There is a famous detective story in which the clue is the dog that did not bark. An apparent break-in has resulted in a murder, but to the dog there was no intruder; the entry was nothing out of the ordinary, thus suggesting an inside job! The history of economic thought presents us with similar clues in the multiplier that was not there, in the work of Ricardo and Marx and, indeed, other nineteenth-century economists. Why, when they had developed all the analytical tools necessary, did they fail to point to the dynamic processes of the multiplier? The problem is particularly striking since the direct and indirect labour embodied in a good is the employment multiplier for that good, and the set of labour values for the economy as a whole is the matrix employment multiplier for the economy. Why did Ricardo and Marx not take the comparatively simple step of examining the dynamic process of employment adjusting through the multiplier?

The dog did not bark because nothing unusual occurred; perhaps Ricardo and Marx did not define a multiplier because no such processes took place in their time when investment or exports varied. (Of course, such variations had effects, but they may have been different or irregular, depending on unpredictable events, such as bankruptcies.) This may be an important clue to the nature of early capitalism and, even more significantly, to the way capitalism has developed. Dynamic processes depend in part on the flexibility of production, which in turn rests on the kind of technology in use. And technology, in turn, developed as a result of learning induced by the characteristic problems encountered in operating the initial production system.

An idealized contrast of early and later capitalism can be sketched: early capitalism consisted largely of family firms and family farms operating production technologies that depended on the presence and cooperation of skilled workers, working together. Such an economy tended to run at full...
capacity, unless seriously disrupted by business failures; product markets tended to clear through price adjustments. Employment remained fixed in the face of fluctuations in sales (short of the bankruptcy level); when output varied it was through changes in the productivity of labour. But this system created strong incentives to change the methods of production, in particular to increase the size of operations and to establish greater control over current costs, especially labour. Towards the end of the nineteenth century the methods of mass production were widely introduced, as we shall see, partly in response to pressures created by problems in the working of the earlier technology. Besides lowering costs, the new methods provided a desired degree of flexibility; but their successful adoption depended on the simultaneous emergence of adequate finance and a mass market, since these new methods required large outlays of capital. The change to the new methods can be called ‘transformational growth’ for, once adopted, these innovations in technology changed the way the system worked, replacing price with multiplier adjustments and full utilization with normal excess capacity.¹

**FIXED EMPLOYMENT TECHNOLOGY COMPARED TO MASS PRODUCTION**

The change from craft technology to scientific mass production has largely been examined from the perspective of total cost reduction (Maddison, 1982). This is certainly a major factor, but the attention paid to it has perhaps led to the neglect of other dimensions. Indeed, economists have paid little attention to the actual characteristics of production technology. Output is normally considered to be a ‘function’ of various ‘combinations’ of the basic ‘factors’: land, labour and capital. The variations in the qualities and features of these are not considered, and neither is it explained exactly how they are ‘combined’. The often-cited ‘laws of returns’ do not fit coherently together (Sraffa, 1926).² Everything is discussed at the highest imaginable level of abstraction and, in fact, the real object of the argument is to explain the distribution of income between rents, wages and profits on the basis of marginal productivity. The analysis of costs and their relation to prices is derivative. By contrast, the input–output approach tells us something about the technical relationships, since the various inputs for each unit output are clearly set forth, but there is still no consideration of how, exactly, these inputs are combined, or what varies with what.

Yet this is just what has to be considered if we are to explore the dimensions of flexibility. Craft production has often been praised for its greater flexibility, compared to mass production, because craftsmen could often adapt product design to the customer’s specifications. Yet this is only one aspect of flexibility, and not the most important when the survival of the firm is in question. So let us turn to an aspect of technology that has largely been overlooked, namely the extent to which the process of production