FINANCING THE NEW RESEARCH-BASED ENTERPRISE
IN NEW ENGLAND

by

Gordon Bruce Baty

S.B., Massachusetts Institute of Technology (1961)

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE at the MASSACHUSETTS INSTITUTE OF TECHNOLOGY September 1963

Signature of Author ...............................................................

School of Industrial Management
August 27, 1963

Certified by .................................................................

Thesis Supervisor
DISCLAIMER

MISSING PAGE(S)
August 27, 1963

Professor Harold Mickley  
Secretary of the Faculty  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

Dear Professor Mickley:

In accordance with the requirements for the degree of Master of Science, I herewith submit a thesis entitled "Financing the New Research-Based Enterprise in New England."

Merely to acknowledge the contributions of the many people required in even a modest research effort is both to underemphasize their enormous importance to it, and to greatly understate the appreciation of the researcher. I should like to express my debt of gratitude to Professor Daniel M. Holland and Dr. Richard S. Morse, whose advice, interest and enthusiasm made the effort seem worthwhile; to Mrs. Sylvia Harrington and Miss Brenda Frank who together managed the copious correspondence for the study and the production of this handsome document; to the Federal Reserve Bank of Boston and the M.I.T. Dean of Engineering who, respectively, provided direct and indirect financial support for the project; and finally, to twenty-five busy but patient men, upon whose indulgence, interest and cooperation this study was built. Thanks very much.

Sincerely yours,

Gordon B. Baty
FINANCING THE NEW RESEARCH-BASED ENTERPRISE

IN NEW ENGLAND

by

Gordon Bruce Baty

Submitted to the School of Industrial Management on August 27, 1963 in partial fulfillment of the requirements for the degree of Master of Science.

ABSTRACT

This thesis presents the results of a study of the initial financing of new firms based on scientific or engineering developments, in the New England area. As a part of this study, an interview survey was undertaken, in which the author interviewed twenty-five individuals with responsibility for investing their own funds or the funds of others in this type enterprise.

The objectives of the study were basically threefold: to identify the major sources of initial venture capital in this region's new technical industries, to assess these sources' present methods and policies in supplying this capital, and to judge the effectiveness of some particular research methods which build upon the direct personal interview. The study is intended primarily for two audiences: the present and potential investors and entrepreneurs in new research-based enterprises.

Part One of the study addresses itself to the general considerations of the venture capital market, and attempts a distinction between initial and subsequent venture capital supplied to the growing firm. Substantial attention is given to the identity and characteristics of the different groups of individuals who supply initial venture capital. The role
of the venture capital firms in this specialized market is discussed, with emphasis upon the reasons for their present non-participation in initial financing, and upon their important role in the market as communications centers. The present availability of initial venture capital is the subject of a brief chapter.

Part Two is concerned with the decision to invest in the new venture situation, and with the various components of that decision: the way opportunities are identified by investors, the appraisal process, the investor's motivations including various tax incentives, the risk-estimation process, the decision to participate in management, and finally, some appraisal of how investors define success and how well they do in attaining it.

The study revealed a good many interesting facts about this highly-specialized sector of the capital market, as well as supplying evidence to support or refute a number of fairly common beliefs about the venture capitalist. The study cast doubt upon the effectiveness of some present tools of decision theory in the appraisal of risk-taking behavior among this type of investor. It also supplied evidence that the personal interview, while limited in effectiveness, may be the most effective way to study this population.

Thesis Supervisor: Daniel M. Holland
Title: Professor of Industrial Management

Thesis Committee Member: Richard S. Morse
Title: Lecturer in Industrial Management
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Part One:

THE PROBLEM AND THE STUDY
Chapter I

INTRODUCTION AND SUMMARY

"We are not here to sell a parcel of boilers and vats, but the potentiality of growing rich beyond the dreams of avarice."

—Samuel Johnson 1

In undertaking any investigation, it is the investigator's burden not only to observe, report, and interpret the facts, but also to defend the salience of the subject he has chosen to investigate. In an area which abounds in investigations and literature as does "small business," this second responsibility becomes the more insistent. We should begin, then, by defining not only the subject and scope of the present study, but also the circumstances which justify its having been undertaken at all.

The subject of this investigation is the process by which capital is directed to the fledgling research-based enterprise in the New England area. Investments by private individuals have received the major emphasis, and in particular, the resources, attitudes, and motivations which have made such investments possible.

1 James Boswell, Life of Samuel Johnson, London, 1781. (Samuel Johnson presiding at the sale of Thule's Brewery)

-2-
The population studied in this survey is comprised of the individuals who, in the past five years, have provided some or all of the initial equity capital for one or more new research-based enterprises in the New England area. The sample of that population studied was a group of twenty-five individuals, ten known or believed to have invested their own funds, and fifteen, funds for which they had responsibility, in such situations.

The Subject

The literature on the financing of small and new enterprise is an enormous and varied one, and is but a minor subset of a still larger literature on small business as an entity. The bulk of this literature probably has its origins somewhere in the American economic tradition, an element of which runs to the effect that if private capitalism and individual initiative are the basic foundations of our economy and society, then small business per se comprises an essential component of that society and deserves encouragement. This literature was already large by 1957; thereafter its growth was accelerated by the studies, investigations, hearings, and reports which attended the enactment of the "Small Business Investment Act of 1958." That the literature is already so vast makes some justification of the present addition the more imperative.

The new research-based enterprise (which will occasionally be referred to throughout as NRBE) was selected for study as an
unique and important component of the small business population.

A working definition of the NRBE is given by Rubinstein\(^2\) as follows.

"The unique features of the new research-based enterprise are:

1) that it is generally trying to do something no one has done before and 2) that it is generally headed by technical people, often with little or no previous business experience ....(their objectives include):

a) the exploitation of a new product, process or service developed in the laboratory which had not yet been utilized commercially; or

b) the expectation that new products, processes, or services would be developed by their laboratories, once they were in business; or

c) joining in the further development of a new scientific or technological field which was still in the early stages of exploitation."

The NRBE is unique among small businesses for two reasons. First, it has an unusual social role as an incubator of new technologies, many of which are too speculative to be included on the project portfolios of larger, more conservative companies, yet too valuable to remain in the corporate or university laboratory. Second, it is distinguished from the more typical small business (e.g. drug stores and service stations) by its potential for substantial growth, should it succeed. Concurrently, we would expect the risks to be greater in the NRBE, although the only government

statistics available do not separate failure records of NRBE's from those of other small firms to permit a comparison.

New England was selected as the region to be studied, for reasons of the author's personal convenience and because the NRBE has played an unusually important role in the area since World War II. The disbanding of the large defense laboratories of Harvard and M.I.T. at the War's end, the availability of excess capacity in the metals fabricating trades, and the employment vacuum created by the departure of the textile industry, created together a fertile seed-bed for new, technically-oriented firms. The success of some early ones created the climate of expectation which led to the establishment of still more until something like a self-sustaining reaction was achieved, supported by the intellectual capital of the universities and the financial capital of the community. Rubinstein estimates that by 1957 between 300 and 400 such firms had been established in New England; the figure has probably at least doubled since then.

The initial capitalization of these firms, as opposed to secondary and later financing, has been singled out for investigation for two reasons, one substantive and the other academic. The substantive reason is that, in all of the literature on the financing of small and new enterprise, almost no attention is paid

3Rubinstein, op. cit.
to the problem of initial capitalization of such firms, in spite of the enormous importance of this first capital. Its influence is inestimable in terms of what the company will be, who will control it, what its future capital structure will be, and whose interests it will ultimately serve. Perhaps its light treatment in the literature may be attributed to the fact that secondary financing and initial public stock issues tend to exhibit some regularity of pattern, as well as convenience of reference materials, whereas initial financing seems sometimes to obey only the second law of thermodynamics, to the very great frustration of anyone who has ever attempted to generalize on the subject.

The other reason for selecting initial capitalization is the fact that so doing extricates the author from the usual embroilment of defining exactly what is meant by "small" or "new" business. Various investigators have based their definitions on assets, sales, net worth, equity capitalization, number of stockholders, number employed, and even years established. Each definition has merits and disadvantages relative to the others, but all introduce an undesirable element of arbitrariness into the specification of population. By concentrating study upon the initial outside capitalization, these problems of definition were largely sidestepped. However, new problems of definition arose in their place. Just what is meant by initial outside capitalization? What if the initial capital comes from the rich uncle of the entrepreneur --
is it still outside? What if it comes from the entrepreneur's own assets? The answer appears to be that outside is not a useful concept -- that the investment decision made by an individual entrepreneur is no different in kind from a decision made by a venture capital firm. The difference lies simply in the motivation and decision processes that precede it.

The Population Sample

Investigations by Rubinstein, ⁴ the Federal Reserve System ⁵ and others revealed that the individual private investor is indisputably the most important source of initial equity capital for the new firm. It was the author's intention to build upon this finding, and design a study based exclusively upon interviews with private individuals investing primarily on their own account. In practice, however, such a sharp definition of "venture capitalist" is both unrealistic and difficult to maintain. One quickly discovers, for example, that some of the most affluent and sophisticated individual venture capitalists are aligned in family groups which in turn are represented by highly professional private investment staffs. Such organizations, in turn, share many methods, communications channels and selection criteria with the publicly-

⁴ Rubinstein, op. cit.

-held venture investment firms and Small Business Investment Corporations, with whom they are in rather direct competition. Thus, a continuum exists in "privateness" and "individuality" among suppliers of venture capital, and this must be represented in any sample purporting to typify the population.

The sample size of twenty-five individuals was not selected in the belief that it was adequate in any sense to permit the drawing of firm statistical conclusions on any of the subjects discussed. It was selected rather as a tractable number to be interviewed within the time and financial constraints of this study, yet one which would permit the author to test a number of widely-held ideas on venture capital, and to unearth whatever facts about the operation of this segment of the capital market appeared interesting and new to the literature. The effective size of the sample studied was increased beyond its actual size, to the extent that the subjects interviewed were willing to discuss the investment policies of their colleagues, comparing and contrasting them to their own. Thus, while the study "proves" nothing in the hypothesis-testing sense, it does provide fairly substantive support for most of the assertions made in the pages that follow.

The sample was identified by a process which was quite unrelated to random selection. A small group of known investors was identified at the outset and contacted. Each of these, in
turn, was asked to suggest one or two additional investors to be contacted, so that the sample was in some sense self-selected. Two interesting facts emerged from this process. First, while it was expected that the subjects would tend to suggest other individuals much like themselves, this did not prove to be the case; a remarkable heterogeneity of investor types emerged from this process. Second, it became clear after several cycles of referral that the author was following very much the same sort of path through the financial community that the entrepreneur might follow in his search for capital for a risky new venture. While this process of identification and referral could probably be continued indefinitely, there were some indications late in the study of a sort of convergence, in which one or two of those persons suggested would already have been contacted.

The following tables classify the various investors interviewed by profession, education, and age.

<table>
<thead>
<tr>
<th>Professional Activities of Investor Sample</th>
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<tr>
<td>Profession</td>
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<tr>
<td>-------------------------------------------</td>
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<tr>
<td>Investment Banking Firms (Partners and Officers)</td>
</tr>
<tr>
<td>S.B.I.C. Officers</td>
</tr>
<tr>
<td>Officers of Industrial Firms</td>
</tr>
<tr>
<td>Family Investment Group Representatives</td>
</tr>
<tr>
<td>Investment Company Officers</td>
</tr>
<tr>
<td>Commercial Bank Officers</td>
</tr>
<tr>
<td>Academic Consultants</td>
</tr>
<tr>
<td>Insurance Company Officers</td>
</tr>
<tr>
<td>Total</td>
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Note: Three subjects are counted in two professional groups. Total subjects equals twenty-five.
EDUCATIONAL BACKGROUND OF INTERVIEW SUBJECTS*

<table>
<thead>
<tr>
<th>Background (highest attainment)</th>
<th>Number</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>Graduate School of Business Administration</td>
<td>11</td>
<td>44</td>
</tr>
<tr>
<td>Liberal Arts College</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Engineering or Science</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

*Based upon knowledge or assumption of author.

ESTIMATED AGES OF INTERVIEW SUBJECTS

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Percent</th>
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<td>7</td>
<td>28</td>
</tr>
<tr>
<td>51 - 60</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>41 - 50</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>31 - 40</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>21 - 30</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

Refer to Appendix 1 for further details regarding population sample.

The Audience

It is hoped that this document will prove to be of interest to at least two groups: present and potential NRBE investors, and present and potential NRBE entrepreneurs.

Investors of the sorts interviewed may find it interesting to compare their own individual policies and attitudes with those of their peers; moreover, some of the experience of interviewing suggests to the author the view that a good many investors might gain a better understanding of the process in which they are involved by reading such a document. In particular, it is hoped that the sections on
project appraisal, taxes, and risk assessment may prove to be of some value to the investors.

The present or potential entrepreneur may constitute the more important audience for the study. To the new, would-be technical entrepreneur, money tends to be money, no matter where it comes from. Typically, there is on his part very little awareness or appreciation of the enormous differences which exist between the various types of venture capital -- differences in basic investor motivation, differences in control demanded, differences in managerial help supplied, in expectations as to time and payoff, and in total funds ultimately available from the source. He can only benefit from whatever knowledge he can gain of his future capital suppliers. Armed with some information, his search for backing is likely to be more successful, and certain to be more efficient, than without it.

The Interviews

The experience of Rubinstein, Herrmann, Butters, the U. S. Federal Reserve System, and others, suggests that the personal interview is the most efficient, and perhaps the only way to assemble the sorts of information needed in such a study. Written questionnaires appeared to be ruled out by the small population being studied, since even a ten percent return is exceptional for a long questionnaire. Moreover, the written questionnaire is a very poor instrument for the measurement of motivation.
Thus it was concluded that a personal interview survey was the appropriate research vehicle for this topic. Also, it was concluded that a highly-specified interview format, such as that used by Butters, Thompson, and Bollinger in cooperation with the Survey Research Center of the University of Michigan\(^6\) should be developed.

It was felt that such a series of questions, if well worked-out, could provide a uniform basis of comparison between interviews. Such an interview format was developed (see Appendix 2) but it did not prove to be successful, and was subsequently abandoned. The use of a highly-structured set of questions seemed only to destroy the sense of spontaneity and personal involvement exhibited by many of the subjects. The most successful interviews were those in which the objectives of the study were briefly explained, and in which the subject took most of the initiative. If any of the topics of interest were omitted, a question or two usually evoked a relevant response. The subjects were informed by letter that the interview should last only about an hour; in practice, however, very few were shorter than an hour and a half, and a few ran as long as two and a half hours, Almost without exception, the subjects were cordial, interested, and candid in their observations. This, of course, made the study much more pleasant for the author than it might otherwise have been.

\(^6\) J. K. Butters, L. E. Thompson and L. L. Bollinger, Effects of Taxation-Investments by Individuals, Division of Research, Graduate School of Business Administration, Harvard University, 1953.
Summary by Chapter

"What did you find out?" is a question which the remainder of this document will be devoted to answering. Following, however, is a chapter-by-chapter summary of the study, which may have the effect either of encouraging or discouraging the reader's perusal of it in its entirety.

Chapter II: Who are the Investors?
The most important source of initial equity capital for the NRBE appears to be the affluent individual investor. He tends to be in the highest wealth category, to have a predominantly liberal-arts background, and to be employed in the financial community; he is most likely between ages thirty-five and fifty-five. He may be motivated by both economic and non-economic considerations; the economic include primarily tax saving or amelioration and capital appreciation, while the non-economic encompass an enormous range of motivations.

Chapter III: The Role of the Venture Capital Organization
The venture capital organizations include primarily the closed-end investment company, the Small Business Investment Company, and the family investment group. None constitutes an important source of initial NRBE backing, primarily for reasons of risk and minimum economic investment considerations. While some have at one time or another provided initial NRBE capital, the practice has largely been discontinued. These groups perform an important function as
communications centers between ideas and private money.

Chapter IV: The Availability of Initial Venture Capital

There appears to be at least as much capital potentially available for venture investments today as ever before. However, the terms on which it is available, and the standards by which projects are being judged both appear to be stiffer than only a few years ago. Thus the quantity of venture funds being supplied is probably lower than it has been in recent years. The private individual is not only more likely to supply initial funds than the venture capital group, but he is also more likely to supply funds to any venture on more liberal terms.

Chapter V: What the Investor Looks For

The most important component of a proposal to most investors appears to be the people involved - their managerial and technical competence. It is important that both kinds of skills exist in the founder or founding group. The market for the innovation is also a topic of concern; nearly all investors prefer that the market be growing, although all don't insist on it. Some distinct attitudes toward different technologies appeared in the study, suggesting that different investors often specialize in particular areas of technology. The product within that technology may be big or small in terms of dollars per unit - but if it's big, the capital market usually insists that prototype and development shall have been done on someone else's money (e.g. a university's, a company's,
or the Government's). Finally, there appears to be no lower limit on the initial investment size, but most appear to run between $50,000 and $200,000.

Chapter VI: Identifying Investment Opportunities

It appears that the financial community is fairly effective at putting people with ideas in touch with people with money. Referral of the entrepreneur from one type of investor to another seems to be a major mechanism of communication. "Finders" are still active in the financial community, and can sometimes perform valuable sources in obtaining capital. While a few investors engage in an active search process, looking for promising situations, most are basically passive and look mainly at projects that get referred to them by associates.

Chapter VII: The Estimation of Risk

The study of the conceptualization of risk by risk takers provides a basis for looking at venture capitalists. Several models of investor risk appraisal are advanced; the most likely one says he makes an objective estimate of potential payoff and a subjective estimate of the probability of that payoff occurring.

The investor's major hedge against uncertainty seems to be the application of standards to particular aspects of the new venture - standards based on industry rate-of-return, length of time organized, potential market, etc. The process of examining proposals to see if standards are met is rather different for institutional
as compared with private investors. Venture capital groups tend to rely on market analysts, technical consultants, etc., in their appraisal whereas individual investors rely quite heavily on the judgment of their friends. They also tend to rely on their ability to judge the people who are running the enterprise.

Chapter VIII: The Role of Taxes

The federal income tax has two major effects on the investor: it decreases his ability to invest in new ventures, but increases his willingness. Only the second appears to have much relevance to the investment decision, however. The prospect of substantial capital gains, with their liberal tax treatment, appears to be a major incentive to investment. Peripheral tax incentives introduced in the "Small Business Investment Act of 1958 (i.e., "Section 1244," and "Subchapter S") appear to have very little influence on the investment decision.

Chapter IX: Participation in Management

Investors may choose to participate in the management of the enterprise because they like to, or because they feel they have to to protect their investment. Most decisions to participate seem to contain components of each. Venture capital groups often have formal participation arrangements based on self-protection, whereas private individuals seem to prefer either a paid, full-time position, or an internal advisor's role. In either case, participation by the investor can be a valuable source of management assistance, as well
as of contacts in the financial, commercial, and legal worlds.

Chapter X: Definition and Attainment of Success

There seem to be several prevailing definitions of "success" in addition to the customary rate-of-return criteria; most of these are non-economic and highly individualistic. Twenty percent per year was mentioned several times as a good appreciation rate, but it is doubtful that this is more than a sort of average expectation. The success records of the venture capital organizations exhibit great diversity; certain groups appear to have done reasonably well by the investors they represent, whereas others have done quite poorly. An attempt was made to appraise the experience of a subsample of the individuals interviewed, with respect to their success in personal NRBE investment. The results suggest that individuals who go into enough situations to permit averaging to function may actually do better than the process mean. Finally, some ideas were advanced on the problems associated with getting out of the maturing venture.

Conclusion

The results summarized in the preceding section were based entirely upon an examination of conditions in the New England capital market (and to a lesser extent, the New York market). However, I believe that they apply with some generality to other parts of the country. Several of the findings are rather highly interpretive, based upon my inferences rather than on straightforward
statements by my interview subjects. However, I have attempted throughout to indicate where this was the case, and have resorted to it only where it appeared unavoidable in interpreting one or another of the phenomena that appeared during my study.

A word on the research method employed is in order. The non-directed interview is a rather blunt research tool in the hands of any but a trained psychologist; the author proved to be no exception. However, spontaneity of response and gratuitous reference to facts unknown to me were the rewards for its use in my study. The price was the loss of an opportunity to ask the same questions of every interview subject thus enabling me to cross-tabulate and correlate replies in the familiar manner so dear to the academician. I consider the loss a small one, inasmuch as the sample of investors turned out to be so heterogeneous as to have made such comparisons useless anyway. I must confess that I wish I had been able, during the study, to think of a better method of research to recommend to future students of the subject. Unfortunately, I was not.

But the possible areas for further research in the area of new enterprise financing are many. Particularly fertile areas lie in analysing the investor's conceptualization of risk, and in the measurement of the effect of taxes upon his investment decisions. It is my opinion, however that the major future empirical contributions in each of these areas will be made by social scientists,
trained perhaps in psychology or psychometry. The investigator trained only in management science is on very soft ground indeed when he tries to separate a man's real motivations from his reported ones, as he is on any other occasion that he tries to probe the attitudes, motivations and feelings of anything as fascinating and frustratingly complex as another human being.
"At one time or another...the following types of individuals and organizations were reported to supply venture funds for promising growth situations: wealthy individuals, family estates, partners and associates in investment-banking houses, investment-banking firms for their own account, closed-end investment companies, outright venture capital firms, pension funds, nonfinancial corporations seeking diversification, dissatisfied corporate officers, wealthy men seeking active management roles, and others...Though this list is impressively long, the interviewers concluded that wealthy men - whether as individuals, as partners in investment-banking houses, or as corporate officers - are the backbone of this market."\(^1\)

The Federal Reserve System's study quoted above, while it did not attempt to distinguish between ordinary small business and small business of exceptional growth potential (e.g. NRBE's), went directly to the heart of the matter in asserting the importance of the wealthy individual in the financing of new enterprise. The present study not only provides supporting evidence for this conclusion, but also indicates that the wealthy individual investor is relatively even more important in the population studied in this investigation, the suppliers of

initial capital to NRBE's.

The importance of the wealthy individual in initial financing of the NRBE, relative to that of investment companies, venture capital firms, Small Business Investment Corporations, and other organizations, has two major explanations. First, the initial capitalization of a new venture is simply too risky for the usual venture capital organization. Since the market shake-out of May 1962, nearly every such organization has adopted an explicit policy of "no initial capital." Though an occasional exception is made, according to two of the interview subjects the role of the venture capital organizations in such situations today is almost nonexistent. Second, possibly more important, is the nature of the individual investor himself. His tax structure normally favors speculative investment, he is typically accountable only to himself for his actions, he can afford the inevitable occasional loss, and he often has motivations for investing which are not strictly economic.

Investor Activity

The sample of individuals interviewed included primarily what might be called the "active investor" - that is the individual who personally finds, investigates, finances, and follows the venture situation. These people, due to their activity in the financial community, are relatively easy to identify and contact. Another group of investors which probably at least equals the first
in terms of total financial contribution to venture situations, is what might be called the "passive investor" group - individuals who take little active part in the search and appraisal process, who entrust, this, and possibly even the decision, to hired professionals. While these investors are sometimes possible to identify, they are less generally accessible to the investigator and probably less interesting due to the very passive nature of their role. Thus, their investment policies and motivations can only be inferred from the policies and histories of the groups that represent them. The "passive investor" group includes a number of family investment groups, holders of stock in Small Business Investment Corporations and certain closed-end investment companies, as well as individuals represented individually by private investment counsellors. Together, the active and passive private individuals supply virtually all of the initial capital to new technical enterprises in the New England area.

**Investor Resources**

Another important dimension in identifying the private venture capitalist is his financial capacity. This, in turn can be specified further as net worth and income. During the study, no explicit efforts were made to determine either of these for the interview subjects, although some evidence is available for estimating income via tax bracket.

The net worth of investing individuals is a difficult
parameter to measure because it is a rather confidential subject among most wealthy persons, in addition to the fact that wealth is hard to define, especially when it consists of non-liquid assets. Butters, Thompson, and Bollinger, in their rather extensive study, were able to classify their sample of individuals making any kind of investments of 746 into the following wealth categories:

<table>
<thead>
<tr>
<th>DISTRIBUTION OF NET WORTH IN HARVARD STUDY SAMPLE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $25,000</td>
<td>142</td>
</tr>
<tr>
<td>$25,000 - 49,999</td>
<td>117</td>
</tr>
<tr>
<td>$50,000 - 99,999</td>
<td>120</td>
</tr>
<tr>
<td>$100,000 - 249,999</td>
<td>149</td>
</tr>
<tr>
<td>$250,000 - 499,999</td>
<td>71</td>
</tr>
<tr>
<td>$500,000 - 999,999</td>
<td>37</td>
</tr>
<tr>
<td>$1,000,000 and over</td>
<td>40</td>
</tr>
<tr>
<td>Not ascertained</td>
<td>70</td>
</tr>
</tbody>
</table>

This was a rather early (1949) study and the sample may not be entirely representative today; however, it does give the reader some feeling for the distribution of wealth among individual investors.

They did not correlate investor participation in new ventures with wealth, as they did with income. However, if one

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2 J. K. Butters, L. E. Thompson and L. L. Bollinger, Effects of Taxation-Investments by Individuals, Division of Research, Graduate School of Business Administration, Harvard University, 1953.
is willing to make the fairly reasonable assumption that income
is rather highly correlated with wealth, one can make some rough
estimates of the importance of personal wealth in specifying the
identity of the venture capitalist.

Total wealth influences investment in two ways, both
somewhat independent of annual income. First, it is the primary
determinent of capacity to invest, not just initially, but through-
out the growth of the enterprise. Second, total wealth may be ex-
pected to have a substantial influence upon willingness to invest
in risk situations, to the extent that the utility of additional
profits is affected by present accumulations.

High annual income is the other distinguishing economic
feature of the venture capitalist group. To the extent that the
progressive income tax penalizes the individual who attempts to
increase his annual personal income, the capital-gains tax
structure makes it logical for him to invest in risk and growth
situations. Butters, Thompson, and Bollinger\textsuperscript{3} reported the
following correlation of income to attitude toward new ventures
among their sample of individuals who invest in all kinds of
situations:

\textsuperscript{3} Butters, Thompson and Bollinger, op. cit.
ATTITUDE TOWARD NEW VENTURES
OF INDIVIDUALS IN HARVARD STUDY SAMPLE,
BY INCOME GROUPS

<table>
<thead>
<tr>
<th>Income Group</th>
<th>Number of Cases</th>
<th>Attitude Toward New Ventures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unfavorable</td>
<td>Neutral</td>
</tr>
<tr>
<td>Under $,500</td>
<td>201</td>
<td>45%</td>
</tr>
<tr>
<td>$7,500 - 12,499</td>
<td>182</td>
<td>39</td>
</tr>
<tr>
<td>$12,500 - 24,999</td>
<td>159</td>
<td>36</td>
</tr>
<tr>
<td>$25,000 - 49,999</td>
<td>120</td>
<td>43</td>
</tr>
<tr>
<td>$50,000 - 99,999</td>
<td>46</td>
<td>35</td>
</tr>
<tr>
<td>$100,000 and over</td>
<td>26</td>
<td>52</td>
</tr>
</tbody>
</table>

Attitude is not, of course, the equivalent of participation, but is certainly a major determinant. The important finding here is that evidence exists to support the commonly-held view that the higher income individual is more likely to be interested in venture investments than the individual of less income. Evidence was found throughout the present study to support this conclusion.

Background and Education

The background and educational experience of the venture investor is probably not too much different from that of most wealthy Americans, with a few notable exceptions. The most common case is that in which wealth is inherited; in this case the most typical pattern appears to be a liberal-arts Ivy League education, perhaps augmented by business school training, followed by some years in the financial community of New York or Boston.

The other pattern of background emerging from the study
was one of self-made affluence. But among the sample interviewed, perhaps 15% fall in a group whose affluence was self-made. Their education is likely to be technical, and the investor has typically been a technical entrepreneur at some time in his career. This fact is likely to be responsible for his wealth; it is also likely to explain his interest in new research-based venture investments, and his emotional commitment to them, which may well outweigh the economic considerations involved. In support of this general profile, it is interesting to observe the finding of Butters, et al, that the second highest, not the highest, income group exhibits the greatest interest in new ventures. If one is willing to assume that this second highest group probably includes more of the self-made men than the highest wealth group, the evidence supports the contention that such men are highly interested in the new venture.

The occupations of the sample interviewed in this study were very widely assorted, as was noted in Chapter I. However, there were strong indications that the congenitally affluent group tended to be most professionally active in the investment and investment-banking fields, whereas the self-made capitalists tended to retain their identity with industry, as presidents, board chairmen, and senior entrepreneurs.

**Investor Age**

The age of the active investor in the NRBE is another
dimension worthy of some note. Several of the men interviewed indicated that they had at one time been far more active than they were at present in the backing of new enterprises. Butters et al.\textsuperscript{4} reported a very significant correlation between youth and interest in new ventures:

\begin{table}[h]
\centering
\begin{tabular}{lllll}
\hline
Age & Number of Cases & Unfavorable & Neutral & Favorable & Total \\
\hline
Under 35 years & 54 & 19\% & 34\% & 47\% & 100\% \\
35 - 44 & 147 & 31 & 27 & 42 & 100 \\
45 - 54 & 209 & 41 & 18 & 41 & 100 \\
55 - 64 & 199 & 42 & 25 & 33 & 100 \\
65 and over & 131 & 64 & 17 & 19 & 100 \\
\hline
\end{tabular}
\caption{Attitude Toward New Ventures of Individuals in Harvard Study Sample, by Age}
\end{table}

In participation (as opposed to favorable attitude), the correlation might be somewhat less, due to the fact that, on the average, the older man has greater financial capacity than the younger. Nonetheless, it was the consensus of several of the senior men interviewed that backing new ventures was a young man's game. Not only does venture financing require great energy and enthusiasm, but it also requires waiting five to ten years for results. As one elder investor interviewed put it,

\begin{quote}
Butters, Thompson and Bollinger, op. cit., p. 261.
\end{quote}
"I'm too old for this game now. I see plenty of situations I'd have invested in ten years ago, but I can't wait ten years for a situation to mature."

In the sample interviewed, the men most active in new venture financing were probably between the ages of thirty-five and fifty-five, though the distribution was evidently skewed to the right.

**Basic Investor Motivation**

It is in this area that the author finds himself on the softest ground in attempting to generalize about the population under study. It was his intent in every interview to discern to what degree the investor was motivated by calculated economic considerations, and to what degree by noneconomic motives. This turned out in practice to be rather more difficult than it sounds.

In a very few instances it was possible to infer directly from the interview content that the motivation to invest in new ventures was entirely economic, or entirely emotional. In the greater number of cases, however, a balance existed which was often difficult to specify. The most usual reason for this is the tendency of such men to view themselves as hard-headed businessmen, and to de-emphasize the noneconomic component of their investment decisions. It was important in most instances to try to distinguish candid statements of motivation from those made "just for the record."
In certain instances the subject would explain in great detail the economic considerations, tax implications, etc., underlying his investment decisions, and then end by admitting that he considered such investment a terrible risk, and that he only invested for the fun of gambling. Or, another answer encountered more than once was that, while he considered himself to be basically economically motivated, he thought that most of his colleagues just did it for fun. One more candid investor put it this way:

"With most of these guys, the real motivation is the emotional association, like backing a winner at the races. Money is just the excuse they give their wives."

The Federal Reserve System's 1958 study, Financing Small Business, reported (correctly, in the author's opinion) that

"Some of the persons who invest small amounts in struggling little businesses appear to do so partly for noneconomic reasons. They may do it because they like "to take a flyer," to defy coolly calculated probability. They are exhilarated by the business process, like to get involved in management problems, and enjoy competing. Some wealthy men take seriously the social responsibility of wealth; they believe that they should invest in small businesses and be helpful to small businessmen for these reasons."

If any valid generalization at all about NRBE investor motivation is possible, it is probably that economic motivation varies from zero to one hundred percent. One of the fundamental questions to be asked by any entrepreneur approaching a potential capital source is "What is this investor's motivation?". Because of the large and unknowable risks associated with initial capitalization of research-based firms, it would be reasonable to assume that most of the people who finance such situations probably aren't economically motivated. This is not altogether true, however, since the author identified several individuals and groups who invest for the coolly calculated reason that they have almost nothing to lose, under the tax provisions of the Small Business Investment Act of 1958 (discussed at length later), although they are not especially interested in small business or research per se. Moreover, it would be most naive to expect even an investor of 100 percent noneconomic motivation to be foolish, and very few are. Their criteria for project selection, in terms of capable people, technical promise and market potential, are probably just as stringent as those of the most highly profit-motivated groups. For the only way for either type to measure success or failure is profit.

If any tendency can be identified, it is that the investors represented by professional staffs tend to make the more rationally economic decisions, while the private individual investor appears more likely to do if for fun. As noted earlier,
a technically and industrially oriented individual may make slightly more rational decisions, but his motivation and record are probably little different from that of his colleague in the financial world. It is not possible to estimate the distribution of investor motivation from available information.

The following principal motivations were identified during the course of the study; while it is possible to list these factors, it is extremely difficult to assess their relative importance in the total market for initial venture capital. The list should be interesting, however, if only for its diversity.

**Economic Factors:**

1. Realizing capital gains, taxable at a lower rate than personal income.

2. Obtaining virtually "heads-I-win" status under certain sections of the Internal Revenue Code.


4. Protecting heirs against losses in inheritance taxes.

5. Developing a technological capability suitable for annexation to existing investments.

**Non-economic Factors:**

1. Gaining the sense of excitement inherent in risk-taking.

2. Participating in a growing enterprise.

3. Gaining the satisfactions of helping to manage the enterprise, of "doing something useful."
4. Fulfilling a belief in the social responsibility of wealth.

5. Helping small businessmen get started because they need help.

6. Asserting a belief in new technical enterprise as an important element in the economy.

7. Keeping up with the Whitneys.

In reality, it is probably impossible to partition motivation, and particularly non-economic motivation, in this way. Most investors represent some combination of several of these, in proportions of which they themselves are quite unaware. Moreover, it is probably inaccurate, though enticingly feasible, to accept an investor's *ex post* appraisal of his motivation in a particular investment, when what one would really like to know is, "What were his motivations when he went into it?".

The Corporations as Venture Capitalists

Before leaving the question of the initial investor's identity, it is appropriate to mention still another source of venture capital - the established industrial corporation.

This source is probably growing more rapidly in importance than any other sector of the venture capital market, and the balance sheets of an ever-increasing number of established technically-oriented firms include investments in speculative new technical enterprises. The roster includes several well-known firms, such as
Union Carbide, Aerojet General, du Pont, Paramount, Western Electric, and CBS. Their influence may be expected to make itself felt in New England as well as other regions.

There are several reasons why an established industrial firm might be interested in backing a new technical venture. First, a mature organization often finds that it has generated cash faster than it has generated opportunities for its profitable reinvestment. It frequently makes sense to risk some of it on a venture which has the possibility of becoming either a salable asset for the realization of capital gains, or a subsidiary company with a high earnings rate. Another reason is that the older company wants to cover its bets technically - to back a number of competent outside groups in several new technologies, so that the firm will have access to technical competence in the areas that acquire commercial importance. Another reason for such participation in NRBE's is that some mature technically-oriented firms feel that they are incapable of attracting technical people in the quality and calibre they need. Since such people frequently find the equity participation, informality and flexibility in the small company to be the most congenial work atmosphere, the mature firm reasons that it should encourage the small firm in the hope of maintaining an affiliation with it. Finally, the firm may simply want an affiliate somewhere near a center of technological activity (e.g. Boston or Palo Alto).
Whatever the reasons, the older firms are stepping up their search efforts to locate promising technical groups. Several have small professional staffs with just this assignment. These staffs, unlike the staff of the typical venture capital organization discussed in the next chapter, can pursue an aggressive search without being buried in a flood of unpromising and unsolicited proposals from every quarter.

The arrangements for participation by the mature firm are many. The firm may simply purchase a bloc of stock outright. It may lend money on some convertible basis. It may simply pay the bills of the new technical firm, charging it as current expense and hoping to acquire stock on options if the venture succeeds. The parent company may participate substantially in the technical and managerial affairs of the venture, or not at all—depending upon the capabilities of the parent firm and the needs of the new enterprise.

In conclusion, this source of venture capital is growing, and may be expected to continue to grow, particularly in view of the threats posed to defense contractors by disarmament movements. The search for new technologies with potential civilian markets may be expected to grow more aggressive among the defense contractors. Opportunities already exist for research in this field of venture capitalism, and will almost certainly multiply in the next several years.
Chapter III

THE ROLE OF THE VENTURE CAPITAL ORGANIZATIONS

"Financing the initial phase: A few - very few - have been financed by venture capital organizations. In most cases, such organizations will - by their own rules - avoid such initial financing. They explain this in various ways, most of them amounting to a belief that the entrepreneurs ought to have something tangible or at least something specific to talk about before they come looking for backing. In addition, this initial investment of time and energy is taken by some of the potential backers as an evidence of good faith on the part of the entrepreneurs - indicating that they are making a sacrifice in order to start the new venture." 1

This observation by Professor Rubinstein although based on conditions existing prior to the enactment of the Small Business Investment Act of 1958, is at least as valid today as then. Virtually no initial financing is being obtained by entrepreneurs from the venture capital organizations of Greater Boston and New York. To understand why this is true, it will be helpful to begin with a brief discussion of the most important types of venture capital organizations.

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In this discussion, we shall consider principally three types of venture capital organization: the closed-end investment company, the Small Business Investment Company (SBIC), and the family investment organization. There have been several other forms of venture capital groups organized in the past, including investment clubs, syndicates, partnerships, pools, trusts, and other forms. However, if such combinations were ever of much importance, they are not today and for this reason are not discussed with the three major types.

Closed-End Investment Companies

The closed-end investment company is normally understood to be a company which, through diversification of investments among many types of companies, hopes to secure for its stockholders a fairly steady-growth-rate, approximating perhaps the Dow-Jones average but with the smaller variance normally associated with a diversified portfolio. However, few closed-end investment companies invest in every possible type of company, and many have come to specialize in companies of particular types. One such specialty is young, technically-based firms.
There are very few such investment companies which make a routine business of supplying venture capital to new enterprises. Of these, only three are large enough to be considered important, and only one is active in the New England area. This one is American Research and Development Corporation, located in Boston. This firm is a mature organization, has assets in excess of $31 million, is listed on the New York Stock Exchange, and has well over 7,000 stockholders.

ARD is an aggressive organization, and it maintains a substantial professional staff to appraise situations and to follow the companies in its investment portfolio. Quoting from a brochure of the firm,

"The objective of American Research and Development Corporation is to help outstanding individuals build companies of stature and to create capital appreciation for the owners of these businesses and for the ARD stockholders.

To achieve this goal, ARD:
. assists in creating companies based on the ideas and new techniques of competent men
. invests in new companies
. invests in existing small or medium-sized companies which appear to have growth potential.

.... The amount which ARD invests in a single situation is flexible and...is determined by the client's requirements. In general, initial investments are in the range of $50,000 to $1,000,000....

While ARD asserts that the creation and initial capitalization of NRBE are among its goals, the ARD portfolio provides evi-
dence that these are not major ones. ARD has discovered, as have
many other venture groups, that the risk and administrative costs
associated with initial financing of technological ventures off-
set the potentially great gain to be made from getting in very
early. While initial investments may in fact be "in the range of
$50,000 to $1,000,000," the million-dollar investment probably
doesn't cost much more to place and administer than the $50,000
one.

The risk associated with initial capitalization is
theoretically more severe for ARD than for its younger counter-
parts, the Small Business Investment Companies. For, although
they are in about the same business, the SBIC has, by the terms
of its charter, special tax protection which, at least in theory,
makes the extreme risk situation more tenable for it than for
the regular closed-end investment company.

For these reasons, ARD and other closed-end investment
organizations have played an exceedingly minor role in initial
venture capitalization. Yet, even if they were more favorably
disposed toward this type of situation, such organizations could
play only a very small role by virtue of their limited numbers
and resources.

The Small Business Investment Companies

The SBIC's were made possible by the Small Business In-
vestment Act of 1958 which, among other things, empowered the
Small Business Administration to license private venture capital companies. Such companies are empowered to extend loans and equity capital to small enterprises which meet the following criteria:

1. Assets not in excess of $5 million
2. Net worth not in excess of $2.5 million
3. After-tax average earnings for past two years not in excess of $250,000.
4. Position in industry not dominant.

The SBIC is in concept a leverage organization. The larger ones (investments in excess of $7 million) can borrow up to 50% of capital and surplus but not exceeding $4 million from the Small Business Administration. Beyond that they can borrow from private sources up to the point where borrowings equal four times capital and surplus. Thus, at least in theory, the SBIC stockholder can have a debt-equity ratio of up to 4:1 at work for him.

The SBIC's are also eligible for special tax treatment, as indicated earlier. All dividends received by the SBIC from portfolio companies are exempt from the usual corporate tax rate (this is minor, however, since almost no new enterprise can afford dividends). The SBIC's losses on sale of investments may be deducted from ordinary income, rather than from capital gains, for the purpose of computing taxes. Finally, the stock-
holder in an SBIC also receives the benefit of asymmetric tax treatment. If he sells his SBIC stock realizing a gain, he is taxed at the capital gains rate (half the regular rate with a ceiling at 25%); if he sustains a loss, it is deductible from his ordinary income for tax computation.

For these reasons we would expect the attitude of the SBIC's toward risky ventures, such as initial capitalization of NRBE's, to be substantially more favorable than that of other venture organizations. This does not appear to be the case, however. Indeed, there is evidence to suggest that, of the three major classes of venture capital organizations, the SBIC's may be the most cautious in their investment policies.

One reason for risk aversion among the SBIC's is their typically small investment capacity. A recent study\(^2\) showed that, of 1,565 SBIC's active in the U. S., as of 1962, only fifty-seven had assets of $1 million or more - and of these, only twelve had assets in excess of $7 million. Thus, risk aversion becomes a principal goal for the vast majority of SBIC's. Venture investment results are governed by the laws of probability, but for most SBIC's a single unfavorable outcome could spell

disaster.\(^3\) A second reason for SBIC disinterest in new situations is that many SBIC's have been organized in such a way as to take advantage of the government credit guarantee, but to serve purposes somewhat different from those intended by the legislation. For example, officers of many banks, credit agencies, development corporations and other groups have organized minor SBIC's to act in capacities merely complementary to their main lines of business. SBIC's of this class, with a few exceptions, would probably not

\(^3\) This is an important fact of general applicability to NRBE initial financing, and deserves elaboration. Simply stated, it boils down to this: even though the small business "game" has the same expected value (rate of return) as the large business "game", nonetheless, since the variance associated with small business is greater than with large, a bigger stake is required to play the small business game with the hope of attaining the expected value.

As an example, let us take two roulette players, A and B. Each begins with a stake of thirty dollars, betting five on each spin of the wheel. A bets only that the number that comes up will be an odd one, but B bets that it will be one of the six numbers divisible by five. It is a no-house-gain wheel, so both A and B have equal long-run expected gains: zero. A has a very good chance of staying in the game all evening and ending with his expected zero gain (his probability of being ruined in the first six spins is only \((1/2)^6 = .0157\). B's chances are not quite so good - his probability of being ruined on the first six spins, for example, is \((4/5)^6 = .25\) - or sixteen times that of A.

The relevance of this example will quickly be seen if for A we substitute "blue-chip investor" and for B, "NRBE investor". Each has about the same expected rate of return, but the stakes needed to stay in each game long enough to attain it are quite different!
even talk to the engineer attempting to start a company, and would not have the professional staff to evaluate his proposal even if they did. Even the larger, publicly-held SBIC's tend to shy away from initial financing, for much the same reasons as the closed-end investment companies: the high risk and the high cost per dollar invested.

To every rule there are exceptions, however. A significant exception in the New England area is Boston Capital Corporation, one of the largest SBIC's in operation (assets - $21 million, investments - $10 million). This firm exhibits an active interest in new ventures as well as established companies. Of its total portfolio of twenty-seven companies, ten were new at the time of investment, and represent 33.6% of the total assets invested and committed.

Boston Capital appears to be one of the very few SBIC's actually fulfilling in some degree the role envisioned for all of them by Congress. Yet this is not the paradox that it might appear to be, because BCC has the size required to support an expert appraisal staff, to diversify its investments, to invest in situations of various levels of riskiness, and to survive the losses that are to be expected in new venture financing.

Summarily, the SBIC's do not today represent a significant source of initial capital for new technical enterprise in New England or anywhere else. For the reasons mentioned earlier, there is little indication that many of them will ever participate in
such situations, although as the larger SBIC's mature one should expect their participation to increase.

The Family Investment Organization

The organizations entrusted with the investment of major portions of hereditary family fortunes are among the most important individual suppliers of venture capital in the country. While the majority of the family groups are not in the venture capital business at all, the few that are exert a substantial influence in the venture capital market.

Family investment groups are organized in a variety of ways, some as partnerships, some as corporations, some involving the family members collectively, some simply providing a community investment staff for several individuals. In certain family investment groups, one or more members of the family will participate rather actively in the selection and following of portfolio companies. In others, the investment staff effectively has the family's proxy to proceed in an independent manner. In certain cases, the organization has allocated to it a certain fixed amount to be invested in venture situations; in others, the resources available are limited only by the merit of the projects coming to its attention.

It is the consensus of the financial community that, of all venture capital organizations, the few best-known family groups are probably the most sophisticated and capable venture
capitalists to be found. It was the author's observation, after some contact with certain of these groups, that there is evidence to support this consensus. The family groups have several advantages, as compared to other forms of venture capital organizations. They have no stockholders to answer to during "building years." They normally have excellent professional staffs for the appraisal and assistance of the new firms - often including men of technical, as well as financial and managerial, backgrounds. In addition, the family group frequently has resources available for second and third financing of the portfolio company, and is under no pressure to get out at the first opportunity. Unlike the SBIC, the family investment group has no limitation on the size and type of venture situation that can be backed, nor constraints on the amount of its participation in a situation.

Yet, for all these advantages, the family groups also play a very small role in initial financing of NRBE's. One reason may be their very sophistication. The major groups have been organized since World War II; in that period they have accumulated a fair amount of experience with new company financing, much of it bad. One observer, discussing the experience of J. H. Whitney and Company, a family group once active in new ventures, commented as follows:

"In a period of twelve years, J. H. Whitney and Company screened 7,000 investment prospects, and
chose fifty - less than 1% - as worthy investment risks."

"Its capital rose 400% in this twelve-year period. But an ordinary stock portfolio would have jumped 500% in value in that time, including reinvestment of all dividends, with far less trouble and expenses and infinitely less risk."

"Moreover, five-sixths of the increase in capital came from only five ventures. And Whitney had to sink $2 million or more in each of these five ventures! Actually even this record of appreciation wouldn't have been realized had it not been for one prematurely early success of one firm."

"The picture looks even more gloomy when you look at the record on investments under $500,000. . . . Poor J. H. shelled out less than $500,000 exactly thirty-eight times. In fifteen cases, Whitney lost his shirt. In six cases, he came out even - not counting all the expenses. In four cases he made something, but the return was hardly worth the effort. Only thirteen of the thirty-eight firms brought in a decent return. For the entire group of thirty-eight, the average annual return was less than 2%. For the thirteen successful investments, the annual rate was 9 - 10%.

Another family investment group, Payson and Trask, has translated its experiences with initial financing into a firm operating policy:

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"The majority of the nearly thirty ventures backed by Payson and Trask in the past eleven years are small firms on the threshold of major growth - but lacking capital to swing such growth on their own. Such companies frequently outrun their founders' resources before they have matured to the point where they can win support of individual or institutional investors."

"Payson and Trask usually will not attempt to promote new inventions. It prefers ventures that have a record of profitable operations - or, at least, seem to be approaching the break-even point. It feels companies running into heavy start-up expenses or market development costs are out of its depth. Occasionally, though, it has turned new investments (one example: a nylon zipper) over to one of its money-making affiliates. The affiliate can plow its earnings into commercializing the invention."

Thus, the experience in financing the very small and very young organization was not a happy one for some family groups. While a few extremely promising new situations still get financed by the family groups, this number is minute in comparison to the private individual investor's activity.

The Communications Function of Venture Capital Groups

It would be quite incorrect to infer from the foregoing that the venture capital organizations play no constructive role in the financing of new technical ventures. The correct conclusion is simply that they supply very little money. Their

real contribution to the entrepreneur searching for initial financing is usually one of communication and referral to someone who can help. Owing to their experience in venture capital, their extensive contacts in the industrial and financial communities, and their daily interaction with the venture capital market, these organizations perform an exceedingly effective role as communications centers, bringing people with good ideas in contact with people with the right kind of money. This function is performed on an informal, person-to-person basis, typically at no cost to either party.

With the exception of a number of SBIC's (noted earlier), the officers of nearly any venture capital organization are willing to spend some time with any aspiring entrepreneur with a reasonable idea. They are likely to be very helpful, aiding the applicant in the appraisal of his own idea, making suggestions on financing arrangements, and likely referring him to a source of venture capital more appropriate to his needs. At the very least, they can provide the entrepreneur with an impartial professional sounding-board, upon which he can test his proposal to see how it is likely to be judged by the rest of the financial community. Thus, it is probably worth his while for him to approach one of these groups, even though he recognizes that their policies exclude their participation in his venture.
Chapter IV
THE AVAILABILITY OF INITIAL VENTURE CAPITAL

"In a dynamic growing economy, the needs of entrepreneurs may exceed available capital resources. At best, there will be an unsatisfied demand, with all businesses - small, medium, and large, competing for the investors' funds. Increasing concentration of savings in the hands of institutions, investment trusts, and other similar investors means that small business, more and more, must meet recognized competitive standards of performance, management, and growth potential in order to raise new capital." 1

In this observation, Bernard Cahn comes close to the heart of the question of "availability," yet runs aground on the concept of "need." Demand is really the only conceptually tractable dimension in such a discussion, as the Federal Reserve System discovered in their 1958 study of small business financing. 2 They discovered, to no one's very great surprise, that most small businessmen and new entrepreneurs felt that they "needed" more capital than was available to them. Such findings, which underlay in a large degree the Small Business Investment Act of 1958 and its legislative forbears, largely ignored the economic fact


that capital is by definition a scarce resource, and is allocated to those who compete for it, in proportion to their ability to stand the test of the market.

The demand for funds, on the other hand, is not an independent variable either, as any investment banker will admit. Demand for equity venture funds, for example, can be very much a function of the entrepreneur's perception of his likelihood of success in his quest for them. Throughout the period 1959 - 1961, when the scientific glamour stocks were selling at incredible multiples of earnings and unseasoned public issues were being floated daily, demand for equity funds appeared to be high. It was high, not because funds were needed for growth and development in any such quantity but because promoters saw that market conditions made such funds available. The author was told by several interview subjects however, that since the market shake-out of May 1962, there has been a remarkable decline in the number of proposals coming to the attention of venture investors. Thus, any argument concerning level of need, based on observations of market "demand" at a given time, is subject to some suspicion.

The Supply

Among the investors interviewed, there was near unanimity on the proposition that the aggregate supply of funds available for all types of venture investments has never been greater. This consensus is borne out in part by the large proportion of the SBIC
funds which are still uncommitted after three or four years of operation. As one investor put it,

"The real need is not for more venture money, but for more really promising situations."

Behind this fairly typical statement lies the fact that, while more money may be potentially available for growth situations than ever before, the criteria for judging these situations are more stringent than ever before. The experience of 1959 - 1961, which another investor appropriately calls "the second era of glorious nonsense," ended by driving most of the unsophisticated and marginal investors completely out of the venture capital market - and by making the professionals much more careful in their appraisal of NRBE's.

The departure of the amateurs from the venture capital market has probably been more than offset, in terms of potential supply, by the increasing number of industrial firms which are becoming venture capitalists, as discussed in Chapter II.

The standards by which new technical firms are judged today, in terms of technical and managerial capability, market potential, stage of product development, etc., appear to be more stringent and probably more realistic than they have been for several years. While a few guileless investors are probably still betting on things with technological-sounding names, they
are in a shrinking minority.

Thus, in the terms of the economist, while the absolute quantity of potentially available capital may be as large as ever, the supply curve has risen (i.e., the price, standardized for risk, has risen for any quantity of capital supplied). The demand curve has, if anything, fallen for reasons noted earlier. The net result is that the quantity of equity venture capital being supplied today is probably smaller than at any time in the past five years.

**The Terms of Availability**

It is difficult to talk about the terms on which initial venture capital is available to the entrepreneur without discussing the appraisal process to which he is submitted by the venture capital market. This is the subject of a later chapter, however, so we shall limit discussion here to the terms on which equity capital is available to the enterprise which has survived the selection process.

To the extent that initial venture capital is available at all from the venture capital organizations, the entrepreneur is likely to find that it is available only on rather stiff terms. This is due in part to the factors mentioned in the previous chapter, and in part to the fact that the motivation of most of these organizations is essentially economic. Their terms are stiff in terms of percent of equity demanded (one SBIC officer stated, "We want fifty to sixty-five percent if we're putting up all the money on a new business."). These organizations are also stringent in their
demands in terms of corporate debt. The convertible debenture is a common form of near-equity financing which provides the investing organization with the bargaining position of creditor, but which requires interest payments of the new firm at exactly the time when they can be least afforded.

The venture capital organizations frequently make deals which include some measure of management intervention on their part in the affairs of the company. There is a rather broad continuum of participation arrangements, ranging from the usual directorship through compulsory "management consultant" contracts. While a certain amount of management assistance is frequently needed and welcomed by the entrepreneur, he will do well to recognize that the amount of such intervention he may expect varies substantially from organization to organization.

The private individual investor is not only more likely to supply initial risk funds than the venture capital organization, but is likely to supply them on rather more liberal terms. He is seldom interested, for example, in gaining a controlling fraction of the company equity for his contribution, simply because he cannot devote the time and energy to a situation that control implies. Moreover, he is more likely to be betting on personalities than on technologies, and to feel that people who are running their own show in their own best interest are more likely to do a good job for him. For much the same reason, the management
role demanded by the individual investor appears to be rather more passive than that demanded by the venture capital groups. He is usually satisfied with a directorship and with an opportunity to help out if asked. (This obviously does not apply to individuals investing in their own enterprises).

The private individual investor appeared to be much less concerned with protection and guarantees than other venture capital sources. He usually prefers straight equity participation, perhaps supplemented by options, to the more exotic forms such as convertible debentures. It is fairly common, however, for a private individual to loan subsequent funds to the company for which he has provided the initial equity capital. The author was unable to determine whether provision for such loans was normally made in the initial financing agreement.

One reason for the sometimes very liberal terms on which entrepreneurs have been able to obtain initiating funds is the tax incentive offered to wealthy individuals by section 1244 of the Internal Revenue Code. This provision, which was established in the Small Business Investment Act of 1958, and which will be discussed in a later chapter, says in effect the following: Any investor in a "1244 company" - one which is below specified limits of size and net worth - can deduct any loss on stock sale from ordinary income for the computation of taxes. Capital gains are taxed at the usual rate, about 25%. This is in effect the identical
incentive offered to investors in SBIC's. A wealthy individual (tax bracket 75% plus) thus has very little to lose if the new venture should fail. In effect, this often means not only that funds are available on quite liberal terms, but sometimes even that the company is neglected by the principal investor, to its great detriment. In more than one instance of which the author is aware, companies have actually been forced to liquidate simply for reasons of tax expediency on the part of the principal investor. Thus, 1244 offerings occasionally provide a means for obtaining initial capital on rather liberal terms, although this is not always an unmixed blessing.

In summary, then, it is the opinion of the author and most of those he interviewed that the total growth capital being supplied today is less than in recent years, notwithstanding the newer tax incentives. The terms on which this capital is being supplied are more stringent than in recent years, as are the criteria by which situations are being judged today. While individual investors may be no less willing than ever to supply initial venture capital, the disappearance of the venture groups and the underwriters from this game has almost certainly brought the total being supplied far below its 1960 - 1961 level.
Part Two:

THE INVESTMENT DECISION
"A venture-capital firm or an investment company usually screens all phases of a company carefully before it invests for its own account or recommends the situation to others. This includes judgment as to the character and capacity of the individuals involved; their ability to adapt themselves to the growth they claim as likely; an investigation of the technological feasibility of the new product or process, including costs; an evaluation of the potential market for the product or process, including the nature and the long-run future of the industry of which the firm is a part; an examination of the firm's past earnings and accounting records; and an investigation into the relevant legal aspects such as those regarding patents....

On the other hand, it seemed to the interviewers that wealthy individual investors, in contrast with the larger funds, seemed to accept the judgment of friends as to the opportunities inherent in a special situation. This casualness may be due to the difficulties of investigation for any but specialists in such matters."  

My study confirms that the Federal Reserve report is basically correct in its characterization of the appraisal practices of institutional investors' appraisal policies as being different from those of individuals. It was the finding of the present survey however that while such a distinction tends to exist, there may be very good reasons for its existence.

The apparent "casualness" that attends the investment decision of the private individual is not altogether irrational. First, by virtue of the fact that he invests in many more initial financing situations than the venture capital group, he necessarily has different appraisal processes. Such situations do not usually lend themselves to the careful appraisal of market potential, past profits, etc., by which the institutions judge more mature companies. Thus, he is thrown upon his ability to judge people, and upon the judgment of his friends. Second, the typical wealthy individual investor could, if he chose, retain professional counsel in his choice of situations - but this to most would be like hiring a professional golfer to play his game for him. Yet, informal as this process is, there is little evidence to demonstrate that the individual investor in risk situations fares any worse than his sophisticated colleagues in the venture capital firms.

**Bases for Evaluation**

**The People Involved**

It was the almost unanimous consensus of the individuals interviewed that people are the most important thing to look at in a venture situation. As one subject put it,

"A first-rate man with a second-rate idea is a much better bet than a second-rate man with a first-rate idea."
Another said,

"The only thing we're really trying to find out is, What kind of guy is the president?"

Many of the individual investors I spoke with felt that any major weakness on the part of management could constitute grounds for the rejection of a proposal, although two stated that, should the company and the market appear to have sufficient promise, they would sometimes help the initial group to find additional team members with the necessary skills.

There were several interesting comments made on the composition of founding groups. One interview subject said that the major thing to stay clear of is the situation where everybody thinks he's president - where no single individual is strong enough to take authority and responsibility for the entire enterprise. Another felt that a crucial element in any new venture group is the "screaming, leaping, wild-eyed nut" - that every new venture needs one such individual, to prod and stimulate the other principals. It was conceded, however, that there was usually a problem later in the firm's development as to what to do with this individual.

Some typical comments on the characteristics of the founding group were:
"Never let an investor be president."
"Has he professional experience? What do his customers think of him? How much time has he spent in jail?"

The usual criterion for a group of entrepreneurs appeared to be balance - the presence of both technical and managerial skills in complementary proportions. It was frequently acknowledged in the interviews, however, that it is extremely difficult to assess these abilities, particularly among technically-oriented people who have no business record. Thus, even the most sophisticated investor is obliged in many instances to rely upon the judgment of his friends and associates in the appraisal of the people who will run the new company.

Concerning the distribution of responsibility among the founders, one individual said this:

"The investor should insist that a single person be made president of the venture, and that he have final responsibility for decisions and results."

**Characteristics of the Market**

At least two of those interviewed place "growing market" ahead of "good people" in their criterion-ordering. One stated that he often attempted first to seek out a promising market, then find the group with the most promising technical capability
in the field, and offer to back them.

While such an approach is not usual, it does point up the enormous significance attached to a growing market by the majority of venture capitalists. This emphasis naturally makes it difficult to find financing for ventures which depend upon markets which do not yet exist, (e.g. a venture based upon a new technology such as "whisker metallurgy," or perhaps a venture proposed to sell to a market which is expected to start growing, such as the manufacture of protein from marine algae). Almost all investors seem to demand at least some substantive indication of commercial promise in the fairly near future.

An interesting exception to the growing-market criterion, but tending in the other direction, is that of Payson and Trask, a New York venture group:

"Payson and Trask aims its sights not just at growth industries; within any one area it is primarily interested in small firms that seem to have a definite competitive edge. This may mean broad experience or unusual ability on the part of company officials, advantageous geographical location, strong patent position or technical know-how, or any of a host of other factors." ¹

Thus, while there is a rather wide distribution of opinion about the necessity of a growing market, most places it in a po-

osition of rather great significance.

The Technology

In the area of technology criteria, as nowhere else, do
the great differences in motivation and objectives among investors
begin to emerge clearly. There exists among investors a whole
spectrum of attitudes toward technology, ranging from that of the
investor who will invest only in exciting new technological de-
velopments, to that of the man who will invest in anything that
promises capital growth, and if it happens to be technological,
that's o.k. One investor said,

"It doesn't matter if you trade technologies
so long as you have good management. That
is the one transferrable item."

One family group which has emphasized the former view,
investing in initial as well as growth situations, is Rockefeller
Brothers. This group is noted throughout the financial community
not only for their excellent selection and followthrough, but also
for their firm commitment to new and developing technologies. One
member of the Boston financial community contrasted the Rockefeller
philosophy with his own in this way:

"I'm interested in exploiting established technical
developments, like transistors - not in capital-
izing research for new and future technologies
like the Rockefellers. But it's their game, they have the time and the money to play it, and God bless 'em."

Yet operating at this end of the technology spectrum has hazards, at least psychological ones, even for Rockefellers. A recent report in Barrons stated,

"Possibly the biggest and probably the wealthiest individual in speculative scientific ventures is Laurence S. Rockefeller. In common with many another holder of glamour stocks, Mr. Rockefeller in the past two years has seen his commitments go up and down like a yo-yo. Unlike most, however, he has lost neither his fortune nor his head. Nor, it might be added, his faith in the ultimate rewards of investing in companies which operate on the far-out frontiers of technology." 2

The sample of the investing public which was interviewed in the present survey was selected in such a way that it was undoubtedly strongly biased toward the investor with a favorable attitude toward new technologies. For this reason, most subjects tended to emphasize the desirable aspects of investing in new technology, while ignoring the disadvantages (e.g., long development times, uncertainties of the research process, frequent dependence on arbitrary government contracting agencies, and a multitude of others). Yet, although these aspects did not receive

frequent mention, it would probably be incorrect to infer that investors are not aware of them. It is rather the author's inference that these factors are simply accepted by the investor as components of the risk which makes venture financing a venture.

There emerged several interesting criteria for the selection of a technology in which to invest. We have already noted the criterion of "frontier research" which guides the Rockefellers. Another criterion is that of staying in a technology in which one already has some experience, either as an investor or as an operator; thus, "specialists" tend to emerge as known investors in particular fields. Several investors mentioned that the technology in which they invested had to have some promise of civilian (vs. space and military) application before they were interested. It was also noted that the technology involved should be of sufficient current interest to attract government R and D contracts to support the firm in its early years, although several individuals strongly disputed this viewpoint. Their opinion was that government R and D contracts, while they may help to build a research capability, are frequently diversionary from the company's central interests and permit very little profit on an enormous expenditure of energy, not just on research, but also on proposal and report preparation.

The ultimate criterion for selecting a technology to
back appeared to be its general excitement. A dramatic and slightly mysterious technology still seems to have a good deal of attraction even among sophisticated investors - although not so much as a very few years ago. One investment counsellor said,

"Let's face it - you've got to have technological glamour to get one of these things financed at all."

For some investors, however, an exciting technology is almost sufficient reason to invest. Either they are erstwhile technologists themselves and fascinated by science and engineering, or they have a sort of mystical commitment to the fulfillment of the ideas of technologists. The author can find no other explanation for the terms and conditions under which some of the NRBE's have been financed in the Boston area.

The Product

It is virtually impossible today to attract backing for a technologist with nothing but an idea. Even among the most sanguine and patient of investors there is today the insistence that a substantial amount of product and/or process development shall have been done already, at the expense of the entrepreneur or someone else.

What constitutes an acceptable level of development to attract financing seems to vary over a rather wide range. Several
investors stated that the existence of a working prototype was indication of sufficient development. Still others felt that the product should be essentially ready for manufacture and marketing. Two stated that they would not even consider a proposal unless the first sale had already been made.

Thus, even for initial equity financing, it is frequently necessary that a substantial investment shall have already been made by the investor, if not in money, then at least in time and energy. Thus, it would appear that the capital market is in effect discriminating in favor of those products of relatively low unit cost, which can be prototyped in the investor's garage and which demand no exotic materials or processes. While this does in fact seem to occur, there are other instances in which a development is transplanted almost directly from a university laboratory or from the laboratories of the firm which formerly employed the entrepreneurs. Such a development may be quite the opposite of the inventor's garage-produced brainchild; it may have high unit cost, employ exotic techniques, and require a lot of money to develop and sell. Thus, the capital market is not filtering off such innovations by its insistence on prior development effort - but it is limiting rather firmly the conditions under which different sorts of development can occur.

The insistence upon prior development work has some of its roots in a number of unhappy investor experiences. In a
typical one, an engineer approached a venture capital group with a device which was "almost ready for market," asking for $200,000 for working capital and marketing expenses. Today, four years and $350,000 later, the company again is out of money, the device is still "almost ready for market," and the first sale is yet to be made. More than once the author encountered the opinion that engineers had to be watched very carefully, or growth capital would be dissipated either on refining existing products or on developing new ones before existing products had begun to pay off.

**Size of Investment**

The author began this study expecting to find some lower limit on the size of investment which investors would consider worthwhile. He could find no evidence, however, that such a lower limit exists. While many investors do in fact have such a "minimum economic investment," the range is enormous. Several investors were encountered who had put $1,000 to $2,000 initial capital into tiny new companies. At the other end of the spectrum, one group asserted that they considered no investment under $1 million, although the author doubts that the policy applies to many initial venture situations.

While no statistics are available to the author on this question, it appeared to him that the greatest fraction of all initial capitalization of NRBE's - perhaps as much as 75% - falls between $50,000 and $200,000.
In summary, it may be risky to try to typify a single ideal company - and it is certainly impossible to find any ideal to which all investors would subscribe. However, if the following situation were available for initial capitalization, a great many individual and institutional investors would be interested.

People: a proven team of technical, manufacturing and sales people, who had worked together for some years, and all of whom had business experience in some form.

Market: a large and rapidly-growing market, with some prospect of a consumer component ultimately developing.

Technology: an exciting, relatively new field, but one which had already demonstrated somehow its market potential and its potential for supporting a stream of related products.

Product: a competent application of the state-of-the-art technology, developed nearly to the point of possible market exploitation.

Investment needed: less than $500,000, and preferably no more than $200,000 if it must come from a single source.

These, then, are attributes that a private investor might look for. How he identifies them in a particular situation and how they are weighted by him are subjects of a later chapter.
Chapter VI
IDENTIFYING INVESTMENT OPPORTUNITIES

"The fraternity of individual backers of small business appears to be rather close knit, at least on a local level. A good deal of information is passed about by word of mouth. If one investor, who enjoys considerable prestige among his associates, believes a situation to be promising and recommends it to others, his friends may participate, merely on the basis of his recommendations." 1

If this statement is true for small business in general, it applies with even greater force to the initial financing of NRBE's. And if any single fact emerged clearly from this study, it is that communications about venture opportunities within the financial community of Boston-New York are very good - much better than is often supposed.

Professor Rubinstein, in his 1958 study of technical entrepreneurship in the Boston area, 2 concluded that the channels of communication between investors and entrepreneurs were quite poor, and recommended the establishment of a central service or


clearing-house to bring investors and ideas together. It is the present author's opinion, however, that at least today very few ventures of any merit escape the attention of the major venture capital sources. A clearing-house of some sort might improve the situation but only very slightly, since essentially this function is being performed today by investment banking houses, commercial banks, lawyers, and as mentioned earlier, venture capital firms. Indeed, it appeared at times to the author that a group with a promising innovation would require some security measures if it did not wish to be known throughout the financial community.

A typical pattern of referral might operate as follows. The hopeful entrepreneur, about to start selling his device, goes to his bank to request a short-term business loan. The banker explains that he cannot make such a loan without security, and that what the entrepreneur needs is equity capital. The banker then refers him to two or three local venture capital organizations. Each of these, in turn, listens patiently and then explains that initial venture capitalization is too risky for them, but that they know some private people who might be interested. The search for backing begins to diverge very rapidly, and it is only a short time until the entrepreneur has either received an indication of interest, or has been rejected by the capital market for reasons which he now understands.

This basic pattern has innumerable variations; it may
start or end at entirely different points in the capital market. In one instance a group of entrepreneurs with a promising device went first to a private individual, a partner in an investment-banking house. He referred them to an SBIC which ultimately financed them. In another, an entrepreneur went to a private investor, was referred to a bank which, in turn, sent him to another private investor who was interested.

The reason why this process succeeds at all is that the knowledgable investors appear to stay in quite close contact with the financial community (if, indeed, they are not already employed in it). Investors, bankers, investment bankers, investment counsellors, and lawyers tend to form a community of interest and an association to which more than one interview subject referred as "the club." Communication is informal, fast, and remarkably effective.

The 'Finder'

Anyone who calls himself a "finder" is subject to a considerable burden of suspicion from the financial community today, and for this reason finders seldom call themselves finders anymore, nor their fees, "finder's fees."

The traditional and legitimate role of the finder in the capital market has been that of an individual who, through his wide associations and personal efforts, is able to take a venture situation, interest appropriate investors in it, and negotiate acceptable terms on both sides. This "middleman" service has
typically commanded a fee of from five to ten percent of the total amount negotiated. In recent years, however, this fee has been demanded by "finders" of various shadings of legitimacy, and whose actual contributions to the financing of the enterprise may have been quite negligible. One investor interviewed cited instances of "finders" who, ex post, had demanded fees simply for giving the aspirant entrepreneur a list of people to go see, or for introducing him to someone who ultimately supplied some capital.

One of the problems of dealing with finders was illustrated by an SBIC officer who had himself once been finder:

"Sometimes when you're hungry you tend to overlook some pretty obvious faults in management, just to get your commission. Being a commissioned leg-man is a tough way to make a living."

The legitimate finder is still in operation both in Boston and New York, but his practice has been much abridged by the competing process of gratuitous referral from banks, venture capital groups, etc. The entrepreneur, in establishing a relationship with a finder, should insist on a clear understanding of what will be the contributions of each party. He should also expect to bear the finder's fee himself, either from his personal resources or in management stock in the new company, since few investors are enthusiastic about investing in finder's fees.
The Investor's Search Process

In addition to the somewhat passive majority of the investing individuals, there is a more active minority who do expend substantial effort in seeking out new venture situations. These are often among the most successful NRBE backers, perhaps because they have reasoned correctly that the best ventures have usually been picked up before the informal referral system reaches them. One investor, a man who had been investing in new enterprises since before World War I, felt that he got as much fun out of "scouting around" as from his investments. Others reported making efforts to keep aware of individuals and groups breaking off from companies and universities, as potential investment. It was the author's impression, based on the most inadequate data, that the individual investors engaged in such active efforts tended to be those motivated largely by noneconomic objectives.

There are also a few venture capital organizations which do not rely entirely upon the referral chain - who feel that, while they see innumerable unsolicited proposals for financing, the quality of the selection would be improved by some aggressive leg-work. One SBIC officer put it this way:

"Ideas come in to us from the street, from referrals, from investment bankers, and from everywhere else. But this is all wrong. We
ought to be out beating the bushes in the fields we want to be in. We ought to be on the offensive in looking for situations."

But being on the offensive is not cheap. An officer of another venture capital group, to see if his costs of search were in line, conducted an informal survey of his colleagues. His conclusion: it costs $3,500 - $4,000 for a venture group to ferret out and examine a single company. It is easy to see why other firms have been tempted to maintain a passive role in identifying new situations - especially if this process has given passable results. It would be reasonable to assume that the venture capital organization, especially the publicly-held one, would consider initiating an active search process when the quality level of investment projects coming to its attention fell below a certain point. This does not appear to be substantiated in experience, however, since many of the somewhat passive SBIC's, after three or four years of operation, are still far from being fully committed.

The topic of advertising for projects arose only twice in the course of the survey - but each time by the champion of an extreme position. The first said,

"Situations don't come looking for you unless someone knows you're alive. So it pays to advertise a little - write an occasional
magazine article, and so forth."

However, the other subject admonished,

"Whatever you do, don't advertise - you get all the _ _ _ _ _._"

The author was unable to abstract from these data a consensus of the financial community on the topic of advertising.

In summary, while a number of individual and institutional investors have chosen to search aggressively for promising situations, many more have not, and have given little indication of ever doing so. Yet, this fact does not really imply irrationality on the part of most investors - more typically, it means that the selection of projects coming to their attention is already adequate, or that the energy which search would require is better spent on more conventional investments.
Chapter VII

THE ESTIMATION OF RISK

"Are these drilling decisions completely ad hoc? Or are they intuitively wise "calculated risks"? What kinds of guides do operators use in forming expectations about the wide range of possible future outcomes? How do they measure risk? And what yardstick do they use to select a course of action? Payout? Return on investment? Hunch? Most of the information in this area has come from fiction, gossip, and legend." 1

The risks of which Grayson speaks are similar in many respects to the risks confronting the backer of a new enterprise. While the former are risks associated with unknown geological formations which might or might not bear some amount of oil, the NRBE investor is confronted by a host of uncertainties: unpredictable markets, unforeseeable technical setbacks, unknown activity of competitors, and above all, the unknowable human factors of the individuals he's backing. It is the purpose of this chapter to explore the ways in which the investor conceptualizes risk, the standards by which he hedges against it, and the ways in which those standards are usually applied.

1 C. Jackson Grayson, Jr., Decisions Under Uncertainty - Drilling Decisions by Gas and Oil Operators, Division of Research, Graduate School of Business Administration, Harvard University, 1960.
The Conceptualization of Risk

The behavior of risk-takers is a topic which has begun to absorb the energies of some of our most capable researchers in economics, management, and the social sciences. It is a topic of enormous significance because, in the final analysis, the tendency of individuals to take risks determines not simply how much gets invested in NRBE's and oil wells, but in nearly every economic pursuit known to society. The ability to measure, to predict, and to supplement these risk-taking practices is an understandable pre-occupation of our academicians.

The conceptualization of risk by risk-takers has for some time been a topic of some speculation. Just how does the venture investor, for example, view the risk situation that confronts him? And what is the significance of that view to him, once adopted? There have been several theories, or "models", of investors' risk conceptualization advanced. Some attempt to describe how he does act; others, how he ought to act if he were "rational."

Parenthetically, the definition of the work "risk" itself is rather elusive. Some writers have made it even more so by defining "risk" to mean "insurable risk", and "uncertainty" to mean "uninsurable risk", each definition implying a different knowledge of the probabilities governing the process. Of course, this is an artificial distinction since no future event is com-
pletely insurable or completely uninsurable in terms of what's known from experience. For the purpose of this discussion, then, no such distinction will be made, and we shall adopt the definition of risk advanced by Professors Cootner and Holland: "We think it captures the essence of the problem to define situations as risky wherever there is the possibility of an outcome different from the expected one." ²

We might now briefly list a few of the most obvious models of risk-takers, as follows:

1. The risk-taker considers only the likelihood of the best possible outcome - i.e., his action is based on an estimate of the skewness, or third moment, of the probability distribution of possible outcomes, rather than on a consideration of that distribution as a whole.

2. He considers only the probability of the worst possible outcome (e.g., complete loss) - again, his concern is with only one characteristic of the probability distribution, its third moment.

3. He asks, "What is the most likely outcome?" - i.e., he is concerned with the mean or first moment of the distribution.

² Paul H. Cootner and Daniel M. Holland, Risk and Rate of Return, an unpublished research report, Division of Sponsored Research, M.I.T. School of Industrial Management, 1963.
4. He asks, "How likely is the most likely outcome?" - i.e., he is concerned with the variance (second moment) or kurtosis (fourth moment) of the distribution.

5. He considers the probability of each of several intermediate outcomes of varying degrees of success - i.e., he is concerned with the entire shape of the distribution confronting him.

While these models are all expressed in probabilistic terms, it does not necessarily follow that the risk-taker should view them that way. And the fact that he does not view risk mathematically certainly does not make his expectations the less probabilistic. I expected at the outset of this study not only to find evidence to support one or more of the models of risk-taking behavior, but also to find some evidence of a fairly well-developed (though not necessarily mathematical) consciousness of probability.

Professor Rubinstein,3 after asking the question "How does an investor in a NRBE calculate the risks?" answered in effect, "He doesn't, because it's not possible to calculate them - and moreover, it wouldn't be useful for most investors to calculate probabilities, since they wouldn't invest in enough situations to give probability a chance to work, anyway."

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The present survey suggests that Rubinstein was correct in asserting that numerical probabilities do not get "calculated" by most investors - but that he may have asked the wrong question. While one or two of the men interviewed did discuss success in such terms as a "one-in-ten deal," many more appeared to have merely some fairly well-developed expectations (or "subjective probabilities") in terms of which they judge risk. Thus, the proper question to have asked may have been simply, "Do investors make some rational estimate of risk and probability?" The answer seems to be yes.

It appeared to the author that the most widespread index for risk estimation among NRBE investors is based upon an estimate of the maximum payoff possible, together with a highly subjective estimate of its probability of occurring. This is very similar to the first model proposed. A typical response to an inquiry on risk was:

"Risk? Well, I just ask myself, 'What will be the sales of this outfit X years from now?' and 'How much would a company with this much sales be worth?' and 'How much would my share of it be worth?' That's how I look at it."

This was not an unusual sort of reply. The investor was not explicitly estimating risk, but possible payoff. Yet the very fact that he acts on such an estimate obliges us to assume that to this estimate of payoff he attaches some subjective probability of attaining it. We can either assume that he considers this payoff
an absolute certainty - or that he has some highly probabilistic expectations about it. Moreover, if we assume the existence of such subjective probabilities, it is reasonable to think that it might even be possible to measure them, drawing inferences from the investor's past behavior, his decisions, and his success record. The task of identifying and measuring these subjective probabilities, however, is one better left to advanced students of behavioral science (see references in appendix).

Modern decision theory provides still another way of viewing risk-taking which the author thought might be useful in the present instance. It is called the "theory of utility" and says, in effect, that people are not motivated simply by the amount of the potential material gains, but rather, by the amount of satisfaction or utility that will ensue from its possession. More specifically, it means that making another thousand dollars may not be so important to the investor as making the previous thousand was (or maybe it's more important, depending on the individual). Professor Grayson, in his study of drilling decisions in the oil fields, contributed both a way of conceptualizing such utility relationships and a potentially valuable technique for measuring them empirically.

The former consists in plotting "utility" against dollars

4 C. Jackson Grayson, Jr., op. cit.
gained and lost (Grayson calls this a "utility function"). As an example, Figure 1 could represent an average individual's utility function.

![Utility Function Graph](image)

Note first that it is not necessary to define the units of utility. We can simply call them "utiles." Next, not that a much higher utility is attached to the gain of the first $10,000 than to the second, and that the utility of the third is smaller still; but a very great disutility is attached to a loss of even one or two thousand dollars - i.e., the individual whose utility function is depicted is a conservative risk averter.

Figure 2 depicts another sort of utility function, one that might belong to one type of risk taker.
Note how this curve differs from that of the risk-investor's depicted in Figure 1. The possibility of small gains does not have as much utility for him as that of a much larger gain, even though the probability of attaining the larger gain may be less. Moreover, he is not too concerned with possible losses, until the size of the loss becomes rather large.

The value of such utility function plots is that it provides a way of conceptualizing different attitudes toward risk. If it were possible to plot and compare curves for, say, samples of individual investors, family fund managers, and SBIC officers, we might have a basis for predicting how much interest should be expected from each type in any particular venture proposal. Its principal value is academic and theoretical, however, because of the difficulties of plotting such curves empirically.
Grayson's approach to measuring empirically the utility functions of individuals was based on personal interviews. He would confront his subject with a series of hypothetical investments or "deals", with specified potential gains and losses. He would then attempt to get the subject to state the probability of gain/loss at which he was just indifferent.\textsuperscript{5} After determining the indifference probabilities for several deals, Grayson was then able to relate those for which the indifference probabilities were equal and then plot gains/losses with their corresponding "utilities." Obviously, it takes a great many such deals to produce a smooth curve, but Grayson appears to have had some exceptionally indulgent interview subjects, because his data are quite extensive.

One of the goals of the present study was to determine whether it might be possible to plot the utility function of the NRBE risk-taker, as Grayson did for the oil operator. I was less interested in actually gathering data and plotting curves than in simply determining whether this would be possible. Thus a "deal" of the Grayson type was devised (see Interview Format in appendix) to test the reaction of the men interviewed.

\textsuperscript{5} A typical deal: "You have an opportunity to invest $10,000 in an oil well. If it hits, you are certain to make $100,000; if it doesn't, you lose your $10,000. Would you invest if the probability of success were one in ten? If not, then two in ten? - etc."
It was clearly apparent after two or three trials with the hypothetical "deal" that this approach to measuring utility among venture investors is not feasible. The reason is clear enough: the required response to the Grayson-type deal is expressed in numerical probabilities but, as discussed earlier, NRBE investors do not conceptualize probability numerically. Thus, while an interview subject might respond that he would take the deal at three chances in ten, he would not in a real situation view the problem in this way. Parenthetically, the oil drilling industry is one of the very few business situations in which risks are normally viewed in terms of mathematical probability - very careful analysis goes into the computation of probabilities of the presence and amount of oil. Thus, oil drilling and gambling appear to be the two most promising areas of application of Grayson's technique. This does not make his contribution the less impressive, however.

**Hedging Against Risk**

However the investor conceptualizes risk, it is clear that he recognizes both that it exists, and that his best defense is to minimize it through the application of standards to investment proposals - standards which, hopefully, eliminate at least some of the unnecessary risk from venture situations, while preserving the great potential gains inherent in them.

We touched on a few of these standards in Chapter V in
describing the things investors look for in new ventures, and what an "ideal" venture might look like. But since the ideal situation seldom occurs in nature, and since venture situations are continually being financed, the relevant question to the investor is "How ideal?".

To many investors, an extremely important standard is the rate-of-return among comparable or similar companies, or companies with products similar to those in question. This, in turn, requires the existence of similar firms or products with which to compare; thus, this standard discriminates against the not infrequent situation of a new device or technology without precedent, making this a difficult type of venture to get financed. The "industry rate-of-return" by which the investor judges the proposal varies widely from individual to individual. A typical figure given was fifteen to twenty percent annual return to investors. Anything below ten is not usually considered good.

A second standard for judging the venture appears to be the length of time during which the entrepreneurial group has been in existence and working together. Several investors mentioned that, while they would consider initial capitalization of a NRBE, it needed to have been together for some minimum period, which ranged from six months to two years. They felt that such a standard eliminated many of the risks associated with groups that turn out to be incompatible.
Yet another standard requires the existence, in the investor's opinion, of a potential product market of a specified size (say, $5 million per year). How he goes about estimating this is a highly individual matter, and ranges from professional market analysis to crystal-gazing, as will be discussed presently. Whatever the method of estimation, however, the standard is quite important, at least to the extent that investors rely upon it.

A fourth group of standards centers about questions of liquidity. How soon will there be a market for the stock? and When can I expect the venture to go public? are typical questions asked by the investor who employs liquidity criteria.

The other standards by which the investors feel they hedge against risk are almost beyond enumeration. Many of them are irrational, or represent a strong reaction against a previous investment experience (e.g., "Don't invest in anything to do with microwaves," or "Don't invest in a company with an engineer for a president."). Nonetheless, such standards exist, are usually clearly defined, and have great importance for both the investor and the entrepreneur, to the extent that the investor perceives these standards as his principal defense against risk and uncertainty.

Investigating the Venture

The attempt to apply standards to a company requires that you know something about it. But the amount known about a venture by its backers is a parameter ranging from about zero to 100 percent.
Among venture capital groups in particular, the process of company investigation has evolved into a highly-developed art. The process of investigation in publicly- and privately-held venture capital organizations are very similar. Typically, three levels of screening exist through which a proposal must pass before it is considered for investment. For convenience of discussion, we shall call these stages initial, secondary, and final screening.

Much of the initial screening of projects by the venture organizations is done on a highly informal basis. A few minutes spent reading a prospectus, or a brief telephone conversation is all that is required to disqualify eighty to ninety percent of the ventures that come before these groups. While an officer of the group is usually able to identify one or more significant weaknesses in the proposal before rejecting it, one SBIC officer confessed that he was afraid that such factors as elegant prospectus presentation, or the lack of it, sometimes had an undue influence on the initial screening process. Thus, while there are probably some deserving projects which get rejected by this initial screening, it appears to be on the whole an effective and efficient process.

The real scrutiny begins with secondary screening. This process is initiated in some of the publicly-held venture groups by giving the applicant group an extensive set of questionnaires...
to be completed. Such forms may be nearly exhaustive in their coverage of every aspect of the technology, the product, the market, the fiscal history of the enterprise, and the personal histories of the principals. This information is typically then verified and supplemented by conversations with the group's legal counsel and auditors, its suppliers, its customers, its dealers, its competitors and their customers, present and former associates and employers of the principals, etc. In short, the secondary screening encompasses nearly any means which can produce usable information in a rather short time-span.

Perhaps twenty-five to fifty percent of the ventures that begin it survive secondary screening; these are then subjected to the typically longer process of final screening. The usual reason given for the delay, which may be six to twelve weeks, is to conduct a "market survey" - a survey which may or may not occur in fact. The real reason for the delay appears to be to give the investor group an opportunity to watch management perform under a variety of circumstances, and also to see whether the group is capable of making a decent quarterly sales projection (they submitted this during secondary screening). Thus, the venture group gives the entrepreneurs a chance to prove what they said.

In commenting upon this entire process, one interview subject said that in his opinion the venture groups, especially
the SBIC's, were far too cautious, too afraid of letting a good venture get by. He felt that if SBIC's were bolder in the initial screening, eliminating all doubtful proposals, they could concentrate more energy on the final screening process with an overall improvement in portfolio quality. The author tends to agree with this viewpoint, although one wonders whether the increased quality would be purchased at the price of a still smaller portfolio for the typical SBIC.

While the venture capital organization normally conducts a very vigorous and professional investigation before making a commitment, private investors are not generally inclined to go to those lengths. Moreover, it would be reasonable to expect that the investors with the least to lose in a venture (i.e., the "1244 investors") would exert the least effort in the appraisal of their investment situations; the study found evidence to support this view.

The private investor appears to rely very heavily on his contacts in business and technical areas in assessing the prospects of a technology, a market, or a group of entrepreneurs. In appraisal of potential markets, he will occasionally enlist the aid of a professional consulting group to do a limited study; he is more likely simply to ask his friends what they think of the prospects, or who they know that might be able to judge. The judgment of a technology is also difficult for the private indi-
vidual, especially if he is not himself technically trained. One
senior investor of substantial technical experience stated that
he had withdrawn from NRBE financing in the past few years be-
cause he no longer had a basis for judging the importance of
new technical developments.

It should be added that there is an interesting and
sometimes humorous current of irrationality that runs through
the investment policies of many individuals. One senior in-
vestor described a selection in which he had participated in the
following terms:

"Our appraisal was the most unscientific thing
you can conceive of. We 'dreamed up' that we
were going to make money."

A banker expressed his view of most individuals' investment
policies as follows:

"If he gets out of bed on the right side in
the morning, he does it."

Most of the energy of the private individual in investi-
gating a situation is likely to be devoted to getting to know the
management. This often means getting to know them fairly well on
a personal basis, as well as through references, credit reports,
business records, etc. Personalities, more than any other factor,
tend to determine the destiny of the NRBE's financing effort. The enterprise that meets every one of an investor's "standards" will probably be rejected if the investor doesn't like the president. The inverse is also true: if the investor likes the entrepreneur, financing may be arranged for situations which fall short of the investor's standards - a fact often regretted later by the investor.

In summary, it appeared to the author that most investors have a strong sense of risk, but that it is reflected primarily in their practices designed to avoid it in unnecessary quantities. Such practices normally center about the investigation of the enterprise in more or less depth, so that some set of highly individual standards may be applied to the situation.
"The tax structure, as of 1949, cut substantially into the investment capacity of the upper income and wealth classes - the strategic source of venture capital for investment in business - and on balance, it also decreased the willingness of these investors in the aggregate to make equity-type investments. In other words, for equity-type investments considered as a whole the investors who were induced by taxes to shift to less risky investment positions appear to have over-balanced the opposite reaction of appreciation-minded investors. The latter group, however, may have been so stimulated by the tax structure to seek out new investments offering unusually large capital gains potentialities, such as promising new ventures, as actually to increase the flow of capital to such situations." ¹

This early study of taxation's effects, while it gave little emphasis to the initial capitalization problem, focused clearly on a central issue: federal income taxes influence not only the willingness of investors to enter risk situations, but also their ability to do it.

The Capacity to Invest

It is reasoned, perhaps correctly, that the federal income tax, by abridging the ability of wealth to multiply itself, has dried up much of the capital which would otherwise have financed

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¹ J. Keith Butters, L. E. Thompson and L. L. Bollinger, Effects of Taxation-Investments by Individuals, Division of Research, Graduate School of Business Administration, Harvard University, 1953.
new enterprises. While this is a reasonable and often-asserted proposition, the present study found very little evidence to support it. In fact, in all the discussions with investors, only once was the effect of taxes mentioned as reducing the potentially available total of venture capital. The author has no doubt that, had he directly asked each investor, "Has the federal tax had an undesirable effect on your capacity to invest?", the answer would likely have been an emphatic "yes", perhaps accompanied by a discourse on the baneful effects of the existing tax structure. However, no such question was asked during any of the many discussions of tax questions, and the lack of any spontaneous mention of this effect is in itself significant in the author's view. An explanation of this apparent de-emphasis since the 1949 Butters et al study may be that the wealthy individual has simply gotten used to the high progressive income tax, as time dims the recollection of the days when it wasn't so high. Or, perhaps the federal income tax structure, oppressive though it may appear to high-income individuals, is provided with enough "safety-valves" (e.g. capital gains provisions, tax-free securities, depletion allowances, and special treatments for business losses) as to keep the pressure from becoming altogether intolerable. Whatever the reason, it appears to the author that, while taxes may in fact be limiting the venture capital available, investor awareness of this fact is not a significant component of the conscious investment decision.
An earlier study by Butters and Lintner,\(^2\) conducted during World War II, suggested that the supply-effect of the personal income tax had a rather different influence on the formation of new enterprises. They concluded that the federal income tax was most important in that it reduced the disposable incomes of the potential entrepreneurs to such a level that they could not start a new business with their own resources. While this is an interesting academic argument, it would be an extremely difficult one to test empirically. It would be rather difficult to identify a sample of individuals who would have started new companies but for their tax-limited resources; it would be harder still to identify a sample who might have started new businesses, had greater personal affluence suggested such a course to them. Butters and Lintner admit that this is at best a minor component in the decision to initiate a new company, and that taxes in general play an almost negligible role in this stage of new enterprise formation.

In general, discussions of the income-limiting effects of taxes on venture capitalization are interesting but indeterminate, since even the investor (let alone the academician) has little idea of what he would have done with money he never had.

\(^2\) J. Keith Butters and John Lintner, *Effect of Federal Taxes on Growing Enterprises*, Division of Research, Graduate School of Business Administration, Harvard University, 1945.
The principal consequence of tax limitations on investor capacity is indirect in its effect on investment decisions. Briefly stated, it is that tax limitation probably create a reaction of demand for additional 'safety-valve' features of the type discussed earlier. Once gained, such ameliorations of the tax burden may themselves exert a strong influence on the investment decisions of individuals, as will be discussed in the next few paragraphs.

The Willingness to Invest

We turn now to the central issue of the tax discussion, which is whether, and in what ways, the Internal Revenue Code has influenced investors' willingness to back venture enterprises. Any discussion of 'willingness' however, leads us back to our earlier discussion of investor motivation, and the polarity we represented as economic motivation vs. non-economic motivation. It appeared to the author during the course of the survey that the investors of basically economic motivations tend to be most influenced by the tax considerations of a situation. The non-economic investor, almost by definition, would probably back new enterprises no matter what tax structure confronted him. Thus, most of what follows applies mainly to the economically-motivated investor.

Without question, the greatest tax impetus to new enterprise investment is the possibility of obtaining long-term capital gains, taxable at a maximum rate of twenty-five percent. While,
again, it is impossible to tell how investors might react to some other tax structure, it is clear to the author that under the present one, the investor puts capital gains in a position of paramount importance. It was mentioned or implied as being extremely important by virtually every investor subject. As an attempt to gain some measure of "how important?", the author asked a few subjects how they might react to hypothetical changes in the tax structure (e.g., maximum income tax - seventy-five percent, maximum capital gains tax - fifty percent). The answers were rather inconclusive, however - due probably to the fact that the possibility suggested had never been considered by the subject. While this small experiment in measuring the importance of capital gains failed, the survey nonetheless showed that its importance is probably greater than any other single economic factor.

The "Small Business Investment Act of 1958," in addition to creating the SBIC's, established a special tax incentive for backers of a particular class of new enterprise. This class is called the "1244 Companies," after Section 1244 of the Internal Revenue Code, which specifies the tax treatment. Such a company

a) Must not offer over $500,000 in common stock in the 1244 issue.

b) Must not have aggregate capital exceeding $1,000,000 including the issue.

Any individual investor in such an issue may take as an ordinary
loss attributable to his trade or business a loss resulting from such an investment; the maximum such loss allowable in a single year is $25,000, or $50,000 on a joint return. Capital gains on stock sale are treated in the usual way. Thus, an investor in the ninety percent tax bracket can keep seventy-five cents of every dollar gained, but loses only ten cents on every dollar lost by the venture.

This tax incentive is very well known in the financial community; only one of the subjects interviewed seemed unaware of its existence. About half the private investors in the sample had, at one time or another, participated in 1244 offerings, although opinions differ on the importance of this provision as an incentive to investment. Only one investor indicated that since they had almost nothing to lose he and his partners invested in only small businesses making 1244 offerings. The consensus seemed to be that 1244 was a rather marginal "sweetner" however - and that few people, especially today, are tempted to invest because of this alone.

One objection to 1244-type loss-hedges was expressed by an investor who had himself been an entrepreneur:

"Maybe 1244 helps attract some money, but at the same time it puts all the investors' attention on the possibility of losses and failure. You've got to concentrate on success if one of these things is going to work. The 1244 groups want to pull out the minute the going gets rough."

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Similar objections to the provision were voiced by several other subjects. Section 1244 is also viewed in some quarters as having been partly responsible for the period of speculation which ended in the market slump of May 1962. The reasoning is that section 1244 attracted many amateurs into the venture capital game who should never have been in at all - most of whom ultimately got stung and got out.

Another class of objection to Section 1244 centered around its limitations of application. One sometimes hears that the aggregate capital limit is too low, or that the upper limit on offering size is too low, or even that there should be provisions made for later offerings under the same conditions. However, the author doubts that revision of any of these provisions would substantially increase the flow of initial capital to new ventures, simply because the vast majority of such ventures, especially research-based ones, fall well below the prescribed limits.

The influence of Section 1244 is extremely difficult to measure objectively. One could count the number of 1244 offerings which have occurred in the past five years, but there is no way to tell how many of these offerings would have been made anyway. Thus, the opinion of investors remains our best guide, and that opinion is predominantly that 1244 plays a rather minor role in influencing willingness to invest.

A second tax incentive created by the "Small Business
Investment Act of 1958" is the so-called "Subchapter S" of Internal Revenue Code Chapter One. This provision allows corporations with fewer than ten shareholders to elect to have their profits or losses charged directly to stockholders. Thus, in effect, a closely-held corporation can elect to be taxed as a partnership. Once an election is made and terminated it cannot be utilized again for five years unless special permission is obtained from the IRS.

The possibility of charging company losses against personal income is, of course, the feature which should make Subchapter S most attractive to venture investors. However, the present survey provides no evidence that it is of any real importance in influencing the willingness of individuals to invest. This tax feature was not mentioned spontaneously once during the interviews; moreover, none of the few subjects questioned about it appeared to be aware of Subchapter S or its effect. One investor, after the author had briefly explained Subchapter S, reflected a moment and then observed that if he'd wanted to be taxed as a partner he'd probably have organized a partnership - especially since they could always become a corporation or elect to be taxed as one. Thus, the author is forced to conclude that Subchapter S is a very minor influence on the investment decision. Unlike Section 1244, however, the limited influence of Subchapter S can probably be attributed to a lack of general knowledge about it. Whether with
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"Further evidence of the strong emphasis placed on management participation by investors in new ventures (was revealed by the study). Three hundred and ninety-eight individuals, about 53% of the sample, reported that they had invested in a new venture at some time during their lives. Nearly two-thirds of these persons, however, had participated directly in the management of the enterprise in which they had invested; moreover, a considerably larger percentage of the persons investing substantial amounts than of individuals investing small amounts had so participated." ¹

The study of Butters, et al, clearly indicated that the desire to participate was an important component of the decision to invest. Yet their study focused on the numbers of individuals in their sample who had somehow participated in management of their portfolio companies, without specifying the type or extent of that participation. It will be the purpose of this chapter to examine both the type and extent of management participation by some different sorts of investors, and to offer a few evaluative comments where appropriate.

¹ J. Keith Butters, L. E. Thompson, and L. L. Bollinger, Effects of Taxation-Investments by Individuals, Division of Research, Graduate School of Business Administration, Harvard University, 1953.
There are basically two reasons for the decision to participate in enterprise management.

a) The investor desired a useful and creative managerial role, with its rewards and satisfactions in terms of putting something together, making it grow, encouraging gifted technologists, and a general sense of the excitement of participation.

b) The investor feels that his presence is needed to protect his investment. Either at the outset or later in the organization's development he may conclude that management lacks some important elements which he can supply.

Normally the investor's motivation includes components of each. Some interesting differences in tendency and emphasis exist, however, between institutional and individual investing.

**Participation by the Venture Capital Groups**

Among the family investment groups, investment companies, and SBIC's, examples of both types of participation can be found. However, the second, defensive, type of participation is by far the more frequent. This is because participation in company management is expensive, and in a profit-motivated venture capital organization, the less participation needed the better. Thus, participation is usually indulged in only when the investment group considers it indispensable.
The venture capital groups expect to participate to some degree in the management of nearly every venture they back. During the first year or two (often called the "hand-holding period"), the venture group's representatives may meet with company management as often as twice a week to discuss problems of operation, finance, and planning. Even more frequent contact by telephone is not unusual in periods involving many decisions of some importance. After a period, the amount of participation by the capital group gradually tapers off, to the point where the new enterprise can stand unassisted. An officer of one major venture capital group sketched their typical pattern of participation as follows:

Group's Participation

<table>
<thead>
<tr>
<th>Group invests</th>
<th>Time</th>
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<tbody>
<tr>
<td>1 yr.</td>
<td>2 yrs.</td>
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</table>
This group, however, was qualified to provide a rather broad selection of services to the companies they backed. Thus, their participation in the early years was somewhat constant. The more typical case, however, is that in which the investing group can only make contributions of a more restricted type and hence will participate most on those occasions when they are needed (e.g., during periods of finance negotiation, or of market development, or of establishing manufacturing facilities). Thus, their participation tends to be intermittent - intensive at times, slight at others.

The most customary vehicle for participation is the directorship of the company. The venture group usually assigns one or two staff men to follow a particular company, and those men will be made directors. They will be expected to know as much as possible about the personnel, technology, and markets of the venture. They are also expected to follow developments in the firm in as great detail as is feasible, ideally keeping as much abreast of development as management. To the extent that these directors have technical training or prior knowledge of the type of business and industry, they can be quite helpful to the management of the new firm. It was acknowledged on several occasions, however, that the director whose background was primarily financial was rather limited in potential contributions. It should be noted parenthetically that some venture groups do
not want even a single director on the board, preferring to keep their participation less formal.

There are several interesting types of relationships which develop between company management and the venture capital group. For example, some groups will give a staff man a leave of absence of one to several months to fill a vacant management role in the company (i.e., controller or treasurer). At least two of the groups represented in the interviews currently had staff men on leave in just this situation. Another not infrequent relationship of venture group to company management is that of paid consultant. Such arrangements are not uncommon among SBIC's and may actually be included as a condition of financing.

Representatives of several venture groups were asked how much time such hand-holding activity normally required. The usual answer was that about a third of the total staff time was normally devoted to assisting the portfolio companies, although this figure appeared to be higher for groups with wide geographical distribution in their portfolios. The remaining two-thirds of the group's time was typically divided about evenly between searching for new situations and general administrative problems.

Not every investment group expects to contribute this kind of management effort to the new venture. A senior partner of one family investment group said,
"We like to regard ourselves simply as the financial vice president of the firm we back. We leave operations mostly to company management, since the only reason why we invest at all is because we have faith in them."

However even this group will step in, in cases of unusual difficulty. Moreover, as suggested earlier, not every company in the typical portfolio receives this kind of attention. Nearly every investment group has investments which are approaching maturity and which require virtually no servicing. These are often the most profitable investments in the portfolio.

Participation by Individuals

The extent to which individuals expect to participate in company management varies enormously and is difficult to predict. It would be reasonable to expect, for example, that the most economically-motivated investor would be the most likely to insist on participating in company management. The survey suggests, however, that the case is just the opposite: that the non-economic individual investor is most likely to want to participate, and that the economically-motivated individual either has more profitable uses for his time, or has so little to lose if the company fails, that he participates only very slightly.

The extreme case of investor participation is the case where the more or less affluent entrepreneur finances his own
firm. This is not a pattern encountered frequently, although examples of this type of investor were included in the survey sample. Such people are normally motivated by the desire to participate constructively in a growing firm, although their motives are economic to the extent that they believe greater gains are possible from their own ventures than from those of others.

The more usual case is the investor who wishes to be considered by management as a consultant, either paid or unpaid, on matters of policy or perhaps of technical detail in an area where he has special abilities. This type of participation is not normally economically motivated. Such an investor can be genuinely helpful to the new firm, both as an operating advisor and as a window on the financial and legal problems of business. This is a role often preferred by the senior or retired businessman, who does not desire a full-time commitment to the enterprise.

Less usual but not uncommon is the case in which the investor desires a role as a full-time officer of the firm he finances. While such a man is often highly qualified for the role he seeks in the company, problems have been created in several situations by such a relationship. A company will sometimes accept the investor's participation as a condition of obtaining capital, only to discover that personality conflicts are created in what was theretofore a congenial, smoothly-functioning group. Thus, the admonition "Choose your bedfellows with care", applies
particularly to the situation where a man's resources may tend to make the entrepreneur oblivious to some rather obvious future difficulties.

At the other extreme is a minority comprised of the individual who invests with no intention whatever of participating in the new venture's management. He may have invested because a friend asked him to, because he thought it would be worthwhile to take a flier on a recommended venture, because he has little to lose due to his tax situation, or because it's fun to back a winning horse or, more accurately, a horse in a race. Whatever his motivation, he tends to rely rather heavily on his judgment of people - and his people, once selected, can run their own show. This study discovered no evidence to suggest that this type of investor does any worse, on the average, than anyone else. Moreover, his non-participation as "silent partner" is welcomed by one type of entrepreneur, though for many it would probably be undesirable. Some typical comments on participation were:

"Most of the time in these things you only go in because you have confidence in the management. You can help if they yell, but they're ninety percent on their own."

"I don't participate much - takes too much time. I'm betting on people who should be able to run their own show."
The period during which individuals seem to feel that their participation is most necessary varies substantially with the situation, but appears to range between one and three years. Relationships may be much longer, but the real difficulties of transition to a going concern are usually encountered sometime in the first three years, and it is during this period that most investors seem to consider their contributions to be most important.

It was the author's impression that today a rather higher level of management participation is accepted than was customary as recently as two years ago. This impression may be simply a function of the sample of investors interviewed. Or, more likely, it is due to the fact that the unsophisticated investor, poorly qualified to select and follow good venture possibilities, is largely out of the market today, leaving only the more wily investors who were participating in management all along.

In general it appeared to the author that, on the whole, participation by the institutional or individual investor in NRBE management is widespread and often beneficial. It can be beneficial primarily because it gives the entrepreneur access to someone with knowledge and friends in areas which may be quite foreign to the entrepreneur, such as finance, law, marketing, control, or government procurement. Also, the investor is very often older than the group he backs, and is thus able to function as a "super-director," bringing experience and a seasoned view-
point to many situations which may be new to the entrepreneurs.

The phenomenon of management participation by investors is one of the features which make new enterprises different in kind, as well as in size, from other types of enterprise. The investor here is frequently offering the new enterprise a good deal besides his money; he is often investing his time, energy, and experience as well - assets which in many instances are valuable to the enterprise beyond any price. His appraisal of the opportunities afforded by a venture situation to capitalize upon these assets, as well as his financial ones, may often be the determining factor in his decision to participate.
"In all the different employments of stock, the ordinary rate of profit varies more or less with the certainty or uncertainty of the returns.... The ordinary rate of profit always rises more or less with the risk. It does not, however, seem to rise in proportion to it, or so as to compensate it completely. Bankruptcies are most frequent in the most hazardous trades. The most hazardous of all trades, that of a smuggler, though when the adventure succeeds it is likewise the most profitable, is the infallible road to bankruptcy. The presumptuous hope of success seems to act here as upon all other occasions, and to entice so many adventurers into these hazardous trades, that their competition reduces the profit below what is sufficient to compensate the risk." 1

-Adam Smith

A central purpose in conducting the survey described in this report was to learn something of the definitions of success employed by the backer of scientific ventures, and of his batting average as he himself views it. Peripheral to this is the additional issue of "what do you do with a success once you have one?", a question sometimes rather more awkward to deal with than might be expected.

Defining Success

The mere fact that someone embarks upon an enterprise usually (though not necessarily) implies that he has some definition of success in mind. Often success in an enterprise is so clear-cut (or binary) in nature that its attainment is apparent to everyone (e.g., the Wright Brothers' plane flies; Peary reaches the South Pole; I win the toss of a coin). More often, and especially in economic enterprises, there are innumerable things that can be measured as indices of success, and innumerable levels of each of these things which may be considered as arbitrary targets defining it. What constitutes a very successful venture for one investor might be only mediocre to another, and a clear-cut failure to a third.

The venture capital groups all tend to measure the same things in defining success, although they recognize different levels of these things as constituting success. Rate-of-return is the usual parameter for venture groups as it is for most other businessmen. The most usual rate-of-return given in the survey as indicating "success" is about twenty percent annual appreciation (or doubling one's money in four to five years). Both Rubinstein and the Federal Reserve System reported this number in their respective studies as being an "investor's consensus" and it was heard often in the present one. It is doubtful, however, that the expectations for any single venture are often that low - simply because
most research ventures appear either to make a good deal better return than this, or a good deal worse one. Thus, while twenty percent per year might constitute some sort of average portfolio appreciation target for some investment groups, it is not likely that a single venture making this return will be judged an enormous success. Most groups with portfolios of such investments appear to regard as successes those ventures which appreciate by a multiple of ten or twenty in the first five years - and these are the statistically rare investments which must be relied upon to offset the others and keep the organization in business. An appreciation of twenty percent on a single investment of a single individual, on the other hand, might be considered quite good.

The number, "five years" is another figure one often hears, but one to which additional qualifications must be appended. The typical statement,"I'm willing to wait about five years", immediately elicits the question, "Wait five years for what? Writing it off as a capital loss? Unloading one's stock in a public offering? Putting additional money into the company? Giving the stock away? Any "maximum waiting time", to be meaningful in a definition of success, must be considered within the context of what the investor hopes to do with his equity at the end of that time.

Among the venture capital organizations, as among individuals, there are substantial goal-related differences in the
answer to the question, "How long?". Some SBIC's feel that if a company hasn't shown indications of making a profit by the third year, it's time to get out - regardless of the consequences to the company. An officer of another venture organization expressed a somewhat different view: "We stay in until it's clear that the situation is so good or so bad that we can no longer make a contribution." Another organization, a well-known family venture group, regards ten years as an altogether reasonable waiting time, but in fact expects to hold some investments much longer. A criterion somewhat more sophisticated than most was mentioned three times in the survey: Stay in only during the steepest part of the growth curve - then get into something else. However, while the theoretical underpinnings of this criterion are above all criticism, it is the author's opinion that this criterion for successful investing is a rather difficult one to put into practice. When an investment's growth is flattening out is precisely what every investor wants to know.

After discussing rate-of-return and time period as success criteria, we are now forced into the rather nebulous region which contains most of the others. At one time or another, each of the following criteria for investment success was mentioned in an interview. While it is impossible to assess their importance, relative to other criteria as well as to each other, a listening of them should project some sense of their flavor and diversity. They include:
1. Just keeping the company in business for some length of time.
2. Getting the company to simply show a profit, however small.
3. "Breaking even" on one's investment(!)
4. Making as much as would have been made investing the money with the rest of one's assets.
5. Getting a new product on the market.
6. Attaining a public stock issue.
7. Getting a company to the point where it's self-sustaining.
8. Building the volume to the point where it will support the investor-manager on a good salary.
9. Building sales to a certain fraction of the market.
10. Keeping things going until a bigger company offers to buy you out.
11. Keeping any unambiguous failures off your record.

It will be noted that most of these are not economic criteria. Moreover, it is doubtful that any single one constitutes the sole measure of success for any investor. However, the mere
fact that they occurred in the study suggests that many individual investment ventures are not being judged by economic criteria alone (perhaps a result of rationalizing past experiences). It suggests also that very few venture capitalists expect to grow significantly richer through their participation - again emphasizing the very important non-economic side of investor motivation.

It was interesting also to observe that success criteria often change during the period of the investor's participation. The author, however, was unable to discover any pattern or general tendency toward either increasing or decreasing emphasis of economic criteria in these instances.

The Score

We turn now to the final substantive question of this study. That question is, "How well have they done?". While it is recognized that many of the investors of initial capital in new ventures may reap enormous returns in non-economic terms from their ventures, such yardsticks of success are, by their very individuality, rather poor for comparing one man's record with another's. Since there is very little unanimity upon the non-economic criteria, we shall focus upon the major economic one: rate of return.

Discussions of the experiences of venture backing in general, and in particular, of initial backing of science based ones, tend naturally to be rather indeterminate. It is somewhat like asking how, in general, bettors do at the racetrack. The
answer is that some win and some lose, with the majority about breaking even. Yet this tells us nothing, unless we know something about the characteristics of the people in each group - characteristics from which we can draw inferences - perhaps that one group has better ways of picking winners - or, perhaps, only that one group is luckier than another.

Whatever the reasons for success, failure and their distribution, this much is clear: the venture capital investors probably cannot expect a higher rate-of-return on their investments than can investors in any other segment of the capital market. On the average, the increased risks appear only to be about compensated by the occasional outstanding success - or perhaps not quite compensated, as with Adam Smith's smugglers.²

The venture capital organizations constitute a likely place to begin, since information on many of them is publicly available, and since, as highly sophisticated, well-staffed organizations, they may well constitute a guide to how well other investors of only average endowments might expect to fare.

American Research and Development Corporation, a conspicuous and well managed venture capital firm, has had a reasonably successful experience since their establishment in 1946. Had their stock been purchased at the original offering at $8.33 and held,

² See the Federal Reserve System's 1958 study, Financing Small Business for documentation of returns to small business investors vs. returns to all others.
the investor would have experienced appreciation of about nine percent per year (including cash dividends, and a distribution of stock in an outstanding early investment). This is a good return, compared to many venture groups' experience - but on the other hand, the annual compound appreciation for that period of Standard and Poor's Industrial Average is in excess of eleven percent, suggesting that ARD investors might have done just as well in a number of other situations.

The publicly-traded SBIC's as a group have not done quite so well. The SBIC Evaluation Service's "SBIC Stock Price Index", which has been computed since October 1960, shows that an investment in October 1960 in a portfolio comprised of index stocks would have depreciated at a rate of sixteen percent per year; had this same portfolio been purchased during the speculative spring of 1961, the depreciation would have been more like seventy-five percent per year. Most SBIC's today are selling at substantial discounts from book value, averaging thirty-eight percent, according to the SBIC Evaluation Service.

The family investment groups are more difficult to generalize upon since few figures are publicly available. However, we do have a few data points to give us some sense of the whole. We mentioned in an earlier chapter the not-altogether-happy experiences of J. H. Whitney and Company, a group no longer active in new venture financing. Another group, Rockefeller Brothers, is generally thought by the financial community to be among the most
successful. A spokesman for the group was recently quoted in Barron's as saying,

"...the Rockefeller batting average on risk investments remains at .900 as far as successes and failures are concerned, or right where it was two years ago." 3

The spokesman failed to comment upon the group's rate-of-return, but one might infer that it is satisfactory from the fact that the organization has in recent months added four new ventures to its portfolio. Several of the other family groups appear to have done reasonably well up until about two years ago, since which time several have sustained sizable paper losses on their science stocks.

So much for the venture capital organizations. Let us now turn to the record of the individual investor, the man who supplies initial capital to New England's NRBE's. The problem of appraising success in terms of rate-of-return is exceedingly difficult to approach on the basis of interviews alone; it is quite doubtful that any individual knows his rate-of-return. Even given the financial statements of every firm in a man's present and past portfolio, it would be extremely difficult to compute such a rate, simply because of the impossibility of

evaluating stock for which there is no market. However the present study attempted a zero-order approximation of individual investor experience, based upon responses from one part of the sample: that part comprised of individuals known to have invested initial money in new ventures on their own behalf. The sub-sample contained ten such individuals. Their characterization of their own experience is reported as stated or implied during the course of the interviews:

<table>
<thead>
<tr>
<th>Professional Group</th>
<th>Clearly Successful</th>
<th>About Broke Even</th>
<th>Clearly Unsuccessful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial a</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Financial b</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

a. Includes company presidents and chairmen.

b. Includes bankers, investment bankers, brokers and investment counsellors.

While it is difficult to infer much from such a tabulation, the author went further and estimated the number of situations in which each investor had participated (in some instances this was known with certainty; in others a best guess sufficed). It was concluded that the six clearly successful investors had to their credit an estimated twenty-nine investments; those
breaking even, about eight; the two unsuccessful investors, only two! Thus, it appears that, at least in this tiny sample, the investors did best who gave the laws of probability a chance to work a bit. One of the individuals in this subsample concluded that,

"Most sophisticated investors in my position have definitely made money, although not so much as they would have made by investing in proven issues on the New York Stock Exchange."

It would be a mistake to attempt any sweeping inference from the experience of this group since, as mentioned before, the sample was undoubtedly biased toward the successful investor, by virtue simply of the fact that he stays in the market long enough to be identified. One might argue from the available evidence, however, that the investor who stays in long enough to give probability a chance does better than the process average would predict - simply because of the others who get out when the first venture turns out badly. Some portion of the bad ventures get absorbed by this second group, but none of the good ones. The distribution of these two groups in the investor population, as well as the magnitude of this effect, would be difficult indeed to estimate.

A Postscript on "Getting Out"

At the outset of this chapter we discussed the time-
criterion of success, and the contingency of its relevance upon what the investor planned to do at the end of that time. The "getting out" part of a venture is not typically uppermost in the mind of the investor entering his first NRBE venture. However, after one or two, he is likely to give a good deal more thought to just how he's going to get out of any additional venture he enters. As one investor put it,

"If more people thought about how they would get out of these things, there'd be a lot fewer getting in. Usually the first public issue is simply to get them out - then it's the public that gets hooked."

There is often a real problem for the investor in getting out, even if the venture is a highly successful one. For example, take the case of an investor who provides a substantial portion of the initial equity money of a new firm. The firm prospers, and for five years the investor waits for his reward. At last a public offering is arranged, at a price which promises a substantial appreciation on his original investment. But what should he do now? Include his stock in the public offering? Probably not a good idea, because neither the underwriters nor the next group of investors will be happy at seeing the original capital pull out - because then the company is little better off than before. Should he attempt to sell his stock privately? Probably
not, because the dumping of a major piece of the stock will simply drive down whatever its tiny market may be, thus jeopardizing both his gains and the underwriting. Should he just plan to leave his money in the company awhile longer? Probably not, because the major burst of capital appreciation has passed, and if he is really a venture capitalist, he will want his funds to place in other risk situations. Clearly, a dilemma confronts him.

The resolution of this dilemma will depend in part on the condition of the market at the moment, partly on the tax structure of our investor, and to a large degree, on the kind of person he is. One very successful investor reported that his best course was simply to wait until the market for his stock had peaked, then give it away to a charity, claiming a tax deduction. Two other investors felt that they had a distinct obligation to the company to hold their stock until the second public offering, then get out.

If a successful venture poses a moderate problem of getting out, the marginal venture poses an enormous one. The marginal company is an enterprise that never failed, yet somehow never quite succeeded either; it stays in business but never grows. The dilemma that confronts the patient investor here is a rather less pleasant one than the first. He can a) leave his money in, making little or no return, or b) insist, if possible, on being bought out by the other stockholders, or c) try to find
an outside investor who will buy the stock at any price, or
d) attempt a coup to liquidate. The first possibility is
probably not attractive to the investor at all, the last
three will probably not be greeted with enthusiasm by manage-
ment; none is a happy solution for everyone. One man inter-
viewed expressed his formula for dealing with such problems:

"The secret of success in getting out of
a venture deal is to find someone who's
a bigger fool than you are."

In summary, generalizations on the ways in which in-
vestors define success and on their experiences in achieving it
are doomed to run aground on a shoal of exceptions and special
cases. The present chapter has outlined a few of the more
common success criteria, discussed the experiences of a sub-
sample of the investor population studied, and offered some
comments on the sometimes tricky problem of getting out of the
successful or not-so-successful venture. It was hoped at the
outset that the study would provide a better basis for the
judgment of investor experience in NRBE; this hope was par-
tailly though not entirely fulfilled. Innumerable opportunities
for further research in this topic exist - and especially, in the
study of patterns of success and failure among different groups
and types of investors. It is the author's hope that this chapter
has constituted a modest first step in this direction.
Postlogue:

SOME IMPLICATIONS FOR ENTREPRENEURS

At the end of any research effort, after the findings and conclusions have been tabulated and catalogued, one question often remains unasked - a question that is both appropriate and important for the researcher to have answered: "Interesting, but what did you learn that is useful?". The author hoped at the outset that this study might prove of some value to both the investor and the entrepreneur. Throughout the chapters that precede, every effort has been made to discharge this promise to the investor, yet the implications for the entrepreneur remain rather less explicit. It is the purpose of this postlogue, then, to focus as directly as possible upon those aspects of the study of the most immediate interest to the technical entrepreneur looking for backing.

At some risk of appearing didactic, the author advances the following guidelines to entrepreneurs in the belief that their importance and generality of application warrant their consideration by most entrepreneurs before approaching the capital market.

1. **Do your homework thoroughly**

   This applies to both the conception and the presentation of your project. The conception should include many aspects besides the technical feasibility of the innovation. One should have in
hand a working prototype of the device, as well as a clear notion of the type of organization required to make it a commercial success. The latter will be the more difficult for the technologist, for it takes him into areas where he may have no first-hand experience. He should have a fair idea about how one manufactures such an innovation, who the subcontractors should be, what the costs are likely to be. He should already have made a choice of colleagues in the enterprise, selecting them both for personal compatibility and complementarity of talents. He should know as much as possible about his ultimate market - how many widjets might be bought, and at what price? How fast might they be demanded? Who else is likely to be selling them? What happens to demand in five years? What other things can we sell to this market? How do things get distributed and sold in it? How much money is required to reach it? And very important, Who is our first customer going to be? Can we sign him up before we make the first one? It is often difficult to answer many of these questions before approaching the capital market, but at the very least one should evince awareness of them as well as a clear-cut plan for obtaining answers soon.

The best-laid plans await a bleak fate unless they are well presented. The engineer who expects his idea to sell itself on the basis of a few sketches and some arm-waving is doing justice neither to himself nor his idea. The people who back technical entrepreneurs are not, for the most part, technically
trained - but neither are they fools - and the best evidence of
man's ability to sell his device to a market is his ability to
sell it to them. The documentation of the project should include
drawings and descriptions of the innovation, presented in non-
technical (but non-patronising!) language directed at a knowledge-
able reader. Its applications should be discussed. A prospectus
should include presentations of cost estimates, projected sales,
market growth, etc., in the language of the businessman - that is,
in terms of pro forma balance sheets and operating statements for
the next few years, backed up by sufficient detail to at least be
convincing. The sources of sales estimates should be documented.
The projections should be related to industry growth, government
contracting trends, etc. Magnificence of presentation is not
necessary, but neatness and thoroughness are. And finally, the
project prospectus should be capable not only of informing the
prospective backers, but also of creating some enthusiasm.

2. **Pick your prospects carefully**

Knocking on doors at random is a poor way to sell anything,
new technical enterprises included. Though it seems obvious,
many entrepreneurs fail to ask themselves even the most ele-
mentary questions about what constitutes the best type of backing
to the enterprise. How much money is needed? How much control
am I willing to part with to get it? How much management assis-
tance will be needed? How soon will additional funds be needed?
How long will it be before the investor can expect a return? And finally, who are the people who have money available on these kinds of terms?

In identifying these people, it may be helpful to talk to other entrepreneurs, to bankers, to acquaintances in the financial world, or to any other knowledgeable person likely to be helpful to you in assembling your list of prospects. This list, once assembled, will be the basis of even more homework. What kinds of ventures have they backed? What does their record look like? How well are they liked by other people whom they've backed? How soon do they have to show a return? How patient are they? What advisory assistance can they offer? How much ownership will they want? And finally, how would they view a proposal like mine coming in off the street? It is an enormous tactical advantage to the entrepreneur to know a few of the answers before approaching a prospective investor. He should be aware of the many different types of venture capital that are available, the different organizations that exist for its administration, the types of bargains other people have been able to drive with them recently, and the standards by which they judge proposals. In short, the entrepreneur should know their game as well as his own.

3. Get some professional help

There's no need to go into a capital search completely alone. A good banker and a good lawyer will be indispensable sooner or
later, so why not pick them now? Correctly chosen, they can be powerful allies in the search. They have probably been through the capital-search mill with entrepreneurs before, and it's their business to know their way around the financial community. They can advise you and help you sidestep pitfalls you wouldn't have thought existed.

This help won't cost very much, so get the best available. The banker won't cost anything, and he wants you to succeed so that he can lend you money when you've succeeded. The lawyer also wants your business later on - and recognizing the financial peril of the new firm, he won't charge you a fortune to help you get started. And he may put it on the cuff.

Picking the best isn't hard. In every community there are a few banks and a few law firms noted for their interest in new enterprises. Any senior member of the financial community can tell you who they are.

In Conclusion,

Perhaps the most important thing for the entrepreneur to be able to do is put himself in the shoes of the prospective backer - then try to view the project as the investor will view it. The success with which he can maintain this viewpoint in the conception, presentation, and execution of his project will inevitably determine to a great degree the success of both the enterprise and the entrepreneur.
Appendix 1

SOME COMMENTS ON THE STUDY

The purpose of this brief section is to look at the study, rather than its results, and to provide a spot for a few comments which don't appear to have any other natural place in the body of this report.

As mentioned in the text, the non-structured interview can, in the hands of a trained and experienced practitioner, be an effective, if not precise, tool of research. Without the benefit of either training or experience in the medium, I found that while I could glean and infer a good deal of information from most interviews, I had the feeling that with even some rudimentary training I could have been far more effective at eliciting useful information. This impression was strengthened by the fact that my later interviews seemed both easier and more generally informative than the earliest ones.

As indicated in the first chapter, the general interview strategy at the outset was to use a formal interview format questionnaire (see Appendix 2), to be completed by me during the course of the interview. The object, of course, was to obtain a degree of comparability between the responses of the different people interviewed. After the first few interviews using this approach, however, it became clear that the structured interview was not in this case an ideal research vehicle. Not only did it necessitate hurrying the conversation to get through all the topics, but it also tended to destroy the spontaneous conversational nature of the interview. The use of the interview format was thereafter abandoned, with an overall improvement in interview results.

The interview approach I then adopted could be best described
as "loosely-structured" - that is, I attempted to encourage the interview subject to take as much of the initiative as he was willing to take, though I had firmly in mind a number of questions which I hoped he would answer before we finished. When I felt that the conversation was converging upon one of these questions, I attempted to elicit a forthright answer on the subject; if it appeared that the discussion might omit some of the general topics completely (e.g., risk estimation, venture appraisal, tax considerations), I would attempt to steer the conversation toward a topic of interest. It was not always possible to accomplish this successfully, and many interviews ended with one or more important points still uncovered. Nonetheless, while the manifest content of the interview might in some cases fall short of what I had hoped for, the latent content often permitted one to infer the answers to some important questions with a fair degree of confidence.

The loosely-structured interview strategy had still another dividend, in terms of information for which I would not myself have thought to ask. In exploratory research (which is how I classify this effort) it is not usually possible to identify, a priori, all the right questions to ask. The loose interview structure permitted on several occasions discussions at length of topics about which I had little knowledge, or even basis for asking informed questions (some topics so discussed were "finders", and problems of "getting out"). Thus, I consider this interview form to be an appropriate research method at least for this population, and I consider the spontaneity and gratuitous references well worth their price in explicit information content.

It was recommended to me at the outset that I employ a tape recorder to transcribe the interviews. This has been used successfully
by some investigators, notably Professor Challis Hall of Yale, in conducting personal interviews of businessmen. In concept it is excellent: it should relieve the interviewer of some of his note-taking burden, and permit lavish direct quotation in the study, thus maintaining the flavor as well as the substance of the ideas. In practice, however, the recorder proved unsuccessful - at least on the two occasions when I attempted to use it. On each occasion, the subject cordially refused to permit our discussion to be recorded, in each case due to a simple reluctance to go "on the record." After these experiences, it was my judgment that no further attempt to record interviews should be made - that the subjects either would refuse to be interviewed with it, or would be made uncomfortable by its presence, thus destroying the spontaneity of the discussion.

It seems desirable, with so small a sample, to attempt to typify the individual and organized venture capital sources contacted in somewhat more detail than appeared in the text. It was with some hesitation that Tables 1 and 2 were prepared for this purpose, but it is hoped that, in the context of this report, they will serve to add some flesh and blood to the otherwise somewhat nebulous "investor sample." The parameters estimated for the individuals and firms represent, in every case, my best estimate. Sometimes a parameter was known with some certainty for several subjects, and merely guessed at for the others, for symmetry's sake. In some cases, the characterization of the parameter in question indicated nothing more than my assessment of a tendency (e.g., economic vs. non-economic motivation) and projects no sense of magnitude. This, however, is an accurate reflection of the state of my knowledge of the facts, and I accept full responsibility for the guesses, judgments and incomplete data represented.
It is my hope that the benefits of these Tables' inclusion will outweigh whatever skepticism about the study they may incur.

Finally a few comments concerning the individuals themselves. As I stated in the early pages of this report, the people interviewed were without exception cordial, candid, and generally helpful. This was due, in part, to the selection-by-referral process by which they were identified - it is doubtful that anyone knowingly referred me to anyone who would not be helpful and interested. Nonetheless, the excellent cooperation, and a very high rate of acceptances of requests for interviews (80%) which I received, lead me to the optimistic conclusion that this class of individual presents a fertile field for further academic research in such areas as the effects of taxation, the decision process under uncertainty, the individual's risk-taking propensity, and others. These people are typically well-educated, have broad interests, and tend to be sympathetic to the aims of academic research (albeit, in some cases amused as well). Thus, if the personal interview is ever going to succeed as a research tool, it certainly should here. But, to any who would undertake its use, I repeat my initial admonition: know what you want to find out, and learn enough about interviewing technique to find it out. Unfortunately, it may be that the only way to learn it is by interviewing.
**Table 1: CHARACTERISTICS OF INDIVIDUAL INVESTORS IN STUDY**

Each had invested in at least one NRBE on his own account.

<table>
<thead>
<tr>
<th>Investor</th>
<th>Estimated Net Worth ($1,000)</th>
<th>Estimated Income ($1,000)</th>
<th>Education</th>
<th>Dominant Motivation</th>
<th>Estimated Years Venture Investing</th>
<th>Present Venture Activity</th>
<th>Type</th>
<th>Estimated No. NRBE Investments</th>
<th>% Time Management Participation</th>
<th>% of Net Worth in NRBE's</th>
<th>Any 1244?</th>
<th>NRBE Economic Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>over $10,000</td>
<td></td>
<td>L.A.</td>
<td>E</td>
<td>25</td>
<td>S</td>
<td>Passive</td>
<td>4</td>
<td>20</td>
<td>20</td>
<td>No</td>
<td>S</td>
</tr>
<tr>
<td>B</td>
<td>5,000 - 10,000</td>
<td></td>
<td>GSBA</td>
<td>E</td>
<td>10</td>
<td>S</td>
<td>Passive</td>
<td>6</td>
<td>15</td>
<td>20</td>
<td>Yes</td>
<td>S</td>
</tr>
<tr>
<td>C</td>
<td>1,000 - 5,000</td>
<td></td>
<td>L.A.</td>
<td>Non-E</td>
<td>15</td>
<td>S</td>
<td>Passive</td>
<td>8</td>
<td>0</td>
<td>15</td>
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<td>S</td>
</tr>
<tr>
<td>D</td>
<td>1,000 - 5,000</td>
<td></td>
<td>L.A.</td>
<td>Non-E</td>
<td>20</td>
<td>I</td>
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<td>0</td>
<td>71</td>
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<td>N</td>
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<td>Non-E</td>
<td>40</td>
<td>S</td>
<td>Active</td>
<td>8</td>
<td>10</td>
<td>15</td>
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<td>M</td>
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<tr>
<td>F</td>
<td>500 - 1,000</td>
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<td>Tech</td>
<td>Non-E</td>
<td>12</td>
<td>Q</td>
<td>Active</td>
<td>4</td>
<td>100</td>
<td>80</td>
<td>No</td>
<td>M</td>
</tr>
<tr>
<td>G</td>
<td>500 - 1,000</td>
<td></td>
<td>Tech</td>
<td>Non-E</td>
<td>10</td>
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<td>Passive</td>
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<tr>
<td>H</td>
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<td></td>
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<td>Non-E</td>
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<td>Q</td>
<td>Passive</td>
<td>3</td>
<td>100</td>
<td>80</td>
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<tr>
<td>I</td>
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<td></td>
<td>GSBA</td>
<td>E</td>
<td>5</td>
<td>Q</td>
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<td>2</td>
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<td>50</td>
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<tr>
<td>J</td>
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<td>E</td>
<td>6</td>
<td>Q</td>
<td>Active</td>
<td>2</td>
<td>20</td>
<td>75</td>
<td>No</td>
<td>M</td>
</tr>
</tbody>
</table>

1. Includes entire career
2. Only economic and non-economic appraisal
3. How subject located ventures
4. Estimated fraction of work week
5. At time of greatest activity
6. "1244 offerings" participation
7. L.A. = Liberal Arts
   Tech = Engineering or Science
   GSBA = Graduate School of Business Administration
8. Quite Active, Somewhat Active, Inactive
9. Success: Substantial, Moderate, None
Table 2: VENTURE CAPITAL ORGANIZATIONS REPRESENTED IN STUDY

<table>
<thead>
<tr>
<th>Firm</th>
<th>Estimated Assets ($ million)</th>
<th>Years in Venture Finance</th>
<th>Search Activity</th>
<th>Total No. NRBE Investment</th>
<th>Management Participation</th>
<th>% Assets Available for Ventures</th>
<th>Investors' B.T. Rate-of-Return (Estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>over 100</td>
<td>4</td>
<td>Passive</td>
<td>10</td>
<td>0</td>
<td>under 1%</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>over 50</td>
<td>18</td>
<td>Active</td>
<td>20</td>
<td>35%</td>
<td>under 10%</td>
<td>12</td>
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<tr>
<td>C</td>
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<td>Passive</td>
<td>10</td>
<td>under 5%</td>
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<td>D</td>
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<td>J</td>
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<td>Active</td>
<td>6</td>
<td>25%</td>
<td>100%</td>
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</table>

1 Includes entire period of venture activity
2 Fraction of total staff time per week
Appendix 2

Active Investors in New Research-Based Enterprises

INTERVIEW FORMAT FORM
(to be completed by interviewer during discussion)

Date_____________________

Firm_____________________

Occupation__________________________________________________________

Sex__________ Age____________

MOST RECENT PARTICIPATION

1. I wonder if you would tell me something about your most recent small enterprise venture?

__________________________________________________________

2. What sorts of people were behind it? Were these the ideal people for the job?

__________________________________________________________

3. How did it come to your attention? (Personal friends, business associates?)

__________________________________________________________

4. How did you know the people involved were managerially and technically competent?

__________________________________________________________
5. What was the technology involved? Do you try to stay within this general area in investing?

6. Would you normally have invested at the outset or waited until the company had established some sort of record?

7. Were you considering some other new venture situations when you chose this?

8. Would you say the venture will have been a success or a failure?
GENERAL VIEWS ON VENTURE FINANCING

1. About what percentage of one's total capital do you think it wise to have invested in venture situations?

2. Why do you invest in new technical ventures, as opposed to other new businesses?

3. What are the most important factors in making a particular venture proposition attractive or unattractive to you? (good people? growing industry? new technology?)

4. Has your willingness to make ventures of this type changed? How?

5. Would you say that taxes and the possibility of long-term capital gains influence your decisions significantly? Are taxes the most important consideration?

6. I assume you're aware of the special tax treatment offered new enterprise backers by so-called "Section 1244" of the Small Business Act of 1958? (yes-no) (If no, explain and give dittoed copy of act) If yes, ask: Has this tax incentive ever encouraged you to participate in a "1244 company"?
7. How do you estimate the amount of risk associated with a venture? Do you compare with other firms of the same general nature, or with the industry, or do you draw mostly on your own judgment?

8. Whose opinion do you seek in estimating risk?

9. How much risk is appropriate in a venture of this kind?
   a. What in your opinion constitutes a "successful" venture?

10. How long should payout be expected to take?

11. How big should payout be?

12. Do you normally expect to participate in the management of the venture you back? To what extent?

13. Is it better to take on a venture alone, or to spread the risk among several investors?

14. How do you usually hear about new venture situations?

15. About how long have you been interested in such situations?
16. How many of them have you backed?

17. How good are scientists, engineers, and inventors as businessmen?

18. Do you think there should be businessmen as well as technical men in a new venture?

19. Do you usually or ever insist that the promoters of a venture have their own money, as well as yours, in it?
OPINIONS ON OTHER BACKERS
OF NEW ENTERPRISE

1. About how many backers of new technical enterprise would you estimate there are in Greater Boston?

2. What might be their average personal income tax bracket?

3. Would you say most made money or lost money in their ventures? Why do they?

4. What do you think is their chief motivation for investing in a new venture?

5. Considering all things, would you say that our personal and capital-gains tax structure encourages or discourages the flow of capital to new ventures?

6. Do you think the existing channels for putting investors in touch with good potential investments are adequate?

How might the situation be improved?
PROPENSITY FOR RISK-TAKING

Just for fun, I'd like to present a hypothetical deal. Let's say you're currently in the market for a promising venture situation, and a colleague in the financial community suggests this one: A group of well-qualified engineers and managers has broken off from a large local electronics manufacturer. They have a new technology and hold several fundamental patents. They plan to sell proprietary devices to the civilian market, but estimate that it will be two years before they can show a profit. They need $50,000 but if the product performs to promise, you estimate that the after-tax return to you in three years will be $200,000. If the product misses, you'll probably lose all $50,000.

You estimate that the product has one chance in ten to hit. Would you take the venture?
What if it had two chances in ten?
Three?
Four?

Now I'd like to change the ground-rules a bit. Suppose now that instead of an outlay of $50,000, you had only to invest $10,000. The payoff is still $200,000, and you still think the venture has about one chance in ten of hitting. Would you take it?
What if it had two chances in ten?
Three?
Let me change the situation just one last time. Suppose again that $10,000 were required, but that the potential after-tax payoff were now only $50,000 instead of $200,000. Again you estimate the chances of success at one in ten. Would you take it?

What if they were two in ten?

Three?

Four?
Appendix 3

REFERENCES

I. References on Financing New and Growing Enterprises


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