16.1 THE IMPERATIVES OF TECHNOLOGY

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify the important consequences of technological change for the organization of business
- Explain the implications for the relationship between business enterprises and market structure

In chapter "Costs and Prices" you learned (or will learn) that modern businesses are treated as going concerns–that is, organizations which are expected to continue to exist into the foreseeable future. This idea, reflected in accounting practices developed in the second half of the 19th century, is central to how heterodox economists understand the nature of the modern business enterprise. Its historical roots are explored in more detail in chapter "The Rise of the Big Business," but here we want to focus on a particular cause, technological advance, and its implications.

In his classic, The New Industrial State (1967), economist John Kenneth Galbraith compared the Ford Motor Company in the year of its founding, 1903, to the same business at the introduction of the first Mustang in 1964. In 1903 the company employed around 125 people, worked with approximately $150,000 in capital, and required only months of negotiations, preparation, and production to bring an automobile to the market. It would be an understatement to say that, six decades later, the process was more involved. The Mustang was the result of several years of preparation, millions of dollars on engineering and 'styling', and tens of millions on tooling for production. At the time, Ford employed over 300,000 people.

Galbraith argued that the essential cause of this massive increase in preparation, capital, and labor was the tremendous advance in **technology** (which he defined as "the application of scientific or other organized knowledge to practical tasks"). Increasingly sophisticated technology requires specialization–of machinery and the materials it will work on, as well as of workers. All of which, of course, requires more capital (that is, money). It also means that increasingly specialized workers, machines, and so on must be more carefully managed; and that a commitment to produce something must be made much further in advance of actually having something to sell. As Galbraith explained, the Dodge brothers' machine shop, responsible for machining the engine and chassis of the original Ford automobiles, could have hypothetically been asked to accommodate significant changes in the car's design with only a few hours delay. The factories which built the Mustang, on the other hand, were effectively locked into making Mustangs for well over a year.

Finally, and most importantly, there is the technological imperative of planning. As Galbraith argued, the large financial and material commitments necessary to design a product and prepare for its pro-

Figure 3. A 1964 Ford Mustang in Wimbledon White, photographed at the 50th anniversary of the Mustang at the Charlotte Motor Speedway. (Source: Sicnag, Wikimedia, CC-BY-2.0)

duction require that each part of the process works today so that, in the distant future, when all the parts are brought together, the job is done correctly. This means that the business enterprise will require specialists in predicting (and shaping) future market conditions, specialists in materials acquisition, specialists in education to ensure a competent workforce, and so on–all to ensure that what the organization set out to do some months or years or decades earlier actually gets done and, with some luck, proves successful. Without that capacity, the confidence to set out on such a sophisticated enterprise would never have existed in the first place.

What bearing, then, does this have on our theories of how businesses behave and how markets operate? We'll start with the general points: first, the small firm of the perfect competition model will not do in an age of increasingly sophisticated technology. Both the complexity of specialized knowledge and its management through a large organization suggest that a large business enterprise will be the norm. Second, that complexity of knowledge and organization suggests that the modern business enterprise ought to be considered in more dimensions that simply its cost curves and a goal of maximizing profits. The politics and culture of organization become relevant to understanding what Galbraith called the **technostructure**–that is, the whole of those people who participate in the group decision-making that directs the business enterprise through time.

viewpoint.

DOES THE INTERNET MOVE US CLOSER TO PERFECT COMPETITION?

A common refrain in recent years argues that information technology–in particular, the internet–contradicts the tendency toward big business. Recall that the model of perfect competition doesn't suggest that firms must be absolutely tiny–say, having no more than a handful of employees. Rather, it simply considers situations in which firms are small *relative to the size of the market*. Many have argued that the internet has made global markets out of local markets; and, as a result, firms that used to be considered large are now small *relative to* the whole world of competitors.

Yet, within the tech sector, as in most other industries, concentration and big business appear to be the norm. Large business like IBM have long dominated traditional computing, before the World Wide Web, and relatively newer firms like Google and Facebook continue to expand control over much of the newer, web-based markets. Of course, Amazon, Paypal, eBay, AirBnB, and Uber have allowed for a proliferation of small merchants, taxi drivers, and hotels; but with these large corporations looming over the markets they've created, have we really returned to the traditional competitive product markets of past centuries–or are we looking at the competitive (one might say, 'divide and conquer') *labor* markets that characterized the rise of big business in the late 1800's?

Third, if planning is the central concern of the modern business enterprise, then we have to reconsider how we see firms relating to their markets. In previous chapters, you have studied the basic neoclassical models of market structure and how firms respond to particular market conditions. The implicit assumption in these models is that firms react to markets. Yet, if long term planning is to be done effectively it would seem obvious that businesses cannot take the markets as given and respond accordingly. Instead, they will have to actively shape those markets to ensure stable, predictable conditions into the future.

This third point has a particular bearing on our theories of prices and competition. History shows that businesses often try to avoid competition in terms of price. You can probably imagine why this is, given the complexity of modern technologies and the magnitude of investments necessary to get a business off the ground. Where starting a new business or a new product line for an existing business requires huge sums of money and years of planning, it is simply a must that the investors and management are reasonably sure that it will be able to sell the product profitably in the relatively distant future. The business enterprise's problem in this scenario is that competitors may be making the same investments; and, in an attempt to make sure those investments don't go to waste due to weak sales, they may try to grab market share by lowering their prices. If everyone in the market pursues the same strategy, what do you think the result would be?

Stiff competition based on prices is relatively rare in established markets for a simple reason: it tends to be mutually destructive to most or all competitors who engage in it. In fact, when prominent businesses engage in that sort of scenario–as, for instance, the fast food giants occasionally have in recent years–it is often considered newsworthy, usually showing up in the headlines of the business press as a 'price war'. A century ago, the term 'cut throat competition,' which includes aggressive price cuts and other efforts to drive competitors out of the market, was common. Clearly, both of the terms suggest that price competition can be a violent thing–something, one would hope at least, that should be avoided if at all possible.

In summary, then, heterodox economists typically see the modern business enterprise as a going concern, engaged in long term planning which includes managing and shaping both technological and market conditions. In this view firms don't maximize profits so much as they seek to survive through time. If it is appropriate to say that businesses tend to maximize anything, it would be growth through

time rather than profits specifically. Likewise, outright price competition is a relatively rare occurrence in mature markets today. Though most businesses will take competition into consideration when setting their prices, it would be a better description of the real world to say that competition occurs mainly through other practices, like advertising and branding, product innovations, or more cost-effective production practices. That is to say that businesses compete chiefly through their investments, not their prices.

16.2 BUSINESS MODELS, PLURAL: AIMS AND METHODS OF THE MEGACORP

LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Identify different general methods by which businesses can pursue profits
- Analyze the nature and significance of advertizing
- Apply heterodox concepts to the analysis of the pharmaceutical industry

As a professor of mine, James Sturgeon, is fond of saying, there's more than one way to make money: You could…

- Steal
- Extort
- Accept a bribe
- Speculate on the financial or real estate markets
- Inherit
- Con
- Or, perhaps failing all of the above, you could earn it

For our purposes here, this can be interpreted as a rather cheeky way of saying that different businesses have different **business models**–that is, different ways of making money in a market (or several markets). And, while they might all be treated with the utmost abstraction as combining inputs to produce outputs of greater value, heterodox economists are inclined to believe that not every way of making money is the same.

Breaking down all of the means by which modern businesses make money is far beyond the scope of this chapter (though the odds are good that the reader is taking this course to fulfill a requirement for a business degree for which she or he will be spending plenty of time doing just that). Instead, we'll borrow from Karl Marx's extensive work on how capitalist economies function to create a simplified picture, Figure 4, of what a business enterprise does. And from there, we'll look to institutional economics to understand qualitative difference in how businesses generate their earnings.

Figure 4. The Business Enterprise in a Monetary Production Economy.

In Figure 4, M represents an amount of money and C represents a commodity (for instance the lumber and other building materials a construction company may use to build a house). P represents the production process that converts the commodity C (building materials) into some other commodity C' (for instance, a house) to be sold for some amount of money M'. This process can be treated as a shorthand depiction of what any business does, with the requirement that if the business is to remain in business M' must be greater than M. Take a moment to review the chapter "Cost and Industry Structure," specifically the definitions of firm and production therein. How does Figure 4 differ?

The difference may not be obvious, but it is important. In the neoclassical tradition in economics–indeed, in the classical tradition which Marx was critiquing–production by businesses is treated as a C→ C' process. That is, all business activity is part of converting commodity inputs into commodity outputs which are of greater value, ultimately, to consumers. Clearly, Figure 4 is more than that: it treats money and commodities as distinct things. This allows us to look at the step-by-step process by which money is converted into commodities, production creates new commodities, and money is created by sale of those new commodities. The whole process of turning money into commodity inputs and ultimately selling commodity outputs for money we'll call **monetary production**. The full implications of these distinctions for Marxian (or radical political) economics would require its own course. For now, we can use this shorthand description of how a business enterprise works to think about different types of business models.

The three numbered arrows in Figure 4 represent three different ways that managers, engineers, markers, and others within a business enterprise can influence the process of monetary production. The first arrow, following M to P, indicates something close to the traditional way of thinking of a business: money is invested into a production process that turns inputs into outputs for sale. This could include building a new factory or setting up a research and development (R&D) team to design new products and more efficient production practices. What is significant here is that the focus is on producing something–turning stuff C into stuff C', presumably with the hope that people will be willing to pay more for C' than was paid for the C necessary to produce it.

The second arrow indicates a different business model–that is, another way the monetary production process could be influenced to make money. Here, you will notice, the initial money invested is going not to production, P, but to the produced commodity, C'. This is meant to indicate investments made to change the *perceived* value of the product the business sells. Of course, one way to do this is to improve the product itself, which would be indicated by the first arrow. With arrow 2, however, we're

dealing with changing the perceived value of the product without actually changing the product itself; and you've probably already guessed the most salient way this can be done: advertising.

Here, the founder of institutional economics, Thorstein Veblen, is worth quoting at length:

> The end sought by the systematic advertising of the larger business concerns is…a *monopoly of custom and prestige*.… The great end of consistent advertising is to establish such differential monopolies resting on popular conviction…. The cost, as well as the pecuniary value and the magnitude, of this *organized fabrication of popular convictions* is indicated by such statements as that the proprietors of a certain well-known household remedy, reputed among medical authorities to be of entirely dubious value, have for a series of years found their profits in spending several million dollars annually in advertisements. This case is by no means unique.
>
> It has been said, no doubt in good faith and certainly with some reason, that advertising as currently carried on gives the body of consumers valuable information and guidance as to the ways and means whereby their wants can be satisfied and their purchasing power can be best utilized. To the extent to which this holds true, advertising is a service to the community. But there is a large reservation to be made on this head. Advertising is competitive; the greater part of it aims to divert purchases, etc., from one channel to another channel of the same general class. And to the extent to which the efforts of advertising in all its branches are spent on this *competitive disturbance of trade*, they are, on the whole, of *slight if any immediate service to the community*. (Veblen 1904, pp. 55-7, Public Domain, emphasis added)

Veblen's inimitable prose may be a bit irksome to read, but reference to the italicized bits above should be enough to understand the argument. 'Custom and prestige,' and the 'fabrication of popular conviction' suggest that businesses are competing through persuasion rather than production of something of value. The second paragraph, then, considers whether these activities are actually of value to society (or perhaps, in neoclassical terms, whether or not they're 'welfare enhancing'). For the most part, they are decidedly not. They may create a pecuniary (that is, money) value for the business–the *perception* of C' is improved and M' increases as a result. But, to society in general they amount to little more than a needless shifting of buying habits and consumption patterns. As Professor Sturgeon notes, there's more than one way to make money.

We should pause to consider the usefulness of this model. Separating money from commodities in the monetary production process has allowed us to consider different business activities as essentially different things. The abstract firm in standard neoclassical theory might lead us to treat anything that makes a business more money as part of the production process (C…P…C'), suggesting that advertising was just another commodity in the production process improving the value of the product to be sold. By implication, then, the advertising added value to society. Yet, treating production and advertising as two different activities allowed room for the argument that, in fact, the advertising was generally wasteful.

DISTINGUISHING ARROW 1 FROM ARROW 2: THE PHARMACEUTICAL INDUSTRY

A contemporary example should indicate the importance of distinguishing between arrows 1 and 2. The price of pharmaceutical drugs continues to be a controversial topic in the United States, and it's no surprise why: according to the OECD,

pharmaceutical spending has risen from an average of $159 per person (or 0.87% of all spending in the US) in 1985 to $1,112 per person (or 2.04% of total spending) in 2014. Moreover, a 2016 Reuters article found that the prices of 4 of the top 10 most widely used drugs more than doubled in just the previous 5 years.

A number of factors are important to explaining these rapid price increases, including an aging population in the US and an exceedingly complex distribution and insurance system for pharmaceuticals. But, let's focus on the common explanation given by the producers themselves: high prices are necessary to recover the high costs of research and development (much of which leads to dead-end investments that don't produce effective drugs that can be brought to market) and the clinical trials necessary for regulatory approval. Clearly, this is in line with the general framework of heterodox economic theory. Pharmaceutical companies are engaging in long-run planning, including significant investments into better products (that is, investments into P in Figure 1), and prices are a reflection of those investments.

But, what's more, our monetary production model can help us find a fuller explanation of the nature and extent of those investments. Consider estimates from Gagnon and Lexchin (2008) on promotional expenditures by the industry. The authors found that, for 2004, the industry devoted about 24% of its sales revenue to promotion, versus about 13% to research and development. Looking specifically to promotion directed at physicians, the authors estimate that approximately $61,000 was spent *per physician* in the US. To be sure, there are other estimates lower than those made by Gagnon and Lexchin. Just the same, it is clear that pharmaceutical enterprises are investing heavily not only in developing new drugs, but in promoting their use as well.

Moreover, the pharmaceutical industry provides us with a somewhat unique opportunity to clearly distinguish investments in C' (arrow 2 in figure 1) from investments in P (arrow 1). Because these drugs are systematically evaluated for their effectiveness in treating specific illnesses, data exist to indicate how well supposedly-arrow 1 investments are improving the product. On this matter, Gagnon (2013) finds that fewer and fewer new molecular entities (truly new drugs, without precedent in drugs already in use) are being developed, and only a small minority of new drugs represent substantial therapeutic advances over existing treatments. The proliferation of 'me-too' drugs, which are new products to be marketed if not actually better treatments for illnesses, suggests that the business model in this industry is focused less on improvements in P and more on inflating C'. That is, arrow 2 appears to dominate, with arrow 1 a secondary concern, in the normal business models of this industry.

Sources: https://data.oecd.org/healthres/pharmaceutical-spending.htm
http://www.reuters.com/article/us-usa-healthcare-drugpricing-idUSKCN0X10TH
Gagnon, M. A. and J. Lexchin. (2008), "The Cost of Pushing Pills: A New Estimate of Pharmaceutical Promotion Expenditures in the United States," *PLoSMedicine,* 5(1), 29-33.
Gagnon, M. A. (2013). Corruption of pharmaceutical markets: Addressing the misalignment of financial incentives and public health. *The Journal of Law, Medicine & Ethics*, 41(3), 571-580.

Finally, there is arrow 3, a direct line from an initial sum of money to a greater amount of money, bypassing all the troublesome in-between steps of producing and selling a good or service. This sort of business model takes many forms and is becoming increasingly popular in the capitalism of today. The traditional exemplar is the financial firm–or, say, the stock broker–which has no direct ties to actually producing something, but rather only to trading in the ownership rights of those producers.

The full role and consequences of financial firms and markets cannot be covered here. What's of interest presently is business activity that can turn a profit without being concerned with producing something for sale, or even simply with persuading people to buy a product. You may have heard

about the causes of the Great Recession of 2008-09 being chiefly linked to business models in finance, insurance, and real estate (the so-called FIRE sector). The problem, many believe, is in the opacity and complexity of a system in which mortgage contracts representing an agreement to pay for a house over time were packaged together into derivative contracts to be sold to investors, then resold, repackaged, and so on. Indeed to make a system even more complex, many financial firms were making side bets that the contracts they themselves were selling would in fact not pay out. Many articles, books, and documentaries have been produced retelling that story, and *The Big Short* is an effective and accurate dramatization of some of those events. For now, it is enough to say that the businesses engaged in those activities were largely concerned with turning money into more money by persuading others that these contracts built on contracts (built on contracts…) were worth more than they were. These were arrow 3 business activities, having little to do with the actual business of housing people.

A century earlier, Veblen had described similar practices in the stock markets, where the goal is to,

> induce a discrepancy between the putative and the actual earning-capacity, by expedients well known and approved for the purpose. Partial information, as well as misinformation, sagaciously given out at a critical juncture, will go far toward producing a favorable temporary discrepancy of this kind. (Veblen, 1904, p. 156, Public Domain)

It was, more recently, precisely this type of behavior which ultimately caused the deepest recession since the Great Depression (which, incidentally, had also been caused by this type of behavior). As a result, many of the largest banks and other financial institutions in the US and abroad have been made to pay fines in the 10's of billions of dollars. Whether these fines will be enough to make this business model unattractive in the future is debatable–but it seems unlikely.