The following idea are by Peter Drucker in
The Daily Drucker* and *Management, Revised Edition

4 FEB – Knowledge and Technology

The search for knowledge, as well as the teaching thereof, has traditionally been dissociated from application.

Both have been organized by subject, that is, according to what appeared to be the logic of knowledge itself.

The faculties and departments of the university, its degrees, its specializations, indeed the entire organization of higher learning, have been subject-focused.

They have been, to use the language of the experts on organization, based upon "product," rather than on "market" or "end use."

Now we are increasingly organizing knowledge and the search for it around **areas of application** rather than around the subject areas of disciplines.

Interdisciplinary work has grown everywhere. ¶¶¶

This is a symptom of the shift in the **meaning of knowledge** from an end in itself to a **resource**, that is, a **means** to some **result**.

Knowledge as the **central energy** of a modern society exists altogether in **application** and **when** it is put to work.

Work, however, cannot be defined in terms of the disciplines.

End results are interdisciplinary of **necessity**.

The Daily Drucker

15 # Technologies and End-Users Are Fixed and Given

16 Four major assumptions, as said at the beginning of this chapter, have been underlying the *practice* of management all along—in fact, for much longer than there has been a *discipline* of management. ¶¶¶

17 The assumptions about technology and end-users underlie, to a very large extent, the rise of modern business and of the modern economy altogether.

18 They go back to the very early days of the Industrial Revolution.

19 When the textile industry first developed, out of what had been cottage industries, it was assumed—and with complete validity—that the textile industry had its own unique technology.

20 The same was true in respect to coal mining and any of the other industries that arose in the late eighteenth century and the first half of the nineteenth century.

21 The first one to understand this and to base a major enterprise on it was also one of the first men to develop what we would today call a modern business, the German Werner Siemens (1816-1892).

22 It led him, in 1869, to hire the first university trained scientist to start a modern research lab—devoted exclusively to what we would now call electronics, and based on a clear understanding that electronics (in those days called "low-voltage") was distinct and separate from all other industries and had its distinct and separate technology. ¶¶¶

23 Out of the insight that technologies and their end-uses are distinct, grew not only Siemens's own company with its own research lab, but also the German chemical industry, which assumed worldwide leadership because it based itself the assumption that chemistry—and especially organic chemistry—had its own unique technology.

24 Out of it then grew the other major leading companies the world over—the American electrical and chemical companies, the automobile companies the telephone companies, and so on.

25 Out of this insight also grew more of what may well be the most successful invention of the nineteenth century, the research laboratory—the last one, almost a century after Siemens's, the 1950 lab of IBM.

26 **Research Management**

27 At around the same time the research labs of the major pharmaceutical companies emerged as a worldwide industry after World War II. ¶¶¶

28 By now, though, the assumptions underlying these successes have become untenable.

29 The best example of this is in the pharmaceutical industry, which increasingly has come to depend on technologies that are fundamentally different from the technologies on which the pharmaceutical research lab is based generics, microbiology, molecular biology, medical electronics, and so on. ¶¶¶

30 In the nineteenth century and throughout the first half of the twentieth century, it could be taken for granted that technologies outside one's own industry had no, or at least only minimal, impact on it.

31 *Now the assumption to start with is that the technologies that are likely to have the greatest impact on a company and an industry are technologies outside its own field*. ¶¶¶

32 The original assumption was, of course, that one's own research lab would and could produce everything the company—or the company's industry—needed.

33 And, in turn, the assumption was that everything that this research lab produced would

be used in and by the industry that it served. ¶¶¶

34 Today's technologies, unlike the nineteenth-century technologies, no longer run in parallel.

35 They constantly *crisscross*, as discussed briefly in chapter 6.

36 Technology that people in their given industries have barely heard of (just as the people in the pharmaceutical industry had never heard of genetics, let alone medical electronics) revolutionizes those industries.

37 Such outside technologies force industries to learn, to acquire, to adapt, to change their very mindset, not to mention their technical knowledge. ¶¶¶

38 A second assumption that was equally important to the rise of nineteenth and twentieth-century industry and companies was:

39 *End-uses are fixed and given*.

40 For example, for the end-use of putting beer into containers, there is now extreme competition among various suppliers of containers.

41 But at one time all of them were glass companies, and there was only one way of putting beer into containers—put it in a glass bottle.

42 Fixed end-use was accepted as obvious, not only by business, industry, and the consumer, but by governments as well.

43 The American regulation of business rests on the assumptions that to every industry there pertains a unique technology and that to every end-use there pertains a specific and unique product or service.

44 These are the assumptions on which antitrust was based.

45 And to this day antitrust law concerns itself with the domination of the market in glass bottles and pays little attention to the fact that beer increasingly is put not into glass bottles but into cans or plastic bottles. ¶¶¶

46 But since World War II end-uses are no longer uniquely tied to a certain product or service.

47 The plastics, of course, were the first major exception to the rule.

48 But by now it is clear that it is not just one material moving in on what was considered the "turf" of another one.

49 Increasingly, the same want is being satisfied by very different means.

50 It is the want that is unique, and not the means to satisfy it. ¶¶¶

51 As late as the beginning of World War II, dissemination of news was basically the monopoly of the printed newspaper—an eighteenth-century invention that saw its biggest growth in the early years of the twentieth century.

52 Now there are many competing deliverers of news:

53 the radio, the television, still the printed newspaper, increasingly the same newspaper delivered online through the Internet, separate news organizations that operate only electronically—(as is increasingly the case with economic and business news), and quite a few additional ones. ¶¶¶

54 And then there is the new "basic resource" *information*.

55 It differs radically from all other commodities in that it does not stand under the *scarcity* theorem.

56 On the contrary, it stands under an *abundance* theorem.

57 If I sell a thing—for example, a book—I no longer have the book.

58 If I impart information, I still have it.

59 And in fact, **information becomes more valuable the more people have it**.

60 What this means for economics is well **beyond the scope of this chapter**, though it is clear that it will force us to radically revise basic economic theory.

61 But it also means a good deal for management.

62 Increasingly, basic assumptions will have to be changed.

63 Information does not pertain exclusively to any industry or to any business.

64 Information also does not have any one end-use, nor does any end-use require or depend upon one particular kind of information. ¶¶¶

65 Therefore, management now has to start out with the assumption that there is no one technology that pertains to an industry and that, on the contrary, all technologies are capable—and indeed likely—to be of major importance to any industry and to have impact on any industry.

66 Similarly, management has to start with the assumption that there is no one given end-use for any product or service and that, conversely, no end-use is going to be linked solely to any one product or service. ¶¶¶

67 One implication of this is that increasingly the *noncustomers* of an enterprise whether a business, a university, a church, a hospital—are as important as the customers, if not more important. ¶¶¶

68 Even the biggest enterprise (other than a government monopoly) has many more noncustomers than it has customers.

69 There are very few institutions that supply as large a percentage of a market as 30 percent.

70 There are, therefore, few institutions where the noncustomers do not amount to at least 70 percent of the potential market.

71 And yet very few institutions know anything about the noncustomers—very few of them even know that they exist, let alone know who they are.

72 And even fewer know why they are not customers.

73 Yet, it is with the noncustomers that changes always start. ¶¶¶

74 *The starting point has to be what customers consider value*.

75 The starting point has to be the assumption—an assumption amply proven by all our experience—that the customer never buys what the supplier sells.

76 What is value to the customer is always something quite different from what is value or quality to the supplier.

77 This applies as much to a business as to a university or to a hospital. ¶¶¶

78 *Management, in other words, will increasingly have to be based on the assumption that* ***neither*** *technology nor end-use is a foundation for management policy.*

79 *They are limitations.*

80 *The foundations have to be* ***customer values*** *and* ***customer decisions on the distribution of their disposable income.***

It is with those that management policy and management strategy increasingly will have to start.

Management, Revised Edition

9 AUG — Research Laboratory: Obsolete?

about **research management** **!!!!!**

What accounts for the decline in the number of major corporate research labs?

The company-owned research laboratory was one of the nineteenth century's most successful inventions.

Now many research directors, as well as high-tech industrialists, tend to believe that such labs are becoming obsolete.

Why?

Technologies crisscross industries and travel incredibly fast, making few of them unique anymore.

And increasingly, the knowledge needed in a given industry comes out of some totally different technology with which, very often, the people in the industry are quite unfamiliar.

As a result the big research labs of the past are becoming obsolete. ¶¶¶

The research laboratory of the big telephone companies, the famous Bell Laboratories of the U.S., was for many decades the source of all major innovations in the telephone industry.

But no one in that industry worked on fiberglass cables or had **ever heard of them**.

They were developed by a glass company, Corning.

Yet they have revolutionized communications worldwide.

The Daily Drucker

20 JUL – New Knowledge

New knowledge is not the most reliable or most predictable source of successful innovations.

Purposeful innovation

For all the visibility, glamour, and importance of science-based innovation, it is actually the least reliable and least predictable one.

Knowledge-based innovation has the longest lead-time of any innovation.

First, there is **a long time span** between the emergence of new knowledge, and it's becoming applicable to technology.

And then there is **another long period** before the new technology turns into products, processes, or services in the marketplace. ¶¶¶

The introduction of innovation creates excitement and **attracts a host of competitors**, meaning that innovators **have to be right the first time**.

They are **unlikely to get a second chance**.

Here, even successful innovators almost immediately have far more company than they want and must prepare themselves to weather the storm that lies ahead.

For example, Apple Computer invented the personal computer.

IBM was able to wrest market leadership from Apple through creative imitation.

Apple failed to maintain its leadership position and became a niche player because it failed to predict and respond to the competition it would face.

In the theory and practice of innovation and entrepreneurship, the bright-idea innovation belongs in the appendix.

But it should be appreciated and rewarded.

It represents qualities that society needs: initiative, ambition, and ingenuity.

The Daily Drucker

How do you make these ideas operational?

About humor, hindsight and insight, creativity and lateral thinking, lateral thinking as process, judgment and provocation, the word "Po", the stepping stone method, the escape method, the random stimulation method, general use of lateral thinking, the logic of lateral thinking → here