 1936), 105, 107; V. I. Lenin, “Frederick Engels,” in H. Pollitt, ed., *Lenin on Britain* (London, 1941), 19; Hobsbawm, “Introduction,” 17, and “History and the ‘Dark Satanic Mills,’” in Hobsbawm, *Labouring Men* (London, 1964), 105–19; and McLellan, *Engels* (Glasgow, 1977), 30. For Soviet and East European views of Engels’s work, see N. N. Stoskova, *Friedrich Engels über die Technik* (Leipzig, 1971); L. F. Ilyichov et al., *Frederick Engels: A Biography* (Moscow, 1974), 10–11, 58–63; T. I. Oizerman, *The Making of the Marxist Philosophy* (Moscow, 1981), 334–44; Henrich Gemkow et al., *Frederick Engels: A Biography* (Dresden, 1972); Horst Ullrich, *Der junge Engels: Eine historische-biographische Studie seiner weltanschaulichen Entwicklung in den Jahren 1834–1845*, 2 vols. (Berlin, G.D.R., 1961–66); Lev A. Leont’ev, *Engels und die ökonomische Lehre des Marxismus* (Berlin, G.D.R., 1970); and Alfred Kosing and Friedrich Richter, *Philosoph der Arbeiterklasse: Friedrich Engels, 1820–1870* (Berlin, G.D.R., 1971).

was not on Engels's interpretations but on his factual accuracy and handling of materials. As Asa Briggs caustically remarked, "If Engels sometimes garbled, they niggle."<sup>7</sup>

In 1974 the American literary critic Steven Marcus devoted a lengthy study to *Condition of the Working Class*, which he considered Engels's "best and most original work." Ignoring the questions usually posed by historians concerning factual and interpretative accuracy, Marcus wanted to employ the techniques of literary analysis to discover "what makes it outstanding among works of its kind and of its time." Historians Maxine Berg, Gertrude Himmelfarb, and Karel Williams have made the most recent contributions to this intermittent debate. Berg's analysis includes an excellent chapter placing Engels's ideas within the context of the discussion of the machinery question in Britain between 1815 and 1848. Himmelfarb analyzed Engels's contribution to the development during the Industrial Revolution of a new idea of poverty. Finally, from the point of view of semiotics, Williams discussed the "misreadings" of Engels's book by Chaloner, Henderson, Hobsbawm, and Marcus and attempted an Althusserian "reading" of the text, something Althusser himself had never done.<sup>8</sup> All in all, this is a meager, and rather peculiar, scholarly harvest for "the first great document of scientific socialism." Summing up the situation, one commentator lamented, "Nobody seems to care that it is a book by Engels which has the distinction of being the first complete work in the Marxist canon."<sup>9</sup>

Raphael Samuel has called attention to the neglect of the historical phenomena that provided the basis for the development of Marx's theories—phenomena recorded by Engels in *Condition of the Working Class* that Marx employed. "The discussion of such questions," Samuel wrote, "has in recent years been left to the philosophers and the economists, each of them concerned, in their own way, with the theoretical consistency of Marx's texts rather than the industrial reality which he was attempting to dissect."<sup>10</sup> This modern academic division of labor has particularly contributed to the neglect of Engels's book, because it is an exceptionally rich and complex work that involves a consideration of philosophy, economic theory, industrial, agricultural, urban, and demographic developments, as well as the Irish Question and the evolution of the labor movement. *Condition*

<sup>7</sup> Friedrich Engels, *The Condition of the Working Class in England*, eds. Henderson and Chaloner (Oxford, 1958), xiii, xxii. Also see Chaloner and Henderson, "Friedrich Engels and the England of the 'Hungry Forties,'" in Institute of Economic Affairs, *The Long Debate on Poverty* (London, 1974), 169–86; W. O. Henderson, *The Life of Friedrich Engels*, 1 (London, 1976): 43–78; and Briggs, "The Chimney of the World," *New Statesman*, March 22, 1958, p. 379.

<sup>8</sup> Marcus, *Engels, Manchester, and the Working Class* (New York, 1974), viii, 29; Williams, *From Pauperism to Poverty* (London, 1981), 278–302; Himmelfarb, *The Idea of Poverty: England in the Early Industrial Age* (London, 1984), 270–87; and Berg, *The Machinery Question and the Making of Political Economy, 1815–1848* (London, 1980), 315–42.

<sup>9</sup> Werner J. Dannhauser, review of Marcus's *Engels, Manchester, and the Working Class*, in *Commentary*, November 1974, p. 97. Also see Fritz Nova, *Friedrich Engels: His Contributions to Political Theory* (New York, 1967), 90–92; and Jones, "Engels and the History of Marxism," 296–97.

<sup>10</sup> Samuel, "Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain," *History Workshop*, 3 (1977): 11. Also see Samuel, "British Marxist Historians, 1880–1980: Part One," *New Left Review*, 120 (1980): 21–22. For similar complaints concerning the treatment of the ideas of the classical economists, see Berg, *Machinery Question*, 3–7.

of the *Working Class* falls neatly into no one's bailiwick, and, therefore, no one has used it to examine the relationship between the development of industrialization, Engels's view of it, and the influence of his theories on the evolution of Marxist doctrines.

Most classical economists, unlike Engels, did not see technology as a principal cause of unemployment. They believed that the introduction of machinery, by reducing the cost of production, would ultimately benefit everyone. The cost of goods would come down; purchasing power would increase; production, therefore, would go up, not only in the industry in which machinery was introduced but also in every other industry. Thus, the general expansion of production in all industries would more than compensate for whatever jobs were lost by the introduction of machinery. A time lag might occur, but ultimately everyone in society would benefit from reductions in the cost of production and increases in the number of jobs.<sup>11</sup>

By the 1840s, however, there was little evidence of improvement in the standard of living for the vast majority of the English people. On the contrary, the condition of workers in the cities was strong evidence of a decline. Periodic slumps in the economic cycle, such as the one occurring at the time of Engels's arrival in England in 1842, exacerbated conditions. Economists could deal theoretically with the problem of slumps by explaining them as a necessary part of the system and claiming, with some justice, that they would inevitably be followed by periods of increased production. Economists had more difficulty, however, accounting for the lack of improvement in the general standard of living and the apparent growth in the number of unemployed and destitute. They found a ready explanation in Malthus's theory of population growth, the indispensable ideological adjunct of classical economic theory and the origin of the iron law of wages.<sup>12</sup> It enabled its supporters to deny any responsibility for the economic conditions of the time and, with good conscience, to accuse workers of being the authors of their own fate. Malthus's theory is one of the best examples in modern history of the exploitation of a presumed natural law to mask the interests of a dominant order.

In his famous *Essay on the Principle of Population* (1798), Malthus argued that "population does invariably increase when the means of subsistence increase. And, that the superior power of population is repressed, and the actual population kept equal to the means of subsistence by misery and vice. Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio." The inevitable result, he concluded, was an ever-recurring trend toward distress among the lower classes that could never be permanently alleviated. Nothing could be done to ameliorate their situation, because any improvement in their food supply would only lead them to have more children. Such considerations forced Malthus to the "disheartening reflection that the great obstacle in the way to any

<sup>11</sup> Berg, *Machinery Question*, 43–110; Alexander Gourvitch, *Survey of Economic Theory on Technological Change and Employment* (1940; reprint edn., New York, 1966), 39–48; and Mark Blaug, *Ricardian Economics* (New Haven, Conn., 1958), 64–79.

<sup>12</sup> S. Ambirajan, *Malthus and Classical Economics* (Bombay, 1959), 71; and Mark Blaug, *Economic Theory in Retrospect* (Homewood, Ill., 1968), 68.

extraordinary improvement in society is of a nature that we can never hope to overcome. The perpetual tendency in the race of man to increase beyond the means of subsistence is one of the general laws of animated nature which we can have no reason to expect to change." The principle of population, he believed, proved that "more will always be in want than can be adequately supplied." Malthus considered misery among the lower classes "an evil so deeply seated, that no human ingenuity can reach it." Only palliatives were possible, such as abolition of the poor laws, which caused an increase in the population and thereby created the very poor who had to be maintained.<sup>13</sup>

Reformers naturally attacked Malthus's doleful conclusions, which had been advanced as a refutation of the Enlightenment belief in progress. Not satisfied with his own argument, Malthus spent the rest of his life worrying it in revision after revision. He made some notable changes. First, he conceded that by means of late marriage, or what he termed "moral restraint," workers could hold down their numbers and thus improve their condition by demanding and receiving higher wages. Although this seems more hopeful, Malthus's conclusions in later editions are almost as pessimistic as those in the first. In the 1826 edition, the last one published in his lifetime, he reasserted that there was "a constant effort in the population to increase beyond the means of subsistence. This constant effort as constantly tends to subject the lower classes of society to distress, and to prevent any great permanent melioration of their condition."<sup>14</sup>

Malthus also continued to affirm his callous denial that human beings had any right to the means of subsistence. His most famous statement in this regard appeared in the second, supposedly more optimistic, edition of his essay (but was judiciously reworded in later ones): "A man who is born into a world already possessed, if he cannot get subsistence from his parents on whom he has a just demand, and if the society do[es] not want his labour, has no claim of right to the smallest portion of food, and, in fact, has no business to be where he is. At nature's mighty feast there is no vacant cover for him. She tells him to be gone, and will quickly execute her own orders, if he does not work upon the compassion of some of her guests."<sup>15</sup>

The second significant change in Malthus's thought was his recognition that in many circumstances workers were not responsible for their own poverty. As Joseph Spengler noted, Malthus perceived by the 1820s that effective demand for labor "tended to be realized only when proper moral and political conditions prevailed, when the social structure was elastic, when agricultural land holdings were adequately broken up, when commerce was active, when there were enough persons willing and able to consume more material wealth than they produced,

<sup>13</sup> T. R. Malthus, *An Essay on the Principle of Population* (1798; reprint edn., New York, 1976), 56, 20, 24, 115, 99, 39–43.

<sup>14</sup> Malthus, *An Essay on the Principle of Population* (1826; reprint edn., London, 1890), 14.

<sup>15</sup> Malthus, *An Essay on the Principle of Population* (London, 1803), 531–32. This passage was quoted by Patricia James. See James, *Population Malthus* (London, 1979), 100. For Malthus's reaffirmation of the same idea in a later edition, see the 1826 edition of *Essay on the Principle of Population*, 476–77.



and when human wants were multiplying sufficiently to overcome the inelasticity of the demand for goods and services in terms of effort.”<sup>16</sup>

Although Malthus had found, theoretically, a number of factors affecting the demand for labor, this discovery did not change his conviction that “the knowledge and prudence of the poor themselves are absolutely the *only* means by which any general and permanent improvement in their condition can be effected. They are really the arbiters of their own destiny; and what others can do for them is like the dust of the balance compared to what they can do for themselves.”<sup>17</sup> Thus, even though Malthus did hold out hope that workers could be taught to exercise moral restraint, limit the population and the competition for jobs, and improve their situation, the overwhelming impression he created over more than thirty years of public debate was uniformly pessimistic. In 1829 his fellow economist Nassau W. Senior observed that Malthus’s principle of population had been “made the stalking-horse of negligence and injustice, the favourite objection to every project for making the resources of the country more productive.” He thought that the majority of Malthus’s readers overlooked the hopeful aspects of his ideas. “They seem to believe that the expansive power of population is a source of evil incapable not only of being subdued, but even of being mitigated.”<sup>18</sup> Malthus had succeeded in persuading manufacturers, politicians, and poor law reformers that nothing could be done to remedy the conditions of workers.<sup>19</sup> They held to what could be described as vulgar Malthusianism, which affirmed that wages would always be driven down to subsistence level by population growth. The socialist leader Ferdinand Lassalle later called this theory the iron law of wages.<sup>20</sup>

Historians have uncovered little evidence that poor relief caused workers to marry earlier, created overpopulation, or led to a decline in wages. Poor relief allowances were “selective, discontinuous, and supplementary . . . to other sources of income because they were typically too small to support an individual fully.”<sup>21</sup> The kind of oscillations in the birth rate predicted by Malthus, who thought

<sup>16</sup> Spengler, “Malthus’s Total Population Theory: A Restatement and Reappraisal,” *Canadian Journal of Economics*, 11 (1945): 83–110, 234–64, esp. 99–100. Spengler’s essay is still the best analysis of Malthus’s later thought on population. Also see Samuel Hollander, “Malthus and the Post-Napoleonic Depression,” *History of Political Economy*, 1 (1969): 306–35.

<sup>17</sup> T. R. Malthus, *Principles of Political Economy* (1836; reprint edn., New York, 1968), 279, 426–30.

<sup>18</sup> Senior, *Two Lectures on Population* (London, 1829), 89, 79, reprinted in Senior, *Selected Writings on Economics* (New York, 1966).

<sup>19</sup> John R. Poynter, *Society and Pauperism: English Ideas on Poor Relief, 1795–1834* (London, 1969), 109; and Raymond G. Cowherd, *Political Economists and the English Poor Laws* (Athens, Ohio, 1977).

<sup>20</sup> Michael T. Wermel, *The Evolution of the Classical Wage Theory* (New York, 1939), 161–68.

<sup>21</sup> Williams, *From Pauperism to Poverty*, 39; Mark Blaug, “The Myth of the Old Poor Law and the Making of the New,” *Journal of Economic History*, 23 (1963): 151–84, and “The Poor Law Report Reexamined,” *Journal of Economic History*, 24 (1964): 229–45; James P. Huzel, “Malthus, the Poor Law, and Population in Early Nineteenth-Century England,” *Economic History Review*, 2d ser. [hereafter, *EHR*], 22 (1969): 430–52, and “The Demographic Impact of the Old Poor Law: More Reflections on Malthus,” *EHR*, 33 (1980): 367–81; Osamu Saito, “Labour Supply Behaviour of the Poor in the English Industrial Revolution,” *Journal of European Economic History*, 10 (1981): 633–52; J. D. Chambers, *Population, Economy, and Society in Pre-Industrial England* (London, 1972), 119–20; D. A. Baugh, “The Cost of Poor Relief in South-East England, 1790–1834,” *EHR*, 28 (1975): 50–68; and Pollard, “Labour in Great Britain.” For qualifications of the recent conclusions concerning the poor laws, see James S. Taylor, “The Mythology of the Old Poor Law,” *Journal of Economic History*, 29 (1969): 292–97; and Donald McCloskey, “New Perspectives on the Old Poor Law,” *Explorations in Economic History*, 10 (1973): 419–36.

reactions to economic distress would be immediate, did not occur.<sup>22</sup> Moreover, population began to grow long before any notable change in the poor law late in the eighteenth century. E. A. Wrigley and R. S. Schofield have attributed approximately 70 percent of the increase in population in the eighteenth century to a pattern of earlier and more widespread marriage, a result of rising real income throughout the century. Thirty percent of the growth was attributable to a decline in mortality, which occurred, in particular, at the end of the century. The pattern—a century of increase in real wages followed by a decline in mortality—is not Malthusian.<sup>23</sup>

Malthus, however, had so convinced his contemporaries of the importance of the population factor in maintaining low wages that few were willing to consider the impact of other factors, such as the introduction of machinery, on employment. At most, conceded David Ricardo, new machinery might have a temporary effect, but it was not the long-range and permanent cause of unemployment.<sup>24</sup> In contrast to Ricardo, Malthus held to the classical economists' view of machinery: "When a machine is invented, which, by saving labour, will bring goods into the market at a much cheaper rate than before, the most usual effect is such an extension of the demand for the commodity, by its being brought within the power of a much greater number of purchasers, that the value of the whole mass of goods made by the new machinery greatly exceeds their former value; and, notwithstanding the saving of labour, more hands, instead of fewer, are required in the manufacture." Malthus knew that the manufacturing system introduced greater risks of unemployment for many workers, but he dismissed the problem as merely "the unavoidable variations of manufacturing labour." He realized that in some situations savings produced by machinery might not be spent or invested, but he could see no danger of this at the time and concluded that there was "little reason to apprehend any permanent evil from the increase of machinery."<sup>25</sup>

THE POSITION OF MALTHUS, RICARDO, and most classical economists was clear: it was not the introduction of machinery that caused the surplus population and unemployment but the sexual conduct or misconduct of the workers themselves. Others, however, believed that additional factors contributed to the problem, such as Irish immigration and the dispossession of small farmers by enclosures in the eighteenth century and the expansion of large-scale farming in the nineteenth. In sum, the sources of unemployment were believed to be four: displacement of

<sup>22</sup> See the 1826 edition of *Essay on the Principle of Population*, 353.

<sup>23</sup> Wrigley and Schofield, *The Population History of England, 1541–1871* (Cambridge, Mass., 1981). Their conclusions concerning eighteenth-century population growth are more clearly expressed in two articles by Wrigley; see "The Growth of Population in Eighteenth-Century England: A Conundrum Resolved," *Past and Present*, 98 (1983): 131–50, and "Marriage, Fertility, and Population Growth in Eighteenth-Century England," in R. B. Outhwaite, ed., *Marriage and Society: Studies in the Social History of Marriage* (New York, 1981), 137–85. For the Malthusian elements, see E. A. Wrigley, "Malthus's Model of a Pre-Industrial Economy," in Jacques Dupâquier et al., eds., *Malthus Past and Present* (New York, 1983), 111–24.

<sup>24</sup> Blaug, *Ricardian Economics*, 64–74.

<sup>25</sup> See the 1826 edition of *Essay on the Principle of Population*, 356, and *Principles of Political Economy*, 352–60.



workers by machinery, increases in population caused by the poor laws or a temporary improvement in the standard of living, immigration from Ireland, and the displacement of agricultural workers. Engels was aware of all four factors, as passages in *Condition of the Working Class* demonstrate, but he believed that the ultimate cause of each was the introduction of machinery. Because he never addressed the question directly, however, his conclusions and presuppositions have to be pieced together from various sections of the book and from some of his other writings. An additional problem concerns the terminology Engels employed. A clarification of the terms that appear in *Condition of the Working Class* must precede an evaluation of the theory that the book expounds.

Engels's particular use of familiar terms has complicated the analysis of his beliefs concerning the relationship of technology to the displacement of workers. The problem begins in the preface and the opening sentence of the first chapter. In the preface, Engels claimed that he was the first writer to deal with "all the workers" and said that he "continually used the expressions working-men and proletarians, working class, propertyless class and proletariat as equivalents" (4: 303–04). Then, in the opening sentence of the first chapter, he declared, "The history of the proletariat in England begins with the second half of the last century, with the invention of the steam engine and of machinery for working cotton" (4: 307).

In spite of Engels's clear explication of his terminology, some writers have concluded that both Engels and Marx distinguished between the proletariat and the wage earner. Daniel Bell wrote, "For Marx, the proletariat was not identical with the masses of poor working people. . . . The classical proletariat consisted of factory workers whose class-consciousness was created by the conditions of their work." Even scholars who have studied the question closely have asserted that, in the term "proletariat," Marx and Engels included "only those wage earners who worked in large-scale industry powered by machinery and whose labor was necessarily cooperative in character. Thus being poor, or even a wage earner, did not make one a proletarian."<sup>26</sup>

This misunderstanding stems from Engels's opening statement that "the invention of the steam engine and of machinery for working cotton" introduced "the history of the proletariat in England." This has been interpreted as Engels's attempt to distinguish between factory workers and those who were simply poor and propertyless. But, in fact, it is an assertion that the conditions of all workers in England in the 1840s—factory workers as well as the destitute—were the result of the introduction of the machine in the eighteenth century. For Engels, the term "proletariat" meant simply those who did not own their own means of production. In a preliminary draft for *The Communist Manifesto*, he wrote, "The proletariat is that class of society which procures its means of livelihood entirely and solely from the sale of its labour and not from the profit derived from any capital; whose weal

<sup>26</sup> Daniel Bell, *The Coming of Post-Industrial Society* (New York, 1973), 148; and Timothy McCarthy, *Marx and the Proletariat* (Westport, Conn., 1978), 78. Also see Hal Draper, *Karl Marx's Theory of Revolution*, 1 (New York, 1977), 129–67.

and woe, whose life and death, whose whole existence depend on the demand for labour, hence, on the alternation of times of good and bad business, on the fluctuations resulting from unbridled competition."<sup>27</sup>

Engels has been criticized for helping create "the myth of a pre-industrial golden age of harmonious working relationships" between employers and workers.<sup>28</sup> But this is to misinterpret the nature of the real myths that Engels created: first, that a propertyless working class had not existed before the introduction of the machine—"up to 1780," he said elsewhere, "England had few proletarians" (3: 487)—and, second, that the entire British working class had become propertyless, that is, a proletariat.<sup>29</sup> Engels's view of the composition of the proletariat was determined by his understanding of the nature and extent of factory work. His contemporaries differed in their definitions of a factory: some used the term only for those establishments with a common source of power such as water or steam; others used it for any establishment where workers were brought together, including what could be called workshops, whether they used machinery or not.<sup>30</sup> Engels seemed to believe that all factories used machinery, as indicated by his inclusion of glass works among his examples, even though this industry did not have mechanical improvements until after the 1840s.<sup>31</sup> He believed, furthermore, that machine labor had "completely destroyed in all countries of the world . . . the old system of manufacture or industry founded upon manual labour" (4: 345). Given the widespread nature of the factory, and the purported destruction of manual labor, Engels naturally concluded that all workers in Britain had become proletarians. In fact, the purpose of *Condition of the Working Class* was to show how the machine had been responsible for the creation of the entire proletariat in England, that is, of all propertyless workers.

"The first proletarians," Engels said, "were connected with manufacture, were engendered by it, and accordingly, those employed in manufacture, in the working up of raw materials, will first claim our attention." The expansion of manufacture, he continued, resulted in the creation of another proletariat, the coal and metal miners. "Then, in the third place, manufacture influenced agriculture, and in the

<sup>27</sup> Friedrich Engels, "Principles of Communism," in *CW*, 6: 341. In his letters to the *Rheinische Zeitung*, Engels referred to the proletarians as "the lower strata of society." They were the "dispossessed," "a class of unpropertied, absolutely poor people, a class which lives from hand to mouth, which multiplies rapidly, and which cannot afterwards be abolished, because it can never acquire stable possession of property"; *CW*, 2: 368–69, 373–74. In 1888 Engels was still using the same definition. See his note to the 1888 edition of *The Communist Manifesto*, where he defined the proletariat as "the class of modern wage-labourers who, having no means of production of their own, are reduced to selling their labour-power in order to live." Karl Marx and Friedrich Engels, *Selected Works*, 1 (Moscow, 1955), 34 n.

<sup>28</sup> C. R. Dobson, *Masters and Journeymen: A Prehistory of Industrial Relations, 1717–1800* (London, 1980), 16.

<sup>29</sup> On the existence of propertyless workers before the Industrial Revolution, see C. Lis and H. Soly, *Poverty and Capitalism in Pre-Industrial Europe* (Brighton, Sussex, 1979). On preindustrial workers in England, see John Rule, *The Experience of Labour in Eighteenth-Century English Industry* (New York, 1981); Robert Malcolmson, *Life and Labour in England, 1700–1780* (London, 1980); T. S. Ashton, *An Economic History of England: The Eighteenth Century* (London, 1955), 201–35; and Christopher Hill, "Pottage for Freeborn Englishmen: Attitudes to Wage-Labour," in Hill, *Change and Continuity in Seventeenth-Century England* (London, 1974), 219–38.

<sup>30</sup> Hsien-T'ing Fang, *The Triumph of the Factory System in England* (1930; reprint edn., Philadelphia, 1978), 213–14 n. 42. On the confusion about the meaning of these terms, see Herman Freudenberger and Fritz Redlich, "The Industrial Development of Europe: Reality, Symbols, Images," *Kyklos*, 17 (1964): 372–401.

<sup>31</sup> Fang, *Triumph of the Factory System*, 19.

fourth, the condition of Ireland; and the fractions of the proletariat belonging to each, will find their place accordingly” (4: 324). Because he believed that the entire proletariat had been created by the machine, Engels was able to use the expressions “working-men and proletarians, working class, propertyless class and proletariat as equivalents.” For the same reason, he attributed the conditions of workers almost anywhere in the British Isles to the impact of machinery.

In *Condition of the Working Class*, Engels devoted one chapter to “Factory Hands”—primarily workers employed in the cotton industry—and another chapter to “The Remaining Branches of Industry,” including stocking weaving, lace making, cotton printing, metal working, pottery, glass making, and dress-making. The purpose of the second chapter, he wrote, was “to record how far the factory system has succeeded in forcing its way into each branch of industry” (4: 479). Occasionally he did indicate where handicraft methods had survived, but the effect of these exceptions was virtually destroyed in the conclusion, where he stated that his examination

testifies to the gradual but sure introduction of the factory system into all branches of industry, recognizable especially by the employment of women and children. I have not thought it necessary to trace in every case the progress of machinery and the superseding of men as workers. Every one who is in any degree acquainted with the nature of manufacture can fill this out for himself. . . . In all directions machinery is being introduced, and the last trace of the working-man’s independence thus destroyed. In all directions the family is being dissolved by the labour of wife and children, or inverted by the husband’s being thrown out of employment and made dependent upon them for bread; everywhere inevitable machinery bestows upon the great capitalist command of trade and of the workers with it (4: 497).

If Engels’s first mistake was to equate factory labor with machine labor, his second mistake, which compounded the problem, was to equate the employment of women and children with factory labor. Wherever he found either factory work or employment of women and children, he presupposed, without further examination, that machinery had been introduced. He seems to have been unaware that factories had developed before the introduction of steam power and that many factories used little or no machinery. Workers were also brought together in order to increase the division of labor and improve supervision of the work force.<sup>32</sup> Engels was equally unaware of the employment history of women and children. He apparently derived his ideas from Peter Gaskell, who wrote a book in 1833 about the effects of machinery in the cotton industry. Gaskell believed that in manufacturing districts “there [was] no employment to be found for adult males,” because their places had been taken by women and children.<sup>33</sup> Although

<sup>32</sup> On eighteenth-century English factories, see Ashton, *Economic History of England*, 113–17. On similar developments in the United States, see Claudia Goldin and Kenneth Sokoloff, “Women, Children, and Industrialization in the Early Republic: Evidence from the Manufacturing Censuses,” *Journal of Economic History*, 43 (1982): 742–43.

<sup>33</sup> Gaskell, *The Manufacturing Population of England* (1833; reprint edn., New York, 1972), 184–85, and *Artisans and Machinery: The Moral and Physical Conditions of the Manufacturing Population* (1836; reprint edn., New York, 1968), 172. Gaskell’s *Artisans and Machinery* is a revised and enlarged edition of his *Manufacturing Population of England*.

a modern historian has said that “no one supposes child labour to have been a creation of the factory system,”<sup>34</sup> Engels, in fact, believed precisely that. He did not know, for example, that large numbers of children in Birmingham and elsewhere were employed in workshops that used little or no machinery.<sup>35</sup> As John Hammond and Barbara Hammond noted, “Scarcely any evil associated with the factory system was entirely new in kind. In many domestic industries the hours were long, the pay was poor, and children worked from a tender age.” Marjorie Cruickshank has found “plenty of evidence” that the situation of children outside the cotton mills was much worse.<sup>36</sup>

Similarly, in her classic study of women and the Industrial Revolution, Ivy Pinchbeck wrote, “It is often assumed that the woman worker was produced by the Industrial Revolution. . . . This theory is, however, quite unsupported by facts.” Pinchbeck showed that for centuries women had been engaged in handicraft work in the home and had been expected to earn their own keep. According to Pinchbeck, the development of factories probably led to a decline in the employment of married women by eliminating some of the domestic industries in which they had traditionally worked. Thus, married women were not taking jobs away from men, nor were factories leading to a breakup of the home. Pinchbeck concluded that the Industrial Revolution caused a decline in married women’s economic position but immensely improved their domestic conditions by permitting them to devote their time to household duties and the care of children.<sup>37</sup>

Engels was led by his preconceptions about factories and the employment of women and children to magnify out of all proportion the degree to which machinery was transforming British industry. Again his ideas seem to have come from Gaskell, who wrote in 1833 that what he said about the cotton industry could be applied to all other industries. “The universal application of steam power” was destroying domestic labor in all industries, packing the population into towns, and destroying families. Engels and Gaskell were not alone in their beliefs. In 1844 William Cooke Taylor said, “Every branch of industry in England, and to some

<sup>34</sup> Rule, *Experience of Labour*, 43.

<sup>35</sup> Eric Hopkins, “Working Hours and Conditions during the Industrial Revolution: A Re-Appraisal,” *EHR*, 35 (1982): 54–55.

<sup>36</sup> Hammond and Hammond, *The Town Labourer* (1917; reprint edn., London, 1966), 31; and Cruickshank, *Children and Industry: Child Health and Welfare in North-West Textile Towns during the Nineteenth Century* (Manchester, 1981), 48. There is no authoritative monograph on the employment of children during the Industrial Revolution, but the topic has been dealt with in many books. See Ivy Pinchbeck and Margaret Hewitt, *Children in English Society*, 2 vols. (London, 1969–73), esp. 2: chap. 14; Clark Nardinelli, “Child Labor and the Factory Acts,” *Journal of Economic History*, 40 (1980): 739–55; and E. H. Hunt, *British Labour History, 1815–1914* (London, 1981), 9–17.

<sup>37</sup> Pinchbeck, *Women Workers and the Industrial Revolution, 1750–1850*, 1 (1930; reprint edn., London, 1969): 307. For an expansion of Pinchbeck’s argument, see Eric Richards, “Women in the British Economy since 1700: An Interpretation,” *History*, 59 (1974): 337–57. Richards concluded that rates of women’s participation in the labor market did not reach preindustrial levels until the middle of the twentieth century. In the United States, which lacked a large domestic industry, industrialization increased the work available for women. See Goldin and Sokoloff, “Women, Children, and Industrialization.” In some areas, however, married women were eventually displaced by machine production. See William Mulligan, “The Family and Technological Change: The Shoemakers of Lynn, Massachusetts, during the Transition from Hand to Machine Production, 1850–1880” (Ph.D. dissertation, Clark University, 1982).

extent throughout Europe and America, is daily assuming more and more definitely the aspect of factory organisation."<sup>38</sup>

Engels's notion that machinery was taking over industry appears throughout his book. "The victory of machine-work over hand-work in the chief branches of English industry . . . and the history of the latter from that time forward simply relates how the hand-workers have been driven by machinery from one position to another" (4: 312). The lower middle class, according to Engels, was being eliminated. It was "an undenied and easily explained fact that the numerous petty middle class of the 'good old times' has been annihilated by manufacture, and resolved into rich capitalists on the one hand and poor workers on the other" (4: 429). The machine's destructive capabilities became a refrain. "The history of cotton manufacture," Engels repeated, "is the story of improvements in every direction, most of which have become domesticated in the other branches of industry as well. Hand-work is superseded by machine-work almost universally, nearly all manipulations are conducted by the aid of steam or water, and every year is bringing further improvements" (4: 429).

Any reader of Engels, or of his contemporaries for that matter, would have had to conclude that machinery was invading every branch of British industry and would soon eliminate, if it had not already done so, the last vestiges of handicraft work. Studies have conclusively shown that this picture of technological change was as overdrawn as Engels's view of machinery's impact on women and children. First of all, despite his claim, Engels never dealt with "all the workers." With the exception of milliners and seamstresses, he ignored laborers in London, "by far the biggest centre of manufactures in the whole country." Their work was still dominated by artisans.<sup>39</sup> In addition, there is no mention in his book of tailors, shoemakers, locksmiths, stonemasons, printers, watchmakers, jewelers, house-painters, cabinet makers, shipbuilders, or construction and transportation workers. Moreover, even in some of the industries he discussed, machinery did not replace hand work until much later in the century.<sup>40</sup> As Engels himself recognized in an introduction to the 1892 edition of his book, many skilled tradesmen, far from being reduced to poverty, had been able to protect themselves very well during the second half of the century, forming trade unions, raising wages, and becoming an aristocracy of labor.<sup>41</sup>

Both Marx and Engels were misled by too great a reliance on classic studies of the impact of the machine. Engels wrote that the introductory section of his *Condition of the Working Class*, on the origin of the proletariat, was "chiefly" taken from Gaskell (4: 366 n.). An examination of the two authors shows that Engels was

<sup>38</sup> Gaskell, *Manufacturing Population of England*, 9–10; and Taylor, *Factories and the Factory System* (London, 1844), 111, as quoted in Fang, *Triumph of the Factory System*, 22. Also see Archibald Alison, *Principles of Population*, 1 (London, 1840): 188.

<sup>39</sup> A. E. Musson, "The British Industrial Revolution," *History*, 67 (1982): 258. Also see Musson, *The Growth of British Industry* (London, 1978), 71, 115–16; I. J. Prothero, *Artisans and Politics in Early Nineteenth-Century London* (Fokestone, Kent, 1979), 20; and David Goodway, *London Chartism, 1838–1848* (Cambridge, 1982).

<sup>40</sup> Samuel, "Workshop of the World"; Prothero, *Artisans and Politics*, 338; Eric J. Hobsbawm, *Industry and Empire* (Baltimore, 1969), 71–72; and Berg, *Machinery Question*, 20–31.

<sup>41</sup> Hobsbawm, "Introduction," 31.



also strongly influenced by Gaskell's analysis of the impact of machinery, which Gaskell predicted would in the near future replace almost all labor, agricultural as well as industrial.<sup>42</sup> In the work of Andrew Ure, the great defender of the machine and the manufacturers, Marx read that the introduction of the self-acting spinning mule had caused the disappearance of male spinners and the hiring of adolescents and children. Ure's conclusions seem to have been based partly on manufacturers' blurbs, partly on the logic of the machine, which simplified work procedures, and partly on the actual displacement of men. But William Lazonick has shown that adult males continued to dominate mule spinning until the 1960s, when the technology finally became obsolete. Far from providing, as Marx believed, the classic example of workers eliminated by the introduction of automatic machinery, the male spinners formed after 1850 "the best organized and the best-financed union in all of Britain."<sup>43</sup>

In addition to overestimating the degree to which male workers were displaced and traditional handicrafts rendered obsolete, Engels failed to realize that the general expansion in the economy was leading to an expansion in the number of workers employed in producing and distributing consumer goods and providing services. "The expanding contingent of cotton workers created increased demand for the output of shoemakers, chandlers, bricklayers and many other specialities."<sup>44</sup> Instead of abolishing the lower middle class, the economic development underway led to an expansion of the petty bourgeoisie, who were employed in new types of work—what has been called the "service revolution."<sup>45</sup> Although less dramatic, it was a change in the composition of the work force as important as that directly caused by the Industrial Revolution.

Although Engels was aware of the impetus that economic development had given to the creation of jobs in new trades and other industries, he failed to take sufficient account of it.<sup>46</sup> He also failed to note that economic development could lead to growth in traditional trades. The expansion of hand-loom weaving until 1830 is the classic example of this phenomenon.<sup>47</sup> Furthermore, the rapid

<sup>42</sup> Gaskell, *Manufacturing Population*, 340–41. Also see his *Artisans and Machinery*, 310–62.

<sup>43</sup> Lazonick, "Industrial Relations and Technical Change: The Case of the Self-Acting Mule," *Cambridge Journal of Economics*, 3 (1979): 231–32, and "Conflict and Control in the Industrial Revolution: Social Relations in the British Cotton Factory," in Robert Weible et al., eds., *Essays from the Lowell Conference on Industrial History* (Lowell, Mass., 1981), 17; and John Foster, *Class Struggle and the Industrial Revolution* (London, 1974), 83, 231.

<sup>44</sup> Robert Glen, *Urban Workers in the Industrial Revolution* (London, 1984), 94.

<sup>45</sup> Prothero, *Artisans and Politics*, 2, 23; Ashton, *Economic History of England*, 216–17; R. M. Hartwell, "The Service Revolution: The Growth of Services in Modern Economy," in Carlo M. Cipolla, ed., *The Fontana Economic History of Europe*, volume 3: *The Industrial Revolution* (Glasgow, 1973), 358–96; Neil McKendrick, "Home Demand and Economic Growth: A New View of the Role of Women and Children in the Industrial Revolution," in McKendrick, ed., *Historical Perspectives: Studies in English Thought and Society* (London, 1974), 152–210; and Musson, *Growth of British Industry*, 129–42.

<sup>46</sup> A. E. Musson, "Technological Change and Manpower," *History*, 67 (1982): 240, and "The Engineering Industry," in Roy Church, ed., *The Dynamics of Victorian Business* (London, 1980), 87–106; David S. Landes, *The Unbound Prometheus* (London, 1969), 118–19; Maxine Berg et al., "Manufacture in Town and Country before the Factory," in Berg et al., eds., *Manufacture in Town and Country before the Factory* (Cambridge, 1983), 11–12.

<sup>47</sup> Duncan Bythell, *The Handloom Weavers: A Study in the English Cotton Industry during the Industrial Revolution* (Cambridge, 1969). On other industries, see Bythell, *The Sweated Trades: Outwork in Nineteenth-Century Britain* (London, 1978); and James A. Schmiechen, *Sweated Industries and Sweated Labor: The London Clothing Trades, 1867–1914* (Champaign, Ill., 1983).

expansion in the number of workers required by industry led to a dilution of traditional labor controls and increased competition among workers, which in turn created a new political consciousness among artisans and handicraftsmen.<sup>48</sup> Engels mistakenly attributed this new political activity primarily to factory workers. Factory hands, he said, have “formed the nucleus of the Labour Movement” (4: 324). But, in looking for a new designation for labor developments in the early part of the nineteenth century, one could make a good case for describing the period as the “Age of the Artisan” rather than the “Age of the Proletariat.” As William H. Sewell, Jr., has said, all recent analyses of the working class during this time agree on one point: “Skilled artisans, not workers in the new factory industries, dominated labor movements during the first decades of industrialization.”<sup>49</sup>

Technological and economic historians recently have reinterpreted the significance of the steam engine and the spinning jenny for the Industrial Revolution. What might be called Engels’s great machine theory of history, the analogue of his contemporary Thomas Carlyle’s great man theory of history, was overthrown decades ago by Paul Mantoux and the early students of handicraft industries, who emphasized the long period of preparation required for the Industrial Revolution.<sup>50</sup> New studies by technological and economic historians have further diminished the significance of the steam engine and spinning jenny. Instead of seeing one or two major innovations as revolutionizing society, historians have emphasized the importance of the incremental changes that occurred in a broad variety of industries.<sup>51</sup> G. N. von Tunzelmann wrote that “output per head rose more through a host of small-scale changes stemming from practical experimentation at every level than through a handful of big breakthroughs.” The economic historian Donald McCloskey told us that “the industrial revolution was not the Age of Cotton or of Railways or even of Steam entirely; it was the age of improvement.”<sup>52</sup>

Nonetheless, there can be no denying the impact that the steam engine and the spinning jenny had on the contemporary imagination. The many small changes were, cumulatively, at least as important as the major ones, but the major changes—some radically new—caught public attention. In 1842 William Cooke Taylor remarked, “The steam-engine had no precedent, the spinning-jenny is without ancestry, the mule and the power-loom entered on no prepared heritage;

<sup>48</sup> Prothero, *Artisans and Politics*, 43.

<sup>49</sup> Sewell, *Work and Revolution in France* (Cambridge, 1980), 1, 285 n. 1. For a study of the factors affecting the development of class consciousness among workers, see Foster, *Class Struggle and the Industrial Revolution*.

<sup>50</sup> Mantoux, *The Industrial Revolution in the Eighteenth Century* (1928; reprint edn., New York, 1961); and Conrad Gill, *The Rise of the Irish Linen Industry* (1925; reprint edn., 1964), 3–4.

<sup>51</sup> Peter Mathias, “Skills and the Diffusion of Innovations from Britain in the Eighteenth Century,” in Mathias, *The Transformation of England* (New York, 1979), 21–44; and Berg *et al.*, “Manufacture in Town and Country,” 10. For the United States, see George Daniels, “The Big Questions in the History of American Technology,” *Technology and Culture*, 2 (1970): 10–11.

<sup>52</sup> Von Tunzelmann, “Technical Progress during the Industrial Revolution,” in Roderick Floud and Donald McCloskey, eds., *The Economic History of Britain since 1700*, 1 (Cambridge, 1981): 163; McCloskey, “The Industrial Revolution, 1780–1860: A Survey,” in *ibid.*, 118. Also see von Tunzelmann, *Steam Power and British Industrialization to 1860* (Oxford, 1978).

they sprang into sudden existence like Minerva from the brain of Jupiter.”<sup>53</sup> Because of the novelty and prominence of new machines, critics were inclined, if not driven, to attribute to them all the changes they saw. Marx and Engels were no different from their contemporaries in this regard; they were simply more logical and systematic in their evaluations. This kind of technological determinism underlay one of Marx’s most famous quotations: “The hand-mill gives you society with the feudal lord; the steam-mill, society with the industrial capitalist.”<sup>54</sup> The point here is not to debate Marx’s and Engels’s technological determinism but to pinpoint the early development of Engels’s theories. That he tended to attribute almost all change to the effects of the machine is clear from his treatment of its influence on unemployment and population growth. Moreover, his idea that the machine was responsible for unemployment is simply a corollary of his belief that it was responsible for the transformation of almost all workers into proletarians.

TO ENGELS, THE MACHINE CAUSED UNEMPLOYMENT in two ways: directly, because it was labor saving and threw large numbers of people out of work; indirectly, because by encouraging economic and technological growth the machine also allowed population growth. Machinery, he said, should be the cause of rejoicing. But “every improvement in machinery throws workers out of employment, and the greater the advance, the more numerous the unemployed; each great improvement produces, therefore, upon a number of workers the effect of a commercial crisis, creates want, wretchedness, and crime.” The jenny, for example, produced six times as much as the spinning wheel. “Thus every new jenny threw five spinners out of employment.” In like manner, he said, “whole armies” have been thrown out of work by the mule because of the increase in the number of spindles. Engels contended that, if one asked workers begging on corners or selling matches what they used to do, they would reply, “Mill hands thrown out of work by machinery” (4: 429–33).

Engels’s assumption about the consequences of the jenny and mule was typical of analysts of machine productivity at the time. Although their logic was clear, it was also false. Total employment in the cotton industry (hand workers and factory workers) continued to expand throughout most of this period. In an article for a German journal in 1844, Engels wrote, “With the aid of the machine a child of eight was now able to produce more than twenty grown men before. Six hundred thousand factory workers, of whom half are children and more than half female,

<sup>53</sup> Taylor, *Notes of a Tour in the Manufacturing Districts of Lancashire* (London, 1842), 4–6, as quoted in E. P. Thompson, *The Making of the English Working Class* (Baltimore, 1968), 208.

<sup>54</sup> Marx, *The Poverty of Philosophy*, in *CW*, 6: 166. On Marx and technological determinism, see William H. Shaw, *Marx’s Theory of History* (Stanford, 1978), and “‘The Handmill Gives You the Feudal Lord’: Marx’s Technological Determinism,” *History and Theory*, 18 (1979): 155–76; Gerald A. Cohen, *Marx’s Theory of History* (Oxford, 1978); Melvin Rader, *Marx’s Interpretation of History* (Oxford, 1979); Nathan Rosenberg, “Marx as a Student of Technology,” in Rosenberg, *Inside the Black Box* (Cambridge, 1982), 34–54; and Gary Young, “The Fundamental Contradiction of Capitalist Production,” *Philosophy and Public Affairs*, 5 (1976): 196–234. Also see the articles by Richard W. Miller, Philippe Van Parijs, and James Noble, in Terence Ball and James Farr, eds., *After Marx* (Cambridge, 1984), 59–119.

are doing the work of one hundred and fifty million people" (3: 482). The figures do not add up and should not be taken literally. But they conjure up an image of the magnitude of the unemployment that Engels was trying to convey. In Engels's view the machine, if directly responsible for creating "whole armies" of unemployed, was also indirectly responsible for an expansion of the population to the point of surplus. To those who argued that without the new system of factory production the millions of additional workers could not have found employment, Engels angrily retorted, "As though the bourgeois did not know well enough that without machinery and the expansion of industry which it produced, these 'millions' would never have been brought into the world and grown up" (4: 432–33).

Here Engels used the classic Malthusian explanation for the expansion that more than doubled the British populace from 8,900,000 in 1781 to 18,555,000 in 1841: boom periods in the economy led to a shortage of labor and a rise in wages, inducing workers to marry earlier and have more children, thereby creating a surplus of workers, whose competition reduced wages and increased unemployment. And yet Engels rivaled Marx in his denunciation of Malthus's principle, calling it "this vile, infamous theory, this hideous blasphemy against nature and mankind"—"the crudest, most barbarous theory that ever existed" (3: 437, 420). Such statements have led Marxist and non-Marxist writers, who agree on little else, to describe the contrast between Malthusian and Marxist population theories as irreconcilable. The demographer William Petersen spoke of Marx's "total rejection of Malthus" and told us that Marxists "believe that the rational control of human fertility is iniquitous." The Marxist economist Paul Sweezy summed up this consensus when he said that Marx "had no use whatever for the Malthusian theory or any of its variants."<sup>55</sup> No one, except the British Marxist Ronald Meek, has discussed Engels's ideas on population, and Meek, too, has presupposed Engels's agreement with Marx. Like most writers, Meek usually refers to "Marx and Engels" as if the names are a single proper noun.<sup>56</sup>

Yet it is clear from *Condition of the Working Class*, and other works, that Engels accepted Malthus's mechanism of population change, though not his policy

<sup>55</sup> Petersen, "Marx versus Malthus: The Symbols and the Men," in Petersen, *The Politics of Population* (London, 1964), 73–74; and Sweezy, *The Theory of Capitalist Development* (1942; reprint edn., New York, 1970), 86. Also see Herman E. Daly, "A Marxian-Malthusian View of Poverty and Development," *Population Studies*, 25 (1971): 25–37; H. L. Beales, "The Historical Context of the Essay On Population," in D. V. Glass, ed., *Introduction to Malthus* (London, 1953), 7–8; and Joel Mokyr, "Malthusian Models and Irish History," *Journal of Economic History*, 40 (1980): 160. The Belgian Marxist scholar Ernest Mandel, who tried to dissociate Engels and Marx from Malthusian ideas, said that they "never upheld" Ferdinand Lassalle's theory of the iron law of wages, which Marx said was fundamentally "the Malthusian theory of population." In fact, however, Engels, in a note to the 1885 edition of *The Poverty of Philosophy*, claimed to have been the first one to formulate the thesis that "the 'natural,' i.e., normal, price of labour power coincides with the wage minimum, i.e., with the equivalent in value of the means of subsistence absolutely indispensable for the life and procreation of the worker." Marx had accepted his analysis, Engels said, and Lassalle had subsequently taken it over from both of them. Engels, by his own account, was the father of the iron law of wages. Mandel, *The Formation of the Economic Thought of Karl Marx* (New York, 1971), 140–43; Marx and Engels, *Selected Works*, 2: 29; and Marx and Engels, *CW*, 6: 125 n.

<sup>56</sup> Meek, "Malthus—Yesterday and Today," *Science and Society*, 18 (1954): 31–39, and *Marx and Engels on Malthus* (New York, 1954).

recommendations. On occasion, Engels was explicit in stating his agreement, conceding that Malthus's law had "a good deal of truth in it under existing conditions" (4: 570). He added:

If there are too few labourers on hand, prices, i.e., wages, rise, the workers are more prosperous, marriages multiply, more children are born and more live to grow up, until a sufficient number of labourers has been secured. If there are too many on hand, prices fall, want of work, poverty, and starvation, and consequent diseases arise, and the "surplus population" is put out of the way. . . . Malthus . . . was . . . right, in his way, in asserting that there is always a "surplus population"; that there are always too many people in the world; he is wrong only when he asserts that there are more people on hand than can be maintained from the available means of subsistence. (4: 480, 566, 570–72).

Astonishingly, Engels even agreed with the conclusions of the Poor Law commissioners that the Old Poor Law was "a check upon industry, a reward for improvident marriage, a stimulus to increased population, and a means of counterbalancing the effect of an increased population upon wages; a national provision for discouraging the honest and industrious, and protecting the lazy, vicious, and improvident." Engels commented:

This description of the action of the Old Poor Law is certainly correct; relief fosters laziness and increase of "surplus population." Under present social conditions it is perfectly clear that the poor man is compelled to be an egotist, and when he can choose, living equally well in either case, he prefers doing nothing to working. But what follows therefrom? That our present social conditions are good for nothing, and not as the Malthusian Commissioners conclude, that poverty is a crime, and, as such, to be visited with heinous penalties which may serve as a warning to others (4: 572).

Engels thus adopted completely the Malthusian explanation of population growth, at least in existing society. He need not have done so. The theory was by no means universally accepted. A contemporary, George R. Porter, with whose work Engels was familiar, attributed the increase in population to a substantial decline in the death rate rather than an increase in the birth rate, which he thought, in fact, had also declined. From this Porter concluded that the quality of life must have improved.<sup>57</sup>

Even some classical economists did not totally accept Malthus's explanation. On the basis of continuous improvement in living conditions in all civilized nations, Nassau Senior argued, *pace* Malthus, that the means of subsistence naturally increase faster than the population. "If it be conceded, that there exists in the human race a tendency to rise from barbarism to civilization, and that the means of subsistence are proportionally more abundant in a civilized than in a savage state, and neither of these propositions can be denied, it must follow that there is a natural tendency in subsistence to increase in a greater ratio than population."<sup>58</sup>

<sup>57</sup> Porter, *The Progress of the Nation* (London, 1836), 18–20.

<sup>58</sup> Senior, *Two Lectures on Population*, 49. For criticisms of Malthus and alternative explanations of population growth, see James A. Field, *Essays on Population and Other Papers* (Chicago, 1931); E. P. Hutchinson, *The Population Debate: The Development of Conflicting Theories up to 1900* (Boston, 1967); Kenneth Smith, *The Malthusian Controversy* (London, 1951); and J. F. McCleary, *The Malthusian Population Theory* (London, 1953).



Although Engels never discussed the theories of Senior and Porter, he was obviously unable to accept either of their explanations for the growth of population. He could not believe that the conditions he had seen in Manchester and elsewhere constituted progress. If so, what could earlier conditions possibly have been? Rather, he wrote, Malthus's critics could not "gainsay the facts which have impelled Malthus to his principle" (3: 438). He thought that Gaskell's picture of a decline in the standard of living since the eighteenth century was closer to the facts (4: 366), and Malthus's theory was the necessary complement that helped explain that decline. Engels accepted the theory for the same reason manufacturers did: it supported his own ideological commitment. But it also confirmed his belief in the necessity of revolution, which he had held before coming to Britain. Convinced by the German communist Moses Hess that England was headed for a social revolution, Engels, from the moment he arrived, "had eyes for nothing but the signs of approaching revolution."<sup>59</sup> On November 30, 1842, a few weeks after he reached Manchester, Engels declared, "Revolution is inevitable for England" (2: 373). Malthus provided the only contemporary theory that accorded with his belief in revolution, at least until Marx developed an independent theory to account for unemployment, a variation of Engels's ideas.

Clearly Engels's endorsement of Malthus's theory of population did not include acceptance of Malthus's conclusion that little could be done to improve the conditions of workers. It was this notion and Malthus's policy recommendations, not his analysis of the mechanism of population change in a capitalist society, that Engels considered "vile" and "barbarous." In an article written at the same time as *Condition of the Working Class*, Engels explained his position. He had been persuaded by the arguments of Archibald Alison, whom he called "one of the most able economists and statisticians," that each man was capable of producing more than he needed to survive—otherwise, he would never have been able to support his children, and society would never have been raised to the current level of civilization. Alison had argued that increased application of capital and labor could enormously increase food supply.<sup>60</sup> Engels added that scientific knowledge was cumulative and increased at least as much as population. It also progressed in a sort of geometric ratio. He believed that science could add indefinitely to man's productive power; no problem was insoluble if scientific knowledge was applied to it (3: 436–40). Engels concluded that Malthus's fundamental principle concerning the ratio between the means of subsistence and population was wrong, even though his facts concerning the existing social arrangements were not. Malthus, he believed, had failed to see that surplus population was a result of surplus wealth, which created surplus productive power. Engels erred in saying Malthus had also failed to see that population presses on the means of employment, not on the means of subsistence. He conceded that Malthus's argument—

<sup>59</sup> Gustav Mayer, *Friedrich Engels* (New York, 1936), 31; Norman Levine, *The Tragic Deception: Marx contra Engels* (Santa Barbara, Calif., 1975), 123–24; and Richard N. Hunt, *The Political Ideas of Marx and Engels*, 1 (Pittsburgh, 1974): 105.

<sup>60</sup> Alison, *Principles of Population*, 33–82.

that labor power, being subject like other commodities to the law of competition, was exposed to periodic crises and fluctuations—had “merit.” For Engels, Malthus’s law, thus corrected, did hold for the capitalist system of production.

LET US RETURN NOW TO THE FOUR FACTORS (enumerated above) that were believed to be the sources of proletarian unemployment. It is now clear that the first two were one for Engels: the introduction of machinery both displaced workers and increased the population. But what of the other two possible sources of unemployment—Irish immigration and the displacement of agricultural workers? Engels thought that these, too, were ultimately reducible to the introduction of machinery. The view of Irish immigration as an exogenous factor primarily responsible for conditions in England was held by a number of writers, including three whom Engels respected—Archibald Alison, Thomas Carlyle, and Dr. James Kay, secretary of the Manchester Board of Health. Engels quoted Carlyle, for example, as saying that the Irishman was “the sorest evil this country has to strive with. In his rags and laughing savagery, he is there to undertake all work that can be done by mere strength of hand and back; for wages that will purchase him potatoes. . . . The Saxon man, if he cannot work on those terms, finds no work. . . . The uncivilised Irishman . . . drives out the Saxon native, takes possession in his room. There abides he, in his squalor and unreason, in his falsity and drunken violence, as the ready-made nucleus of degradation and disorder.”<sup>61</sup>

In contrast to Alison, Carlyle, and Kay, Engels regarded the Irish not as extraneous to but as part of the English economic system. “The rapid extension of English industry could not have taken place if England had not possessed in the numerous and impoverished population of Ireland a reserve at command” (4: 389). The repeal of the Corn Laws in England, he noted, might reduce the cost of food, stimulate production, and lead to reemployment, but only temporarily. “The ‘surplus’ population of England, and especially of Ireland, is sufficient to supply English manufacture with the necessary operatives, even if it were doubled” (4: 566). The temporary improvement in workers’ conditions would increase the population, setting the stage for the next crisis.

But what was the origin of the surplus Irish population? It is hard to see how the conditions of the Irish, either in Ireland or in England, could be the result of technological unemployment. Most of them had never been employed in a factory, and, as Engels categorically stated, they were “utterly unfit for manufacture as now conducted” (4: 560). It is also difficult to discern how the Malthusian mechanism could have affected population growth in Ireland. Supposedly a rise in the wages paid to workers, particularly mill hands, caused them to marry earlier and have more children, but the Irish were not factory laborers and thus not receiving higher wages. Alternatively, the Poor Law encouraged workers to be improvident and have children when they could not afford them, but there was no Poor Law

<sup>61</sup> Carlyle, *Chartism* (London, 1840), 28.

in Ireland until 1838. Nevertheless, Engels maintained that the introduction of the machine in England brought into play the Malthusian process of population growth in Ireland. After explaining how the introduction of machinery produced the English proletariat, he wrote, "Ireland had entered upon an orderly development only since the beginning of the 18th century. There, too, the population . . . now rapidly multiplied, especially after the advance in manufacture began to draw masses of Irishmen towards England" (4: 321). The Irish were not, according to Engels, alone responsible for poverty in England (as Alison, Carlyle, and Kay had thought), but as part of the British economy they had become participants in the Malthusian cycle set in motion by the introduction of the machine.

Displaced agricultural workers were yet another category of the unemployed whose fate Engels attributed to the introduction of the machine. The invention of the spinning jenny, he asserted, created a great demand for weavers, which increased wages and led weavers to give up their other occupation as farmers. Their land was turned over to a new class of large tenant farmers able to improve the yield of the land and undersell the yeoman farmer, who either had to take to spinning or weaving himself or become an agricultural laborer. If the spinning jenny had created the industrial proletariat, "the same machine gave rise to the agricultural proletariat" (4: 311). The patriarchal relationship between laborers and employers dissolved as workers became day laborers, solely dependent on wages for subsistence. The invention of agricultural machinery also had an adverse effect on rural employment:

The constant extension of farming on a large scale, the introduction of threshing and other machines, and the employment of women and children (which is now so general that its effects have recently been investigated by a special official commission) threw a large number of men out of employment. It is manifest, therefore, that here, too, the system of industrial production had made its entrance, by means of farming on a large-scale. . . , by the introduction of machinery, steam, and the labour of women and children" (4: 550).

Engels derived this explanation as well from Gaskell, who wrote:

Agriculture is undergoing a transition as great, and almost as remarkable, as manufacture. . . . Mechanical contrivances for lessening human labour, are sought for with as great avidity in the one case as in the other. . . . The same causes are at work, therefore, upon the two great divisions of national industry, and their effects have even been more severely felt by the agricultural than the manufacturing labourer; and have in great measure, already pauperized the whole body, and nearly extinguished the peasantry, as a moral and independent class of the community.<sup>62</sup>

Both Gaskell and Engels ignored the enclosure movement and its effect on the creation of a rural proletariat, which had been going on for centuries. The number of workers employed in agriculture had increased from about 1,350,000 in 1750 to 2,100,000 in 1851.<sup>63</sup> Historians now recognize that the proletariat began to grow

<sup>62</sup> Gaskell, *Manufacturing Population*, 339–40, 35–46.

<sup>63</sup> Eric L. Jones, ed., *Agriculture and Economic Growth in England, 1650–1815* (London, 1967), 23–24; Pollard, "Labour in Great Britain," 142; J. D. Chambers, "Enclosure and Labour Supply in the Industrial Revolution,"

long before the Industrial Revolution. Charles Tilly recently calculated that by 1750 the majority of people in Western Europe were already proletarians.<sup>64</sup>

Gaskell and Engels also greatly overestimated the impact of machinery on farming. Until the second half of the nineteenth century, the mechanical thresher was the only machine that improved agricultural productivity. Raphael Samuel concluded that "the agricultural revolution of the 18th and early 19th centuries had nothing to do with machinery."<sup>65</sup> Furthermore, the surplus of laborers clearly resulted more from the increase in population than from the displacement of male workers by women and children. In fact, women had traditionally worked in the fields, and their employment may have declined, rather than increased, during this period. The change from pastoral farming to cereal production, which required heavier labor, and the competition of surplus male farm laborers led to a displacement of women. The introduction of machinery in the second half of the century enabled landowners to dispense with the labor of women and children.<sup>66</sup>

In his analyses of unemployment among agricultural workers as well as among Irish and industrial workers, Engels compressed demographic and economic changes that took place over a period of a century or more into one monumental event, the Industrial Revolution, caused by one inexorable factor, the machine. The changes that he interpreted were caused by a variety of factors, about which historians still disagree, but Engels attributed all of them to the introduction of the steam engine and spinning jenny. It was an overwhelming vision of the world, still captivating today. Everywhere he found that the machine was the force turning industrial and agricultural workers alike into proletarians afflicted by progressive impoverishment and immiseration. Any improvement in their conditions must ultimately lead to a renewal of the Malthusian cycle.

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*EHR*, 5 (1953): 319–43. Recently, historians have qualified Chambers's conclusion that population increase rather than enclosure provided the growing labor supply for industry. They have pointed out that increased efficiency of production caused a decline in the relative number of agricultural laborers required to produce food and thus indirectly released other laborers to work in industry. Such qualifications, however, do not invalidate Chambers's main point that enclosure was not the immediate source of new industrial labor. See R. D. Baack and R. P. Thomas, "The Enclosure Movement and the Supply of Labour during the Industrial Revolution," *Journal of European Economic History*, 3 (1974): 401–23. Also see James A. Yelling, *Common Field and Enclosure in England, 1450–1850* (London, 1977), 222–27; P. K. O'Brien, "Agriculture and the Industrial Revolution," *EHR*, 30 (1977): 166–81; N. F. R. Crafts, "Enclosure and Labor Supply Revisited," *Explorations in Economic History*, 15 (1978): 172–83; and "Income Elasticities of Demand and the Release of Labour by Agriculture during the British Revolution," *Journal of European Economic History*, 9 (1980): 153–68; and Michael Turner, *Enclosures in Britain, 1750–1830* (London, 1984), 76–80.

<sup>64</sup> Tilly, "Demographic Origins of the European Proletariat," in David Levine, ed., *Proletarianization and Family History* (Orlando, Fla., 1984), 33.

<sup>65</sup> Samuel, "Village Labour," in Samuel, ed., *Village Life and Labour* (London, 1975), 17; David H. Morgan, "The Place of Harvesters in Nineteenth-Century Village Life," in *ibid.*, 29, and *Harvesters and Harvesting, 1840–1900: A Study of the Rural Proletariat* (London, 1982), 15; J. D. Chambers and G. E. Mingay, *The Agricultural Revolution, 1750–1880* (London, 1966), 2–3; E. J. T. Collins, "Harvest Technology and Labour Supply in Britain, 1790–1870," *EHR*, 22 (1969): 453–73; and John R. Walton, "Mechanization in Agriculture: A Study in the Adoption Process," in H. S. A. Fox and R. A. Butlin, eds., *Change in the Countryside: Essays on Rural England, 1500–1900* (London, 1979), 23–42.

<sup>66</sup> K. D. M. Snell, "Agricultural Seasonal Unemployment, the Standard of Living, and Women's Work in the South and East, 1690–1860," *EHR*, 34 (1981): 407–37; Eric L. Jones, *Agriculture and the Industrial Revolution* (Oxford, 1974), 101; Jennie Kitteringham, "Country Work Girls in Nineteenth-Century England," in Samuel, *Village Life and Labour*, 131–32; and Michael Roberts, "Sickles and Scythes: Women's Work and Men's Work at Harvest Time," *History Workshop*, 7 (1979): 3–28.

Since the existing system offered no hope, the only alternative for Engels was revolution. The Malthusian law of population led industrialists to believe that nothing could be done for workers, whose only salvation lay in “moral restraint.” But it also persuaded Engels that nothing could be done for workers within the existing system. Proletarians must accomplish their own salvation—not by sexual abstinence but by revolution. Engels spoke of “the deep wrath of the whole working class, from Glasgow to London, against the rich, by whom they are systematically plundered and mercilessly left to their fate, a wrath which before too long a time goes by, a time almost within the power of man to predict, must break out into a revolution in comparison with which the French Revolution, and the year 1794, will prove to have been child’s play” (4: 323). Here, too, Engels echoed Gaskell, who predicted that the displacement of men by machinery would lead to an “explosion . . . from which the imagination turns with sickening terror.”<sup>67</sup>

ENGELS’S IMPRESSIONS OF THE EFFECTS of the introduction of machinery helped create an image of the Industrial Revolution whose popular influence is evident even today: the rapid and widespread introduction of machinery led to the universal establishment of the factory system, which employed large numbers of women and children for the first time and created both massive technological unemployment and a rebellious proletariat.<sup>68</sup> Engels’s technological determinism formed the basis of Marx’s theories of the inevitability of the industrial reserve army and the inability of the capitalist economy to improve the conditions of workers. And, in *Condition of the Working Class*, Marx found the empirical foundation for his belief in the inevitability of revolution. Marx, who frequently praised Engels’s work, called it the “first precise study” of the proletarian movement.<sup>69</sup>

The Marxist economists Ronald Meek and Paul Sweezy have said that, in contrast to the classical economic theorists, Marx put “technological change at the very center of economic theory.”<sup>70</sup> Maxine Berg has shown that the classical economists were deeply concerned with the machinery question, but, insofar as Meek and Sweezy are correct, it was Engels, not Marx, who originally placed the overwhelming emphasis on technology. Marx arrived at his conclusions concerning the historic revolutionary role of the proletariat through a study of Hegel’s philosophy of history and his exposure to French socialist thought in Paris. It was “a philosophical deduction rather than a product of observation.”<sup>71</sup> At the time that Engels published *Condition of the Working Class*, Marx had little knowledge of

<sup>67</sup> Gaskell, *Manufacturing Population*, 341.

<sup>68</sup> For a useful critique of this image and its creation, see Krishan Kumar, *Prophecy and Progress: The Sociology of Industrial and Post-Industrial Society* (Baltimore, 1978).

<sup>69</sup> Marx, as quoted in Alan Gilbert, *Marx’s Politics: Communists and Citizens* (New Brunswick, N.J., 1981), 51.

<sup>70</sup> See Meek’s commentary on Sweezy’s “Karl Marx and the Industrial Revolution,” in Robert V. Eagly, ed., *Events, Ideology, and Economic Theory* (Detroit, 1968), 121.

<sup>71</sup> Leszek Kolakowski, *Main Currents of Marxism*, 1 (Oxford, 1978): 130, 373–75; and Ali Rattansi, *Marx and the Division of Labour* (London, 1982), 60–66.



technology and industrial development.<sup>72</sup> Engels developed his ideas from the classical economists and the British working-class movement. His contributions to Marxism—the emphasis on technology and the explanation of its role in creating the industrial reserve army—were theories he derived not only from Gaskell but also from the Owenite and labor critique of machinery.<sup>73</sup>

The theory of the revolutionary proletariat is generally considered to be the weakest link in the Marxist system. Meek remarked that there is an unresolved problem in Marx's idea of economic development: "Just because you bring dynamic technological change into your basic model of development, it does not necessarily follow that you thereby see the system as tending inexorably towards overthrow and ruin. Just because your model predicts impoverishment, it does not necessarily follow that you believe that the impoverished workers will eventually rise up and put an end to the system. It would seem that something more must be brought into our picture if we are to be able to give a Marxian explanation of Marx's revolutionary political conclusions."<sup>74</sup> Therefore, Meek wondered, how had Marx reached his revolutionary conclusions?

The answer to Meek's unresolved problem lies not so much in theory as in Engels's experience of the English working class, which confirmed his earlier expectations of revolution. He arrived at a disastrous time in English history, saw strikes and protests everywhere. The Irish, he believed, had infused stolid English workers with their rebellious spirit. It was Engels who provided the flesh and blood examples for Marx's primarily philosophical conception of the revolutionary proletariat.

Engels created the deterministic framework. He identified the machine as the moving force producing a surplus population and preventing the improvement of conditions, and he predicted the revolutionary outcome of the process. As Bob Rowthorn has said, "Much of Marx's more famous economic writings are really an attempt to systematize, under the influence of Ricardian thought, the earlier insights of Engels."<sup>75</sup> Over the following twenty years Marx read widely in the literature on technology and industry. He added considerable detail to the picture presented by his associate, modified some of the ideas, gave a far better historical explanation of the development of capitalism, and elaborated a more sophisticated explanation of the functioning of the system, but he did not change Engels's basic framework. That is why he could write so enthusiastically to Engels in 1863 about *Condition of the Working Class*. After comparing the book again to his notes on the

<sup>72</sup> Marx, of course, was aware of the importance of technology, but it was not one of the focal points of his analysis. For the best picture of his approach at that time, see "Economic and Philosophic Manuscripts of 1844," *CW*, 3: 229–346. He was concerned primarily with the problems of private property, the division of labor, and alienation. For the most comprehensive treatment of the evolution of Marx's and Engels's ideas before 1848, see Edward D. Gregory, "The Influence of French and English Socialism on the Early Thought of Friedrich Engels and Karl Marx, 1835–1847" (Ph.D. dissertation, Queen's University, Kingston, Ontario, 3 vols., 1978).

<sup>73</sup> Berg, *Machinery Question*, 322–23.

<sup>74</sup> See Meek's commentary in Eagly, *Events, Ideology, and Economic Theory*, 123; and Paul M. Sweezy, "Marx and the Proletariat," in Sweezy, *Modern Capitalism and Other Essays* (New York, 1972), 148.

<sup>75</sup> Rowthorn, *Capitalism, Conflict, and Inflation* (London, 1980), 227 n. 15.

following period, Marx concluded, "As far as the main points . . . are concerned, they have been confirmed down to the smallest detail by developments since 1844."<sup>76</sup>

*The Communist Manifesto*, in particular, contains Marx's adaptation of Engels's earlier ideas.<sup>77</sup> There is the same expectation that revolution is imminent, the belief that nine-tenths of the population had been proletarianized, and the conviction that the wages of the working classes were being driven down to subsistence level. Revolution would come about because of the inability of the system to provide for workers. Originally formulated to prove the necessity of private property, the Malthusian population doctrine proved to Marx and Engels the necessity for revolution. Malthus was the unwitting godfather of the revolutionary proletariat. As Marx said:

The modern labourer . . . , instead of rising with the progress of industry, sinks deeper and deeper below the conditions of existence of his own class. He becomes a pauper, and pauperism develops more rapidly than population and wealth. And here it becomes evident, that the bourgeoisie is unfit any longer to be the ruling class in society. . . . It is unfit to rule because it is incompetent to assure an existence to its slave within his slavery, because it cannot help letting him sink into such a state, that it has to feed him, instead of being fed by him. Society can no longer live under this bourgeoisie, in other words, its existence is no longer compatible with society (4: 495–96).

*The Communist Manifesto*, however, also contains Marx's introduction of a change in Engels's theory of technological determinism and the creation of the proletariat. By 1848 Engels and Marx had become aware that factories did not necessarily employ machinery. In a draft for *The Communist Manifesto*, Engels recognized the continued existence of handicrafts, which were being organized in large workshops similar to factories (4: 342). Therefore, factories were not simply the product of the machine. By 1867 Marx also knew that wage laborers had existed before the introduction of machinery, that is, that machinery had not been the original cause of the creation of the modern proletariat. In *Capital*, he noted the early development of large workshops under the control of capitalists in which the mode of production was similar to that of medieval craftsmen. Marx thought that this period extended roughly from the middle of the sixteenth century to the last third of the eighteenth. There was, however, one major difference between the medieval and modern shop—the intense division of labor in the capitalist system. It was this division of labor that ultimately led to the development of machines, because the work of individual craftsmen had been so simplified that it could be performed by machines. In his analysis, Marx shifted the emphasis from the mode of production to the social relations of production, thereby considerably attenuating Engels's technological determinism.<sup>78</sup>

<sup>76</sup> Marx to Engels, April 9, 1863, in Karl Marx and Frederick Engels, *On Britain* (Moscow, 1962), 539.

<sup>77</sup> Carver, *Marx and Engels*, 78.

<sup>78</sup> Marx, *Capital*, 3 vols. (Chicago, 1909–10), 1: 353, 369, 404. For a discussion of Marx's emphasis on social relations, see Donald MacKenzie, "Marx and the Machine," *Technology and Culture*, 25 (1984): 482–86.

The second major change Marx introduced concerned Engels's theory of unemployment. As we saw, Engels's explanation of unemployment had both a technological and a Malthusian component. Marx accepted Engels's explanation of technological unemployment. He did not so much reject the Malthusian elements—or presuppose their validity, as a number of authors have suggested—as consider them to be inadequate to explain the growth of the industrial reserve army.<sup>79</sup> Like the Malthusians, Marx believed that an increase in wages would increase the marriage and the birth rates among workers, as well as reduce the death rate among children, but he also believed that poverty itself caused the workers to have children more rapidly than they would otherwise. The factory system needed large numbers of young people as laborers, which encouraged early marriage and the production of children. The greater the poverty, the greater the need to produce children. Thus, “the absolute size of the families stands in inverse proportion to the height of wages, and therefore to the amount of means of subsistence of which the different categories of labourers dispose.” For Marx, then, population increase was a natural development, but he considered the increase to be insufficient for the insatiable needs of capital during periods of expansion. In order for capital to develop in an unfettered fashion, it needed an additional supply of laborers, which it created by extending the hours of work, by hiring women and children, by introducing capitalist methods into agriculture and displacing farm workers, and, most important, by creating technological unemployment. “Capitalist production can by no means content itself with the quantity of disposable labour-power which the natural increase of population yields. It requires for its free play an industrial reserve army independent of these natural limits.”<sup>80</sup>

Marx's contribution to Engels's theory of technological unemployment was to explain the process that prevented the expansion of capital from employing all available workers, a possibility Engels had accounted for by means of Malthus's population principle. For his new theory Marx was also indebted in part to Malthus, Ricardo, and to John Barton, a lesser-known economist who published an attack in 1817 on the classical economists' position on machinery.<sup>81</sup>

Malthus was among the first to see the inadequacies of his original formulation of the principle of population. He realized that it was not subsistence that determined population growth but the demand for labor, which was itself determined by the growth and investment of capital. Unfortunately, Malthus discovered, capitalists did not always invest or spend their profits, which caused insufficient demand, consumption, and employment. “The greatest powers of production,” he said, “are rendered comparatively useless without effectual

<sup>79</sup> Samuel M. Levin, “Marx vs. Malthus,” *Papers of the Michigan Academy of Science, Arts, and Letters*, 22 (1936): 243–58. For a slightly different version of Levin's essay, see his *Malthus and the Conduct of Life* (New York, 1967), 89–107. Also see Petersen, “Marx versus Malthus,” 72–89; and Daly, “A Marxist-Malthusian View,” 25–37.

<sup>80</sup> Marx, *Capital*, 1: 601–02, 706, 595; 3: 256, 298–99. For Marx's most extensive comments on population, see his *Grundrisse: Foundations of the Critique of Political Economy* (Baltimore, 1973), 604–10. For an attempt to turn Marx's fragmentary comments on population into a systematic theory, see Michio Morishima and George Catephores, *Value, Exploitation, and Growth* (London, 1978), chap. 5.

<sup>81</sup> Marx explicitly acknowledged his debt to Ricardo and Barton; *Capital*, 1: 692 n., 445 n.

consumption, and . . . a proper distribution of the produce is as necessary to the continued increase of wealth as the means of producing it.” But, because merchants and manufacturers spent so much of their time engaged in business, they did not have the leisure to spend all that they earned. “There must therefore be a considerable class of persons who have both the will and the power to consume more material wealth than they produce, or the mercantile classes could not continue profitably to produce so much more than they consume.”<sup>82</sup> Malthus in effect advocated a division of labor in which some classes devoted themselves to accumulation and others to consumption. He thought that landlords, clergymen, statesmen, and lawyers, as well as their servants, admirably performed this most useful and necessary function of consuming without producing.

Marx ridiculed this defense of parasitic classes<sup>83</sup> and only rarely acknowledged the debt he owed to Malthus, but he did take note of Malthus’s theory of underconsumption. In *Capital*, Marx wrote that the consuming power of society is “restricted by the tendency to accumulate, the greed for an expansion of capital. . . . To the extent that the productive power develops, it finds itself at variance with the narrow basis on which the conditions of consumption rest.” He concluded that “the last cause of all crisis remains the poverty and restricted consumption of the masses as compared to the tendency of capitalist production to develop the productive forces in such a way, that only the absolute power of consumption of the entire society would be their limit.”<sup>84</sup> One of the factors counterbalancing the tendency toward crises of underconsumption was the existence of Malthus’s unproductive consumers. In a passage that could almost have been written by Malthus himself, Marx said: “Over against this overproduction on one side must be placed overconsumption on the other, production for the sake of production must be confronted by consumption for the sake of consumption. What the industrial capitalist has to surrender to landlords, the State, creditors of the State, the church, and so forth, who only consume revenue, is an absolute diminution of his wealth, but it keeps his lust for enrichment going and thus preserves his capitalist soul.”<sup>85</sup>

Joan Robinson believed that Marx foreshadowed the modern Keynesian theory of effective demand—that is, “a low propensity to consume, caused by unequal distribution of income and inordinate thrift, is a necessary condition for rapid accumulation in the early stages of capitalism, but, when its work has been done, it impedes accumulation, by reducing the incentive to invest, and generates recurrent and ever-deepening slumps.”<sup>86</sup> Robinson’s interpretation has been questioned,<sup>87</sup> but there can be no question of Marx’s debt to Malthus for his theory of underconsumption. According to Marx, “the real contribution made by Malthus

<sup>82</sup> Malthus, *Principles of Political Economy*, 411.

<sup>83</sup> Marx, *Capital*, 1: 653.

<sup>84</sup> Marx, *Capital*, 3: 286–87.

<sup>85</sup> Marx, *Theories of Surplus Value*, 3 vols. (Moscow, 1963–71), 2: 578; 1: 283.

<sup>86</sup> Robinson, “Marx on Unemployment,” *Economic Journal*, 51 (1941): 248. Also see Robinson, *An Essay on Marxian Economics* (London, 1966), 48–51, 70–72.

<sup>87</sup> Blaug, *Economic Theory*, 16, and *Ricardian Economics*, 238–40.

. . . is that he places the main emphasis on the *unequal* exchange between capital and labour, . . . whereas Ricardo . . . leaves the origin of surplus-value obscure.”<sup>88</sup> From Malthus, Marx learned that there was no automatic mechanism to reestablish harmony between capitalists and workers. Demand could be defective with dire consequences for the workers as well as for the capitalist system. From Ricardo came the admission that there were circumstances in which machinery could lead to unemployment. To the annoyance of other classical economists, Ricardo declared, “The opinion entertained by the labouring class that the employment of machinery is frequently detrimental to their interests, is not founded on prejudice and error, but is conformable to the correct principles of political economy.”<sup>89</sup>

To the development of Marx’s thought, Malthus and Ricardo contributed concessions, recognitions of the limitations of the principles they accepted. What John Barton contributed was a new principle. Barton argued that the increase of wealth in the state did not necessarily lead to an increase in employment, as Adam Smith and others contended. He observed that a greater and greater proportion of the national wealth was being invested in fixed capital, in machinery, which reduced the proportion available for circulating capital and the amount devoted to the employment of workers and, thus, reduced opportunities for employment. It was conceivable for national wealth to be increasing—even for the absolute number of workers employed in industry to be increasing—at the same time that the relative employment possibilities for workers were decreasing.<sup>90</sup> This became the basis of Marx’s own explanation of the creation of the industrial reserve army.

Marx believed that Barton’s and Ricardo’s analyses overthrew “the whole of the absurd theory of population . . . , in particular the claptrap of the vulgar economists,” that workers should strive to reduce their numbers to counterbalance the lack of demand for labor. Barton and Ricardo had shown that “to keep down the labouring population, thus diminishing the supply of labour, and consequently, raising its price, would only accelerate the application of machinery, the conversion of circulating into fixed capital, and, hence, make the population artificially ‘redundant.’” Thus, for Marx, although population growth might contribute to the misery of workers, the restriction of population offered no relief, for higher wages only induced employers to introduce more machinery. The essential factor causing the degradation of workers was machinery, not population growth. “The labouring population,” Marx said, “always increases more rapidly than the conditions under which capital can employ this increase for its own

<sup>88</sup> Marx, *Theories of Surplus Value*, 3: 14. Also see his *Grundrisse*, 417–20. There were other writers who espoused theories of underconsumption, but Marx apparently singled out Malthus because his ideas pointed to the concept of surplus value. For several other favorable references to Malthus, see Jean Freville, *La misère et le nombre: L'épouvantail Malthusien* (Paris, 1956), 244–45. For the arguments against Marx as an underconsumptionist, see Ernest Mandel, *Marxist Economic Theory*, 1 (New York, 1970): 361–71; Joseph A. Schumpeter, *Capitalism, Socialism, and Democracy* (New York, 1950), 38–39; and Thomas Sowell, *Marxism: Philosophy and Economics* (New York, 1985), 84–95.

<sup>89</sup> Ricardo, *Principles of Political Economy* (London, 1891), 383–84. On Ricardo’s contentious revision, see Berg, *Machinery Question*, 43–74.

<sup>90</sup> Barton, *Observations on the Circumstances which Influence the Condition of the Labouring Classes of Society* (1817; reprint edn., Baltimore, 1934), 17–18.



self-expansion.” Ultimately, the workers would become rebellious and revolt. In a passage echoing Engels a quarter of a century earlier, Marx concluded that, along with the growth of capital,

grows the mass of misery, oppression, slavery, degradation, exploitation; but with this too grows the revolt of the working class, a class always increasing in numbers, and disciplined, united, organised by the very mechanism of the process of capitalist production itself. The monopoly of capital becomes a fetter upon the mode of production, which has sprung up and flourished along with, and under it. Centralisation of the means of production and socialisation of labour at last reach a point where they become incompatible with their capitalist integument. This integument is burst asunder. The knell of capitalist private property sounds. The expropriators are expropriated.<sup>91</sup>

Despite the nearly universal belief that Marx and Engels would have nothing to do with any idea derived from Malthus, both of their theories of unemployment were influenced by him. Engels incorporated the population principle of Malthus the demographer, and Marx took the doctrine of effective demand of Malthus the economist. Malthus helped confirm both Engels’s and Marx’s belief in the inevitability of revolution. Engels believed that Malthus’s theory proved the hopelessness of improvement in the condition of workers; Marx used Malthus’s idea that the capitalist system would not automatically provide effective demand for all the labor available.

Combining the ideas of Malthus, Ricardo, and Barton, Marx argued that the proportion of constant to variable capital would always increase and reduce the relative demand for labor. “The relative mass of the industrial reserve-army increases . . . with the potential energy of wealth. But the greater this reserve army in proportion to the active labour-army, the greater is the mass of a consolidated surplus-population, whose misery is in inverse ratio to its torment of labour. The more extensive, finally, the lazarus-layers of the working class, and the industrial reserve army, the greater is official pauperism. This is the absolute general law of capitalist accumulation.”<sup>92</sup>

<sup>91</sup> Marx, *Capital*, 1: 708, 836–37.

<sup>92</sup> *Ibid.*, 1: 681–89, 707. A number of authors have argued that, by the time of *Capital*, Marx no longer believed in the immiseration of the working classes. See Thomas Sowell, “Marx’s ‘Increasing Misery’ Doctrine,” *American Economic Review*, 50 (1960): 111–20; Martin Nicolaus, “Proletariat and Middle Class in Marx: Hegelian Choreography and the Capitalist Dialectic,” in James Weinstein and David W. Eakins, eds., *For a New America* (New York, 1970), 252–83; Mandel, *Marxist Economic Theory*, 150–54, and *Formation of the Economic Thought of Karl Marx*, 140–53; Roman Rosdolsky, *The Making of Marx’s ‘Capital’* (London, 1977), 282–313; Michael Harrington, *The Twilight of Capitalism* (New York, 1976), 130–34; and Isaac D. Balbus, *Marxism and Domination* (Princeton, N.J., 1982), 48–55. For restatements of the traditional view, see Ronald L. Meek, “Marx’s ‘Doctrine of Increasing Misery,’” *Science and Society*, 26 (1962): 422–41; Fred M. Gottheil, “Increasing Misery of the Proletariat: An Analysis of Marx’s Wage and Employment Theory,” *Canadian Journal of Economics and Political Science*, 28 (1962): 103–13, and *Marx’s Economic Predictions* (Evanston, Ill., 1966), 151–61; M. C. Howard and J. E. King, *The Political Economy of Marx* (Burnt Mill, Harlow, Essex, 1972), 132–35, 199–203; and Walter Eltis, *The Classical Theory of Economic Growth* (London, 1984), chap. 8. There is evidence for both views. Unfortunately, revisionists have failed to take into consideration statements such as Engels made in a note to the 1885 edition of *The Poverty of Philosophy* that “in reality wages have a constant tendency to approach the minimum”; *CW*, 6: 125 n. But, for an attempt to give a systematic account of Marx’s theory of wages, see Rowthorn, *Capitalism, Conflict, and Inflation*, 182–230.

With a single qualification, one might argue that John Maynard Keynes made the most fitting commentary on the relations between Malthus and Marxism when he wrote that Malthus and Ricardo provided “an immensely powerful foundation to justify the *status quo*, to ward off experiments, to damp enthusiasm, and to keep us all in order; and it was a just recompense that they should have thrown up Karl Marx as their misbegotten progeny.” The qualification is that Marxism was a legitimate not a “misbegotten progeny.”<sup>93</sup>

<sup>93</sup> Keynes, *The Collected Writings of John Maynard Keynes*, volume 10: *Essays in Biography* (London, 1972), 104–05.