For purposes of pedagogy I have sometimes illustrated the tendencies of modern industry by reference to a product which, unaccountably, none of the great electrical appliance manufacturers has yet placed on the market. This is a toaster of standard performance—the pop-up kind—which is remarkable only in that it etches on the surface of the toast in darker carbon one of a selection of standard messages or designs. For the socially ambitious hostess an attractive monogram would be available; for members of the hereditary peerage there would be a coat of arms; the devout, at breakfast, would have an appropriate devotional message from, according to taste and caste, the Reverend Billy Graham or the Archbishop of Canterbury; for the worried or patriotic in the United States there would be an aphorism urging vigilance from Mr J. Edgar Hoover and in Britain from the Rt Hon Quintin Hogg; for modern painters and economists there would be a purely abstract design. A restaurant version could sell advertising, carry a few words from Prime Minister Wilson on the importance of the wage freeze, or, in the United States, a reminder from the Secretary of State of the dangers of another Munich.

Conceivably this is a vision that could come from the head of General Electric. But the systematic proliferation of such ideas in the modern firm is the designated function of much more lowly men who are charged with product development. At an early stage in the development of the toaster the participation of specialists in technology, production, style, and design, and perhaps philosophy, art, and spelling would have to be sought. No one would authorize the product without a judgment on how the problems of inscription were to be solved and at what cost. An adverse finding on technical and economic feasibility would not be overridden. At some stage, development would become contingent on the findings of market researchers and merchandise experts on whether the toaster could be sold and at what price. The selling methods - how the consumer was to be persuaded to buy this toaster - would figure largely in these discussions.

The central characteristics of modern industry are illustrated by this culturally exciting invention. It would require a large organization, embracing many specialists, to get this product to consumers. Considerable capital would be required. While it is conceivably open to an individual entrepreneur, such as myself, to have an inspiration, no one would expect a one-man firm to produce such a product. It could be floated only by a big firm. All decisions on the toaster—those involving initiation, development, and ultimate acceptance or rejection—are the work of teams of specialists and are exercised deep down in the company. And no one would think of leaving price or demand to the market. The price would be subject to careful advance calculation. And a careful strategy would be devised—one that is normally although not infallibly successful—to insure that the public would buy it. This last requires a special word.
A market economy is an arrangement by which people, by their purchases, make clear what they want or do not want. Their market behaviour, in turn, is an instruction to producers as to what they should produce or not produce. The initiative lies with the individual. He is sovereign. There is something admirably libertarian and democratic about this process. It is not hard to understand why, among the susceptibly devout, the market, no less than Christianity and Zen Buddhism, evokes such formidable spiritual feeling.

But in the case of this toaster, the initiative came not from the consumer but the producer. It was not the consumer who established the price in the market. The price was set by the manufacturer. The consumer had no idea that he needed this blessing before it was unveiled. Nor was he left with a free choice as to purchase. On the contrary, great thought was given to the means for insuring that he would do so.

When initiative lies with the consumer we agree that we have a market economy. When it passes to the producer—and when the consumer is accommodated to the needs and convenience of the producer—it is commonly and correctly said that we have a planned economy. In the last lecture I showed that technology and associated change impair the market and make planning necessary. Now we see that this setting aside of the market, its replacement by planning, is a commonplace feature of modern business.

In the case of the toaster the planning is imperfect; the consumer retains the right to resist persuasion or otherwise contract out of the management to which he is subject. This is not unimportant. We should notice also that the planning is not done by the state—with which we normally associate such dubious activity. It is done by a large company or corporation. This is not without paradox. Large corporations, we were taught from our prenatal days, are the very essence of unplanned capitalism.

They do plan, none the less. The modern large corporation can be understood only as an adaptation to the needs of modern technology, related capital requirements and organization, and resulting planning. In the remainder of this lecture I want to look at the corporation as a planning instrument.

Successful planning requires that the planning authority be able to control or sufficiently influence the various contingencies which bear upon the result it seeks. And it must not be subject to the power of those who might frustrate its plans either by ill-considered interference or even by considered interference which reflects other and alien objectives. The modern large business corporation possesses the principal requisites of successful planning. The rest, we shall eventually see, it obtains from the state.

The modern corporation achieves much of its requisite authority merely by being very large. This enables it to possess and control the large amount of capital and to mobilize and direct the large number of specialists that modern technology requires. Also, if the firm is large, contingencies that cannot be perfectly controlled can be absorbed or offset. If planning for a particular product by Unilever or Id goes sour, there are other products to offset the misfortune. Labour is often one of the elements that is not under the full authority of the firm. If Shell runs into labour trouble in a particular plant or country, there are plenty of others to act as a cushion. As I shall
argue in the next lecture, size is also a great advantage for regulating prices and consumer behaviour—in short, for influencing the relevant environment.

A plausible consequence of these advantages of size is that the modern industrial enterprise will be very large. And so it is. I draw my illustrations on this point from the United States. That is partly because it shows the most developed industrial tendencies. The United States is indispensable on this planet as a foretaste of what is just over the horizon for less advanced and hence more fortunate lands. Full use should thus be made of us. But it is also the American data that I have at hand.

In 1962 the five largest industrial corporations in the United States, with combined assets in excess of $36 billion, possessed over 12 per cent, almost one-eighth, of all assets used in manufacturing. The fifty largest corporations had over a third of all manufacturing resources. The 500 largest had well over two thirds of it. In the mid-nineteen-fifties, twenty-eight corporations provided approximately 10 per cent of all employment in manufacturing, mining, and retail and wholesale trade. Twenty-three corporations provided 15 per cent, about one-seventh, of all employment in manufacturing.

This concentration was especially high in government business. In the first half of the decade (June 1950 to June 1956) a hundred firms received two-thirds by value of all defence contracts; ten firms received one-third. In 1960 four corporations accounted for an estimated 22 per cent of the industrial research and development expenditure which I mentioned last time. Three hundred and eighty-four corporations employing 5,000 or more workers accounted for 85 per cent of these research and development expenditures.

While these data are for the United States, you must not suppose that great size is peculiar to America. Shell, if the Dutch will allow me to attribute it to Britain, would rank fourth in sales after General Motors, Ford, and Standard Oil of New Jersey in a list of the world’s largest industrial corporations. Unilever would be sixth and British Petroleum and ICI would be in the first two dozen as would also the National Coal Board if that were entered in the competition.

We have difficulty in thinking of the private firm as a planning instrument because we associate planning with the state. But the modern industrial enterprise operates on a scale that is far more nearly comparable with that of government than old-fashioned market-oriented activity. In 1965 three American industrial corporations, General Motors, Standard Oil of New Jersey, and Ford Motor Company, together had more gross income than all of the farms in the United States. The income alone of General Motors of $20.7 billion about equalled that of the 3,000,000 smallest farmers in the country - around 90 per cent, of all farmers. The gross revenues of each of the three corporations just mentioned far exceed those of any single state. The revenues of General Motors in 1963 were fifty times those of the state of Nevada, eight times those of the state of New York, and slightly less than one-fifth those of the Federal Government.

Economists have anciently quarrelled over the reasons for the great size of the modern corporation. Is it because size is essential in order to reap the economies of modern large-scale productions? Is it, more insidiously, because the big firm wishes to
exercise monopoly power in its markets? There is a little truth in both of these shop-
worn answers. The firm must be large enough to carry the large capital commitments
of modern technology. It must also be large enough to control its markets. But the
modern firm is larger than these purposes require. General Motors is not only large
enough to afford the best size of automobile plant but is large enough to afford a
dozen of the best size. And it is large enough in addition to produce a host of other
things as diverse as aircraft engines and refrigerators. Why is this? And why, although
it is large enough to have the market power associated with monopoly, is it that
consumers do not complain excessively about exploitation? We have here the answer.
The great size of General Motors, though it allows the economies of scale and the
control of markets, is primarily in the service of planning. And for this planning—
control of supply, control of demand, control of capital supply, absorption or
minimization of risk where it cannot be avoided—there is no clear upper limit to the
desirable size. It could be that the bigger the better.

A prime requirement of the planning authority is control over its own decisions. This
autonomy has, in fact, a double purpose. It is necessary if it is to pursue the objectives
of its planning; I shall speak of these objectives later on in these lectures. It is also a
necessary aspect of decision-making under conditions of advanced technology. We
saw in the case of that toaster with which I began this lecture that all of the important
decisions, initiation, design, approval, disapproval, were really taken by teams of
specialists working deep in the organization.

This is so generally in all business enterprises. Decision comes not from individuals
but from groups. The groups are numerous, as often informal as formal, and subject to
constant change in composition. Each contains the men possessed of the information,
or with access to the information, that bears on the particular decision together with
those whose skills consist in extracting and testing this information and obtaining a
conclusion. (There will also usually be a few present who are skilled at concealing the
fact that they do nothing at all.) It is through groups that men act successfully on
matters where no single one, however exalted or intelligent, has more than a fraction
of the necessary knowledge. It is what makes modern business possible, and in other
contexts it is what makes modern government possible.

Effective participation in such decision- making is not closely related to rank in the
formal hierarchy of the company or corporation. This takes an effort of mind to grasp.
Everyone is influenced by the stereotyped organization chart of the business
enterprise. At its top is the Board of Directors and the Managing Director; next comes
the principal executive officer; thereafter come the department or divisional heads—
those who preside over the switch-gear division, the large generators division, the
small motors division, the appliance division. Power is assumed to pass down from
this pinnacle. Those at the top give orders; those below relay them on or respond.

Power is so employed only in very simple organizations—in the peace-time drill of
some Territorials or a troop of Boy Scouts moving out on Saturday manoeuvres.
Elsewhere the decision will require information. Some power will then pass to the
person or persons who have this information. If this knowledge is highly particular to
themselves, then their power becomes very great. At Los Alamos, New Mexico,
during the development of the atomic bomb, Enrico Fermi, the great atomic scientist,
rode a bicycle up the hill to work; Major-General Leslie R. Groves presided in
grandeur over the entire Manhattan District, the vast organization which made the bomb. Fermi had the final word on numerous questions of feasibility and design. In company with a handful of others he could, at various early stages, have brought the entire enterprise to an end. No such power resided with General Groves. At any moment he could have been replaced without any loss.

**Group decision**

When power is exercised by group, not only does it pass into the organization but it passes irrevocably. If an individual has taken a decision, he can be called before another individual, who is his superior in the hierarchy, his information can be extracted and examined and his decision can then be reversed by the greater wisdom or experience of the superior. But if the decision requires the combined information of a group, it cannot be safely reversed by an individual. He will have to get the judgment of other specialists. This returns the power once more to organization.

No one should insist, in these matters, on pure cases. There will often be instances when an individual has the knowledge to modify or change the finding of a group. But the broad rule holds: if a decision requires the specialized knowledge of a group of men, it is subject to safe review only by the similar knowledge of a similar group. Group decision, unless acted upon by another group, tends to be absolute.

I reached some of these conclusions during the Second World War when, in the early years, I was in charge of price control. Decisions on prices—to fix, raise, rearrange or, very rarely, to lower them—came to my office after an extensive exercise in group decision-making in which lawyers, economists, accountants, men knowledgeable of the product and industry, and specialists in public righteousness had all participated. Alone I was nearly helpless to alter such decision; hours or days of investigation would be required and, in the meantime, a dozen other decisions would have been passed. Given what is commonly called an adequate staff, one could have exercised control. But an adequate staff had to be specialized. In being so, it largely duplicated the decision-making group with adverse effect on the good nature and sense of responsibility of the latter and the time required for decision.

To have responsibility for all of the prices in the United States was awesome; to discover how slight was one's power in face of group decision-making was sobering. Although group decision tends to be absolute, it can be rendered unreliable by external interference. The group reaches decisions by receiving and evaluating the specialized information of its members. If it is to act responsibly, it must be accorded responsibility. It cannot be arbitrarily or capriciously overruled. If this occurs, it will develop the same tendencies to irresponsibility as an individual similarly treated.

The modern large business corporation is admirably equipped to protect the autonomy on which group decision so deeply depends. One possible threat to such autonomy is the state. Here the modern corporate charter accords a large area of independent action to the firm in the conduct of its affairs. And this freedom is defended as a sacred right. In American business attitudes nothing is held to be so iniquitous as government interference in the internal affairs of the corporation. And attitudes in other countries are similar if less choleric. There is equally vehement resistance to any invasion by trade unions of the prerogatives of management.
But the modern large enterprise is equally jealous, although less outspoken, in protecting itself from interference from those who own or supply it with capital. Interference with decision from these quarters would be equally damaging to the authority of its planning and to the quality of its decisions.

The modern firm exempts itself from interference from those who supply current capital requirements, first of all by having its own source of capital. A banker or investment banker or other investor can specify as to how funds that he advances are to be used. The use of earnings returned from profits is wholly at the discretion of those who run the firm. If funds must come from a banker, his views must be treated with respect. If he is not needed, only politeness is in order. Few things have resulted in a greater shift in power than the ability of the large modern firm to supply itself with capital. Few things have more altered the character of capitalism. It is hardly surprising that retained earnings of corporations have become such an overwhelmingly important source of capital.

**Elaborate Exercise in Illusion**

The shareholder, too, has been separated from all effective power in the large corporation. Many things have led to this result. With the passage of time and the ineluctable effects of inheritance, estate taxes, philanthropy, alimony and the other enjoyments of non-functional heirs, even the largest holdings are dispersed. It is impossible to get any considerable number of shareholders together for an action in opposition to management. Instead, the Board of Directors meets in solemn conclave to select the management which previously selected the Board. The electoral rituals of the modern large company are among our most elaborate exercises in illusion.

But the exercise of authority by the modern enterprise is also protected by the technical complexity of its decision. Some thirty years ago in the United States it was discovered that one Colonel Robert W. Stewart, then the head of the Standard Oil Company of Indiana, was transferring an appreciable share of the revenues of the company to his own pocket. He had arranged to have the firm buy crude petroleum from a Canadian company, which he partly owned, and which existed for the sole purpose of buying the oil in Texas and marking up the price. It was an admirable business; all was plotted, there were no costs at all, and Colonel Stewart got the profits. He later explained that the bonds into which he put these profits he intended to return to Standard Oil of Indiana, but he just carelessly allowed them to remain in his safe deposit box for many years and even more carelessly, clipped some of the coupons. The Rockefellers, who owned about 15 per cent, of the shares of the company, were able, though not without effort and expense, to throw the Colonel out. But it was possible only because the Colonel was engaged in a simple and comprehensible form of skulduggery. Modern malfeasance or misfeasance could easily turn on some complicated problem in the technology of petrochemicals including patent rights or some intricate question of equipment procurement. No more than in the case of a decision on my toaster would the rights or wrongs be readily evident or would it seem safe to intervene. I have said that modern group decision-making requires the exclusion of uninformed interference. But this works both ways. The nature of the decision also excludes such interference.
Where Autonomy is Vulnerable
One thing does make the autonomy of the modern corporation vulnerable. That is a failure of earnings. Then it has no source of earnings so it must turn to banks and other outside investors. The latter, under the circumstances, will have prying tendencies. And the shareholders, who are not being rewarded, may also be moved to do something about it. A management that is making money is secure in its autonomy. One that is losing money is not. We should expect, as a final characteristic of the large corporation that it would take care to protect its autonomy by always making money. Here too are expectations fulfilled. Not even my fellow economists have yet noticed how completely they are fulfilled.

In 1957, a year of mild recession in the United States, not one of the 100 largest industrial corporations failed to return a profit. Only one of the largest 200 finished the year in the red. Seven years later, in 1964, a prosperous year by general agreement, all of the first 100 again made money; only two among the first 200 had losses and only seven among the first 500. None of the fifty largest merchandizing firms failed to return a profit. Nor, predictably, did any of the fifty largest utilities. And among the fifty largest transportation companies, only three railroads, together with the momentarily unfortunate Eastern Airlines, failed to make money. In Britain none of the largest twenty-five industrial firms lost money last year and only two of the largest fifty.

Business liturgy has long intoned that profits and losses are symmetrical. One gets the profits as the price of risking the losses. ‘The American competitive enterprise system is an acknowledged profit and loss system, the hope of profits being the incentive and the fear of loss being the spur’. But this is not true of that part of the economy in which the firm is able to protect its profits by planning. It is not true of the United States Steel Corporation, author of the sentence just cited, which has not had losses for a quarter of a century.

Such is the corporation as a planning authority. It rivals in size the state itself. It has authority extending over and uniting the capital and organized talent that modern technology requires. Its authority extends on to its supply of capital. And its power is safely removed and protected from the extraneous or conflicting authority either of the state or its own owners or creditors.

Perhaps the exercise of this authority that will seem least plausible is that over prices and, more particularly, over public behaviour, including what people buy. This, slightly changing the publicized order, I will discuss next time.