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## **On the economy of machinery and manufactures**

**Babbage, Charles**

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Chap. XIII. Distinction between making and manufacturing.

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## SECTION II.

### ON THE DOMESTIC AND POLITICAL ECONOMY OF MANUFACTURES.

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#### CHAP. XIII.

##### DISTINCTION BETWEEN MAKING AND MANUFACTURING.

\*(131.) THE *economical principles* which regulate the application of machinery, and which govern the interior of all our great factories, are quite as essential to the prosperity of a great commercial country as are those mechanical principles, the operations of which have been illustrated in the preceding section.

The first object of every person who attempts to make any article of consumption, is, or ought to be, to produce it in a perfect form; but in order to secure to himself the greatest and most permanent profit, he must endeavour by every means in his power to render the new luxury or want which he has created, cheap to those who consume it. The larger number of purchasers thus obtained will, in some measure, secure him from the caprices of fashion, whilst it furnishes a far greater amount of profit, although the contribution of each individual is diminished. The importance of collecting data, for the purpose of enabling the manufacturer to ascertain how many

additional customers he will acquire by a given reduction in the price of the article he makes, cannot be too strongly pressed upon the attention of those who employ themselves in statistical inquiries. In some ranks of society, any diminution of price in a commodity will bring forward but few additional customers; whilst, in other classes, a very small reduction will so enlarge the sale as to yield a considerable increase of profit.

(132.) If, therefore, the *maker* of an article wish to become a *manufacturer* in the more extended sense of the term, he must attend to other principles besides those mechanical ones on which the successful execution of his work depends; and he must carefully arrange the whole system of his factory in such a manner, that the article he sells to the public may be produced at as small a cost as possible. Should he not be actuated at first by motives so remote, he will, in every highly civilized country, be compelled, by the powerful stimulus of competition, to attend to the principles of the domestic economy of manufactures. At every reduction in price of the commodity he makes, he will be driven to seek compensation in a saving of expense in some of the processes; and his ingenuity will be sharpened in this inquiry by the hope of being able in his turn to undersell his rivals. The benefit of the improvements thus engendered is, for a short time, confined to those from whose ingenuity they derived their origin; but when a sufficient experience has proved their value, they become generally adopted, until in their turn they are superseded by other more economical methods.

(133.) There exists a considerable difference between the terms *making* and *manufacturing*. The former refers to the production of a *small*, the latter to that of a *very large number of individuals*; and the difference is well illustrated in the evidence given before the Committee of the House of Commons on the Export of Tools and Machinery. On that occasion Mr. Maudslay stated, that he had been applied to by the Navy Board to make iron tanks for ships, and that he was rather unwilling to do so, as he considered it to be out of his line of business; however, he undertook to make one as a trial. The holes for the rivets were punched by hand-punching with presses, and the 1680 holes which each tank required cost seven shillings. The Navy Board, who required a large number, proposed that he should supply forty tanks a week for many months. The magnitude of the order made it worth while to commence *manufacturer*, and to make tools for the express business. Mr. Maudslay therefore offered, if the Board would give him an order for two thousand tanks, to supply them at the rate of eighty per week. The order was given: he made tools, by which the expense of punching the rivet-holes of each tank was reduced from seven shillings to ninepence; he supplied ninety-eight tanks a week for six months, and the price charged for each was reduced from seventeen pounds to fifteen.