

¶ Here is a method for measuring the profit potential of alternative product-market strategies, starting with a forecast of trends and contingencies and then working toward company needs and long-run objectives.

# Strategies for Diversification

By H. Igor Ansoff

The Red Queen said, "Now, *here*, it takes all the running *you* can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"<sup>1</sup>

So it is in the American economy. Just to retain its relative position, a business firm must go through continuous growth and change. To improve its position, it must grow and change at least "twice as fast as that."

According to a recent survey of the 100 largest United States corporations from 1909 to 1948, few companies that have stuck to their traditional products and methods have grown in stature. The report concludes: "There is no reason to believe that those now at the top will stay there except as they keep abreast in the race of innovation and competition."<sup>2</sup>

There are four basic growth alternatives open to a business. It can grow through increased market penetration, through market development, through product development, or through diversification.

A company which accepts diversification as a part of its planned approach to growth undertakes the task of continually weighing and comparing the advantages of these four alternatives, selecting first one combination and then another, depending on the particular circumstances in long-range development planning.

While they are an integral part of the over-

<sup>1</sup> Lewis J. Carroll, *Through the Looking-Glass* (New York, The Heritage Press, 1941), p. 41.

<sup>2</sup> A. D. H. Kaplan, *Big Enterprise in a Competitive System* (Washington, The Brookings Institution, 1954), p. 142.

all growth pattern, diversification decisions present certain unique problems. Much more than other growth alternatives, they require a break with past patterns and traditions of a company and an entry onto new and uncharted paths.

Accordingly, one of the aims of this article is to relate diversification to the over-all growth perspectives of management, establish reasons which may lead a company to prefer diversification to other growth alternatives, and trace a relationship between over-all growth objectives and special diversification objectives. This will provide us with a partly qualitative, partly quantitative method for selecting diversification strategies which are best suited to long-term growth of a company. We can use qualitative criteria to reduce the total number of possible strategies to the most promising few, and then apply a return on investment measure to narrow the choice of plans still further.

## Product-Market Alternatives

The term "diversification" is usually associated with a change in the characteristics of the company's product line and/or market, in contrast to market penetration, market development, and product development, which represent other types of change in product-market structure. Since these terms are frequently used interchangeably, we can avoid later confusion by defining each as a special kind of product-market strategy. To begin with the basic concepts:

¶ The *product line* of a manufacturing company refers both to (a) the physical characteristics of the individual products (for example, size, weight,

materials, tolerances) and to (b) the performance characteristics of the products (for example, an airplane's speed, range, altitude, payload).

¶ In thinking of the market for a product we can borrow a concept commonly used by the military — the concept of a mission. A *product mission* is a description of the job which the product is intended to perform. For instance, one of the missions of the Lockheed Aircraft Corporation is commercial air transportation of passengers; another is provision of airborne early warning for the Air Defense Command; a third is performance of air-to-air combat.

For our purposes, the concept of a mission is more useful in describing market alternatives than would be the concept of a "customer," since a customer usually has many different missions, each requiring a different product. The Air Defense Command, for example, needs different kinds of warning systems. Also, the product mission concept helps management to set up the problems in such a way that it can better evaluate the performance of competing products.

¶ A *product-market strategy*, accordingly, is a joint statement of a product line and the corresponding set of missions which the products are designed to fulfill. In shorthand form (see EXHIBIT I), if we let  $\pi$  represent the product line and  $\mu$  the corresponding set of missions, then the pair of  $\pi$  and  $\mu$  is a product-market strategy.

With these concepts in mind let us turn now to the four different types of product-market strategy shown in EXHIBIT I:

¶ *Market penetration* is an effort to increase company sales without departing from an original product-market strategy. The company seeks to improve business performance either by increasing the volume of sales to its present customers or by finding new customers for present products.

¶ *Market development* is a strategy in which the company attempts to adapt its present product line (generally with some modification in the product characteristics) to new missions. An airplane

EXHIBIT I. PRODUCT-MARKET STRATEGIES FOR BUSINESS GROWTH ALTERNATIVES

MARKETS		$\mu_0$	$\mu_1$	$\mu_2 \dots \dots \dots$	$\mu_m$
PRODUCT LINE	$\pi_0$	MARKET Penetration	MARKET DEVELOPMENT		
	$\pi_1$	PRODUCT DEVELOPMENT	DIVERSIFICATION		
$\pi_2$					
$\dots$					
$\pi_x$					

company which adapts and sells its passenger transport for the mission of cargo transportation is an example of this strategy.

¶ A *product development* strategy, on the other hand, retains the present mission and develops products that have new and different characteristics such as will improve the performance of the mission.

¶ *Diversification* is the final alternative. It calls for a simultaneous departure from the present product line and the present market structure.

Each of the above strategies describes a distinct path which a business can take toward future growth. However, it must be emphasized that in most actual situations a business would follow several of these paths at the same time. As a matter of fact, a simultaneous pursuit of market penetration, market development, and product development is usually a sign of a progressive, well-run business and may be essential to survival in the face of economic competition.

The diversification strategy stands apart from the other three. While the latter are usually followed with the same technical, financial, and merchandising resources which are used for the original product line, diversification generally requires new skills, new techniques, and new facilities. As a result, it almost invariably leads to physical and organizational changes in the structure of the business which represent a distinct break with past business experience.

### Forecasting Growth

A study of business literature and of company histories reveals many different reasons for diversification. Companies diversify to compensate for technological obsolescence, to distribute risk, to utilize excess productive capacity, to reinvest earnings, to obtain top management, and so forth. In deciding whether to diversify, management should carefully analyze its future growth prospects. It should think of market penetration, market development, and product development as parts of its over-all product strategy and ask whether this strategy should be broadened to include diversification.

### Long-Term Trends

A standard method of analyzing future company growth prospects is to use long-range sales forecasts. Preparation of such forecasts involves simultaneous consideration of a number of major factors:

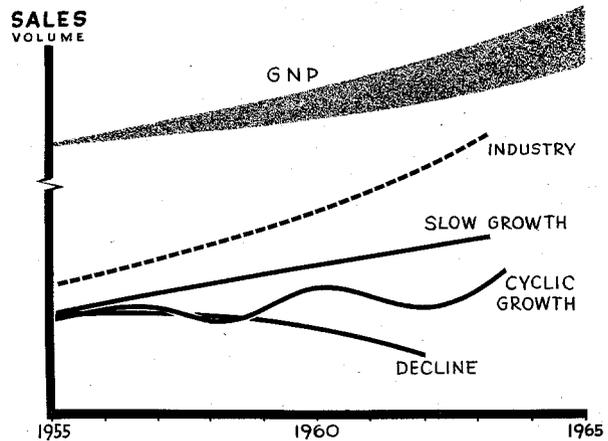
- General economic trends.
- Political and international trends.
- Trends peculiar to the industry. (For example, forecasts prepared in the airplane industry must take account of such possibilities as a changeover from manned aircraft to missiles, changes in the government "mobilization base" concept with all that would mean for the aircraft industry, and rising expenditures required for research and development.)
- Estimates of the firm's competitive strength relative to other members of the industry.
- Estimates of improvements in the company performance which can be achieved through market penetration, market development, and product development.
- Trends in manufacturing costs.

Such forecasts usually assume that company management will be aggressive and that management policies will take full advantage of the opportunities offered by the different trends. They are, in other words, estimates of the best possible results the business can hope to achieve *short* of diversification.

Different patterns of forecasted growth are shown in EXHIBIT II, with hypothetical growth curves for the national economy (GNP) and the company's industry added for purposes of comparison. One of the curves illustrates a sales curve which declines with time. This may be the result of an expected contraction of demand, the obsolescence of manufacturing techniques, emergence of new products better suited to the mission to which the company caters, or other changes. Another typical pattern, frequently caused by seasonal variations in demand, is one of cyclic sales activity. Less apparent, but more important, are slower cyclic changes, such as trends in construction or the peace-war variation in demand in the aircraft industry.

If the most optimistic sales estimates which can be attained short of diversification fall in either of the preceding cases, diversification is strongly indicated. However, a company may choose to diversify even if its prospects do, on the whole, appear favorable. This is illustrated by the "slow growth curve." As drawn in EXHIBIT II, the curve indicates rising sales which, in fact, grow faster than the economy as a whole. Nevertheless, the particular company may belong to one of the so-called "growth industries" which as a whole is surging ahead. Such a company may diversify because it feels that its pro-

EXHIBIT II. TREND FORECASTS



spective growth rate is unsatisfactory in comparison to the industry growth rate.

Making trend forecasts is far from a precise science. The characteristics of the basic environmental trends, as well as the effect of these trends on the industry, are always uncertain. Furthermore, the ability of a particular business organization to perform in the new environment is very difficult to assess. Consequently, any realistic company forecast should include several different trend forecasts, each with an explicitly or implicitly assigned probability. As an alternative, the company's growth trend forecast may be represented by a widening spread between two extremes, similar to that shown for GNP in EXHIBIT II.

### Contingencies

In addition to trends, another class of events may make diversification desirable. These are certain environmental conditions which, if they occur, will have a great effect on sales; however, we cannot predict their occurrence with certainty. To illustrate such "contingent" events, an aircraft company might foresee these possibilities that would upset its trend forecasts:

- A major technological "breakthrough" whose characteristics can be foreseen but whose timing cannot at present be determined, such as the discovery of a new manufacturing process for high-strength, thermally resistant aircraft bodies.
- An economic recession which would lead to loss of orders for commercial aircraft and would change the pattern of spending for military aircraft.
- A major economic depression.
- A limited war which would sharply increase the demand for air industry products.

- A sudden cessation of the cold war, a currently popular hope which has waxed and waned with changes in Soviet behavior.

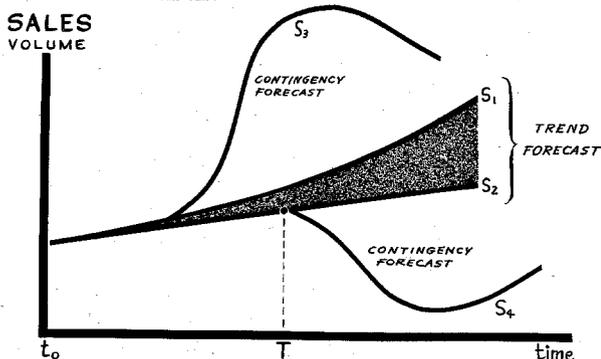
The two types of sales forecast are illustrated in EXHIBIT III for a hypothetical company. Sales curves  $S_1$  and  $S_2$  represent a spread of trend forecasts; and  $S_3$  and  $S_4$ , two contingent forecasts for the same event. The difference between the two types, both in starting time and effect on sales, lies in the degree of uncertainty associated with each.

In the case of trend forecasts we can trace a crude time history of sales based on events which we fully expect to happen. Any uncertainty arises from not knowing exactly when they will take place and how they will influence business. In the case of contingency forecasts, we can again trace a crude time history, but our uncertainty is greater. We lack precise knowledge of not only *when* the event will occur but also *whether* it will occur. In going from a trend to a contingency forecast, we advance, so to speak, one notch up the scale of ignorance.

In considering the relative weight we should give to contingent events in diversification planning, we must consider not only the magnitude of their effect on sales, but also the relative probability of their occurrence. For example, if a severe economic depression were to occur, its effect on many industries would be devastating. Many companies feel safe in neglecting it in their planning, however, because they feel that the likelihood of a deep depression is very small, at least for the near future.

It is a common business practice to put primary emphasis on trend forecasts; in fact, in many cases businessmen devote their long-range planning exclusively to these forecasts. They usually view a possible catastrophe as "something one cannot plan for" or as a second-order

EXHIBIT III. A HYPOTHETICAL COMPANY FORECAST — NO DIVERSIFICATION



correction to be applied only after the trends have been taken into account. The emphasis is on planning for growth, and planning for contingencies is viewed as an "insurance policy" against reversals.

People familiar with planning problems in the military establishment will note here an interesting difference between military and business attitudes. While business planning emphasizes trends, military planning emphasizes contingencies. To use a crude analogy, a business planner is concerned with planning for continuous, successful, day-after-day operation of a supermarket. If he is progressive, he also buys an insurance policy against fire, but he spends relatively little time in planning for fires. The military is more like the fire engine company; the fire is the thing. Day-to-day operations are of interest only insofar as they can be utilized to improve readiness and fire-fighting techniques.

#### Unforeseeable Events

So far we have dealt with diversification forecasts based on what may be called *foreseeable* market conditions — conditions which we can interpret in terms of time-phased sales curves. Planners have a tendency to stop here, to disregard the fact that, in addition to the events for which we can draw time histories, there is a recognizable class of events to which we can assign a probability of occurrence but which we cannot otherwise describe in our present state of knowledge. One must move another notch up the scale of ignorance in order to consider these possibilities.

Many businessmen feel that the effort is not worthwhile. They argue that since no information is available about these unforeseeable circumstances, one might as well devote the available time and energy to planning for the foreseeable circumstances, or that, in a very general sense, planning for the foreseeable also prepares one for the unforeseeable contingencies.

In contrast, more experienced military and business people have a very different attitude. Well aware of the importance and relative probability of unforeseeable events, they ask why one should plan specific steps for the foreseeable events while neglecting the really important possibilities. They may substitute for such planning practical maxims for conducting one's business — "be solvent," "be light on your feet," "be flexible." Unfortunately, it is not always clear

proved position in their own industry may be identified as companies that are notable for drastic changes made in their product mix and methods, generating or responding to new competition.

"There are two outstanding cases in which the industry leader of 1909 had by 1948 risen in position relative to its own industry group and also in rank among the 100 largest — one in chemicals and the other in electrical equipment. These two (General Electric and DuPont) are hardly recognizable as the same companies they were in 1909 except for retention of the name; for in each case the product mix of 1948 is vastly different from what it was in the earlier year, and the markets in which the companies meet competition are incomparably broader than those that accounted for their earlier place at the top of their industries. They exemplify the flux in the market positions of the most successful industrial giants during the past four decades and a general growth rather than a consolidation of supremacy in a circumscribed line."<sup>4</sup>

This suggests that the existence of specific undesirable trends is not the only reason for diversification. A broader product line may be called for even with optimistic forecasts for present products. An examination of the foreseeable alternatives should be accompanied by an analysis of how well the over-all company product-market strategy covers the so-called growth areas of technology — areas of many potential discoveries. If such analysis shows that, because of its product lines, a company's chances of taking advantage of important discoveries are limited, management should broaden its technological and economic base by entering a number of so-called "growth industries." Even if the definable horizons look bright, a need for flexibility, in the widest sense of the word, may provide potent reasons for diversification.

### Diversification Objectives

If an analysis of trends and contingencies indicates that a company should diversify, where should it look for diversification opportunities?

Generally speaking, there are three types of opportunities:

(1) Each product manufactured by a company is made up of functional components, parts, and basic materials which go into the final assembly. A manufacturing concern usually buys a large fraction of these from outside suppliers. One way

to diversify, commonly known as *vertical diversification*, is to branch out into production of components, parts, and materials. Perhaps the most outstanding example of vertical diversification is the Ford empire in the days of Henry Ford, Sr.

At first glance, vertical diversification seems inconsistent with our definition of a diversification strategy. However, the respective missions which components, parts, and materials are designed to perform are distinct from the mission of the over-all product. Furthermore, the technology in fabrication and manufacture of these parts and materials is likely to be very different from the technology of manufacturing the final product. Thus, vertical diversification does imply both catering to new missions and introduction of new products.

(2) Another possible way to go is *horizontal diversification*. This can be described as the introduction of new products which, while they do not contribute to the present product line in any way, cater to missions which lie within the company's know-how and experience in technology, finance, and marketing.

(3) It is also possible, by *lateral diversification*, to move beyond the confines of the industry to which a company belongs. This obviously opens a great many possibilities, from operating banana boats to building atomic reactors. While vertical and horizontal diversification are restrictive, in the sense that they delimit the field of interest, lateral diversification is "wide open." It is an announcement of the company's intent to range far afield from its present market structure.

### Choice of Direction

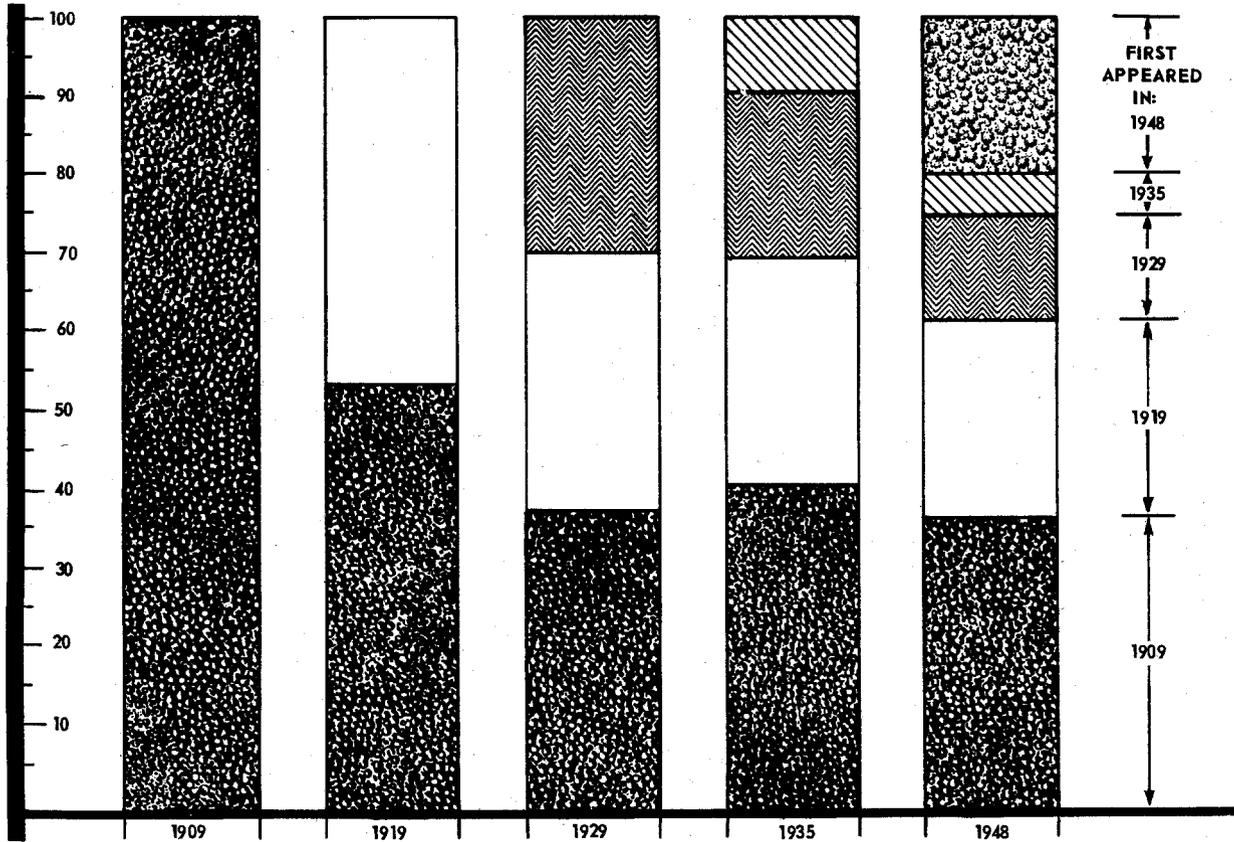
How does a company choose among these diversification directions? In part the answer depends on the reasons which prompt diversification. For example, in the light of the trends described for the industry, an aircraft company may make the following moves to meet long-range sales objectives through diversification:

1. A vertical move to contribute to the technological progress of the present product line.
2. A horizontal move to improve the coverage of the military market.
3. A horizontal move to increase the percentage of commercial sales in the over-all sales program.
4. A lateral move to stabilize sales in case of a recession.
5. A lateral move to broaden the company's technological base.

Some of these diversification objectives apply to characteristics of the product, some to those

<sup>4</sup> *Ibid.*, p. 142.

EXHIBIT IV. CHANGES IN LIST OF THE 100 LARGEST INDUSTRIAL CORPORATIONS



(even to the people who preach it) what this flexibility means.

An interesting study by The Brookings Institution<sup>3</sup> provides an example of the importance of the unforeseeable events to business. EXHIBIT IV shows the changing make-up of the list of the 100 largest corporations over the last 50 years. Of the 100 largest on the 1909 list (represented by the heavy marbled texture) only 36 were among the 100 largest in 1948; just about half of the new entries to the list in 1919 (represented by white) were left in 1948; less than half of the new entries in 1929 (represented by the zigzag design) were left in 1948; and so on. Clearly, a majority of the giants of yesteryear have dropped behind in a relatively short span of time.

Many of the events that hurt these corporations could not be specifically foreseen in 1909. If the companies which dropped from the original list had made forecasts of the foreseeable kind at that time — and some of them must have — they would very likely have found the future growth prospects to be excellent. Since then, however, railroads, which loomed as the

<sup>3</sup> A. D. H. Kaplan, *op. cit.*

primary means of transportation, have given way to the automobile and the airplane; the textile industry, which appeared to have a built-in demand in an expanding world population, has been challenged and dominated by synthetics; radio, radar, and television have created means of communication unforeseeable in significance and scope; and many other sweeping changes have occurred.

#### Planning for the Unknown

The lessons of the past 50 years are fully applicable today. The pace of economic and technological change is so rapid that it is virtually certain that major breakthroughs comparable to those of the last 50 years, but not yet foreseeable in scope and character, will profoundly change the structure of the national economy. All of this has important implications for diversification, as suggested by the Brookings study:

"The majority of the companies included among the 100 largest of our day have attained their positions within the last two decades. They are companies that have started new industries or have transformed old ones to create or meet consumer preferences. The companies that have not only grown in absolute terms but have gained an im-

of the product missions. Each objective is designed to improve some aspect of the balance between the over-all product-market strategy and the expected environment. The specific objectives derived for any given case can be grouped into three general categories: *growth objectives*, such as 1, 2, and 3 above, which are designed to improve the balance under favorable trend conditions; *stability objectives*, such as 3 and 4, designed as protection against unfavorable trends and foreseeable contingencies; and *flexibility objectives*, such as 5, to strengthen the company against unforeseeable contingencies.

A diversification direction which is highly desirable for one of the objectives is likely to be less desirable for others. For example:

☐ If a company is diversifying because its sales trend shows a declining volume of demand, it would be unwise to consider vertical diversification, since this would be at best a temporary device to stave off an eventual decline of business.

☐ If a company's industry shows every sign of healthy growth, then vertical and, in particular, horizontal diversification would be a desirable device for strengthening the position of the company in a field in which its knowledge and experience are concentrated.

☐ If the major concern is stability under a contingent forecast, chances are that both horizontal and vertical diversification could not provide a sufficient stabilizing influence and that lateral action is called for.

☐ If management's concern is with the narrowness of the technological base in the face of what we have called unforeseeable contingencies, then lateral diversification into new areas of technology would be clearly indicated.

### Measured Sales Goals

Management can and should state the objectives of growth and stability in quantitative terms as *long-range sales objectives*. This is illustrated in EXHIBIT V. The solid lines describe a hypothetical company's forecasted performance without diversification under a general trend, represented by the sales curve marked  $S_1$ , and in a contingency, represented by  $S_2$ . The dashed lines show the improved performance as a result of diversification, with  $S_3$  representing the curve for continuation of normal trends and  $S_4$  representing the curve for a major reverse.

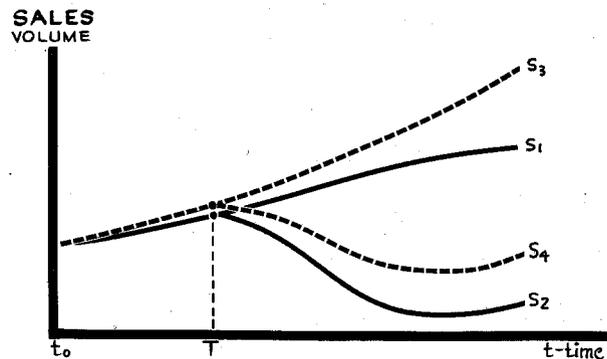
*Growth.* Management's first aim in diversifying is to improve the growth pattern of the company. The growth objective can be stated thus:

Under trend conditions the growth rate of sales after diversification should exceed the growth rate of sales of the original product line by a minimum specified margin. Or to illustrate in mathematical shorthand, the objective for the company in EXHIBIT V would be:

$$S_3 - S_1 \geq \rho$$

where the value of the margin  $\rho$  is specified for each year after diversification.

EXHIBIT V. DIVERSIFICATION OBJECTIVES



Some companies (particularly in the growth industries) fix an annual rate of growth which they wish to attain. Every year this rate of growth is compared to the actual growth during the past year. A decision on diversification action for the coming year is then based upon the disparity between the objective and the actual rate of growth.

*Stability.* The second effect desired of diversification is improvement in company stability under contingent conditions. Not only should diversification prevent sales from dropping as low as they might have before diversification, but the percentage drop should also be lower. The second sales objective is thus a stability objective. It can be stated as follows:

Under contingent conditions the percentage decline in sales which may occur without diversification should exceed the percentage drop in sales with diversification by an adequate margin, or algebraically:

$$\frac{S_1 - S_2}{S_1} - \frac{S_3 - S_4}{S_3} \geq \delta$$

Using this equation, it is possible to relate the sales volumes before and after diversification to a rough measure of the resulting stability. Let the ratio of the lowest sales during a slump to the sales which would have occurred in the same year under trend conditions be called the stability factor  $F$ . Thus,  $F = 0.3$  would mean that the company sales during a contingency

amount to 30% of what is expected under trend conditions. In EXHIBIT VI the stability factor of the company before diversification is the value  $F_1 = S_2/S_1$  and the stability factor after diversification is  $F_3 = S_4/S_3$ , both computed at the point on the curve where  $S_2$  is minimum.

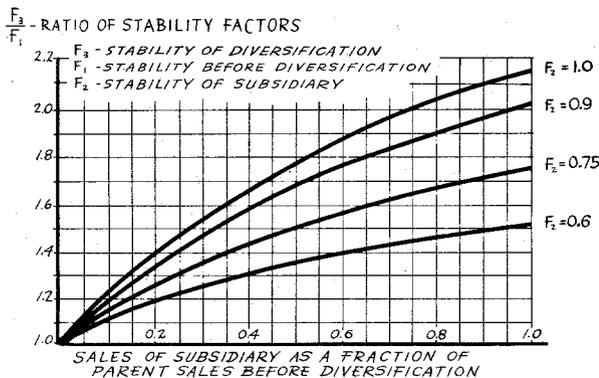
Now let us suppose that management is considering the purchase of a subsidiary. How large does the subsidiary have to be if the parent is to improve the stability of the corporation as a whole by a certain amount? EXHIBIT VI shows how the question can be answered:

On the horizontal axis we plot the different possible sales volumes of a smaller firm that might be secured as a proportion of the parent's volume. Obviously, the greater this proportion, the greater the impact of the purchase on the parent's stability.

On the vertical axis we plot different ratios of the parent's stability before and after diversification ( $F_3/F_1$ ).

The assumed stability factor of the parent is 0.3. Let us say that four prospective subsidiaries have stability factors of 1.0, 0.9, 0.75, and 0.6. If they were not considerably higher than 0.3, of course, there would be no point in acquiring them (at least for our purposes here).

EXHIBIT VI. IMPROVEMENT IN STABILITY FACTOR AS A RESULT OF DIVERSIFICATION FOR  $F_1 = 0.3$



On the graph we correlate these four stability factors of the subsidiary with (1) the ratio  $F_3/F_1$  and (2) different sales volumes of the subsidiary. We find, for example, that if the parent is to double its stability (point 2.0 on the vertical axis), it must obtain a subsidiary with a stability of 1.0 and 75% as much sales volume as the parent, or a subsidiary with a stability of 0.9 and 95% of the sales volume. If the parent seeks an improvement in stability of, say, only 40%, it could buy a company with a stability of 0.9 and 25% as much sales volume as it has.

This particular way of expressing sales objectives has two important advantages: (1) By

setting minimum, rather than maximum, limits on growth, it leaves room for the company to take advantage of unusual growth opportunities in order to exceed these goals, and thus provides definite goals without inhibiting initiative and incentive. (2) It takes account of the time-phasing of diversification moves; and since these moves invariably require a transition period, the numerical values of growth objectives can be allowed to vary from year to year so as to allow for a gradual development of operations.

## Long-Range Objectives

Diversification objectives specify directions in which a company's product-market should change. Usually there will be several objectives indicating different and sometimes conflicting directions. If a company attempts to follow all of them simultaneously, it is in danger of spreading itself too thin and of becoming a conglomeration of incompatible, although perhaps individually profitable, enterprises.

There are cases of diversification which have followed this path. In a majority of cases, however, there are valid reasons why a company should seek to preserve certain basic unifying characteristics as it goes through a process of growth and change. Consequently, diversification objectives should be supplemented by a statement of long-range product-market objectives. For instance:

☐ One consistent course of action is to adopt a product-market policy which will preserve a kind of technological coherence among the different manufactures with the focus on the products of the parent company. For instance, a company that is mainly distinguished for a type of engineering and production excellence would continue to select product-market entries which would strengthen and maintain this excellence. Perhaps the best known example of such policy is exemplified by the DuPont slogan, "Better things for better living through chemistry."

☐ Another approach is to set long-term growth policy in terms of the breadth of market which the company intends to cover. It may choose to confine its diversifications to the vertical or horizontal direction, or it may select a type of lateral diversification controlled by the characteristics of the missions to which the company intends to cater. For example, a company in the field of air transportation may expand its interest to all forms of transportation of people and cargo. To paraphrase DuPont, some slogan like "Better trans-

portation for better living through advanced engineering," would be descriptive of such a long-range policy.

¶ A greatly different policy is to emphasize primarily the financial characteristics of the corporation. This method of diversification generally places no limits on engineering and manufacturing characteristics of new products, although in practice the competence and interests of management will usually provide some orientation for diversification moves. The company makes the decisions regarding the distribution of new acquisitions exclusively on the basis of financial considerations. Rather than a manufacturing entity, the corporate character is now one of a "holding company." Top management delegates a large share of its product-planning and administrative functions to the divisions and concerns itself largely with coordination, financial problems, and with building up a balanced "portfolio of products" within the corporate structure.

### Successful Alternatives

These alternative long-range policies demonstrate the extremes. No one course is necessarily better than the others; management's choice will rest in large part on its preferences, objectives, skills, and training. The aircraft industry illustrates the fact that there is more than one successful path to diversification:

¶ Among the major successful airframe manufacturers, Douglas Aircraft Company, Inc., and Boeing Airplane Company have to date limited their growth to horizontal diversification into missiles and new markets for new types of aircraft. Lockheed has carried horizontal diversification further to include aircraft maintenance, aircraft service, and production of ground-handling equipment.

¶ North American Aviation, Incorporated, on the other hand, appears to have chosen vertical diversification by establishing its subsidiaries in Atomics International, Autonetics, and Rocketdyne, thus providing a basis for manufacture of complete air vehicles of the future.

¶ Bell Aircraft Corporation has adopted a policy of technological consistency among the items in its product line. It has diversified laterally but primarily into types of products for which it had previous know-how and experience.

¶ General Dynamics Corporation provides a further interesting contrast. It has gone far into lateral diversification. Among the major manufacturers of air vehicles, it comes closest to the "holding company" extreme. Its airplanes and missile manufacturing operations in Convair are paralleled by production of submarines in the Electric Boat

Division; military, industrial, and consumer electronic products in the Stromberg-Carlson Division; electric motors in the Electro Dynamic Division.

### Selecting a Strategy

In the preceding sections qualitative criteria for diversification have been discussed. How should management apply these criteria to individual opportunities? Two steps should be taken: (1) apply the qualitative standards to narrow the field of diversification opportunities; (2) apply the numerical criteria to select the preferred strategy or strategies.

### Qualitative Evaluation

The long-range product-market policy is used as a criterion for the first rough cut in the qualitative evaluation. It can be used to divide a large field of opportunities into classes of diversification moves consistent with the company's basic character. For example, a company whose policy is to compete on the basis of the technical excellence of its products would eliminate as inconsistent classes of consumer products which are sold on the strength of advertising appeal rather than superior quality.

Next, the company can compare each individual diversification opportunity with the individual diversification objectives. This process tends to eliminate opportunities which, while still consistent with the desired product-market make-up, are nevertheless likely to lead to an imbalance between the company product line and the probable environment. For example, a company which wishes to preserve and expand its technical excellence in design of large, highly stressed machines controlled by feedback techniques may find consistent product opportunities both inside and outside the industry to which it caters, but if one of its major diversification objectives is to correct cyclic variations in demand that are characteristic of the industry, it would choose an opportunity that lies outside.

Each diversification opportunity which has gone through the two screening steps satisfies at least one diversification objective, but probably it will not satisfy all of them. Therefore, before subjecting them to the quantitative evaluation, it is necessary to group them into several alternative over-all company product-market strategies, composed of the original strategy and one or more of the remaining diversification strategies. These alternative over-all strategies should be

roughly equivalent in meeting all of the diversification objectives.

At this stage it is particularly important to allow for the unforeseeable contingencies. Since the techniques of numerical evaluation are applicable only to trends and foreseeable contingencies, it is important to make sure that the different alternatives chosen give the company a broad enough technological base. In practice this process is less formidable than it may appear. For example, a company in the aircraft industry has to consider the areas of technology in which major discoveries are likely to affect the future of the industry. This would include atomic propulsion, certain areas of electronics, automation of complex processes, and so forth. In designing alternative over-all strategies the company would then make sure that each contains product entries which will give the firm a desirable and comparable degree of participation in these future growth areas.

### Quantitative Evaluation

Will the company's product-market strategies make money? Will the profit structure improve as a result of their adoption? The purpose of quantitative evaluation is to compare the profit potential of the alternatives.

Unfortunately, there is no single yardstick among those commonly used in business that gives an accurate measurement of performance. The techniques currently used for measurement of business performance constitute, at best, an imprecise art. It is common to measure different aspects of performance by applying different tests. Thus, tests of income adequacy measure the earning ability of the business; tests of debt coverage and liquidity measure preparedness for contingencies; the shareholders' position measures attractiveness to investors; tests of sales efficiency and personnel productivity measure efficiency in the use of money, physical assets, and personnel. These tests employ a variety of different performance ratios, such as return on sales, return on net worth, return on assets, turnover of net worth, and ratio of assets to liabilities. The total number of ratios may run as high as 20 in a single case.

In the final evaluation, which immediately precedes a diversification decision, management would normally apply all of these tests, tempered with business judgment. However, for the purpose of preliminary elimination of alternatives, a single test is frequently used —

return on investment, a ratio between earnings and the capital invested in producing these earnings. While the usefulness of return on investment is commonly accepted, there is considerable room for argument regarding its limitations and its practical application.<sup>5</sup> Fundamentally, the difficulty with the concept is that it fails to provide an absolute measure of business performance applicable to a range of very different industries; also, the term "investment" is subject to a variety of interpretations.

But, since our aim is to use the concept as a measure of *relative* performance of different diversification strategies, we need not be concerned with its failure to measure absolute values. And as long as we are consistent in our definition of investment in alternative courses of action, the question of terminology is not so troublesome. We cannot define profit-producing capital in general terms, but we can define it in each case in the light of particular business characteristics and practices (such as the extent of government-owned assets, depreciation practices, inflationary trends).

For the numerator of our return on investment, we can use net earnings after taxes. A going business concern has standard techniques for estimating its future earnings. These depend on the projected sales volume, tax structure, trends in material and labor costs, productivity, and so forth. If the diversification opportunity being considered is itself a going concern, its profit projections can be used for estimates of combined future earnings. If the opportunity is a new venture, its profit estimates should be made on the basis of the average performance for the industry.

### Changes in Investment Structure

A change in the investment structure of the diversifying company accompanies a diversification move. The source of investment for the new venture may be: (1) excess capital, (2) capital borrowed at an attractive rate, (3) an exchange of the company's equity for an equity in another company, or (4) capital withdrawn from present business operations.

If we let  $i_1$ ,  $i_2$ ,  $i_3$ , and  $i_4$ , respectively, repre-

<sup>5</sup> See Charles R. Schwartz, *The Return-on-Investment Concept as a Tool for Decision Making*, General Management Series No. 183 (New York, American Management Association, 1956), pp. 42-61; Peter F. Drucker, *The Practice of Management* (New York, Harper & Brothers, 1954); and Edward M. Barnett, "Showdown in the Market Place," *HBR* July-August 1956, p. 85.

sent investments made in the new product in the preceding four categories during the first year of diversified operations, we can derive a simple expression for the *improvement* in return on investment resulting from diversification:

$$\Delta R = \frac{(p_2 - p_1)(i_2 + i_3 + i_4) + (p_2 - r)i_1 - i_2r + (p_1 - r)(i_3 + i_4)i_1}{I + i_2 + i_3}$$

where  $p_1$  and  $p_2$  represent the average return on capital invested in the original product and in the new product, respectively, and quantity  $I$  is the total capital in the business before diversification.

We can easily check this expression by assuming that only one type of new investment will be made at a time. We can then use the formula to compute the conditions under which it pays to diversify (that is, conditions where  $\Delta R$  is greater than zero):

(1) If excess capital is the only source of new investment ( $i_2 = i_3 = i_4 = 0$ ), this condition is  $p_2 - r > 0$ . That is, return on diversified operations should be more attractive than current rates for capital on the open market.

(2) If only borrowed capital is used ( $i_1 = i_3 = i_4 = 0$ ), it pays to diversify if  $p_2 - p_1 > r$ . That is, the difference between return from diversification and return from the original product should be greater than the interest rate on the money.

(3) If the diversified operation is to be acquired through an exchange of equity or through internal reallocation of capital,  $p_2 - p_1 > 0$  is the condition under which diversification will pay off.

### A Comprehensive Yardstick

The formula for  $\Delta R$  just stated is not sufficiently general to serve as a measure of profit potential. It gives improvement in return for the first year only and for a particular sales trend. In order to provide a reasonably comprehensive comparison between alternative over-all company strategies, the yardstick for profit potential should possess the following properties:

(1) Since changes in the investment structure of the business invariably accompany diversification, the yardstick should reflect these changes. It should also take explicit account of new capital brought into the business and changes in the rate of capital formation resulting from diversification, as well as costs of borrowed capital.

(2) Usually the combined performance of the new and the old product-market lines is not a simple sum of their separate performances; it should

be greater. The profit potential yardstick must take account of this nonlinear characteristic.

(3) Each diversification move is characterized by a transition period during which readjustment of the company structure to new operating conditions takes place. The benefits of a diversification move may not be realized fully for some time, so the measurement of profit potential should span a sufficient length of time to allow for effects of the transition.

(4) Since both profits and investments will be spread over time, the yardstick should use their present value.

(5) Business performance will differ depending on the particular economic-political environment. The profit potential yardstick must somehow average out the probable effect of alternative environments.

(6) The statement of sales objectives, as pointed out previously, should specify the general characteristics of growth and stability which are desired. Profit potential functions should be compatible with these characteristics.

We can generalize our formula in a way which will meet most of the preceding requirements. The procedure is to write an expression for the present value of  $\Delta R$  for an arbitrary year,  $t$ , allowing for possible yearly diversification investments up to the year  $t$ , interest rates, and the rate of capital formation. Then this present value is averaged over time as well as over the alternative sales forecasts. The procedure is straightforward (although the algebra involved is too cumbersome to be worth reproducing here<sup>6</sup>). The result, which is the "average expected present value of  $\Delta R$ ," takes account of conditions (1) through (5), above. Let us call it  $(\Delta R)_e$ . It can be computed using data normally found in business and financial forecasts.

### Final Evaluation

This brings us to the final step in the evaluation. We have discussed a qualitative method for constructing several over-all product-market strategies which meet the diversification and the long-range objectives. We can now compute  $(\Delta R)_e$  for each of the over-all strategies and, at the same time, make sure that the strategies satisfy the sales objectives previously stated, thus fulfilling condition (6), above.

If product-market characteristics, which we have used to narrow the field of choice and to compute  $(\Delta R)_e$ , were the sole criteria, then the

<sup>6</sup> See H. Igor Ansoff, *A Model for Diversification* (Burbank, Lockheed Aircraft Corporation, 1957); and John

Burr Williams, *The Theory of Investment Value* (Amsterdam, The North-Holland Publishing Co., 1938).

strategy with the highest  $(\Delta R)_e$  would be the "preferred" path to diversification. The advantages of a particular product-market opportunity, however, must be balanced against the chances of business success.

### Conclusion

A study of diversification histories shows that a firm usually arrives at a decision to make a particular move through a multistep process. The planners' first step is to determine the preferred areas for search; the second is to select a number of diversification opportunities within these areas and to subject them to a preliminary evaluation. They then make a final evaluation, conducted by the top management, leading to selection of a specific step; finally, they work out details and complete the move.

Throughout this process, the company seeks to answer two basic questions: How well will a particular move, if it is successful, meet the company's objectives? What are the company's chances of making it a success? In the early stages of the program, the major concern is with business strategy. Hence, the first question plays a dominant role. But as the choice narrows, considerations of business ability, of the particular strengths and weaknesses which a company brings to diversification, shift attention to the second question.

This discussion has been devoted primarily to selection of a diversification strategy. We have dealt with what may be called *external* aspects of diversification — the relation between a company and its environment. To put it another way, we have derived a method for measuring the profit potential of a diversification strategy, but we have not inquired into the *internal* factors which determine the ability of a diversifying company to make good this potential. A company planning diversification must consider such questions as how the company should organize to conduct the search for and evaluation of diversification opportunities; what method of business expansion it should employ; and how it should mesh its operations with those of a subsidiary. These considerations give rise to a new set of criteria for the *business fit* of the prospective venture. These must be used in conjunction with  $(\Delta R)_e$  as computed in the preceding section to determine which of the over-all product-market strategies should be selected for implementation.

Thus, the steps outlined in this article are the first, though an important, preliminary to a diversification move. Only through further careful consideration of probable business success can a company develop a long-range strategy that will enable it to "run twice as fast as that" (using the Red Queen's words again) in the ever-changing world of today.

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**I**N a highly diversified company . . . there is a natural tendency to assign a single executive the responsibility for so many diverse businesses that he becomes a jack of all trades and a master of none. . . .

This is serious, because American business competition no longer permits survival of businesses without managers of special intelligence and competence in their individual fields. Therefore, as a continuing process, we attempt to organize our company [W. R. Grace & Co.] so that the manager for any business or group of businesses is as expert in them as his competition. This is sometimes difficult. As one important aid, we have tried to minimize the number of management levels; we have tried to keep the organization "flat." The more management levels you have, we feel, the more friction, inertia and slack you have to overcome, and the greater the distortion of objectives and the misdirection of attention. In this you must always be on your guard, because levels of management, like tree rings, grow with age. As one company president put it, "If all an executive does is agree with his subordinate executive, you don't need both of them."

Ernest C. Arbuckle, "Diversification," *Management for Growth*, edited by Gayton E. Germane  
Stanford University, Graduate School of Business, 1957, pp. 85-86.

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