

THE LIFE-CYCLE APPROACH TO STRATEGIC PLANNING

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WP #1493-83

October 1983

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The life-cycle concept has long been recognized as a valuable tool for analyzing the dynamic evolution of products in the market place. It is derived from the fact that a product's sales volume follows a typical pattern that can readily be charted as a four-phase cycle known as embryonic, growth, maturity, and aging.

The managerial implications of the product life-cycle have been widely documented. See, for example, Clifford (1980), Urban and Hauser (1980), Kotler (1980). Moreover, the linkage between the product life-cycle and strategic management has been a subject of increasing attention (Luck and Ferrell, 1979; Porter, 1980, Chapter 8). Also much attention has been given to the relationship between the product life-cycle and management of innovation and product technology (Abernathy and Utterback, 1982, Utterback 1978, Hayes and Wheelwright 1979a and 1979b, Moore and Tushman, 1982).

Although normally the stages within the product life-cycle are characterized by their corresponding sales growth, it is important to understand how often financial characteristics impact each stage, such as profit and cash-flow. As shown in Figure 1, profits are negative throughout all or most of the embryonic phase, but tend to increase sharply during the growth phase, prior to leveling off and subsequent steady decline at the maturity phase, when normally competitive pressure begins to erode profit margins. At the very end of the aging phase, profits could even turn negative, if there is not a timely disinvestment of the business or product. What is even more impacting is the behavior of cash flows, which take large negative values during the embryonic and growth stages, representing an investment into the future, to be compensated during the maturity and aging phases, when positive cash flows become significant.

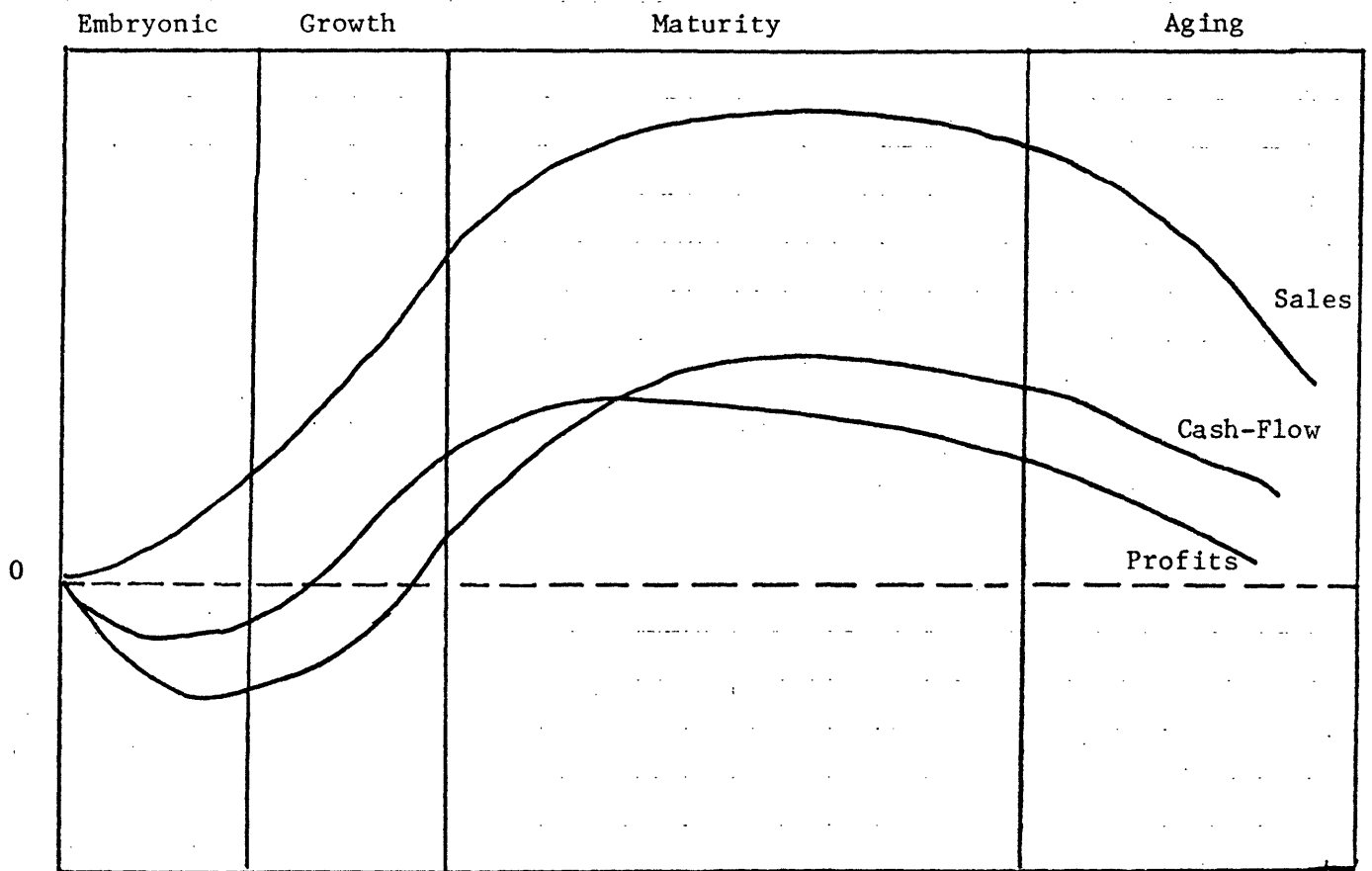


Figure 1: Yearly Sales, Cash-flow, and Profits Through the Life-cycle Stages.

Obviously, the patterns just described attempt to represent the characteristics of the "natural" behavior of a typical product. There are numerous exceptions to this, surrounded by a high degree of controversy on the real meaning of the product life-cycle, which we will explore at the end of this paper.

Despite this controversy, it is understandable that very many industries, in particular high-technology ones with a rapid pace of innovation, center a great deal of attention in the challenges of managing products with short life time.

The implications of the product life-cycle become central for the implementation and development of strategies in those industries. Accordingly, Arthur D. Little Inc. (ADL) has proposed a fairly structural methodology to guide strategic choices based on the life-cycle concept (Osell and Wright, 1980, Forbes and Bate, 1980, Arthur D. Little, 1974, 1979, 1982).

This approach is supported by another type of portfolio matrix, whose primary dimensions are the life-cycle stages and the competitive position. Schematically, the ADL strategic planning methodology is summarized in Figure 2. The rest of this paper is directed to the presentation of that methodology.

1. The Life-cycle Portfolio Matrix

The business portfolio matrix suggested by ADL shares the same attributes of the previous matrices we have discussed - the growth/share matrix, and the industry attractiveness/business strength matrix -; that is, it is a pictorial representation of all the businesses of the firm, in two dimensions. One represents the impact of the external forces, normally uncontrollable by the firm. ADL chose the four stages of the business life-cycle as descriptors of the industry characteristics. The second dimension represents the strengths the firm has in the industry in which each of its businesses compete. ADL selected six categories of competitive positioning (dominant, strong, favorable, tenable, weak, and non viable.).

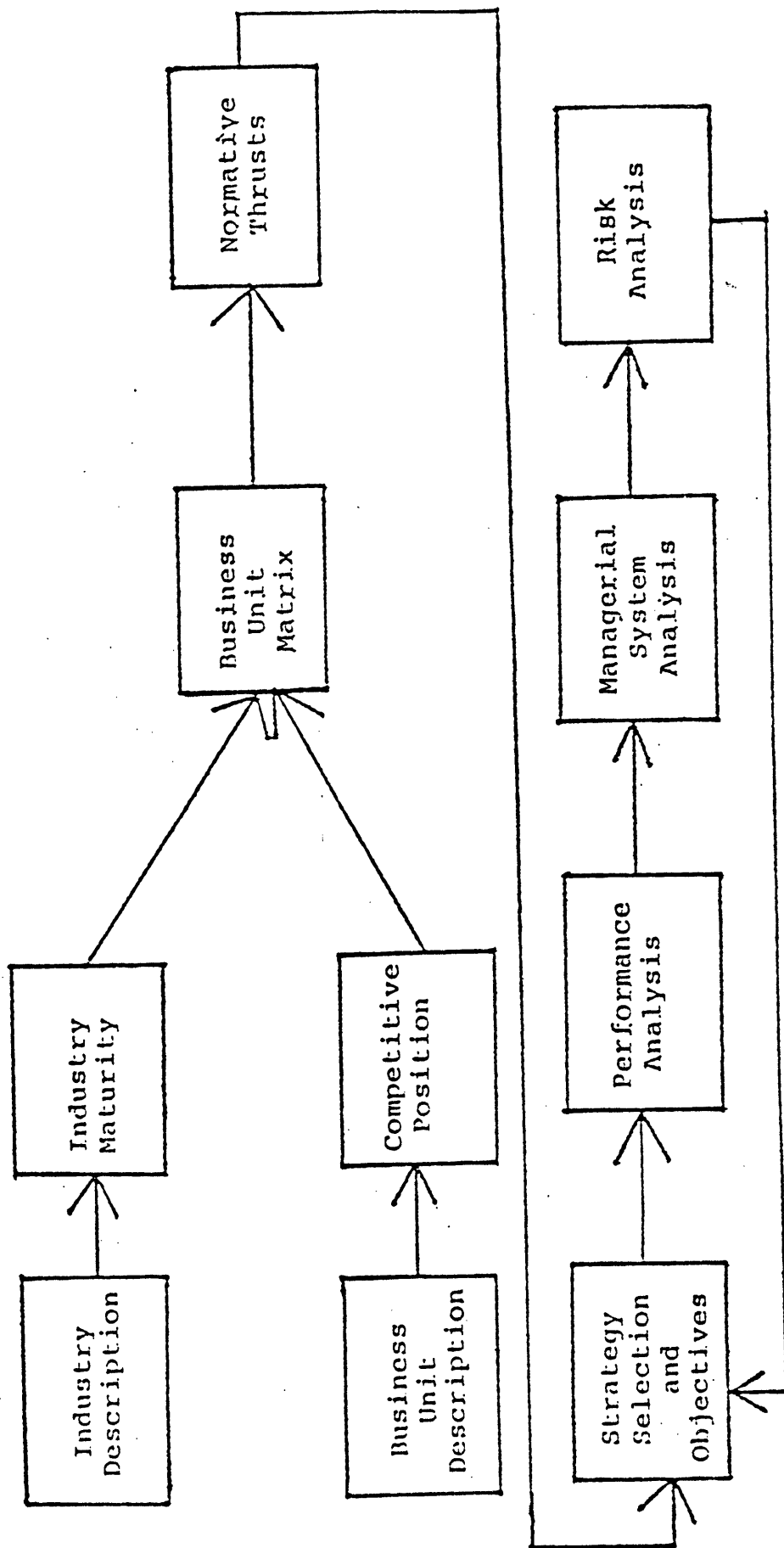


Figure 2: ADL Strategic Planning Methodology

Figure 3 presents the six-by-four resulting portfolio matrix. As is the case with all of the previously discussed matrices, the position of a business unit within it suggests the pursuit of some natural strategic objectives. Often, a major way of articulating those objectives is to reflect upon a desirable market share position, the need to deploy financial resources to support investment requirements, and the expectations with regard to cash flows required from or contributed to the corporation. Figures 4, 5, and 6 provide some suggestions for strategic positioning according to these three dimensions.

The use of this matrix is, therefore, conditioned to three primary tasks. One is to segment the business of the firm into relatively independent SBUs, which will lend themselves to being analyzed in terms of the two dimensions of the matrix. Two, is to guide managers through a systematic process in assessing the stage of the life-cycle in which each business falls. And three, is to provide some support to identify the categories of competitive positioning of each individual business. These three subjects will be briefly reviewed now.

1.1 Criteria for Business Segmentation

ADL assigns the label "strategy center" to what we have referred to as Strategic Business Unit (SBU). A strategy center is a natural business, that is, a business area with an external marketplace for goods or services, and for which one can determine independent objectives and strategies.

In order to build business strategies, the first task of managers is to segment the firm into a set of natural businesses. To accomplish that, ADL suggests the use of a set of clues which are grounded on conditions in the marketplace rather than in internally shared resources, such as sharing of manufacturing facilities, common technology, or joint distribution channels. Once again, the emphasis on segmentation is articulated in terms of the external environment, attempting to establish the roots of business identification in the behavior of competitors, instead of being driven by internal functional

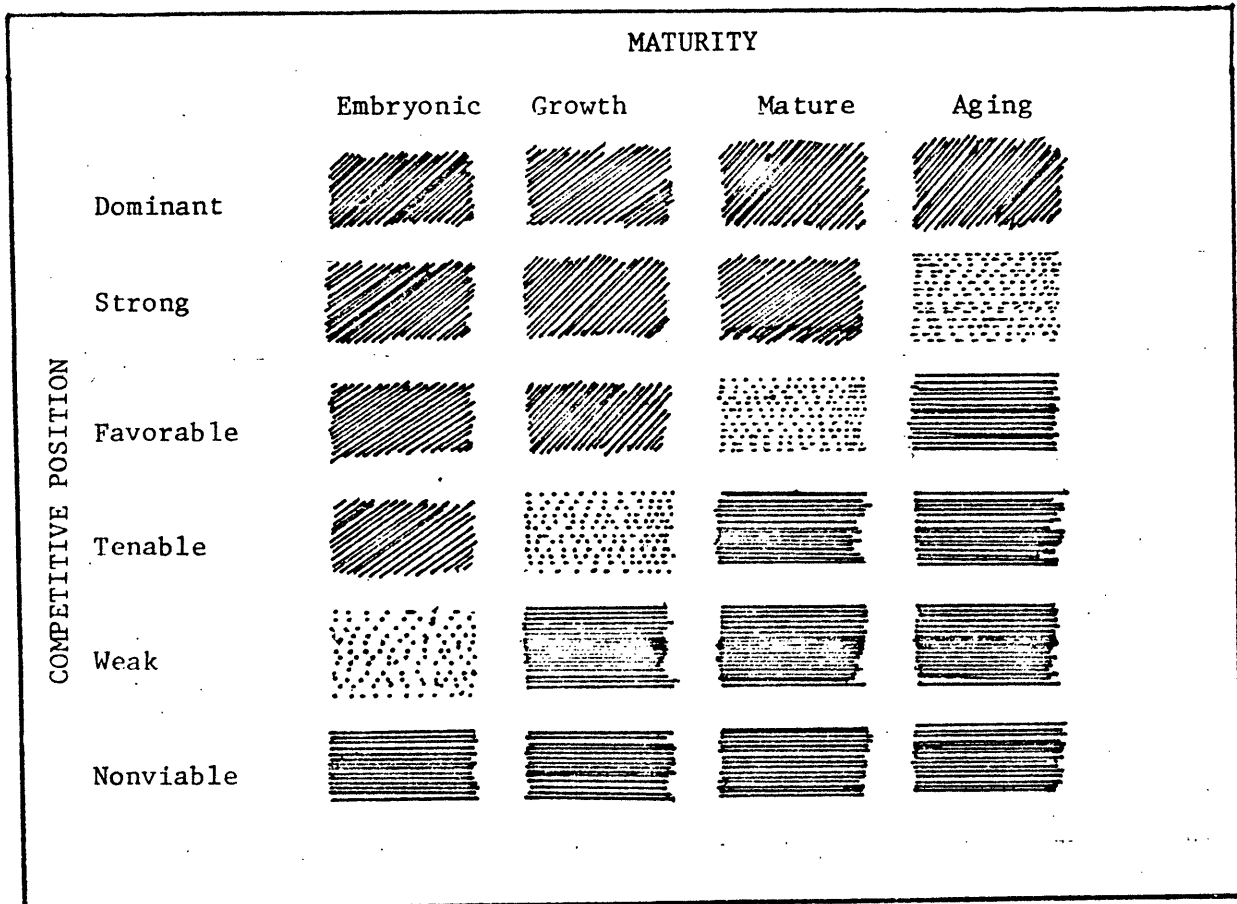


Figure 3: The Life-cycle Portfolio Matrix

	Embryonic	Growth	Mature	Aging
Dominant	All Out Push For Share Hold Position	Hold Position Hold Share	Hold Position Grow With Industry	Hold Position
Strong	Attempt to Improve Position All Out Push For Share	Attempt to Improve Position Push For Share	Hold Position Grow With Industry	Hold Position or Harvest
Favorable	Selective or All out Push For Share Selectively Attempt to Improve Position	Attempt to Improve Position Selective Push For Share	Custodial or Maintenance Find Niche and Attempt to Protect	Harvest or Phased Withdrawal
Tenable	Selectively Push For Position	Find Niche and Protect it	Find Niche and Hang on or Phased Withdrawal	Phased Withdrawal or Abandon
Weak	Up or Out	Turnaround or Abandon	Turnaround or Phased Withdrawal	Abandon

Figure 4: Strategic Positioning in Terms of Market Share Suggested by the Life-cycle Portfolio Matrix

	Embryonic	Growth	Mature	Aging
Dominant	Invest Slightly Faster Than Market Dictates	Invest to Sustain Growth Rate (and Preempt New (?) Competitors)	Reinvest as Necessary	Reinvest as Necessary
Strong	Invest as Fast as Market Dictates	Invest to Increase Growth Rate (and Improve Position)	Reinvest as Necessary	Minimum Reinvestment or Maintenance
Favorable	Invest Selectively	Selective Investment to Improve Position	Minimum and/or Selective Reinvestment	Minimum Maintenance Investment or Divest
Tenable	Invest (Very) Selectively	Selective Investment	Minimum Reinvestment or Divest	Divest or Divest
Weak	Invest or Divest	Invest or Divest	Invest Selectively or Divest	Divest

The terms invest and divest are used in the broadest sense and are not restricted to property, plant & equipment

Figure 5: Strategic Positioning in Terms of the Investment Requirements Suggested by the Life-cycle Portfolio Matrix

	Embryonic	Growth	Mature	Aging
Dominant	Probably Profitable, But Not Necessary Net Cash Borrower	Profitable Probably Net Cash Producer (But Not Necessary)	Profitable Net Cash Producer	Profitable Net Cash Producer
Strong	May be Unprofitable Net Cash Borrower	Probably Profitable Probably Net Cash Borrower	Profitable Net Cash Producer	Profitable Net Cash Producer
Favorable	Probably Unprofitable Net Cash Borrower	Marginally Profitable Net Cash Borrower	Moderately Profitable Net Cash Producer	Moderately Profitable Cash Flow Balance
Tenable	Unprofitable Net Cash Borrower	Unprofitable Net Cash Borrower or Cash Flow Balance	Minimally Profitable Cash Flow Balance	Minimally Profitable Cash Flow Balance
Weak	Unprofitable Net Cash Borrower	Unprofitable Net Cash Borrower or Cash Flow Balance	Unprofitable Possibly Net Cash Borrower or Net Cash Producer	Unprofitable (Write-off)

In addition, to cash throw-off or use, each grain may use or throw-off managerial resources.

Note: In some cases, the tax shield value of a unit should be taken into account in evaluating unit performance.

Figure 6: Strategic Positioning in Terms of Profitability and Cash-flow Suggested by the Life-cycle Portfolio Matrix

arrangements. The clues which ADL offers to define a strategy center are:

- 1) Competitors. A strategy center has a single set of competitors. If a given business unit faces different sets of competitors in various segments of the same industry, it might be split into more than one strategy center in order to focus more sharply its strategic actions against the relevant competitors.
- 2) Prices. All products belonging to a strategy center should be affected similarly by price changes. However, if only some of the products of a business unit are impacted, it is most likely that this unit should be split into more than one strategy center. Alternatively, if price changes also influence products in other organizational units, the strategy center might have to be integrated into another unit of the firm.
- 3) Customers. A strategy center has a single set of customers. When many different customer segments are being served, there is positive indication that more than one strategy center ought to be defined. Also, if another unit of the organization shares the same set of customers, the strategy center may be too narrowly defined, and it might be convenient to broaden this definition by joining two or more units of the organization under a single strategy center.
- 4) Quality/Style. In a strategy center properly defined, all product quality or styling characteristics move harmonically. If a change in these characteristics for some of the products belonging to a strategy center does not have a corresponding response in the rest of the products, this might indicate the need to differentiate more than one strategy center.
- 5) Substitutability. All products in a strategy center should be relatively close substitutes. Also, there should be no close substitutes in different strategy centers, because these would signal the need to melt those products in the same unit.

6) Divestment or Liquidation. The acid test for the definition of a strategy center is the divestment or liquidation question. If a product line can be eliminated without affecting the selling or marketing effectiveness of other products in the strategy center, then it is most likely that more than one business unit should be recognized. All product lines of a strategy center are intimately linked in terms of marketing and selling efforts.

1.2 Identifying the Stage of a Business Within the Life Cycle

ADL identifies eight external factors which are key descriptors of the evolutionary stage in which a business resides within its life cycle. These descriptors are: market growth rate, market growth potential, breadth of the product lines, number of competitors, distribution of market share among competitors, customer loyalty, entry barriers, and technology. (All of these correspond to the category of external uncontrollable factors, which we have addressed in the industry attractiveness/business strength matrix). Figure 7 provides a checklist to help positioning a business unit in the life-cycle stages according to each one of these descriptors. Obviously, it will be unlikely that a strategy center falls consistently in a single stage in every descriptor. As usual a judgmental call has to be made to finally capture the essence of the industry maturity of the strategy center.

1.3 Identifying the Competitive Position of a Business

ADL has decided to address the question of competitive positioning in terms of a set of subjective and qualitative categories, rather than ascribing a numerical value such as market share, to this dimension of the matrix. Figure 8 spells out the attributes of the first five competitive categories - dominant, strong, favorable, tenable, and weak - . The sixth one, non-viable, does not need a formal description, because it represents the final recognition that the firm has really no strength whatsoever, now or in the future, in that

MEASURES TO ASSESS INDUSTRY MATURITY

	Embryonic	Growth	Mature	Aging
1. Growth Rate	Normally grows at rate much faster than that of G.N.P.	As new customers learn about product, growth increases, and more suppliers are attracted. At some point growth rate begins to decelerate.	Growth rate equals or becomes less than that of G.N.P.	As needs continue to change, it becomes impossible to modify the product lines sufficiently to match those needs, and the markets shrink.
2. Predictability of Growth Potential	Growth potential hard to define accurately; only a small portion of the demand is satisfied.	Increasing percentage of demand is met and upper limits of demand become clearer. May be uncertain developments, such as price reductions based on economies of scale.	Growth potential is well understood. Competition satisfies specialized requirements. Viable market segments have proliferated.	Growth potential a known and limited quantity.
3. Product Line Proliferation	Competitive pressures increase as attracted competitors serve specialized customer requirements with variations of original product.	Proliferation of product line occurs rapidly.	Proliferation of product line slows down or ceases.	Demand slackens, unprofitable products are dropped, and ultimately product line narrows.
4. Number of Competitors	Number of competitors is dependent on unforeseeable circumstances.	Number of competitors reaches maximum. Entrants attracted by established record of growth and high margins. Industry consolidation and shake-out begins in late growth stage.	Companies become entrenched or drop out if without viable product differentiation or acceptable cost position.	New entrants unlikely. Number of competitors continues to drop.
5. Market Share Distribution (Concentration) and/or Share Stability	Share distribution reacts unpredictably to entrepreneurial insights and timing. Shares are unstable and tend to fluctuate among competitors.	Large percentage of industry sales are controlled by only a few or even one company. Shares are somewhat more stable and typically several competitors enlarge shares against the competition.	Share distribution often equally concentrated. Very few companies control a large percentage of the sales. Industry increasingly resistant to change, and market shares stabilize. Only extraordinary events such as strikes and natural disasters cause significant share shifts.	Share distribution either concentrates further as competitors fall out or fractionates as industry tends to segment or localize. Aging shares are usually stable. However, the collapse of marginal competitors may enlarge shares of major companies. Weak competitors may continue token participation.
6. Customer Stability	Customers accept products on a trial basis without significant loyalty to the supplier.	While some repeat customers develop, others actively seek alternative suppliers.	Customers have well developed buying patterns, competitors understand the dynamics of purchase decisions, and it is difficult for a new supplier to win over accounts.	Customers are extremely stable in identity and type. As suppliers dwindle, customers have fewer alternatives and become less aggressive in seeking them.
7. Ease of Entry	Easy to enter, because no one dominates. Pricing strategies are being developed, and customer expectations are uncertain. If a significant barrier to entry exists, it will probably be guts and high technological and related capital requirements.	Entry tends to be more difficult as competitors accumulate certain market franchises. However, vigorous market growth reduces risk of entry, because share can be obtained without directly attacking competitors. Entry achieved by locating customers with somewhat specialized requirements.	Market entry is difficult. Competitors with dominant positions have leverage in economies of scale. Low market growth means new competitors must capture share from existing competitors.	Because industry is usually declining, there is little or no incentive to enter.
8. Technology	Technology plays an important and volatile role in matching product characteristics to market needs. Customer requirements tend to be poorly defined so product is likely to undergo several modifications.	The process often continues through the industry's growth phase.	Customer technological requirements are well known and, generally not demanding. Technology shifts toward process and material improvements and efficiency. To renew itself, new technologies must be found by industry or business to replace current products with new designs.	Technological content is known, stable and accessible.

Figure 7: Guidelines for Assessing the Stage of the Life Cycle for a Strategy Center

1. Dominant	<ul style="list-style-type: none">● Controls behavior of other competitors (performance and/or strategy).● Has a wide choice of strategic options (widest choice of options both natural and selected).
2. Strong	<ul style="list-style-type: none">● Able to take independent stance or action without endangering long-term position.● Able to maintain long term position regardless of competitors' actions.
3. Favorable	<ul style="list-style-type: none">● Has a strength which is exploitable in particular strategies.● Has a more than average opportunity to improve position.
4. Tenable	<ul style="list-style-type: none">● Sufficiently satisfactory performance to warrant continuation in business.● Usually exists at the sufferance of the dominant company or industry in general.● Has a less than average opportunity to improve position.
5. Weak	<ul style="list-style-type: none">● Currently unsatisfactory performance but opportunity exists for improvement.● May have most of characteristics of better position but obvious shortcoming.● Inherently short-term condition: must change.

Figure 8: Criteria for Classification of Competitive Position

particular business, and therefore, exiting is the only strategic response.

Although the broad descriptions provided in Figure 8 are meaningful enough to characterize the difference among each competitive position, it might be useful to comment briefly on the nature of their distinct role. There is only one firm in an industry, if any, that can assume a dominant role. If such a firm exists, it truly sets up the standards of the industry. It is Kodak in films, Boeing, in commercial aircraft, and IBM in mainframe computers. A strong business enjoys a most definitive advantage over its competitors, with relative market share beyond 1.5, but has not reached the absolute dominance of the former category. A favorable position means that there is something unique about the business. It could result from a differentiating strategy on the exploitation of a particular niche where the firm happens to excell. But we are talking now about attributes in some facets of the industry, as opposed to dominant or strong positions industry-wide. A tenable business is beginning to have some symptoms of erosion and misperformance; however, there is little question that the business deserves full attention and has a good probability for effective recovery. Finally, a business in a weak position is in a transitory situation which can not be sustained in the long run. It is either up or out.

2. Portfolio Vision in the Life-cycle Matrix

It is useful not only to present the position of all the business units of a firm in a portfolio matrix, but also to provide the contribution of each business unit by means of a set of financial indicators, such as sales, profits, assets, and return or net assets. Figure 9 represents the overall portfolio of the business of a firm in the life-cycle matrix, and Figure 10 further documents the financial contribution of each of these businesses. This information is helpful

Competitive position \ Maturity						Total
	Embryonic	Growth	Mature	Aging		
Dominant		Unit 2 (VHF and SSB radios) Unit 12 (Hi-power tubes)		Unit 10 (Mechanical navigational systems)		3
Strong	Unit 13 (Dyna)	Unit 7 (Heat sensing devices) Unit 11 (Electron microscopes)	Unit 5 (Radar products) Unit 8 (Switching devices)			5
Favorable		Unit 1 (Electronic navigational systems) Unit 9 (Elec. temp control systems)	Unit 6 (Low pressure devices)			3
Feasible						
Weak	Unit 4 (Electronic recording systems)	Unit 3 (Mini-computers)				2
Total	2	7	3	1		13

Figure 9: An Illustration of the Life-cycle Portfolio Matrix
Source: Osell and Wright (1980)

Distribution of Corporate Sales (%)

		Life Cycle Stages				
		E	G	M	A	Total
COMPETITIVE POSITION	D	--	34.7	--	6.8	41.5
	S	1.0	14.4	4.4	--	19.8
	F	--	25.8	0.3	--	26.1
	T	--	--	--	--	--
	W	1.5	11.1	--	--	12.6
Total		2.5	86.0	4.7	6.8	100

Distribution of Corporate Net Income (%)

Life Cycle Stages					
	E	G	M	A	Total
D	--	50.9	--	15.8	66.7
S	1.1	25.9	5.9	--	32.9
F	--	12.5	0.5	--	13.0
T	--	--	--	--	--
W	-1.3	-11.3	--	--	-12.6
Total	-0.2	78.0	6.4	15.8	100

Distribution of Corporate Assets (%)

		Life Cycle Stages				
		E	G	M	A	Total
COMPETITIVE POSITION	D	--	26.9	--	5.8	32.7
	S	1.1	14.8	3.5	--	19.4
	F	--	32.3	0.3	--	32.6
	T	--	--	--	--	--
	W	1.7	13.6	--	--	15.3
Total		2.8	87.6	3.8	5.8	100

Return on Net Assets (%)

Life Cycle Stages					
	E	G	M	A	Total
D	--	13.3	--	19.1	14.3
S	6.5	12.3	11.8	--	11.9
F	--	2.7	11.7	--	2.8
T	--	--	--	--	--
W	-5.3	-5.0	--	--	-5.7
Total	-0.5	6.3	11.8	19.1	7.0

Keys: E: Embryonic, G: Growth, M: Maturity, A: Aging, D: Dominant, S: Strong, F: Favorable, T: Tenable, W: Weak

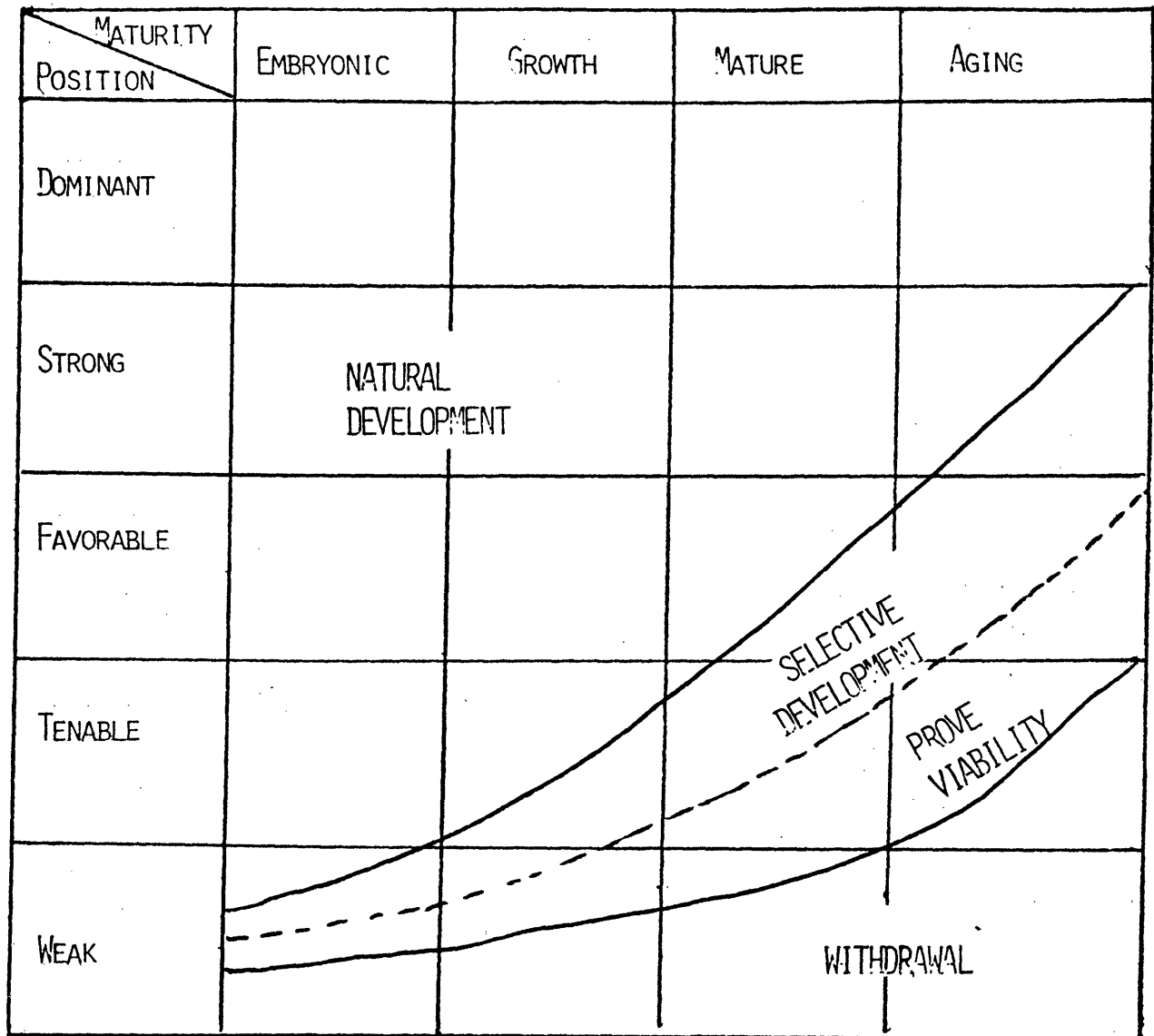
Figure 10: Distribution of Corporate Sales, Net Income, Assets and Return on Net Assets by Life-Cycle Stages and Competition Positioning

to confirm the role that an individual business should play according to its classification in the matrix. Obviously, a firm will be better off by having a large fraction of its business in a dominant or strong position, and those businesses are expected to have handsome financial performances. However, when looking at the industry maturity dimension, a firm would benefit from having a reasonably well-balanced portfolio. If all businesses are projected toward the aging dimension, the firm might enjoy an excellent current profitability, but very little in terms of future expectations. On the contrary, if the portfolio is biased toward the embryonic side, the firm could have great future potential, but might be unable to achieve it, because of the lack of a current base to support the large commitment of resources required.

3. The Concept of Natural Strategic Thrust and Generic Strategy

Once the portfolio of businesses has been properly positioned in the life-cycle matrix, ADL introduces three conceptual aids to assist managers in the process of identifying an appropriate strategy for each strategy center.

The first of these concepts is the so called families of thrusts. ADL postulates that there are four families which cover the entire spectrum of business positioning within the portfolio matrix: natural development, selective development, prove viability, and withdrawal. Figure 11 shows broadly where each of these four families fit. A "natural development" family corresponds to a business which, because of its industry maturity and its competitive strength, deserves a strong support to assure an industry-wide growth. A "selective development" family, as its name implies, requires concentration of resources in industries which are either particularly attractive or where the firm has singular competitive skills to exploit. "Prove viability" is inherently a transitory situation which cannot be sustained, calling for immediate actions to change the state of affairs.



FAMILIES OF THRUSTS

Natural Development:

Startup
Grow with industry (maintain position aggressively)
Gain position gradually
Gain position aggressively
Defend position
Harvest

Selective Development:

Find niche (maintain selectively)
Exploit niche (build aggressively)
Hold niche (maintain selectively)

Prove Viability:

Catch up (late entry usually into growth or mature)
Renew (may or may not change position)
Turn around (recapture position)
Hang in (prolonged existence)

Withdrawal:

Withdraw (from specific markets)
Divest (products, assets)
Abandon

Figure 11: Natural Strategic Thrusts

And "withdrawal" calls for concerted actions to withdraw from the business.

Having selected the family of strategic thrust most appropriate for a given business, the manager should select now one specific thrust belonging to that family. These are given in the bottom of Figure 11. For example, the thrusts available for the natural development family are:

- Start up, which could be applied in an embryonic stage, when the business unit has strong competitive potential to acquire rapidly a significant strength in that market.
- Growth with industry, which is applicable when the firm is satisfied with the current position of the business, and wants to maintain its existing market share. These conditions exist when the competitive position is either dominant or strong, and the industry has reached a certain stage of maturity.
- Gain position, gradually useful when modest increase in market share are required for the business to have a more solid position, perhaps applicable when the firm enjoys a favorable status in a growth industry.
- Gain position aggressively, a clear thrust when the firm has a tenable or weak position in the early stages of maturity, and wants to improve dramatically its current standing to avoid being left out from an attractive industry.
- Defend position, which could apply when the firm enjoys an either dominant or strong position in earlier stages of maturity.
- Harvest, clearly relevant for the aging stages.

The third concept is that of generic strategy. Having selected a specific thrust within the family, ADL proposes a set of 24 generic strategies to choose from, in order to support the development of the preferred thrust. These strategies are described in Figure 12.

ADL does not presume that this list of generic strategies exhaust the full spectrum of alternatives for strategy creation. In fact, they are

Figure 12: Generic Strategies Proposed by Arthur D. Little, Inc.

Survey
Code

- A *Backward Integration* - To incorporate within the business organization the functions, operations, or products that were previously external and that served to supply and support existing business operations.
- B *Development of Overseas Business* - To establish overseas a separate business unit in the same industry as the domestic business unit, but in a market with different characteristics.
- C *Development of Overseas Facilities* - To invest in off-shore production plants for products to be sold in domestic markets by domestic business unit.
- D *Distribution Rationalization* - To prune back the distribution system to a more effective network; this may include cutting back to the highest volume distributors or shaping by geography or type.
- E *Excess Capacity* - To provide additional capacity for existing products beyond current needs - not incremental capacity - in order to meet anticipated future growth.
- F *Export/Same Product* - To invest in marketing selected products of the domestic business unit in foreign markets; these may or may not have the same competitors and market dynamics as the domestic market.
- G *Forward Integration* - To incorporate within the business organization external functions between the current business and the ultimate consumer so that more effective distribution or increased control over the marketplace can be achieved.
- H *Hesitation* - To slow down or establish a 1-year moratorium on new capital investment and new expenses; does not prohibit expense or capital investment for normal maintenance of the business, e.g., because of capital limitations, dangers of overextending management, or market uncertainties.
- I *Initial Market Development* - To invest in creating a primary demand for a brand-new product; typically undertaken by the first company to develop a new market, often when that company has a clear technological edge.
- J *Licensing Abroad* - To exploit through licensing in foreign countries the use of domestic technology, patents, know-how, brand franchise, etc., belonging to the domestic business unit.
- K *Complete Rationalization* - To strip down a business to currently most profitable piece and reinvest the proceeds of divestments in the successful operations retained.
- L *Market Penetration* - To increase market share through manipulating the marketing mix; e.g., lower price, product line breadth, increased product and sales service, increased advertising.
- M *Market Rationalization* - To prune back the market served by the business unit to most profitable segments and/or higher volume segments, or by particular type or geography, in order to concentrate marketing focus.
- N *Methods and Functions Efficiency* - To invest in new ways of doing existing tasks by adding new "soft" technology - e.g., new patterns of work flow, computer-aided production planning and inventory control, etc. - so as to improve effectiveness or efficiency.

Figure 12: Continued

Survey
Code

- O *New Products/New Markets* - To invest in developing, manufacturing, and marketing products related or unrelated to the present product line for new markets that are different in geography or by type from the present markets served by the business unit.
- P *New Products/Same Market* - To develop, broaden, or replace products in the present product line, selling them into the existing market served.
- Q *Production Rationalization* - To increase standardization of designs, components, and manufacturing processes and/or concentrating facilities and/or subcontracting out elements of production.
- R *Product Line Rationalization* - To narrow the product line to the most profitable products.
- S *Pure Survival* - To maintain existence of the business unit in periods of extremely adverse business conditions by eliminating functions, products, or by underfinancing any activity.
- T *Same Products/New Markets* - To expand existing domestic market by geography or type for the existing product line.
- U *Same Product/Same Markets* - To execute those strategies required to maintain the present competitive position of the existing business unit...with the existing product in existing markets.
- V *Technological Efficiency* - To improve operating efficiency through technological improvements in physical plant, equipment, or process.
- W *Traditional Cost Cutting Efficiency* - To reduce costs uniformly through management edicts.
- X *Unit Abandonment* - To divest a business unit because of its inability to remain viable within the corporation or because the unit may be of greater value to someone else.

persistently encouraging managers to add, expand, innovate, and offer new strategic alternatives. However, they feel the 24 generic strategies suggested constitute a reasonable broad set, so as to cover some of the more significant options related to the task of strategy formulation.

We have found it useful to group those strategies into sub-categories which communicate the main area of concern addressed by the strategy. The resulting categories are given in Figure 13.

In order to link these three concepts of families, strategic thrusts, and generic strategies, ADL has provided a mapping which is given in Figure 14. Another way of assisting managers in the selection of generic strategies congruent with the stage of the life cycle and the business competitive position is given in Figure 15. Obviously, these suggestions should not be taken in a mechanistic sense.

Strategy formulation can never be reduced to simplistic rules of thumb. However, a framework such as this one might be useful, first, to reinforce the concept of natural strategies - namely, to uncover courses of action which might be consistent with the industry and competitive portion of a business - and second, to facilitate a diagnostic process. In this capacity, the ADL framework can assist managers simply by providing a checklist against which to contrast both the strategies which are already in place, as well as those which are being proposed for the development of a business.

4. Performance Analysis

In the ADL methodology, the portion of a business in the life cycle affects directly the performance measurements used to monitor the quality of strategy implementation.

One tool used for this purpose is what ADL refers to as the Ronagraph, which shows on the vertical axis the return on net assets (RONA) generated by each of the businesses of the firms portfolio, and on the horizontal axis the internal deployment of earnings. When that number is

- I. Marketing Strategies
 - F. Export/Same Product
 - I. Initial Market Development
 - L. Market Penetration
 - O. New Products/New Markets
 - P. New Products/Same Market
 - T. Same Products/New Markets
- II. Integration Strategies
 - A. Backward Integration
 - G. Forward Integration
- III. Go Overseas Strategies
 - B. Development of an Overseas Business
 - C. Development of Overseas Production Facilities
 - J. Licensing Abroad
- IV. Logisitcs Strategies
 - D. Distribution Rationalization
 - E. Excess Capacity
 - M. Market Rationalization
 - Q. Production Rationalization
 - R. Product Line Rationalization
- V. Efficiency Strategies
 - N. Methods and Functions Efficiency
 - V. Technological Efficiency
 - W. Traditional Cost Cutting Efficiency
- VI. Harvest Strategies
 - H. Hesitation
 - K. Little Jewel
 - S. Pure Survival
 - U. Maintenance
 - X. Unit Abandonment

Figure 13 Grouping of Generic Strategies by Main Areas of Concern

Strategies Thrusts	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	NATURAL DEVELOPMENT																							
Startup					E				I			L												
Growth with industry	A	B	C			F	G			J				N		P				T	U			
Gain position gradually							G					L								T				
Gain position aggressively		B	C		E		G					L		N	O	P				T		V		
Defend position	A		C											N							U	V	W	
Harvest				D				H			K		M				Q	R			U		W	
	SELECTIVE DEVELOPMENT																							
Find niche	A						G		I			L	M					R	T					
Exploit niche		B	C		E							L		N		P					U	V		
Hold niche			C	D										N		Q					U			
	PROVE VIABILITY																							
Catchup				D	E							L	M			P	Q	R						
Renew				D									M		O	P	Q	R			U			
Turn around				D								L	M	N			Q	R				V	W	
Prolong existence	A			D		F				J	K		M	N			Q	R	S	T			W	
	WITHDRAWAL																							
Withdraw				D									M				Q	R					W	
Divest				D						K							Q	R	S					
Abandon																								X

Figure 14: Families, Strategic Thrusts and Related Generic Strategies

Figure 15: Generic Strategies by Stage in the Life-cycle and Competitive Position

Industry/Maturity Characterization Strategy	Embryonic	Growth	Mature	Aging
I. Initial Market Development	← DSFTW →	DSF →		
L. Market Penetration	← DSFTW →	DSF →		
U. Same Products/ Same Markets		← TW →	← TW →	← T →
T. Same Products/ New Markets	← DSF →	DSF →	DSF →	
P. New Products/ Same Markets		← DSF →	DSF →	
O. New Products/ New Markets			← DS →	
A. Backward Integration		← DSF →	DSF →	
G. Forward Integration			← DSF →	
F. Export/ Same Products		← FTW →	FTW →	
J. Licensing Abroad		← FTW →	FTW →	
C. Development of Overseas Facilities		← DS →	DS →	
B. Development of Overseas Business		← DSF →	DSF →	
E. Excess Capacity		← DSF →		
M. Market Rationalization		← TW →	← FTW →	← SFT →
D. Distribution Rationalization		← TW →	← FTW →	← SFT →
R. Product Line Rationalization		← TW →	← FTW →	← SFT →
Q. Production Rationalization			← FTW →	← SFT →
V. Technological Efficiency		← DSFT →	DSF →	
N. Methods and Functions Efficiency			← DSFT →	DSF →
W. Traditional Cost Cutting			← TW →	← FTW →
H. Hesitation			← FTW →	← SFT →
K. Complete Rationalization			← FTW →	← SFT →
S. Pure Survival				← DS →
X. Unit Abandonment	← W →			← WT →

Competitive Position:
D - Dominant
S - Strong
F - Favorable
T - Tenable
W - Weak

← → Span of Arrow Indicates Normal Investment
(Time, Effort, Money) Timeframe in Which
To Implement Given Strategy

100%, all earnings are redeployed and the business is cash neutral. Above a 100%, the business becomes a cash user, and below 100%, a cash generator. Moreover, a negative number means that a disinvestment strategy is being applied, because more than 100% of profits are being taken out of the business. In the Ronagraph, each business unit is represented by a circle, whose area is proportional to the investment attached to that business unit.

Figure 16 illustrates a typical Ronagraph, which is used not only to show some key financial characteristics of the business units, but also to compare them with the performance of leading competitors. The zones in the graph indicate the performance to be expected from a strong competitor, which is maintaining its position. Business B is performing exactly according to those expectations, while businesses C and A are above and below this benchmark, respectively.

This consistency between financial performance and stages of the life-cycle is not limited exclusively to RONA. A host of other indicators are also expected to perform in accordance with the industry maturity. Some of those indicators are: profits after taxes, net assets, net working capital/sales, costs of goods sold/sales, fixed costs/sales, variable costs/sales, profit after taxes/sales, operating cash flows/sales and net cash flow to corporation/sales. We have briefly commented on Figure 1 the expected behavior of sales, profits, and net cash flows, as the business travels through the life cycle. Moreover, Figures 5 and 6, establish the expected investment requirements, and profitability and cash flow requirements, respectively, according to the position of the business in the life-cycle matrix.

For an excellent illustration of the approach for allocating resources derived from the life-cycle matrix, and the financial implications for strategic performance, see Osell and Wright (1980).

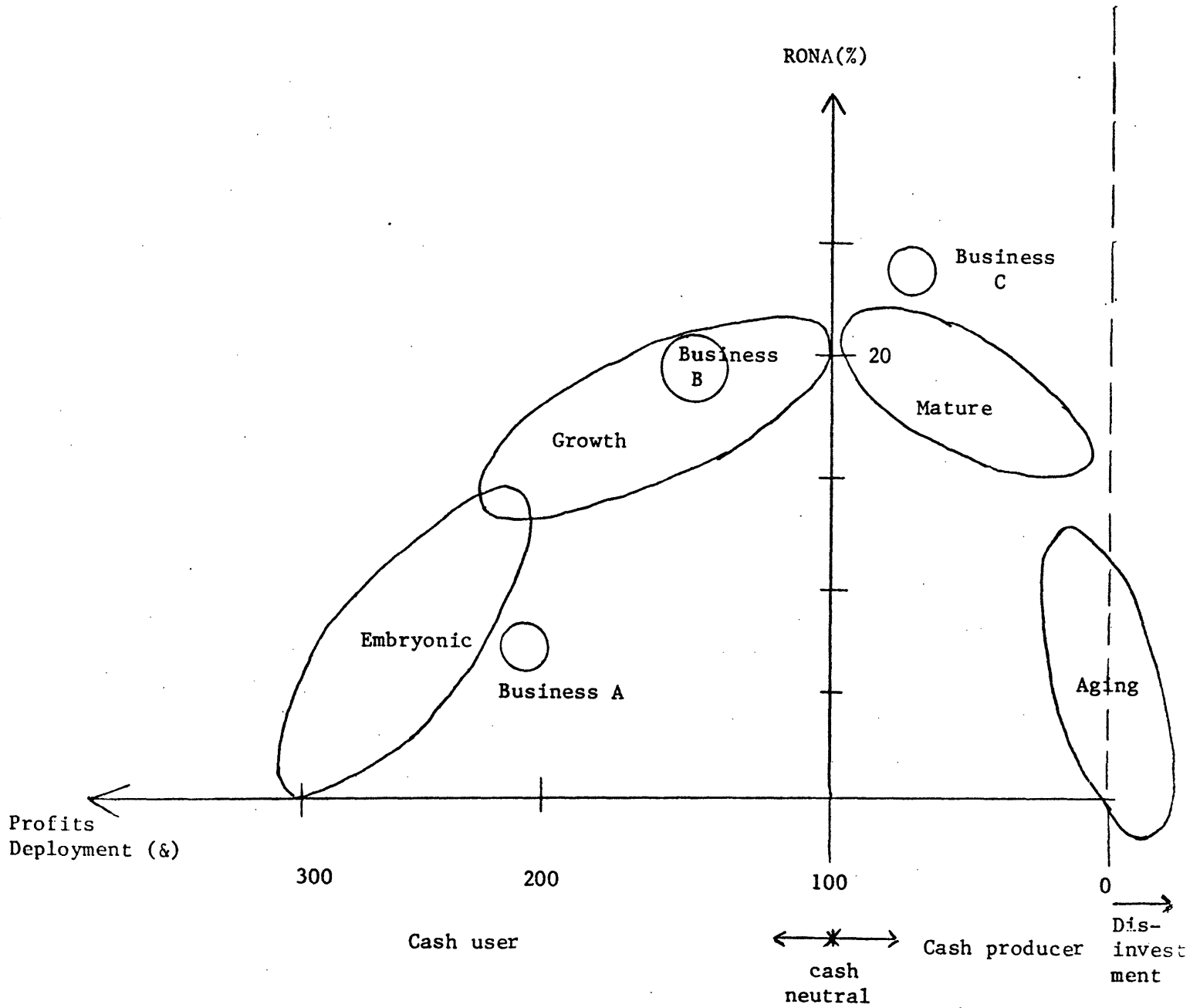


Figure 16 A Typical Ronagraph

CONSISTENCY OF MANAGERIAL SYSTEM WITH INDUSTRY MATURITY

CHARACTERISTICS	Aging		
	Embryonic	Growth	Mature
General	<p>Entrepreneurship</p> <ul style="list-style-type: none"> • Start up • Flexibility • Survival 	<p>Sophisticated management of markets</p> <ul style="list-style-type: none"> • Growth • Develop advantageous competitive position 	<p>Critical administration</p> <ul style="list-style-type: none"> • Maximize efficiency • Optimize profits
Planning Systems	<p>Emphasis on new products and customers. Planning horizon tends to be longest; because of great degree of uncertainty, plans themselves cover wide range of options. Approach to planning fairly flexible; planning cycles may be short due to rapidly changing conditions.</p>	<p>Planning is concerned with products and programs designed to meet the basis of competition. Time frames of programs coincide with investment pay-back periods. Approach to planning—the form of plans, who is involved—becomes more certain but remains flexible as needs for various programs appear.</p>	<p>Plans look inward as much as outward—are prepared by product line, market and business function. Planning horizon down to 3-5 years as industry becomes more predictable and leeway for radical strategies diminishes. Considerable formality exists in the planning system.</p>
Organization	<p>Organization is small but growing rapidly to handle many new needs; functional area with most rapid growth is marketing because of push to take market share. Because of growth, organization is not very stable; structure is informal and subject to change; responsibilities usually not clearly defined.</p>	<p>Organization is less open to change and its structure a function of identifiable competitive forces and strategies. Consistent informal relationships emerge and exist alongside the formal structure. Number and variety of tasks increases, hence an increase of functions and hierarchical levels. Organization is formalized with proper differentiation of tasks the key objective.</p>	<p>Integration of tasks is the key organizational objective. Established reporting relationships, career paths, jobholders and interfacing with customers and suppliers make the organization resistant to change. With multifunctional, multidivisional and multilevel integration called for, organizational structure can be highly complex, including explicit and implicit structures within the formal system.</p>
Reward System	<p>Reward incentives are high due to risk; incentive compensation component also high relative to the fixed component. Objectives on which incentive compensation is based are more growth oriented than profit oriented. The character of the compensation system tends to be least formal and most flexible.</p>	<p>Rewards are more current, less deferred. Both promotion and compensation are key, with a variable element to compensation plus indirect compensation and benefits. Variable compensation and benefits depend on individual and group (usually functional or responsibility center) performance.</p>	<p>Rewards tailored to job, including bureaucratic considerations such as hierarchical level, span of control, etc., as well as performance. Performance is divisible into individual, subgroup, SBU or corporate performance. Rewards consider specific strategy or managerial mission. Promotion paths and compensation packages are well-defined. In-company competition is fostered.</p>
			<p>Incentive compensation is less important than fixed compensation; objectives on which incentive compensation is based are control and financial performance related. Character of compensation system is formal and rigid.</p>

Figure 17: Consistency of Managerial Systems with Industry Maturity

4. Communications & Information System	Emphasis is on rapid responsiveness; information system is informal and tailored to the business; the content of the reporting tends to be largely qualitative, market-oriented and presented in an unsystematic way. Generally there are few policies and no procedures.	The purpose of formal communications is planning; that of informal communications, seizing short-term opportunities. Pressures are dynamically balanced during growth, as are formal and informal communication systems. Formal systems become detailed and quantitative, following the increasing size of the SBU and complexity of tasks.	Coordination and control are of increasing importance as organization becomes complex and strategies become internally focused. Communications facilitate coordination and control. They become systematic and quantitative and more one-way than two-way.	Emphasis is on control, with the content largely quantitative, oriented to the balance sheet, and presented in very structured way. The business generally has many policies and procedures.
5. Controls and Measuring System	The focus is on markets, marketing and product development, to identify areas needing rapid responses. Measures are few in number and not fixed in nature. The frequency of measurements is often but measures tend not to go into a detail.	Focus is on marketing and manufacturing, to give early warning of troublesome situations or drastic variances from strategies and performance. Measurements are taken less frequently. Isolation of key data from an increasing base is a key control function. Measures are multiple and require interface between controllers and line managers.	The main focus is on manufacturing and traditional financial performance. It becomes easier to "run the business by the numbers." Periods of measurement are regular and widely spaced. Control and information systems highly developed.	Emphasis is on the financial performance of operations for control and maximizing profits. Measures are fewer in number but fixed. The reporting period may be longer than in a less mature stage. Because the product lines are narrower and the business more stable, the level of reporting detail is less.
6. Climate	The good SBU is run by managers whose individual decisions have broad impact on the direction of the SBU and who regularly consult with each other, take broad views and share a common perspective. The style is participative, collaborative and open to risk-taking. The climate fosters quick decisions and action.	The climate favors risk-taking regarding new products and/or new markets, the preference is for controlled risk and a management style that takes the long view (e.g., eventual market share or cost position). The management style must combine participation with formality, structure and delegation.	The management style supports efficiency and the development of systems. Specialized managers (e.g., in direct sales, plant engineering, etc.) refine their expertise without frequent reference to other specialists, but rather with reference only to top management.	Opportunism together with an understood technology and market creates a hybrid climate, favoring efficient caretaking and flexibility. Management recognizes certain costs as sunk and cuts losses accordingly. The survival mode breeds a collaborative climate, but tight control and attention to detail characterize the SBU.
7. Management Development	Formalized management development processes and succession paths are non-existent. Management skills are drawn from the outside, and from within the parent company. Little formalized training or time for training is present.	High growth rates and proven concept viability require infusion of management skills. Formal management succession and development programs start. Growth is constrained if outside hiring commitment by management is not given. Intermittent growth constraints due to lack of management possible in this period.	Self-sufficient supply of managers. Formalized development, educational, rotational staff/line programs. Little hiring from outside except for specialized needs. Professional (as opposed to managerial) development of staff gains emphasis. Formal promotional procedures grow common. Diversity of management styles decrease.	Oversupply of qualified personnel. Ambitious leave as turnover rate increases, unless opportunities are present elsewhere in the parent organization. Management development deemphasized.

Figure 9.17: Consistency of Managerial Systems with Industry Maturity (continuation)

5. Managerial Systems Analysis

The primary characteristic of strategic management is to seek congruency among all the administrative systems, with the corporate culture. The ADL strategic planning approach subscribes strongly to this philosophy, providing once more a consistency check among managerial systems within the stages of the life-cycle. The central idea is that the management tasks significantly change as a business goes from embryonic to aging, and therefore, administrative systems, structure and organizational climate should change accordingly. Figure 17 provides a remarkably compact description of the primary characteristics of the managerial systems and organizational climate, within each stage of the life-cycle.

6. Risk Analysis

The last step in the ADL methodology consists of mixing the degree of risk implicit in the strategy pursuit by an individual business unit. Risk is being assessed in terms of the predictability of profit performance, the more unpredictable it becomes, the greater the risk.

The risk assessment involves an exercise of high subjectivity. ADL identifies seven factors which contribute to risk to be assessed independently. These factors are:

- Maturity and competitive position, which is given by the position of the business within the life-cycle matrix. The highest risk exists on an embryonic business, which is in a weak competitive position. The lower risk is the dominant business in an aging industry. The risk decreases when moving in the life-cycle matrix horizontally from left to right and vertically from the bottom to the top.
- Industry; some industries are inherently less predictable than others at the same stage of maturity.

- Strategy; some strategies are more aggressive than others, and consequently imply a larger risk.
- Assumptions; the hypotheses regarding the future, in which the strategies are based, could contain also different degrees of risk.
- Past performance, units with a good track record are less risky than those with erratic records.
- Management; the demonstrated ability of the managers in charge of the unit is a central determinant to the predictability of earnings.
- Performance improvement; the magnitude of the gap between existing and expected performance is the last important conditioner of risk.

Figure 18 exhibits the format proposed by ADL for the assessment of the risk analysis.

7. A Critique of the Life-cycle Approach

There are some major contributions that ADL has made in the area of strategic planning by proposing a comprehensive and structured process to assist managers in the identification of strategic choices. By selecting the life cycle as the central conceptual framework behind that process, ADL has recognized a relevant and widely accepted concept which has deep implications for strategic development, particularly in high technology.

Implicitly, the life cycle has been part of the previously described portfolio matrices. However, it has been ADL's contribution to raise that concept to a prominent position within strategic planning, thoroughly exploiting the strategic implications of the life cycle.

The resulting methodological approach is, certainly, highly creative, searching for consistency of industry maturity, not only with strategic planning, but with all the other key administrative processes, organizational climate, and structure. From this perspective, the ADL methodology not only is relevant to strategic planning; it addresses also some of the key concerns of strategic management.

Factors	Risk Level		
	Low	Medium	High
Maturity Position			
Industry			
Strategy			
Assumptions			
Past Performance			
Management Factors			
Performance Improvement			
Overall Risk Level			

Figure 18: Risk Analysis

Finally, the articulation of strategic thrusts and generic strategies consistent with industry maturity and competitive position of the business might either offer constructive suggestions for managers who are not well seasoned in the practice of strategic planning, or, at least, might constitute a useful diagnostic base against which to contrast the existing strategies of an on-going business.

We turn our attention now to limitations that can be raised on the ADL methodology. First, is the overall controversy surrounding the usefulness of the life-cycle concept. Dhalla and Yuspeh (1976) claim that the life-cycle has little validity, and that the marketing strategies typically recommended for succeeding stages of the cycle, are likely to cause trouble: "In some respects, the concept has done more harm than good, by persuading top executives to neglect existing brands, and place undue emphasis on new products." Dhalla and Yuspeh particularly deplore the branch managers tendency to assume that some slump in sales is evidence of having reached its aging stage, prompting the abandonment of the brand. However, their view is drawn from non-durable goods, like cereals and cosmetics, stressing the behavior of brand sales as opposed to business units sales.

Porter (1980) also raises some criticisms regarding the life cycle:

- The duration of the life-cycle stages varies widely from industry to industry, and it is hard to specify what stage prevails in an industry at a given point in time.
- The industry maturity does not always evolve into a well behaved S-shaped pattern. Sometimes, industries rejuvenate after a period of decline. Occasionally, industries skip stages, particularly when they are affected by passing fads. Also, economic conditions, such as depression, might obscure the true developmental stage corresponding to a given industry.
- Firms can affect the shape of the life-cycle curve, primarily through

product innovation and repositioning

- The nature of competition is quite variable from industry to industry, depending on the life-cycle stage. For example, some industries evolve from a very fragmentary structure to a highly concentrated one. (i.e. automobiles). Others go just the other way around. They begin as concentrated industries and, as time passes, they become more and more fragmented (i.e. bank cash dispensers). A legitimate question to be raised is if there is any broadly applicable strategic implication to be derived from the position of a business in the life-cycle, when such important structural changes are occurring simultaneously in the industry.

All of these comments serve to stress the point that, although the life-cycle approach is a useful frame of reference, it has to be applied in a highly judicious way.

There is a final warning that we would like to address pertaining to the use and applicability of the ADL strategic planning process. There are clearly some advantages in having a well organized, disciplined methodology to facilitate the formulation and development of strategies. Its counterpart, however, is that excessive rigidity could lead to a mechanistic type of thinking which would stifle rather than enhance creativity. Although ADL would never intend to apply its methodology that way, in uninitiated hands that tool could hinder a truly innovative way of thinking.

References

- Abernathy, William J., and James M. Utterback, "Patterns of Industrial Innovation", in Michael L. Tuchman and William L. Moore, Readings in the Management of Innovation, Pitman, Boston, 1982
- Arthur D. Little, Inc. A System for Managing Diversity, Cambridge, Ma., December 1974.
- Arthur D. Little, Inc., Discovering the Fountain of Youth: An Approach to Corporate Growth and Development, San Francisco, California, 1979.
- Arthur D. Little, Inc., A Management System for the 1980's, San Francisco, California, 1979.
- Clifford, Donald K., Jr., "Managing the Product Life Cycle" in Philip Kotler and Keith Cox, Eds., Marketing Management and Strategy. A Reader, Prentice-Hall, Englewood Cliff, New Jersey, 1980.
- Dhalla, Nariman K., and Sonia Yuspeh, "Forget the Product Life Cycle Concept!", Harvard Business Review, Vol. 54, No. 1, Jan.-Feb. 1976, pp. 102-109.
- Forbes, Edward H., and Thomas J. Bate II, "The Life Cycle Approach to Strategic Planning", unpublished master thesis,, Sloan School of Management, Cambridge, Mass., 1980.
- Hayes, Robert H., and Steven C. Wheelwright, "Link Manufacturing Process and Product Life-Cycle". Harvard Business Review, Vol. 57, No. 1, Jan-Feb. 1979a, pp. 133-140.
- Hayes, Robert H., and Steven C. Wheelwright, "The Dynamics of Process Products Life Cycles", Harvard Business Review, Vol. 57, No. 2, March-April 1979b, pp. 127-135.

- Kotler, Philip, Marketing Managment, 4th Ed., Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1980.
- Luck, David J., and O.C. Ferrell, Marketing Strategy and Plans, Prentice-Hall, Englewood Cliffs, New Jersey, 1979.
- Moore, William L, and Michael L. Tushman, "Managing Innovation over the Product Life-Cycle", in Michael L. Tushman and William L. Moore, Readings in the Management of Innovation, Pitman, Boston, 1982.
- Osell, Roger R., and Robert V. L. Wright, "Allocating Resources: How to do it in Multi-Industry Corporations", in Kenneth J. Albert (editor), Handbook of Business Problem Solving, McGraw-Hill, New York, 1980, Chapter 8, pp. 1.89 - 1.109.
- Porter, Michael E., Competitive Strategy, The Free Press, New York, 1980.
- Urban, Glen L., and John R. Hauser, Design and Marketing of New Products, Prentice-Hall, Englewood Cliffs, New Jersey, 1980.
- Utterback, James M. "Management of Technology". in Arnolddo C. Hax (Ed.), Studies in Operations Management, North-Holland, Amsterdam, 1978, pp. 137-160.