Chapter IX

ON MACHINERY AND EMPLOYMENT

Prior to the publication of the 3rd edition of his Principles Ricardo held that the use of machinery was beneficial to the class of labourers. His belief was based on the reasoning that since machinery made it possible to produce commodities at a lower cost, it must lead to an increase in their quantity and accordingly be advantageous to all classes of society. Of course, Ricardo did not express himself to this effect in the first two editions of his Principles, but there is sufficient evidence to show that Ricardo did believe that the introduction of machinery was not injurious to the class of labourers. Thus, in his Essay on Profits, published in Feb. 1815, Ricardo alluded to "the effects of improved machinery, which it is now no longer questioned, has a decided tendency to raise the real wages of labour." In May 1817, after the publication of the first edition of his Principles, Ricardo in a letter to Barton remarked:

"It is undoubtedly true that in proportion as the accumulations of capital are realised in fixed capital such as machinery, etc. they will give less permanent employment to labour, and therefore there will be

2. Works and Correspondence of Ricardo, Vol. IV p. 35.
a less demand for men; and a less
necessity for an increase of popu-
lation, than if the accumulated capi-
tal had been employed as circulating
capital. But the quantity of goods
produced, over and above the necessary
consumption, would be precisely the
same in both cases, or rather the
balance would be in favour of the fixed
capital and not of the circulating capital,
as you suppose.” 3

It is obvious, therefore, that Ricardo believed that the
investment in fixed capital would create less demand for labour-
ers in future and hence a less necessity for an increase of
population, rather than any displacement of the labourers already
employed. Moreover, Ricardo also believed that the increased
income of the society consequent upon the investment in fixed
capital would lead to increased funds for the employment of labour.

In 1819, in a speech in Parliament, Ricardo declared that
“it could not be denied, on the whole view of the subject, that
machinery did not lessen the demand for labour.” 4

In the early 1820s when McCulloch in an article in the Edinburgh Review approved the views of Barton that machinery has adverse effects on labour, Ricardo contested this opinion. In a letter to McCulloch, he wrote:

"The employment of machinery I think never diminishes the demand for labour—it is never a cause of a fall in the price of labour, but the effect of its rise."  

In April 1820 Malthus published his Principles of Political Economy. Malthus expressed the opinion that the demand for labour is occasioned by and is proportional to the rate at which the whole value of the annual produce of the country increases. According to Malthus whether the use of machinery will have favourable or unfavourable effect on the demand for labour would depend upon the effect of machinery on the value of the annual produce. Malthus holds that the view that the demand for labour can only be in proportion to the increase of the circulating capital is true only in 'individual cases' i.e. in those cases where the substitution of fixed capital saves a great quantity of labour which cannot be employed elsewhere.

Illustrating this Malthus says:

"If, for instance, a capitalist who had employed £ 20,000 in productive labour, and had been in the habit of selling his goods for £ 22,000, making a profit of 10 per cent., were to employ the same quantity of labour in the construction of a machine worth £ 20,000, which would enable him to carry on his business without labour in future, except as his machine might require repair, it is obvious that, during the first year, the same value of the annual produce, and the same demand for labour would exist; but in the next year, as it would only be necessary for the capitalist, in order to obtain the same rate of profits as before to sell his goods for a little more than £ 2,000 instead of £ 22,000, the value of the annual produce would fall, the capital would not be increased, and the revenue would be decidedly diminished; and upon the principle that the demand for labour
depends upon the rate at which the value of the general produce, or of the capital and revenue taken together, increases, the slackness of the demand for labour under such circumstances would be adequately accounted for. 9

Malthus, however, believes that in the case of the economy as a whole, from the standpoint of the demand for labour, it is 'not necessary' to make the distinction between the circulating capital and the fixed capital. According to him the use of fixed capital—which generally increases the value of the total produce of the country—is 'extremely favourable' to the increase of circulating capital.

Malthus's advocacy of the use of machinery is, however, conditional; and the condition is that the introduction of machinery should take place 'gradually' so that there is adequate market for the increased output. Malthus believes that if the fixed capital increases at so rapid a rate that the increased supplies do not find a market then the general produce of the country will fall in value and the demand for labour will shrink. He says:

"In general, therefore, there is little to fear that the introduction of fixed capital, as it is likely to take place

In practice, will diminish the effective demand for labour; indeed it is to this source that we are to look for the main cause of its future increase. At the same time, it is certainly true, that if the substitution of the fixed capital were to take place very rapidly, and before an adequate market could be found for the more abundant supplies, derived from it and for the new products of the labour that had been thrown out of employment, a slack demand for labour and great distress among the labouring classes of society would be universally felt.\(^\text{10}\)

Malthus admits that machinery has vast enriching power and also that since the use of machinery cheapens the commodities produced, the market for the products is likely to extend. But he is convinced that whether or not the introduction of machinery will be really advantageous to society will depend upon the situation and circumstances of the period. He says:

"But it is known that facilities of production have the strongest tendency to open markets, both at home and abroad."

\(^{10}\) Ibid., pp. 239-240.
In the actual state therefore of most countries, there is little reason to apprehend any permanent evil from the introduction of machinery. The presumption always is, that it will lead to a great extension of wealth and value. But still we must allow that the pre-eminent advantages derived from the substitution for manual labour, depend upon the extension of the market for the commodities produced, and the increased stimulus given to consumption; and that, without this extension of market and increase of consumption, they must be in a great degree lost."

Within a few months of the publication of Malthus's Principles of Political Economy Ricardo began writing his Notes on Malthus. During the same period he revised his Principles of Political Economy and Taxation for the third edition. When the third edition was published in May 1821, it contained a new

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11. Ibid., p. 366.
chapter 'On Machinery' in which Ricardo, contrary to his previous opinion, declared that the introduction of machinery is harmful to the class of labourers. Accounting for the change of opinion Ricardo says:

"My mistake arose from the supposition, that whenever the net income of a society increased, its gross income would also increase; I now, however, see reason to be satisfied that the one fund, from which landlords and capitalists derive their revenue, may increase, while the other, that upon which the labouring class mainly depend, may diminish, and therefore it follows, it I am right, that the same cause which may increase the net revenue of the country, may at the same time render the population redundant, and deteriorate the condition of the labourer."13

Ricardo has illustrated a hypothetical case in which the substitution of a machine for human labour leads to shrinkage in the amount of 'circulating capital' resulting into the reduced demand for labour. He then remarks:

"In this case, then, although the net produce will not be diminished in value,

13. Ibid., p. 388."
although its power of purchasing commodities may be greatly increased, the gross produce will have fallen..., and as the power of supporting a population, and employing labour, depends always on the gross produce of a nation, and not on its net produce, population will become redundant, and the situation of the labouring classes will be that of distress and poverty. 14

Ricardo, however, also believes that the reduction in the prices of the commodities consequent upon the use of machinery will facilitate capital formation because the wants of the capitalists will be satisfied with a smaller fund and more of the net revenue will be saved. An increase of capital will lead to increased demand for labour and some of the displaced labourers will be re-employed. He says:

"As, however, the power of saving from revenue to add to capital, must depend on the efficiency of the net revenue, to satisfy the wants of the capitalist, it could not fail to follow from the

reduction in the price of commodities consequent on the introduction of machinery, that with the same wants he would have increased means of saving,—increased facility of transferring revenue into capital. But with every increase of capital he would employ more labourers; and, therefore, a portion of the people thrown out of work in the first instance, would be subsequently employed.  

Not only are some of the displaced labourers re-employed but the introduction of machinery after some time, by increasing savings to a level which is greater than of the previous gross revenue, is positively beneficial to the labourers. Ricardo writes:

"I have before observed, too, that the increase of net incomes, estimated in commodities, which is always the consequence of improved machinery, will lead to new savings and accumulations. Those savings, it must be remembered are annual, and must soon create a fund,

15. Ibid., p. 390.
much greater than the gross revenue, originally lost by the discovery of the machine, when the demand for labour will be as great as before, and the situation of the people will be still further improved by the increased savings which the increased net revenue will still enable them to make."^{16}

Ricardo has also pointed out that to illustrate how the use of machinery may lead to unemployment of labourers he had taken a strong case of a too rapid and extensive mechanisation of industry. He believes that in reality this does not happen. Moreover, in actual practice, machinery is erected out of new savings and hence it does not displace the labourers already employed. He says:

"The statements which I have made will not, I hope, lead to the inference that machinery should not be encouraged. To elucidate the principle, I have been

16. Ibid., p. 396.
supposing, that improved machinery is suddenly discovered, and extensively used; but the truth is, that these discoveries are gradual, and rather operate in determining the employment of the capital which is saved and accumulated, than in diverting capital from its actual employment." ¹⁷

Malthus, who appears to have already come to know of Ricardo's change of opinion was very glad over the development. In a letter to Mïndoni he wrote:

"You will be rather pleased to hear that he (i.e. Ricardo) has altered his opinions on the subject of the effects of machinery on the labouring classes of society, and in a new edition which he is about to publish of his work, will I believe go so far as to say that it may not only for a time, but permanently injure the labourer, although it may increase the neat produce. This is going just as far or perhaps a little farther than I should go, but the

¹⁷. Ibid., p. 395.
view which he takes of the subject is somewhat different."\(^{18}\)

McCulloch, who was originally of the view that the introduction of machinery was harmful to the class of labourers and who became a convert to Ricardo's opinion that it was not so, felt greatly astonished on Ricardo's change of opinion and in a letter to Ricardo expressed himself to this effect."\(^{19}\)

Ricardo wrote to McCulloch:

"There is on this part of the subject one expression of yours which I confess surprises me,.....You say, "little did I expect after reading your triumphant answer to the arguments of Mr. Malthus that you were so soon to shake hands with him, and give up all." Mr. Malthus does not think that I have given up anything to him, and no one who has read the chapter has supposed me to have approached one step nearer to Mr. Malthus's doctrine than I was before."\(^{20}\)

\(^{18}\) Works and Correspondence of Ricardo, Vol. VIII p. 377.
\(^{19}\) Cf. Ibid., pp. 381-382.
\(^{20}\) Ibid., p. 387.
It may be pointed out that there is no evidence as to the precise stage at which Ricardo changed his opinion. In fact the first intimation of the change is given by Malthus's letter to Sismondi of March 12, 1821, quoted above. However, Piero Sraffa has correctly pointed out that the transition stage in Ricardo's thinking on the subject is marked by the writing of the Notes on Malthus in the autumn of 1820, especially Note 149.21 As has already been noted, Malthus had asserted that from the viewpoint of demand for labour it is not necessary to make the distinction between the circulating capital and the fixed capital. Ricardo commented on this as follows:

"The effective demand for labour must depend upon the increase of that part of capital, in which the wages of labour are paid. . . . To the capitalist it can be of no importance whether his capital consists of fixed or of circulating capital, but it is of the greatest importance to those who live by the wages of labour; they are greatly interested in increasing the gross revenue, as it is on the gross revenue that must depend the means of providing for the population. If capital

21. Works and Correspondence of Ricardo, Vol. I p. 149
is realized in machinery, there will be little demand for an increased quantity of labour." 22

Note 153 reads:

"It might be possible to do almost all the work performed by men with horses, would the substitution of horses in such case, even if attended with a greater produce, be advantageous to the working classes, would it not on the contrary very materially diminish the demand for labour?" 23

However, since the Notes on Malthus were read by McCulloh before the publication of the 3rd edition of Ricardo's Principles 24 and since McCulloh was taken entirely by surprise on discovering Ricardo's change of opinion in the third edition it is difficult to point out the precise stage of Ricardo's change of opinion.*

23. Ibid., p. 239.

* Moreover, Ricardo in Note 243 speaks of the 'unmixed advantages' of the inventions to save labour. Cf. Works and Correspondence of Ricardo, Vol. II p. 365.
Oswald Clair has suggested that Note No. 149 must not have been among those sent to McCulloch for perusal and that this note must have been inserted at a later date. However, he has ignored to take note of Note No. 153 which, in fact, appears to be closer to Ricardo's new opinion.

It may be pointed out that although in the systems of both Malthus and Ricardo the introduction of machinery, under certain circumstances, leads to unemployment of labourers, yet the explanation of the two is entirely different. According to Malthus's analysis, the use of machinery may increase the production to such an extent that there may not be an adequate market for the products and this may lead to general depression and the unemployment of both capital and labour. In the Ricardian system, on the other hand, it is not the insufficiency of demand or the general overproduction but the labour-saving character of the technological progress that results into the unemployment of labour. One can say that whereas Malthusian schema gives rise to Keynesian involuntary unemployment Ricardian system gives rise to non-Keynesian, technological unemployment. Moreover, Ricardo though he recognised the possibility of the technological unemployment in the short-run, was optimistic about the demand for labour as technology proceeded in the long-run. He has laid down that the

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greater productivity of improved machinery increases the annual savings funds so that after a period of time employment would be higher than had the improved machinery not been introduced. Hence for Ricardo in the long-run (which is his chief concern) machinery and labour are complementary.