CREATING NEW BUSINESS VENTURES:
NETWORK ORGANIZATION IN MARKET AND CORPORATE CONTEXTS

by

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ABSTRACT

An increasing number of scholars and practicing managers have stressed the importance of the ability to generate new businesses in the dynamic context of the modern industrial economy. It is also readily evident that the two traditional models of the business venturing process - the independent entrepreneurial system and the large corporate industrial R&D system - are no longer the only organizational options. Innovation in regional contexts like Route 128 and corporate contexts like 3M present successful, celebrated, and widely imitated alternative organizational models. A distinctive feature of these emerging forms of organization highlighted by many observers is their "network" like character. Indeed, these fluid and dynamic networks of social and economic linkages are seen to serve as channels for resource and information flows that are responsible for boosting innovation in these contexts. These observations have inspired a number of formal initiatives in both market (regional) and corporate contexts to create organized forums or foci around which business venturing networks may develop. There is, however, little research that provides an empirical or theoretical foundation for understanding these emerging developments. The aim of this thesis is to make such a contribution.

At the heart of the thesis are two field-research based case studies. The first is a study of the 128 Venture Group, a "networking" organization in the Route 128 region. The second, is a study of the New Opportunity Development group, an internal venturing unit in Eastman Kodak - a Fortune 50 industrial corporation. The two cases were chosen for comparison because they are organizational innovations that have remarkably similar espoused goals - to create networks that facilitate the business venturing process, but are embedded in very different contexts. Some of the key questions that I address in the case studies are: How are these networks organized? What are their formal theories of action? How do these theories of action play out in practice: Who participates in the networks? Why? How do they interact with each other? And, how do these different features affect the creation of new business ventures? The basic premise underlying this research methodology is that by understanding how, one also learns what can be done. This is a case where practice must be the guide of theory, and theory once developed must serve as a guide to practice.

The cases reveal striking differences between these models of organization and the traditional archetypes. Moreover, it is clear that these new forms cannot be well understood within the framework of the conventional theory. I argue that a very different theoretical perspective, one that has its roots in interactionist sociology, enables a more compelling interpretation of these cases. The differences between the traditional theoretical framework and the one offered in the thesis are sharply defined in the following four points:
(1) One must conceive of the creation of new business ventures as the outcome of the collective action of numerous intentional and knowledgeable actors as opposed to the mere combination of a bundle of resources. It is important, therefore, to examine the division of labor and particularly the nature of specialization among those involved in the network, since the business venturing process intrinsically involves the interweaving of acts of skill with acts of insight.

(2) Coordination is neither the heroic task of the entrepreneur in the market nor is it automatic inside the corporation. The coordination of the collective action must be undertaken in an inherently ambiguous information situation. It is important to therefore understand the nature of the rules and conventions of interaction and the processes by which they are created, interpreted, and altered, since that both enables ongoing collective action and constrains the forms it can take.

(3) One needs to deflect attention away from the conception that economic profit is the only incentive that motivates entrepreneurship. Status and reputation in the relevant social context may be more important. While that is closely tied to economic profit in a market context like Route 128, it may be more closely tied to career issues in corporate contexts like Kodak. One must therefore understand the chains of opportunity for status attainment through entrepreneurship in different contexts.

(4) Finally one needs to emphasize that business venturing does not take place in a social vacuum, but is always embedded in other fields of activity and institutions. The extent to which these overlapping networks are consistent or at odds greatly influences the institutionalization of the process.

Thesis Committee: M. Horwitch, D. Lessard, M. Piore, J. Van Maanen, and E. Westney (Chair).
ACKNOWLEDGEMENTS AND DEDICATION

The process that resulted in the creation of this thesis bears a striking similarity to the subject it addresses: the creation of new ventures. Just as a new venture is rarely the brain-child of the solitary entrepreneur but the work of a network of cooperative actors, this thesis was made possible by a network of collaborators.

The most important members of this collaborative network have been the members of my committee - Mel Horwitch, Don Lessard, Mike Piore, John Van Maanen, and Eleanor Westney. Each brought their own distinctive perspective to bear on the process and made a special contribution to this thesis. Conversations with Mike inspired the intellectual agenda I have come to adopt. He also pointed me in the right direction at several points in the process. Mel introduced me to several sites to do my field-research, was generous with enormous amounts of his time (inevitably at the shortest notice) and constantly urged me to find my own voice. Most important was his refrain - "Get it done!!" John took an engineer with an interest in philosophy and turned him into a social scientist. He introduced me to qualitative research and the joys (and pains) of writing it up. Don fueled my eclecticism by constantly providing different perspectives by which to look at issues. At the same time he helped me harness my eclecticism and do a grounded piece of research. Eleanor, as the chair of my thesis, managed a process that could otherwise have become extraordinarily complex. Both during the thesis and as my program advisor she provided the multidisciplinary perspective and direction which enabled me to make important intellectual choices.

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Finally, I dedicate this thesis to my mother and father, who started it all.
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CHAPTER 1

INTRODUCTION

While business venturing - the process of creating innovative new business opportunities in the form of new products, processes, services, or administrative practices - has long been considered the "engine of economic development,"\textsuperscript{1} it has acquired special prominence in recent years. This is because it is widely considered by scholars and practicing managers to be imperative for sustainable success in the "dynamic context"\textsuperscript{2} of the modern business environment. According to these observers, this critical need for generating new business ventures is driven by dynamic interactions of competitive, market-pull, and technology-push forces. These forces are visible in many ways. Competition has become cut-throat on a truly global basis; the decline of U.S. hegemony and the rise of the Japanese and East Asian NICs, not merely in traditional cost-sensitive industries but in modern technological innovation driven industries has ushered in a new competitive era.\textsuperscript{3} There is a fragmentation of demand in product markets; mass markets for standard products are being displaced by a more variegated and differentiated demand for customized and specialty products.\textsuperscript{4} Product and process life cycles are becoming shorter; a 1981 survey of 700 U.S. companies indicated that new products (those less than five years old) would account for one-third of all profits in the 1980s, an increase from
one-fifth in the 1970s. The technology frontier is a shifting and increasingly complex target; for instance, the linking of bio-technology, micro-electronics, and instant imaging technology have led to the formation of an instant medical diagnostics industry that is rapidly replacing previous diagnostic techniques in the health care industry. It is readily apparent that to secure sustainable competitive advantage under these dynamic environmental conditions, a central organizational challenge is to devise newer and more effective processes and institutions for the creation of new business ventures.

The importance of creating innovative new business opportunities in these "dynamic" contexts provides the broad motivation for this thesis: to investigate different models of organization for the creation of new business ventures. Since the creation of new ventures involves a myriad of activities, it is important to demarcate the field of activity I refer to as the "business venturing" process. In keeping with Schumpeter's classic formulation, the creation of a new venture may been seen as the process of putting together novel combinations of resources. A new venture is like a jig-saw puzzle that needs to be assembled. Business venturing, then, refers to the process by which the pieces are put together. One could look at this process from several perspectives or levels of analysis. If the pieces of the puzzle be viewed as different resources, this process can be analyzed as a resource mobilization problem; if the combination of the pieces be seen as involving interactions among different organizations, the process may be examined at the interorganizational level of analysis; and one could equally well look at the process from the perspective of the individual as is the case in the entrepreneurship literature. In this
thesis I am going to adopt an social interactionist perspective which treats the patterns of interaction among the individuals involved in the business venturing process as the relevant units of analysis. I am interested in studying different models for the "organization" - each defined by a contextually specific pattern of interaction - of this combinatorial process starting from the stage of the initial idea for the venture up to the stage when the new venture matures. The term "organization" serves as shorthand for a series of questions concerning the pattern of interaction including: Who is involved in the process? How do these actors interact with each other? What motivates them to participate in the process? What are the mechanisms by which the combination of different elements takes place? I will not be concerned with the management of the new venture itself. Therefore, I will have little to say about what makes a new venture successful, and such questions as the "right" composition of a new venture's management team, the "right" organizational design for a new venture, and so on.

As the interest in innovation and different organizational models of business venturing has intensified, it is also evident that the two traditional models - the independent entrepreneurial system and the large-corporate industrial R&D system - are no longer the only options. Business venturing in regional contexts like Route 128 and corporate contexts like 3M offer successful, celebrated, and widely imitated alternative organizational models. A distinctive feature of these emerging models, in both regional and corporate contexts, that has been highlighted by several observers is their "network" like character. The term "network" signifies the fluid and dynamic webs of social and economic
linkages that serve as channels for resource and information flows in these contexts. Indeed, this pattern of linkages has been seen to be the most important factor responsible for boosting innovation in these situations. This has inspired a number of initiatives in both regional and corporate contexts to create formal organizations that serve as foci around which business venturing networks may be institutionalized.\textsuperscript{10}

However, in spite of the widespread recognition and enormous interest in these emerging organizational models, there is little systematic research that provides a sound empirical or theoretical foundation appropriate for understanding these developments. This thesis is devoted to that end.

In this introductory chapter, I will develop in greater detail the scope of this thesis. The point of departure is Schumpeter's classic and enduring framework that provides the theoretical underpinnings of the two traditional organizational models for business venturing - the independent entrepreneurial system and the large corporate industrial R&D system. These ideal types provide the reference points against which contemporary models may be compared. I will then highlight the main features of the emerging organizational models that depart from and force a reexamination and renewal of these traditional archetypes. Recent studies that have looked at these emerging models are then reviewed and critiqued. This sets the stage for a discussion of the research questions, scope, and methodological approach of this thesis. I conclude this chapter by outlining the organization of the remainder of this thesis.
Traditional Archetypes of Business Venturing: Schumpeter's Legacy

Model I: The Independent Entrepreneur in a Market System

Traditionally, following Schumpeter's classic portrayal, there have been two dominant models of business venturing. The first, predominant at the time he wrote The Theory of Economic Development, (1911), he called "competitive capitalism":

Innovation in competitive capitalism is typically embodied in the foundation of new firms... The new combinations do not, and generally cannot, evolve out of the old firms, but place themselves side by side with them and attack them.

The vital and indispensable element of competitive capitalism is the individual entrepreneur who conceives and implements the formation of an innovative new business venture. Schumpeter's entrepreneur was not an inventor, for in his view:

It is not the knowledge that matters but the successful solution of the task sui generis of putting an untried method into practice—there may be, and often is, no scientific novelty involved at all, and even if it be involved, this does not make any difference to the nature of the process.

Schumpeter's entrepreneur, then, is more of a heroic than an economic figure, since business venturing in competitive capitalism is seen to face enormous social restraints and immense difficulties: first, the objective knowledge lies outside the known and is shrouded with uncertainty; second, there is the subjective reluctance of individuals to strike out into the unknown; and finally, there is the antagonism of non-innovators to the pioneer - in the form of legal and political obstacles, social mores, customs, and the like. Therefore, the entrepreneurial function, in Schumpeter's view is:

A feat not of intellect, but of will. It is a special case of the
social phenomenon of leadership. Its difficulty consisting in the resistances and uncertainties incident to doing what has not been done before, it is accessible for, and appeals to, only a distinct type which is rare.

Beyond the heroic aptitudes of the entrepreneur, the second element that Schumpeter viewed as being essential to the mechanism of competitive capitalism is credit-creation, since:

Innovation, being discontinuous and involving considerable change and being, in competitive capitalism typically embodied in new firms requires large expenditures previous to the emergence of any revenue, credit becomes an essential element of the process.

But, a third element is necessary in order to induce the performance of the entrepreneurial function and provide the mechanism for the creation of credit. This, in Schumpeter's view, is the ability to earn temporary super-normal profits or "entrepreneurial gains" from the innovation. This gain motivates the entrepreneur to take on the challenges posed by innovation; forces the creation of credit, and also acts to overcome the resistance of the other businessmen to change, inducing them to follow the innovating entrepreneur like a herd, generalizing the change throughout the economy, and leading to the cycles of "creative destruction" through which, Schumpeter believed, the capitalist system progresses.

The central features, then, of Schumpeter's "competitive capitalism" model of the business venturing process may be summarized as follows:

The putting to new uses of existing resources is what "progress" fundamentally consists of. It is the nature of the entrepreneur's function to act as the propelling force of the process; entrepreneur's profit, credit, and the cycle being the essential parts of the mechanism.

Thus, the social organization on which Schumpeter's model of
competitive capitalism rests is the entrepreneur, who, like a rogue elephant, breaks out of the social restraints inherent in the market system, bringing forth the waves of creative destruction by which the capitalist system progresses.

**Model II: The Large Corporate Industrial R&D System**

All the elements are different in Schumpeter's second model of business venturing - "trustified capitalism" - predominant in his later work *Capitalism, Socialism, and Democracy*, first published in 1942:

Innovation is, in this case, not any more embodied typically in new firms, but goes on, within big industrial units, now existing, largely independently of individual persons.

Center-stage in trustified capitalism is occupied not by the individual entrepreneur, but by the large-scale industrial enterprise and its industrial R&D apparatus. The indomitable will of the entrepreneur is no longer crucial since the social restraints to innovation are much lower: "It meets with much less friction, as failure in any particular case loses its dangers." Innovation, thus, tends to be carried out as a matter of course on the advice of specialists whose activities are coordinated routinely through bureaucratic decision making procedures.

The problem of credit creation is also easily solved in the large corporation. Innovation can be financed more readily within the large firm; circumventing the information asymmetry and risks inherent in external credit markets. As Schumpeter asserted:

Conscious policy towards demand and taking a long-term view towards investment becomes possible. Although credit-creation still plays an important role, both the power to accumulate reserves and the direct access to the money market tend to reduce the importance of this element.
Finally, by wielding monopoly power, large firms can also protect the innovation from rapid imitation, successfully extract entrepreneurial rents from the innovative new business, and maintain the incentives for continued innovation.

These advantages of the large corporation in the purposeful pursuit of innovation led Schumpeter to predict that the giant enterprise and its industrial R&D laboratories would oust the individual entrepreneurial model by making the process of business venturing routine and automatic, thereby rendering the entrepreneurial function obsolete.

History’s assessment of Schumpeter’s predictions have been somewhat mixed. While Schumpeter’s forecast that large firms and their industrial R&D labs would play an increasingly larger role in the business venturing process and, therefore, in capitalist development has been unerringly borne out, the individual entrepreneurial system has persisted and by no means disappeared. Indeed, some scholars still maintain that the individual entrepreneurial system remains the most important source of innovative new businesses. The exactitude of Schumpeter’s predictions notwithstanding, his models continue to be the twin pillars on which much of the contemporary discourse on the process of innovation and the generation of new business ventures rests. In fact, the heightened importance attached to innovation in recent years, has seen an enormous resurgence of interest in Schumpeter’s theoretical framework. So much so, that in the context of business venturing, these two models may be considered to occupy the same place that the market vs. hierarchy
dichotomy occupies in the analysis of the efficient allocation of existing resources.\textsuperscript{14}

**New Approaches to Business Venturing: Challenging Schumpeter's Models**

Just as the interest in Schumpeter's work has intensified, a whole new set of organizational models for generating new business ventures have come to the forefront that call into question the adequacy of the categories in Schumpeter's theoretical framework and the dichotomy between the individual entrepreneurial system and the large corporate industrial R&D system.

One of the most prominent manifestations of these new patterns is the emergence of dynamic industrial regions like Route 128 and Silicon Valley. On the surface, there is a similarity in the pattern of business venturing in these regions and Schumpeter's model of competitive capitalism - in both these models innovation is primarily embodied in the creation of new firms. But while innovation in Schumpeter's model relied upon the heroic efforts of the individual entrepreneur, in these regional contexts it is the result of the cooperative action of \textit{networks} of people in which the entrepreneur plays a central but limited role.\textsuperscript{15} In these regional contexts business venturing seems to depend upon exactly the dense structure of social interactions, rich communication flows, and give-and-take behavior that Schumpeter's market model would strive to eliminate. Moreover, as opposed to the sharp antagonism and enormous social resistance that Schumpeter's entrepreneur faced in his model, the participants in the venturing process in Route 128 are feted, and
supported in many ways by the regional community.

A parallel development may be observed in the context of the large corporation. A whole spectrum of novel corporate venturing activities that are very different from traditional industrial R&D have been documented, with the process of innovation in U.S. firms like 3M and Japanese firms like Honda and NEC being among the most celebrated examples. In these cases, venturing increasingly seems to be becoming a more decentralized corporate-wide activity, often involving cooperation among teams of people from different parts of the company (not necessarily R&D) and spanning different hierarchical levels. Financing of new ideas often takes the form of a competitive internal market rather than direct hierarchical allocation. Central authority plays a much diminished role in coordination, which relies more upon dense networks of horizontal communication and a broad framework of conventions within which decisions are often made participatively. These features of the corporation bear a stronger resemblance to (and, in fact have in many cases been explicitly modeled after) the regional forms described above, than to Schumpeter's large bureaucratic corporation.

Moreover, these are no longer isolated examples: recent surveys have listed more than a hundred different regional initiatives world-wide to mimic what has come to be known as the "Silicon Valley Model"; and despite a wave of ups and downs, about 30% of the Fortune 100 firms have some form of internal corporate venturing (ICV) activity.17

These emerging organizational patterns seriously call into question the
adequacy of Schumpeter's models for modern business venturing and lead
to the major research questions of this thesis:

1) What are the distinctive features of these new network models of
business venturing in corporate and regional contexts and how do
they differ from the traditional models?

2) Can these features be explained within the Schumpeterian
theoretical tradition?

3) If not, what alternative explanations can be offered?

The Recent Literature: A Critique and an Alternative

There is a small, but growing literature that has begun to look at these
emerging developments. Following Mohr (1980), these studies may be
broadly classified into two categories depending on whether they adopt
the variance approach or the process approach. The predominant
research strategy of the former category has been the comparative cross-
sectional method. In this vein, there have been several studies that have
tried to document observable empirical regularities across samples of
internal corporate venturing efforts or venturing in regional centers. Or
else, these studies have searched for empirical regularities across
different business ventures that were generated within a particular
context. Thus, the kinds of questions these variance-based studies have
tried to answer are - What is the critical mass of the different resource
inputs (capital, technology, labor) that impels the creation of new
ventures: what is the set of formal institutions (venture capital
institutions, state development agencies, technology-based universities,
etc) that is required; how long should the return-on-investment time
frame for a new venture be; what should be the composition of a new

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venture's management team; what are the structural features (autonomy, formalization, etc.) of a new venture; what are the psychological profiles of venture founders, etc. Like all cross-sectional approaches, these studies generate lists of common elements across these cases that are then classified as being functional or dysfunctional. These lists serve a useful tool for post-hoc macroscopic comparisons, but the general statistical relations they uncover often provide little in the way of explanatory power. Thus, in their attempts to mimic successful models of business venturing, different regional authorities and corporations have many times adopted virtually all the features identified in such lists, with little success. The fundamental limitation of these variance-based studies is that little attempt is made to show how the various critical elements identified by the comparative analysis interrelate and interact to generate the observed outcomes. This problem is all the more serious because such lists are often built upon no sound theoretical base, but just on observed empirical regularities.18

The limitations of the variance approach are precisely what process approaches try to overcome.19 As Mohr (1980) defines it, a process approach focuses on "how people get things done; on a recurrent flow of events, the outcome of which depends on the combination and recombination of particular conditions."20 Process approaches also recognize that a critical feature of these external and internal venturing processes are the historical, social, and cultural features of their context, or what Granovetter calls the "ongoing structures of social relations", and attend more seriously to his suggestion that "a sophisticated account of economic action must consider its embeddedness in such structures."21
Joining with the process research tradition, I would argue that while comparative analysis can document empirical regularities at the observable level, the true task of theory is to infer the generative mechanisms, or underlying models, that produce the surface behavior in each case. An intensive clinical approach which bears upon particular cases, and generalizes only from an intimate understanding of these cases can serve us better than a systematic approach that seeks immediately to establish rigorous laws and thus gives the appearance of being more scientific. That is to develop a theory of the individual case is a meaningful scientific activity. For this purpose qualitative field-based studies may be more suitable than large sample surveys and multivariate analysis. This is in no sense a suggestion that we return to the purely descriptive case study. Data and theory, observation and explanation, must confront each other in each case. Explaining organizations, then, is not just establishing empirical regularities across a set of organizations; it is discovering those deeper organizing rules in each case, and only then comparing across organizations.

There are very few studies of the emerging business venturing patterns in corporate or market contexts that follow such an intensive case-based interpretive methodological tradition. Notable exceptions in the corporate context are studies conducted by researchers like Burgelman of the internal corporate venturing (ICV) process in a large diversified firm; Dougherty of the new product development process in American firms; and Nonaka and his collaborators of the new product development process in Japanese firms. In the market context, the most insightful studies
include Rogers and Larsen's study of business venturing in Silicon Valley and several cases studies of the dynamic industrial regions of Italy and Germany conducted by Sabel and Piore and their collaborators.\textsuperscript{24}

While this stream of research provides the foundation on which this thesis is built, and to which it will contribute by adding another set of cases, the thesis has two distinctive aspects which define where its major contributions will lie.

First, by explicitly comparing network models of business venturing in a regional and a corporate context, I confront head-on the parallels between these models that have been widely aluded to in the existing literature but have not been fully developed empirically or theoretically.

Second, I attempt to bridge the micro-macro gap in organizational analysis by drawing on a variety of recent approaches that have begun to reconstruct macro-sociological phenomena based upon a micro-sociological foundation.\textsuperscript{25} The intellectual traditions on which this program rests includes symbolic interactionism, social phenomenology, and social network analysis.\textsuperscript{26} This program, foremost, involves a rejection of the "methodological collectivism" underlying macro-sociological approaches such as structural-functionalism that suggest that the forces that constrain and determine behavior involve abstractions of social position such as system, structure, role, norms, values, etc.\textsuperscript{27} This means rejecting the view that social collectivities have structural properties that apply to the whole and are not derivable from individualistic principles, and insisting that society is built out of the active construction of
knowing, intentional actors. But the program also rejects the "methodological individualism" underlying approaches such as behaviorism and rational-choice that suggest that large scale phenomena can be accounted for by the situations, intentions, dispositions, and beliefs of individuals. Instead, the program advocates "methodological situationalism" or adopting approaches that do not turn to macro-structural properties of social collectivities or to individuals, but to interaction in specific social situations as the relevant methodological units of analysis. As Knorr-Cetina elaborates, it requires us to see the outcome of social action as tied to particular contexts and to other participants in the situation. Hence, while it may be correct that individuals are intentional actors, social action arises from the interlocking of intentionalities rather than their singular existence. Moreover, human conduct is interlocked not merely by interpersonal ties but by individuals taking account of the other. Thus, individuals are part of an interactive process in which the perspective of others partly constitutes the self. The conception of social behavior as externally and internally contingent upon the actions of others thus entails the notion interacts rather than acts as the crucial observables of human conduct. Macro-phenomena, then, may be logically derived from these micro-units by looking for the patterns of interrelations between them. As Collins contends, "it is within micro-situations that we find both the glue and transforming energies of macro-structures." The underlying spirit of this program that serves to guide the methodological and theoretical approach of this thesis has been aptly captured by Knorr-Cetina:

It is through micro-social approaches that we learn the most about the macro-order, for it is these approaches that through their unashamed empiricism afford us a glimpse of the reality about which we speak. Certainly, we will not get a grasp of whatever is the
whole of the matter by a microscopic recording of interaction. However, it may be enough if we can - for the first time - hear the macro order tick.

The Methods and Scope of this Study

The method I have adopted to accomplish these objectives are intensive, first-hand field studies of two specific social units through which one can describe and analyze the pattern of social and economic relations and flow of activities related to business venturing in a market and a corporate context respectively. While the specific methodology employed in each of these settings, and the reasons for choosing them, are discussed at greater length later in this thesis, a few introductory remarks are in order.

In the regional (market) context, the social unit I have chosen for analysis is the 128 Venture Group - a "networking" forum which draws its name from the Route 128 area, in which it is embedded. The Route 128 area, a region defined by a 50 mile radius centered around Boston, is widely recognized as being quintessential of the phenomenon that has come to be called a regional high technology innovation complex. The 128 Venture Group is a forum which is at once an integral part and microcosm of the business venturing process in the context of Route 128. It is also an innovative formal "network-creating" organization that attempts to institutionalize the networking process. The 128 Venture Group is in some ways akin to a modern "bazaar," an institution that has much the same significance in the business venturing process in Route 128 that the periodic market-places had in the development of many
modern market economies, and continue to occupy in many pre-industrial economies like that of Morocco.\textsuperscript{35}

In the corporate context, I have chosen for analysis the internal corporate venturing program of Eastman Kodak Company. Kodak is a Fortune 50 industrial corporation that has in recent years made a concerted attempt to diversify its business mix in order to lessen its reliance on silver-halide based photographic products and cope with the emergence of a more "dynamic" environmental context. To accomplish this, in addition to a major corporate restructuring that has involved the decentralization of Kodak's traditional centralized functional structure into numerous largely autonomous business units, Kodak has initiated a formal internal venturing program charged with the generation of new business opportunities based on internal ideas not directly related to the originator's mainline responsibility. These business opportunities are therefore separate from the opportunities that arise as a result of the formally planned R&D projects at the corporate and business levels. This case is interesting because it represents a pattern of internal venturing that has several similarities with the 128 Venture Group so that it can be meaningfully compared with it, but is embedded in a corporate context and hence needs to be understood independently.

A comparative study based on two single cases has its limits. It is not possible to generalize from its findings to other cases. While the comparative case oriented approach is limited in this way (generalizability) it has many special features that are of enormous value. As enumerated by Ragin (1987), first, case oriented research is holistic-
cases are treated as whole entities and not as collections of parts (or as collections of scores on variables). Thus, the relation between the parts of a whole are understood within the context of the whole, not within the context of general patterns of covariation between the variables characterizing the members of a population of comparable units. Second, causation is understood conjuncturally. Outcomes are analyzed in terms of interactions of situations, and it is usually assumed that any of several combinations of conditions might produce a certain outcome. The primary contribution of such a study to the understanding of contemporary business venturing must inevitably lie in a relatively microscopic and contextual analysis of a wide range of social and economic forces as they appear in concrete form in the two chosen settings. Therefore, the choice of cases, both independently and from a comparative standpoint, can only be justified on theoretical or substantive grounds. In this thesis, the logic underlying the choice of cases is first, their substantive appeal in terms of being interesting organizational innovations that represent a next stage in the evolution of the network-like forms of organization in regional and corporate contexts, and second, the enormous theoretical mileage, from a comparative standpoint, that may be derived by understanding how the process of business venturing differs between market and corporate organization, the two institutions that are more generally regarded as the primary anchors of industrial organization.

Organization of the Thesis

The thesis is organized as follows: Chapters 2 and 3 are the detailed case studies of the Route 128 Venture Group and the New Opportunity
Development (NOD) organization at Kodak respectively. Both these chapters are internally complete and relatively independent essays. In each case, I first describe the setting of the study and the details of the methods employed. I then present a comprehensive descriptive account of the field findings and my own interpretation and analysis of these observations. I also attempt to relate as far as possible my findings to the larger empirical and theoretical literature on the phenomenon. Some of the key questions that I address are: How are these networks organized? What are their formal theories of action? How do these theories of action play out in practice: Who participates in the networks? Why? How do they interact with each other? And, how do these different features affect the creation of new business ventures? The basic premise underlying this research methodology is that by understanding how, one also learns what can be done. This is a case where practice must be the guide of theory, and theory once developed must serve as a guide to practice.36

In Chapter 4, I compare these two cases with the objective of highlighting the similarities and differences in these two models for generating new business opportunities. I show the limits of Schumpeter's framework and propose alternate theoretical explanations that are primarily derived from interactionist sociology. I also outline certain areas of theoretical enquiry that require further work if we are to truly understand the emerging trends in business venturing.
ENDNOTES TO CHAPTER 1

1. This phrase indicates the fundamental role accorded to innovation in the development and growth of capitalist society by Schumpeter (1911). He developed this position in opposition to the dominant theory at the time that considered capital accumulation as the fundamental motor of capitalism.

2. This is a term coined by Klein (1977) to capture many of the dynamics described below.

3. The data on this competitive shift are vividly presented in Scott (1986).


6. See Horwitch (forthcoming) for a discussion of the changing complexity in technology.

7. This is in no way intended to suggest that generating new business opportunities is the only organizational challenge. The importance of other factors such as competitive manufacturing technologies, global strategies, etc. are discussed at some length by various scholars in a collection of essays edited by Teece (1987).

8. See Kanai (1988) for an excellent review of the various perspectives that may be employed in this regard.

9. See, for instance, Horwitch (forthcoming); Piore (1988); Powell (1987); Sabel (1987); Storper (1987). In fact, these observers have gone so far as to suggest that these developments are at the leading edge of a general trend in modern industrial organization towards hybrid forms of organization that resemble neither market nor hierarchy, but "networks".

10. Feld (1981) introduced the idea that networks are organized around different foci such as religion, ethnicity, professional societies, etc. While a formal "network-creating" organization is not among the foci he explicitly mentions, the existence of such organizations is by no means new. As Sarason and Lorentz (1979) describe, we have always had them in the form of such associations as the Rotary Club.

11. The continuing predominance in modern business venturing of these two contrasting modalities of organization has been highlighted by Horwitch and Prahalad (1976).


13. The so-called "neo-Schumpeterian" charge has been led on the side of the economists by Nelson and Winter (1982), in strategic management by Rumelt (1987) and in organization theory by Barney (1987). For two

14. As noted above, while a strong parallel may be discerned between Schumpeter's two models and the markets and hierarchies paradigm, the substantive phenomena with which they are concerned are very different. While ultimately it will be desirable to join these two research streams together in order to arrive at a more complete understanding of different economic institutions, for the present I will agree with Williamson, who wrote: "A division of effort between the process of innovation on the one hand and the management of proven resources on the other may well be efficient;" (quoted in Burgelman and Sayles, 1986:123).

15. Indeed, as the case of the 128 Venture Group will show more clearly the entrepreneurial function is often merely that of the provider of technology who gets "the ball rolling." The rest of the venture is really seen as being the product of a team of people that often includes the entrepreneur, a core management team, a venture capitalist also involved in the management of the venture, and some key providers of professional expertise.

16. While my focus here is on "internal venturing", a much greater variety of corporate approaches to generating new business opportunities have been documented. These range all the way from separate internal venturing divisions, to joint venture strategies, to external venturing strategies. For an excellent review of these different approaches, see Roberts and Berry (1985) and Burgelman (1986).

   For the purposes of this study, internal venturing is defined as a formal separate process within the corporation (other than corporate R&D) that is concerned with the process of generating new business opportunities. Some of the important studies on internal venturing are Block (1983), Burgelman (1983), Fast (1977, 1979), Hisrich and Peters (1986), Kanter (1985, 1987), Roberts (1979, 1980), Roberts and Frohman (1972), von Hippel (1973), and Sykes (1986).

17. See Miller and Cote (1985) for a description of the burgeoning of Silicon Valley clones, and Burgelman and Sayles (1986) for the evidence on the ICV phenomenon.

18. The reason why such theoretical underpinnings are missing is because these situations often cannot be explained within the traditional theoretical categories and call for a different set of categories of discourse and analysis that are still at a stage of infancy. What we need before we resort to such variance approaches is a more vigorous attempt to construct useful theory which can best be done by process-approaches.

19. There is a growing interest in the process perspective in organizational and institutional analysis. Some of the classic statements are Polanyi's (1957) description of the economy as a "socially instituted process," Silverman's (1970) view of "organizational action"; and Bower's (1970) process perspective on corporate strategy.
20. I am thankful to J.P. MacDuffie for letting me use this definition of a process perspective based on his reading of Mohr (1980).


25. See Knorr-Cetina and Cicourel (1981) for an important collection of papers devoted to this program that I draw upon extensively in this thesis.

26. Symbolic Interactionism has its roots in the works of Mead (1934) and is brilliantly articulated by Blumer (1969). Social phenomenology has its origins in the work of Schutz (1970) and Husserl and is developed in a highly accessible fashion in Berger and Luckman (1967) and Strauss (1978). The social network perspective builds upon the work of Simmel (see Wolff, 1950) and has developed along both macro and micro lines. In this study I am more concerned with the latter developments particularly the work of Becker (1982) and Granovetter (1982, 1985).

27. The classic statement on structural-functionalism is Merton (1949).

28. This critique of structural functionalism is the crux of a scathing and compelling argument by Elster (1983).

29. The behaviorist program is best identified with Homans (1964). For the rational choice and related game-theoretic position see Elster (1983).

30. A similar approach was adopted by Kling and Gerson (1978a; 1978b) in their study of the social organization of "computing worlds."


34. The regional context is treated as being equivalent to a market context in this thesis. This clearly violates the neoclassical economist's theoretical conception of the market system: individuals acting alone, competing against each other with the objective of maximizing profit, and connected only through the price mechanism. But as economists such as Polanyi (1957), Kornai (1971), and Lamberton (1984) have themselves noted, the neoclassical ideal is hardly a satisfactory representation of the empirical economy. Substantively, the market system is a contextually specific form of organization; one that has elaborate methods of communication and joint decision making, so that to build exclusively on the price mechanism is not a thrifty but a miserly treatment of the
market model. One can easily see how the regional context may be regarded as a substantive market in this sense: coordination here does not rest upon formal organization or the visible hand of authority but on an elaborate communication structure that enables exchange in the region.

35. For the role of the periodic bazaar in the development of modern market economies, see Braudel (1982). For a brilliant study of an existing Moroccan bazaar that has remarkable parallels with the 128 Venture Group see Geertz (1979).

36. This relationship between theory and practice has been proposed by Eccles and Crane (1988).
CHAPTER 2

THE "BAZAAR" AT ROUTE 128: A CASE STUDY OF THE 128 VENTURE GROUP

One ought to think of Silicon Valley not as just a geographical place, nor simply the main center of the microelectronics industry, nor even as several thousand high-tech firms, but as a network [emphasis in original]. (Rogers and Larsen, 1984)

INTRODUCTION

By the end of World War II, technological innovation and the business venturing process had come to be indisputably dominated by the large corporation and its industrial R&D laboratories. Considerable empirical research supports this proposition. For instance, Dorfman (1987) found that 17 of the 23 most important early developments in semiconductor electronics and computing were indeed "scientific breakthroughs" spawned by large research intensive corporations. This era of "big science" type R&D (Noble, 1977; Graham, 1985) appeared to confirm Schumpeter's (1928) earlier prediction that "trustified capitalism" would supplant "competitive capitalism" as the dominant model of business venturing and "automate the process of innovation."

The bureaucratization of the business venturing process, however, also created institutional rigidities and sizeable disincentives for innovation. With production and marketing usually divorced or "segmentalized" from R&D (Kanter, 1983), large corporations were often unable to swiftly commercialize the technical innovations conceived in their labs. Starting in the mid-50s, this induced several key personnel of industrial R&D labs
to leave the corporations in pursuit of the more sizeable rewards that could be obtained through entrepreneurial ventures. What began as a trickle of new entrepreneurial start-ups soon burgeoned into a flood that wrested the innovative edge from the large firms. As evidence, Dorfman (1987) documents that 11 of the 18 major innovations in semiconductor electronics and computing between 1970 and 1980 could be attributed to small start-up companies reversing the trend witnessed earlier.

From Schumpeter's standpoint, this pattern of business venturing may be viewed as a reversal to his model of "competitive capitalism." However, this would be a misleading interpretation, as these small high technology start-ups were not due to the unrelated efforts of heroic individual Schumpeterian entrepreneurs. Instead, much of this growth in new high-tech business enterprise resulted from a very different organizational model of business venturing called "regional innovation complexes," exemplified by Silicon Valley and Route 128 (Miller and Cote, 1985; Storper, 1987; Florida and Kenney, 1987b). The distinctive feature of these "social structures of innovation" is that they are dense, richly joined "networks" of technology intensive enterprises, venture capital, skilled labor, top-notch universities, and support services (Florida and Kenney, 1987a,b). The significance of these "networks" to the social organization and functioning of regional innovation complexes is universally emphasized in the growing literature on this important contemporary phenomenon. These "networks" are seen as the conduits for the critical resource and information flows that result in positive economic externalities or "agglomeration economies" (Dorfman, 1982, 1983; OTA, 1984) which facilitates innovation and the formation of new business
ventures.

Given the widely acknowledged importance of such networks in regional innovation complexes, it is surprising how little attention from a descriptive or process perspective has been given to understanding just how they are organized and how they work. For the most part, these networks are assumed to result automatically from the geographic concentration of the key functional ingredients of a regional innovation complex - a major research and technological university, a well-developed industrial infrastructure, and liberal venture capital. Very rarely, though, does this recipe of geographic concentration of resources spontaneously generate the rich network flows that are argued to be at the heart of this mode of organization. Consequently, some scholars have voiced a pressing concern to study more carefully how the networks in Silicon Valley and Route 128 historically evolved and the role played by different institutions in maintaining and enhancing the dynamic vitality of these networks (Aldrich et. al. 1986, 1987; Birley, 1987).

This chapter offers a contribution in this direction. It reports on a field study of the 128 Venture Group - a "networking" organization located in the Route 128 regional innovation complex. The 128 Venture Group is a somewhat unique organization in that its explicit and openly professed objective is to facilitate the creation of new business ventures by helping its participants avoid some of the failures that may occur in the larger informal network of the Route 128 complex. It is, in a sense, a formal "marketplace" or "bazaar" that serves as a focal point of exchange in the flow of complementary resources and information that
are the life-lines of the business venturing process in the Route 128 complex. It is, therefore, a particularly interesting case to study because not only is it an innovative model of a formal "network-creating organization," variants of which are now to be found in many innovation complexes (Kahn, 1985, Kanai, 1987), but it is also a brilliant window into the broader networking process in the Route 128 region.

The exposition of the chapter is organized as follows. In Section I, the historical evolution of the Route 128 regional innovation complex is traced with a view to provide a contextual back-drop and a historical understanding of the features of the broader social network within which the 128 Venture Group is embedded. In Section II, the origins, publicly espoused role, and formal organization of the 128 Venture Group are described. In Section III, I elaborate upon the native view of the business venturing process and its relationship to the division of labor and roles among the various participants in the process. In Section IV, I describe the interests and motives of the participants who attend the meetings of the 128 Venture Group and their view of the role played by the 128 Venture Group in realizing these interests. In Section V, I describe the typical patterns of interaction that may be observed in the meetings of the 128 Venture Group. Finally, in Section VI, I assess the performance of the 128 Venture Group from the standpoint of facilitating the formation of new business ventures, its broader role in the context of the overall Route 128 innovation complex, and the extent to which it has been institutionalized.

1. THE EVOLUTION OF THE ROUTE 128 ENTREPRENEURIAL NETWORK
The Route 128 regional innovation complex, also proclaimed by billboards along Route 128 as "America's Technology Region" - draws its name from its geographical location. Most of the firms in the region are located in two layers around Route 128 - "America's Technology Highway" - a semi-circular highway at a radius of about 10 miles around Boston. The outer layer of this regional innovation complex extends to Route 495, a semi-circular highway another 10-15 miles further away from Boston, along which are some of the major firms like DEC, Wang, and Data General that rose to prominence after the mid-70s. The inner layer extending towards Cambridge and Boston, includes in addition to the new start-ups some of the older high-technology enterprises of the region such as Mitre, and Raytheon. In addition to this annular concentration, firms are located along Route 90, Route 2 and Route 93, three radial highways that link Boston and Cambridge, where the universities MIT, Harvard, and Northeastern are located, to the outer circular highways. The third major component of the Route 128 complex, besides the high-tech firms and the universities, are the leading venture capital organizations of the area such as American Research and Development Corporation, TA Associates, Boston Capital Corporation, etc., and they are mostly located in Boston and Cambridge.

The origins of the rich social network that lies at the heart of the vibrant dynamism of this high-tech regional innovation complex may be traced to the manner in which this symbiotic triad of university research, high-tech enterprise, and venture capital, historically evolved.
The history of the high-technology innovation complex around Boston predates World War II. Rogers and Larsen (1984: 236) describe this early period as follows:

Several spin-offs from MIT research laboratories occurred prior to World War II: Ionics, High Voltage, and EG&G for example. Carl Taylor Compton was president of MIT in this era and he encouraged his engineering faculty and staff to become involved in area private firms. In his view the high-technology start-ups represented an important kind of technology transfer in which innovations coming out of MIT research labs would be commercialized by for-profit companies. The net result was that MIT faculty were not just allowed to engage in consulting with these local firms, they were encouraged to do so. The MIT policy of close industry-university relationships was unique for the 1930s, almost heretical in its day. But to the great advantage of the local economy in the Boston area, it worked. [...] Without MIT, there would be no Route 128 complex.

Compton’s vision and initiative established an enduring pattern in the supply of innovative technological ideas for new business ventures. The institutionalization of this pattern in the post-war period and its influence on the further evolution of the Route 128 innovation complex is also wonderfully described by Rogers and Larsen (1984: 237):

The first little acorns that were to grow into the Route 128 oak forest were planted by President Compton, but the high-technology complex did not really sprout until massive federal funding for wartime research began in the early 1940s. That is when the basic formula for Route 128 fell into place: Federal government monies went to MIT research laboratories, which spun-off engineer entrepreneurs who took a "hot idea" for a technological innovation from the banks of the Charles River out to Boston’s western suburbs on Route 128 in the form of a new company.

The most prominent example of this formula at work was the formation of Digital Equipment Corporation (DEC). Kenneth Olsen, an engineer in the MIT Lincoln Laboratory, who developed the TX-O computer under a
military contract, left MIT in 1956 to found DEC and pursue the commercial development and application of his research at MIT. This enterprise ultimately led to the production of the PDP-1, the first commercial mini-computer, an innovation that spawned a whole new industry.

Route 128 shifted into a high-growth phase from 1955 to 1971, a period when the number of firms jumped from 39 to 1200, a result of defense and aerospace contracts (Rogers and Larsen, 1984: 237). Many of these new firms were spin-offs from MIT. In a survey conducted in 1968, Roberts (1968) found that the origin of over 200 firms in the region could be traced to MIT. Other new firms were spin-offs from earlier start-ups such as DEC whose family tree numbers more than 30 firms and includes such prominent names as its competitor Data General (Dorfman, 1983).

Following this boom a serious decline set in, as the Vietnam War ended, the economy went sour and government contracts were cut back. Suddenly, 12,000 engineers and technical people were out of work. As a result, by 1975 Massachusetts was in the trough of a severe depression with unemployment standing at 11%, considerably worse than the nation-wide average at the time of 8.5%. This was due to the joint effect of the continuing post-War decline in its traditional industries - textiles, shoe-making, and machine-tools, and the sudden withdrawal of support from the defense-related high technology industries that had previously served to offset this decline. While the early 70s were, no doubt, a period of considerable economic and social problems, the high technology infrastructure built in the earlier period provided a springboard for the
region to capitalize on the explosive expansion in the commercial market for electronic computers and related industrial equipment and instruments that occurred in the late-1970s.

From 1975 to 1979, the region added 75,000 employees to its high technology work-force, an increase of 32% compared with the national average of 25%. As a result, unemployment in the region dropped to about the lowest in the nation, and the proportion of the labor force employed in the high-tech sector increased to the highest among the nation’s industrial states, a position that has only strengthened through the 1980s. Moreover, as the pioneering research of David Birch (1980) has documented, it is striking to note that the greater part of this growth came from the creation of new enterprises as opposed to the growth of existing firms. Once again, much of this growth in new enterprises was in the form of spin-offs from MIT’s research labs and earlier generations of high-technology firms.

The history of the supply of innovative high-technology business ideas and entrepreneurs who were willing to pursue their development by establishing new ventures describes only one aspect of the evolution of the Route 128 innovation complex. Equally important to the evolution of this regional innovation complex is the parallel history of the supply of venture capital (Timmons and Bygrave, 1986).

The history of venture capital in the Route 128 region is perhaps even older than the history of high technology enterprise. Some scholars have suggested that the origins of organized venture capital in the region may
be traced as far back as the provision of risk capital to finance whaling fleets in the nineteenth century, reflecting a historical openness and more venturesome attitude of local investors towards riskier enterprise. More significantly, as early as 1911, the Boston Chamber of Commerce was providing financial and technical assistance to new enterprises, and in 1940 the New England Industrial Development Corporation was launched to provide similar kinds of assistance to new ventures (Kaplan, 1948: 156-80).

From the standpoint of the present regional high-technology innovation complex the most significant historical development was the formation of American Research and Development Corporation (ARDC), the nation's first institutional venture fund in 1946. MIT's president Compton had a prominent role in the formation of this institution too. Realizing that the new high-technology companies that were being spun-off from MIT and elsewhere required venture capital to start-up he took the lead in founding ARDC, obtaining the money from Boston-based insurance companies. The original Board of Directors of ARDC included four MIT department chairmen in addition to a prominent group of bankers and industrialists. This mix of technical, financial, and industrial expertise was seen as being essential to creating an entity that could effectively finance technology-oriented enterprise. ARDC financed many of the early high-tech firms in the Boston area; its most famous start-up being DEC whose phenomenal success legitimized a whole new model for establishing new technology-oriented business ventures (Rogers and Larsen, 1984: 237).²

Besides ARDC, a number of the early venture capital investments in
new high-tech firms in the Boston area were made by private individuals and families from the Boston area and New York City such as the Rockefellers (Florida and Kenney, 1987c: 19-20). Private investors continue to play a very important role in the current investment patterns in the regions (Wetzel, 1986).

By the early 1960s, several large Boston financial institutions also became involved in venture capital. First National Bank of Boston formed an SBIC affiliate for providing loans to technology-oriented businesses, and around the same time, Federal Street SBIC was established by a consortium of Boston banks with the same aim (Florida and Kenney, 1987c: 19-20).

The further evolution of the venture capital industry followed a pattern similar to that of the new business enterprises. Proliferation by spin-offs from preceding generations was as prevalent in the venture capital industry as it was in high-technology enterprises. Some of the prominent cases of this mode of growth by spin-offs are documented in Florida and Kenney (1987c: 20-21):

ARD similarly [to DEC] became an incubator for venture capital funds. In 1963, Boston Capital Corp. was founded by ARD alumnus, Joseph Powell. By the 1970s, ARD alumni were instrumental in launching a host of top level partnerships including Palmer, Greylock, Charles River Partnership and Morgan Holland. In 1968, Peter Brooke left his position as manager of First National Bank of Boston’s high technology loan program and went on to launch TA Associates which currently manages more than $1.5 billion in capital, making it the largest venture capital fund in the country. As the technology base of the Boston region developed, a host of partnerships were organized by veteran venture capitalists. Both Burr, Egan and Deleage and Clafflan Capital Management were formed by former TA Associates employees, while the Venture Capital Fund of New England was established by the managers of First National Bank of Boston’s Venture Group.
The growth of the venture capital resources in the Boston area slowed down at the same time as the broader recession in the region, partly because of the recession itself and partly because of the increase in the federal capital gains tax from 28 to 49 percent in 1969 which reduced the supply of capital available to the venture capitalists. Indeed, this inhibitive federal policy caused the growth in venture capital to lag behind the spurt in new enterprises that began in 1975 by a few years, taking-off only in 1978 after the federal capital gains tax had again been reduced to 28 percent and some the restrictions on investment by pension-fund managers relaxed. From 1979 onwards the venture capital pool in Boston has experienced an explosive growth in keeping with the national trend.\(^3\) This growth has included increases in the size of existing venture capital funds and has seen the formation of several new funds as well as the movement of branch offices of funds headquartered elsewhere to the Boston area.

The historically rich supply of entrepreneurs ready to pursue new technology-oriented innovative business opportunities and venture capital ready to finance these risky ventures are the essential foundations on which the Route 128 innovation complex evolved. While private initiative has been the primary driving force in the evolution of this complex, the state government has played an important supporting role, particularly in the 1980s (Dukakis and Kanter, 1988).\(^4\) The major initiative in this period was the Governor’s Commission on Mature Industries formed in 1983. This led to the creation of new programs like the Massachusetts Product Development Corporation that joined with existing programs like the Massachusetts Industrial Finance Agency, the Massachusetts
Technology Development Corporation, and the Community Development Finance Corporation, to provide funds for struggling mature industries, new product development, and high risk financing (Saxenian, 1985).

One final observation needs to be made in this brief history of the Route 128 high technology regional innovation complex. This also leads into a discussion of how this pattern of evolution relates to the features of the social network in the region. The growth of the Route 128 high technology complex has almost exclusively been from within. That is, this growth has not relied on major inflows from other regions of new technological ideas, capital, skilled labor, or entrepreneurial talent. This shared regional affiliation, thus, provides an underlying social bond on which the entrepreneurial network of the region is overlaid.

The Entrepreneurial Network at Route 128

It is evident from the above history of the evolution of the Route 128 high technology complex that a number of key organizations played a central role in shaping the formation of the entrepreneurial network in the region. Most important by far is the role played by MIT. In a recent study, Dukakis and Kanter (1988) estimated that of the new enterprises established in the Route 128 area since 1975, as many as 72% can trace their origins to some affiliation with MIT. This common affiliation to MIT creates a basic social network that links many of these enterprises since their founders may have been to school together, share alma mater links, or else are associated via links with university professors who serve as linking pins in this network. On a lesser scale
the sort of fraternal network that is created by links with MIT is also created by the ties across the various generations of spin-offs in both the high-tech firms and the venture capital firms described earlier. These ties form a network that may be considered analogous to the kinship relationships found in a ramifying extended family.

The entrepreneurial network in the Route 128 region is by no means limited to this familial network. It is much broader. Many more firms are involved and the network includes participants that aren't only the founders of the enterprises but are the engineers, salesman, and managers that work in this high-tech regional complex. Many of these network links are forged by the customary social relationships such as friendships and acquaintances and economic relationships such as buyer-supplier type links. Other links result from the enormous occupational mobility to be observed in the region as everybody is caught in the flux of the birth, death, and metamorphosis of innovative technology intensive enterprise.

In addition to ongoing interpersonal relationships, a few formal organizations play a prominent role in the continuous reproduction and dynamic development of the entrepreneurial network in the Route 128 region. These organizations are the functional equivalents of the bars and restaurants described by Rogers and Larsen (1984) in Silicon Valley:

Bars and restaurants in Silicon Valley are more than just places to eat and drink; they are favorite places to talk shop. [...] The bars and restaurants provide a neutral meeting ground for old friends who may have worked together sometime but now are employed by competing firms. They chat over a glass of California Chablis not about their families, sports, or hobbies, but about EPROMs, flip-flops, and gate-arrays - Computerese.

In the Route 128 region, the foci of such interactions are not so much
area bars and restaurants, as a set of formal organizations - professional associations, clubs, societies, and groups - that are all recognized, more or less explicitly, as serving a "networking" function.

Founded in 1938, the oldest of these organizations is the Small Business Association of New England (SBANE) which organizes numerous forums such as workshops, fairs, seminars, and ongoing small group meetings such as Dialog (a self-help network of CEOs of start-up enterprises that is described in greater detail in Kanai, 1988).

Another prominent institution is a political interest group called the Massachusetts High Technology Council (MHTC) which represents CEOs from over 150 companies that account for more than 50% of the state's high-tech employment. Founded in 1977, by Ray Stata, chairman of Analog Devices, and Edson de Castro, president of Data General, with an initial representation of 36 firms, the MHTC lobbies for the interests of the high-tech firms in state politics and has played a pivotal role in the passage of some key state government initiatives such as the tax-liberalization reform popularly known as Proposition 2 1/2.

Other notable organizations that serve as foci of the region's entrepreneurial networks are the MIT Enterprise Forum (for a detailed case study of this forum see Kanai, 1988); the Boston Computer Society (BCS), a professional society with a large membership (BCS also has a special interest group for entrep-eneurs and consultants); The Networking Institute (TNI) a private initiative similar to SBANE that promotes electronic networking; and various networking organizations for special
interest groups such as women entrepreneurs, minorities, etc.  

In most instances, however, the creation of new-business ventures is more an unintended consequence of these formal organizations than their professed purpose. If networking be defined according to Maguire (1983: 23) as the "purposeful" process of linking three or more people together and of establishing connections and chain reactions among them," [emphasis added] then very few of these organizations would qualify as networking organizations whose specific purpose is to facilitate the formation of new enterprises. For instance, for an entrepreneur looking for venture capital or an unhappy engineer in a large corporation looking for an opportunity to work in a start-up, most of these forums offer little more than access to a set of people whom they can informally approach with the hope of finding a "lead." However, this process may be inefficient because of the difficulty of knowing whom to approach, limits on the number of people one can informally approach, and the likelihood that the other members of the organization are so similar to the individual that they have little of complementary value to offer.

The 128 Venture Group, however, is an organization whose explicit purpose is to facilitate the formation of new business enterprises. It does this by offering a forum where participants may openly advertise their needs and skills to over a hundred others who are equally interested in matching complementary needs and skills. As one observer has noted, the 128 Venture Group "appears to resemble a spot market in enterprise, about as close as one could imagine in the real world to a competitive marketplace." (Piore, 1986: 18) This distinctive characteristic is what
makes the 128 Venture Group such an interesting case to study. It is a naturally occurring market-like "network-creating organization" and affords a rich opportunity to develop an empirically grounded model of an innovative and theoretically important organizational form. The details of the research methodology underlying this study are presented in the methodological appendix to this chapter.

II. ORIGINS AND ORGANIZATION OF THE 128 VENTURE GROUP

Origins

The 128 Venture Group is the brain-child of its founder and present chairman, Michael Belanger. In the context of the 128 Venture Group, Belanger is what DiMaggio (1988) calls an institutional entrepreneur. A multi-faceted personality, Belanger has variously been an entrepreneur, consultant and venture capitalist. Belanger launched this networking group in 1983, at a time when, in his view, market conditions had produced a surplus of venture capital in the Route 128 region and "old-school investors were seeking young start-ups outside the normal channels." Belanger sensed that the time was ripe to establish a "marketplace" where the players could get together to realize their complementary interests. He was driven by personal motives as well. Via the 128 Venture Group, Belanger also intended to create for himself a central and privileged position in the flow of innovative ideas - commonly called the "deal-stream" - that could be a source of good personal investments.
Belanger's models for such a "marketplace" came from his experience with other venture capital clubs, in particular the Connecticut Venture Capital Group which he regularly attended in 1981 and 1982. However, he felt that there were several flaws in the format of these models that needed to be modified. The first flaw in his view was that:

Many of these clubs were not locally focused and drew participants from various regions. I think that made them ineffective because networking is not really interregional.

The second flaw in the format of these groups in his view were the steep barriers to entry that many of them employed:

In some clubs you must establish that you are the CEO of a firm or the partner of a venture fund to join. That creates very restricted networks that in due course become quite incestuous and can cut you off from developments that are really exciting and new... In another case, I belonged to one club that charged $250 just to get in the door, and that's just way too much.

The third major flaw he identified was the timing, atmosphere, and culture of some these clubs which made them more like social gatherings and less like business-oriented networking forums:

They [the Connecticut Venture Club] held luncheon meetings, and lunch tends to get a little boozy if you don't watch out. There was more of a Rotary Club atmosphere than a business atmosphere. I wanted one where business gets done.

Belanger, therefore, decided to structure his venture group as an "intensive networking" modification of the Connecticut Group, and in 1982 asked some well connected friends in the Boston venture capital community to endorse the description of his concept in a letter which he mailed to about 500 members of the local entrepreneurial community. The response was very encouraging, and in January 1983, more than 80 people turned out for the first meeting of the 128 Venture Group. Based on the meetings that I attended, the "intensive networking" format that Belanger
devised is described in greater detail below.

The Formal Organization of the 128 Venture Group

The formally espoused purpose of the 128 Venture Group, as described in the announcement of its meetings (see Appendix 2.1) that is mailed to the local community is to:

Provide a forum where the technical innovators seeking to start or build a firm can meet informally with the venture community representatives and individual investors who provide seed capital and venture funding as well as potential candidates for their management team.

To accomplish this purpose, the basic format of The 128 Venture Group's meetings is a breakfast meeting, held on the second Thursday of every month. The venue is the Newton Marriot, a hotel located just off Route 128, the highway from which the Group both draws its name and symbolic legitimacy. The meeting starts at 7:30 a.m. and usually lasts for about three hours.

The meetings, now in their fifth year, are attended by 80-200 people, most of whom are members of the Route-128 entrepreneurial community, though a handful of participants from neighboring states and even other nations are perhaps the rule rather than the exception. About two-thirds of the people are new participants, never having attended earlier meetings. In fact, there are very few "regulars" who attend each and every meeting. Instead, "regulars" usually cycle through the meetings about once every quarter.

People arrive at the meetings in response to an announcement (see
Appendix 2.1) which is mailed about 2 weeks prior to the meeting to a target population that includes previous participants who had indicated an interest in being on the mailing list and others drawn from the mailing lists of several other entrepreneurial associations of the region such as SBANE, BCS, etc.\textsuperscript{8} The regular mailing list numbers about 800 people. A large number of the participants, however, attend after having informally learnt of the Group’s activities from friends, acquaintances and press reports.

The announcement includes a pre-registration form which can be returned along with a pre-registration fee of $20. This amount is in keeping with Belanger’s deliberate intention to keep the barriers to entry as low as possible and he claims that it merely covers the cost of the renting the hotel, breakfast, and the modest administrative costs of running the Group. Returning a completed pre-registration form along with the money enables the participant to be listed on a pre-registrants list that is made available to all attendees before the breakfast meeting. Pre-registration is not necessary and anybody can attend by paying $25 for registration on the morning of the meeting.\textsuperscript{9} Nonetheless, pre-registration is encouraged by the threat that if the number of people who show up exceeds the number of seats at the breakfast tables then attendance can not guaranteed. But in all my experience the threat was never carried-out, additional tables being added to seat the overflow of last minute attendees.

Attendees are asked to identify their interest in the meeting by choosing to be representative of one of four pre-defined categories, viz. a
provider of - (i) capital, (ii) technology, (iii) professional services, or (iv) a management team candidate. This interest may be indicated in the pre-registration application (along with a blurb not exceeding 25 words) or at the time of registration. All participants at the meeting are asked to wear an identification tag bearing their names and a brightly colored dot symbolic of the category they represent - red for technology, green for capital, blue for management, and yellow for professional services.

The check-in usually starts at 7:30 a.m., but many attendees show up even earlier. Having checked-in for the meeting and donned their identification tag with its brightly colored dot, attendees usually mill around for about a half-hour in the hallway outside the Salon "D" or "E" lounge at the Marriot, which usually opens for breakfast at about 8:00 a.m. This informal milling around constitutes a distinct first phase of the meeting. Interaction during this stage is usually informal conversation that may now and then progress to an initial "lead." A "lead" is defined as a promising opportunity of mutual interest. This "lead" may then be pursued more seriously, either by sitting together during the meeting or else, if mutual interest is immediately evident, by exchanging business cards so that the "lead" may be "followed-up" after the meetings.

In the second phase of the meeting, participants sit down for breakfast at tables for between 8-10 people. After introductory remarks by the Chairman of the Group, participants are given 60 seconds each to introduce themselves to the Group with the aid of a cordless microphone that is passed around from person to person. The "over 100 rule" takes effect when the number of attendees exceeds a hundred, and the time
allowed for introductions is reduced to 40 seconds. The Chairman sets the tone for this phase by delivering a pro-forma 1-minute introduction and then usually hands the microphone to a trusted regular to make the first presentation of the day. The time-limit on introductions is enforced quite strictly; the manner of interruption being the well-known cure for long-windedness, the water glass tapped with a metal spoon.

While introductions vary enormously in duration, content, and style, they broadly include information about who the person is, often a short personal occupational history, current affiliation/status, specific interest and expectations from the meeting. Most participants listen to the introductions quite carefully. They may often take notes of the people whose introductions are of particular interest to them. The note-taking is facilitated by the pre-registrants list which is made available to all participants at the beginning of the meeting. This also encourages preregistration because people usually like to end their introductions by drawing the attention of their audience to the location of their name, address, and telephone number on the pre-registration list.

After the introductions are over, and sometimes in the middle if the number of participants is very large, an invited speaker presents his views on a subject of topical interest to entrepreneurs. The talk is usually short (about 20 minutes) and is followed by an equally short question-answer session. The invited talks don't seem to be the focus of the meeting and I met few people who attended merely to listen to the talk.
The formal meeting then ends, but the interaction among a large proportion of the participants by no means ends. Indeed, the meeting can now be considered to enter into its third phase. A flurry of activity suddenly ensues in this phase. Business cards quickly surface everywhere as people try and establish contacts with those whose interests were complementary to theirs. This frenzied milling around continues for about half an hour and then people disperse, usually at around 10-10:30 a.m. to continue with their regular business day.

The rest of the activity takes place outside the meeting. The only other direct outcome of the meeting is a final list of all the participants including their names, addresses and phone numbers which is mailed to all participants in about five days after the meeting.

In the following sections, the different sociological features of this network-creating "market" are discussed in greater detail. I begin by describing from the perspective of the participants the nature of the business venturing activity and how that relates to division of labor, occupational structure, and social stratification to be observed among them. The categories that are employed in this discussion are not based on a set of a-priori theoretic dimensions but are those that are employed by the participants themselves.

III. THE BUSINESS VENTURING PROCESS AND DIVISION OF LABOR

At a basic level, the participants of the 128 Venture Group easily identify with one of the four labels provided by the Group - technology,
capital, management, and professional services - as well as the implication that choosing one of these categories also signals that their "purpose" or "motive" in attending the meeting is to seek out complementary resources in one of the remaining categories. These four categories are generally regarded to accurately capture the four essential components that are combined in the creation and evolution of a typical new high technology venture: an individual entrepreneur or team of entrepreneur-founders who provide an innovative technology and are inspired to pursue it as a new business venture; a provider of capital who is willing to take the risk of investing in the venture; management team candidates that provide the specialized managerial skills required for the direction for a new venture that the original entrepreneur-founders may not possess; and providers of professional services specialized to the needs of new high technology ventures.

At a more finely-grained level of analysis, however, one very quickly realizes that the rudimentary classification defined by the labels provided by the 128 Venture Group glosses over a much more differentiated and specialized division of labor. To make sense of this more intricate pattern of differentiation it is vital to first describe a model of the different "stages of development" in the evolution of new business ventures that is widely shared by the participants. While there is considerable variation as to what these stages are called, there appears to be a broad consensus that a "typical" high technology new business venture evolves through five sequential stages that can each be distinguished by the major developmental benchmarks accomplished, the key goals targeted, and the primary resources required (particularly the
venture capital requirements). This stages of development model is summarized in Figure 2.1 and is briefly discussed below.

Phase I: Various called the "seed stage," "zero stage," "pre-start-up stage," or "concept stage," this is the phase when the new venture is little more than an idea or concept. The management team is no more than the initial innovator-founder and some key associates, product development is unfinished, and only a rudimentary business plan has been drawn up. Little investment has been made in the venture at this stage, the founder's personal resources and efforts, or what is called "sweat equity," often being the only investment. The key goals and bench-marks of the venture at this stage are establishing the technical and market feasibility of the business concept, based on which a more detailed business plan may be prepared and the appropriate management team structured and recruited. The entrepreneur, at this stage, is usually looking for an initial investor who will provide both the financial resources (usually limited between $50,000 and $500,000) and the business expertise and advise that will allow the founder to establish the feasibility and merits of the business idea as attractively as possible for the next round of financing. The entrepreneur-founder may also seek the help of professionals to help with market research, preparation of business plans, determining legal exposures such as potential patent infringements, assessing the defensibility of patents, etc. In addition, the entrepreneur-founder may look to add specialized management expertise in areas such as marketing or finance to buttress the venture's management team.
FIGURE 2.1: A GENERAL MODEL OF THE STAGES OF DEVELOPMENT OF A VENTURE IN ROUTE 128

<table>
<thead>
<tr>
<th>NAME OF STAGE</th>
<th>VENTURE CHARACTERISTICS</th>
<th>DEVELOPMENT GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Seed Stage</td>
<td>- Rudimentary business plan</td>
<td>- Technical and Market Feasibility of Concept</td>
</tr>
<tr>
<td>Zero Stage</td>
<td>- Product Development Unfinished</td>
<td>- Market Research and Preparation of Formal Business Plan</td>
</tr>
<tr>
<td>Pre-Startup Concept</td>
<td>- Initial Innovator and Some Key Associates</td>
<td>- Build Initial Management Team</td>
</tr>
<tr>
<td>II. Start-up Stage</td>
<td>- Technical and Market Feasibility Proven</td>
<td>- Get Product Ready for Market</td>
</tr>
<tr>
<td>First Stage</td>
<td>- Formal Business Plan Prepared</td>
<td>- Make Initial Sales</td>
</tr>
<tr>
<td></td>
<td>- Core Management Team in Place</td>
<td>- Establish Production and Manufacturing Feasibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Build Management Organization</td>
</tr>
<tr>
<td>III. Second Stage</td>
<td>- Initial Feasibility of Venture Established</td>
<td>- Launch Expanded Manufacturing and Sales Effort</td>
</tr>
<tr>
<td>Expansion Stage</td>
<td>- Initial Market Acceptance</td>
<td>- Reach Break-even Mark</td>
</tr>
<tr>
<td></td>
<td>- Management Team Established</td>
<td></td>
</tr>
<tr>
<td>IV. Third Stage</td>
<td>- Significant Sales and Orders</td>
<td>- Reach Financial Strength</td>
</tr>
<tr>
<td>Later Stage</td>
<td>- Near Break-even Achieved</td>
<td>- Achieve Market Share Targets</td>
</tr>
<tr>
<td>V. Bridge</td>
<td>- Profitable</td>
<td>- Find Exit Vehicle</td>
</tr>
<tr>
<td>Pre-Public Mezzanine</td>
<td>- Increasing Sales</td>
<td>(IPO, LPO, MBO, Merger, Acquisition)</td>
</tr>
<tr>
<td></td>
<td>- Established Product</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Mature and Seasoned Management Team</td>
<td></td>
</tr>
</tbody>
</table>
Phase II: Most often called the "start-up" or "first" stage, by this phase the investigation of the feasibility of the business concept has progressed to the stage where the technical feasibility has been proven and a formal business plan that analyses the market and business feasibility has been fully prepared. The core management team is in place and plans for the full management team have been sketched. The key targets of this stage are to get the product ready for market, make initial sales, establish production and manufacturing feasibility, and build the management organization. The efforts of the firm are still, for the most part, inwardly focussed. The financial resources that the venture requires at this stage is typically called first stage financing in which private institutional investors often play the key role. The venture may also seek management team candidates and professional service providers to help meet their plans.

Phase III: Various called "second stage" or the "expansion stage," by this phase the internal feasibility of the venture has been established. There is initial market acceptance of the product or service, and revenues are being generated though the firm is yet far from break-even. The developmental goals of this phase are to launch an expanded manufacturing and sales effort and capture as large a portion of the target market as possible. The widely agreed upon bench-marks are to achieve the sales forecasts in the plan and reach the break-even mark. The venture at this stage will usually seek an additional round of venture financing, and in several instances this round may be syndicated by a group of venture capitalists with the venture capitalist from the second phase often playing a lead role. Additional players may play a role in
this phase of the venturing process such as small business investment companies (SBICs), commercial banks, etc.

Phase IV: The distinction between this phase and the next (Phase V) is often blurred, but it is still useful to separate them. The fourth phase which is variously described as "third stage," or "later stage" is primarily a phase sandwiched between the "expansion" stage (Phase III above) and the "exit" stage (Phase V below). At this point, the venture already has significant sales and orders and requires additional resources and strategic direction to firmly establish its market position and market-share. The aim is to reach the financial strength so that it appears to be an attractive venture for the subsequent public offering, buy-out, or merger. In many cases this may also be the situation in which a turnaround strategy and resources may be required. Several venture capitalists specialize in this stage and are usually involved through the final stage too. Managers and consultants who tout themselves as "turnaround" specialists or trouble-shooting experts are also key figures during this phase of the venture process.

Phase V: The most widely used terms for this stage are "bridge," "pre-public," "mezzanine," etc., and all involve achieving an exit vehicle for the investors, particularly the venture capitalist. In many instances the stage is also named for the particular exit vehicle chosen - IPO (initial public offering), LBO (leveraged buy-out), MBO (management buy-out), merger or acquisition. By this stage the venture is ideally profitable, has increasing sales, an established product and a mature and seasoned management team. In some instances this phase could also be used to
finance a turnaround or a salvage. In addition to specialized venture capitalists, investment bankers and industrial corporations are also significant players in the game at this stage.

During this phase, or sometimes shortly after it, the venture may approach maturity, and be "sold-out" by its initial founder who along with many of the key members of the original management team may leave the firm and go on to start another venture or become investors or consultants or part of a new venture's management team. In sum, the initial components that were combined to create the new enterprise may by this stage all be withdrawn, to be replaced by a more professional management team and traditional providers of debt and commercial finance. The original players, on the other hand, are once again in search of new opportunities.

In practice, of course, there are as many exceptions to this model as there are true instances. Stages may be added, deleted or combined. The venture may fail or prematurely be declared a "lemon" and lose the support of its investors and be disbanded well before it has gone through all the stages of development described above. But it is still an idealized model that shapes the definition of the finer division of labor among the participants of the 128 Venture Group and is discussed at greater length below.

**Technology:** The largest number of participants, 32% of the total, at the 128 Venture Group's meetings wear name tags with a red colored dot signalling that they are participating as providers of technology. Most
often this means that they are entrepreneur-founders representing a new venture. In very few cases, though inevitably in one or two cases every meeting, is the provider of technology an individual who has not launched a formal business entity to pursue the idea or concept proposed. This is evident in the titles the providers of technology employ to present themselves: Chairman, President, Founder, Chief Executive Officer, and so on, of firms that have suitably "high-tech" names as XTechnologies, etc.

The primary dimension across which providers of technology are differentiated is the current stage of the venture they represent. Thus the question most commonly addressed to a provider of technology is: "What stage is your venture at?" - because it helps to broadly locate the immediate situation of the entrepreneur and demarcate his immediate and pressing concerns and needs. While the ventures represented are distributed across all stages of development, a greater proportion of the ventures appeared to be at the early stages of development. 13

Several other characteristics are important in distinguishing among the providers of technology. One of the most important is the nature of the venture they are promoting. This is a composite of many different features: the particular industry or market segment that the business addresses; whether it is a "concept" venture (technology-push ideas for which there are no established market such as neural-net computers) or a "real" venture (a venture that addresses a specific market need such as a more efficient networking device to link computers of different types); whether the business is a new product venture or a new service; whether it is innovation intensive (requires ongoing R&D) or not; and so on.
Another important distinguishing characteristic is the history of the venture's financing, particularly since the reputation of the funding source often rubs off onto the venture. Finally, it is important to note that while the providers of technology are viewed as representing a particular venture, their personal characteristics are just as important. The entrepreneur's credentials and technological or market expertise are just as salient in distinguishing among the providers of technology as the particular features of the venture they represent. As one "provider of technology" reminded me:

Calling us "providers of technology" is in some ways a misnomer. Because, what I am really providing is my and the rest of my team's technological, market and entrepreneurial skills. The technology is embodied in us. We don't sell the technology, we sell ourselves.

**Capital:** About 20% of the participants at the 128 Venture Group's meetings wear identification tags with a green colored dot signifying that they are providers of capital specialized to the needs of new business ventures. A very rich spectrum of actors are involved in this category. It includes private venture capital firms, small business investment companies (SBICs), subsidiaries of financial corporations, subsidiaries of industrial corporations, public agencies, firms representing wealthy families, informal investors, commercial banks, and investment banks.14

A primary distinction that is drawn among these actors is the type of capital they provide: "venture capitalists" provide long-term investment capital for the creation, expansion and revitalization of new ventures, "commercial banks" provide a range of short-term financial services for the day-to-day operations of a new venture, and "investment banks" provide a variety of exit stage financial services such as managing an
initial public offering, an acquisition, or leveraged buy-out.

Of these three types, venture capitalists are the most prominent group in the 128 Venture Group. Among them, finer distinctions are drawn depending on the sources and size of the fund, and its "investment philosophy." The sources of funds include pension funds, insurance companies, bank trust departments, federal and state government sources, corporate resources, wealthy families and individuals, etc. The size of venture capital funds range all the way from the largest fund of about $1 billion, to the many informal investors with funds as small as a few thousand dollars. The investment philosophy of the venture capitalist is a more complex axis of distinction and is a composite of the preferences of the venture capitalist regarding such factors as the portfolio mix of start-ups, expansion stage and exit stage ventures; the size of investment they are willing to make varying from thousands to a few million dollars; the willingness to act as "sole" investors, "lead" investors, or only "secondary investors; the investment vehicle such as preferred stock or common stock; the investment time frame from 3 to 7 years; the stage of venture investment such as primarily zero-stage or first stage deals; the geography or industry such as only New England based deals or only deals in microelectronics; the degree and nature of active managerial involvement such as symbolic membership on the Board or intensive direct management participation; and so on. It is easy to see from this plurality of dimensions that at the finest level of analysis each venture capitalist has a unique investment philosophy. While that is undoubtedly true, there are some well recognized sub-types or strategic groups.15

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By far the dominant sub-group among the venture capitalists are the private institutional venture capital funds. They will typically provide risk capital in return for equity in the new venture. Usually long-term investors, they invest in time frames of about 5-7 years at which point they typically have expectations of getting an annualized return of 20-40% after tax on their investments. In the interim, they usually charge no interest on their capital and are often active investors in the new venture, serving as members on the venture’s board, etc. But within this category too one can distinguish between the "general" and the "boutique" venture capitalists. The former are large firms such as TA Associates, Battery Ventures and ARD that invest across all stages and nearly every industry segment. The latter are smaller funds such as Bain Capital or Ampersand Ventures that specialize in particular types of deals, such as international deals, LBOs and mergers, zero-stage deals, etc.

The second important sub-group of venture capitalists are the SBICS, and MESBICs, such as State Street Bank, etc. These are semi-public venture capitalists that get $4 from public resources to match every $1 they put-up in a small venture. Since SBICs pays interest for the state contribution, they usually lend money on credit terms of 14-16% annual interest and are therefore predominantly involved in later stages of a ventures financing or "secondary" investments as part of a syndicate of other investors. The amounts financed by the SBICs are also restricted, usually being in the range of $100-500K though in syndicated situations they may be involved in financing of nearly $3-4 million.

A third sub-group that has a somewhat similar investment philosophy as
the SBICs are public venture capital agencies, such as Massachusetts High Technology Development Corporation (MHTDC), etc., that rely for funds on the state government.

A fourth sub-group of capital providers are the venture capital arms of major financial corporations such as Bank of New England, Bank of Boston, etc., that in all respects are very similar to the mainstream private institutional venture capital funds. The primary difference is that the source of funds are usually the parent bank and not private sources such as pension funds, etc.

The fifth sub-group and an increasingly important source of venture capital are the venture capital subsidiaries of major industrial corporations such as Raytheon, GTE, etc. Here the purely financial or capital gains oriented motives of classic venture capitalist are often supplanted by additional motives such as getting a window on emerging technologies, and so these firms may be involved in very large deals such as mergers and acquisitions or the last stages of a venture. Industry biases are most clearly evident in these cases.

The final category of investors and, as Wetzel (1986) documented, the largest pool but least visible category of venture capital is the informal investor. This includes ex-entrepreneurs, rich individuals, and managers of a small funds drawn from close friends, who will often invest in situations that traditional venture capitalists may fail to exploit. They are increasingly becoming more and more important in very early stage investments as more and more formal venture capitalists shy away from
these more uncertain stages.

Among the providers of commercial capital, both standard commercial banks (e.g. Bank of Boston), and to a lesser extent leasing companies (e.g. New England Leasing Co.) are involved. Often these are specialized wings within these organizations that are devoted to the needs of new ventures. Similarly, the investment bankers are also often representatives of specialized units of the parent bank, such as Bank of Boston, that deal with new ventures situations.

The discussion until now has primarily addressed the pattern of differentiation among the providers of capital who participate in the 128 Venture Group. It is just as important to point out some aspects of the relationships among these participants. First, there is a distinct status hierarchy that everybody seems to recognize, the precise basis for which I was unable to plumb, but appears to be based on the size, "quality," and performance of the fund. For instance, most participants I spoke with regarded TA Associates and Greylock to be at the top-most rungs of the venture capital pyramid and ARD, for all its historical glory, a notch lower in this hierarchy. Second, venture capitalists are often part of smaller cliques who regularly share information on deals and may even spread the risk among themselves with one of them taking a lead investor role and then syndicating with the other for the total amount financed.16 The clique also helps to economize on search costs as shared information about good and bad deals prevents costly duplication of effort. This is not to suggest, however, that the competition among venture capitalist of the same clique for the best deals is not fierce. Instead, what one sees
are some similarities with the pattern of generalized reciprocity or competitive cooperation to be found among Japanese sub-contractors.17 Finally, since the dominant tendency in the venture capital industry is towards increasing specialization, a variety of alliances and partnerships are being forged. For instance, one venture capitalist may fund primarily the seed stage, but then have a relationship with another venture capitalist who funds the further expansion stages, who may in turn have preferred relationships with an exit stage specialist such a particular investment banker.

Management: 21% of the participants wear the identification tags with blue dots that are reserved for management team candidates. The basic distinction that is drawn among them is based on their functional specialization, viz. marketing, sales, manufacturing, engineering, R&D, human resources, tax/legal, or general management. The other important dimension for differentiation is the industrial sector in which the participant has in-depth knowledge and experience. Finally, management team candidates are distinguished according to their educational background and occupational history. Important in this regard are distinctions between engineers and those with non-engineering or management backgrounds, and whether the individual has primarily worked in a large-corporation or has had significant experience in start-up situations. Some management team candidates are essentially itinerant consultants who work for short stints with companies to address a specific problem and then move on to the next assignment. There are also a few who explicitly tout themselves as turnaround artists promising to help revitalize dying ventures.
Professionals: 26% of the participants sport the yellow dot indicating that they are providers of professional services. Professionals fall into the following categories. The first category includes the independent professionals such as lawyers, patent attorneys, accountants, etc, who specialize in new business ventures. The second category includes providers of support services such as market research, advertising and public relations, distribution and sales, training and development, documentation of software, etc. The third category is composed of individual consultants who cater to the entire gamut of specialized advice all the way from writing a business plan, developing marketing manufacturing or financial strategies etc. A fourth category that is similar to the second above but deserves independent mention are the "experts" - the Red Adairs of the Route 128 region. These are leading trouble shooters and providers of expert opinion. A final category includes all those what one informant aptly called "finders". Included in this category are headhunters who specialize in finding management team candidates for new ventures, and individuals who act as brokers and arbitragers attempting to make the most of a noisy and messy information situation and leverage privileged positions in the overall network. Usually for a retainer or a commission these individuals will help "find" anything - capital, a key individual or expert who has the requisite information, a lead customer, a supplier, etc.

Summary and Discussion: A few overall observations can be made about the division of labor among the participants of the 128 Venture Group. The most striking is the enormous degree of specialization and the
emphasis on conceiving of the division of labor in terms of highly specific types of expertise. At the same time the particular role to which one brings one's expertise to bear is more fluid. Participants inevitably move around between categories. An entrepreneur today may be a management team candidate tomorrow and a venture capitalist the day after. This underscores the point that the skills are all human embodied skills and it is this human-embodied expertise that is the true foundation of the division of labor observed among the participants. While this specialization creates the requisite variety and fine complementarity of resources that are required in the venturing process, it also makes the search for the right combination a crucial activity.

The second noteworthy overall pattern is the relationship among the participants. Relationships are marked by competition and cooperation among the participants; there are mutual bonds of cooperation across which generalized reciprocity may be observed and yet there is always a bitter competition for the hundred of types of "deals" that are constantly at issue in the regional market.

A final observation that is important is the hierarchical stratification dividing participants into the small privileged core of winners and the teeming mass of participants in the periphery. The pride of place in the overall social hierarchy is occupied by the established venture capitalist. But the inner core includes entrepreneurs who have built a solid track record of one or two big winners and can now basically propose anything they want and get funded. Indeed the flow of information may sometimes even be reversed with the VCs approaching them with venture ideas that
they would like to fund and have them manage. To a lesser extent a similar status hierarchy exists for the management team candidates and the professional service providers. Certain departments of large companies such as certain development labs in DEC and MIT and certain experts have regional reputations that give them a privileged place in the overall market structure. If this social stratification was purely tied to performance and was just restricted to that it would be not so important, but its deeper significance is that it creates a particular social elite in which membership also implies an incestuous network of exchange. So in a sense, the name of the game is to enter into this inner elite circle, or if one is already a part of it to maintain one's position. The struggle is a perpetual one for both members of the core and the periphery, because ultimately market forces rule life in the business venturing process and positions at the pyramid of the hierarchy are not sustained by virtue by birth-right or by being part of a social caste, but by virtue of maintaining a successful track-record in the market.

This sets the stage for a more detailed discussion of the motives of the participants who attend the 128 Venture Group and the significance they attach to its existence and the role it plays towards realizing their interests.

IV. THE MOTIVES FOR PARTICIPATING IN THE 128 VENTURE GROUP

By holding the meetings in the early hours of the work-day, Michael Belanger, the founder of the 128 Venture Group, had hoped to "keep the non-serious ones way." If the professed "agendas" of the participants in attending the meeting are any indication, his strategy works. For the
participants I interviewed, attending the 128 Venture Group is not like going to a Rotary club type social gathering," or a way of filling in leisure-time. On the contrary, their "agendas" are more directly market-like, instrumental, and purposeful, and fall into the following broad categories:

(i) Searching for complementary expertise or "finding a promising lead to a 'match'": In keeping with the "marketplace" like image of the 128 Venture Group, the most common "agenda" of participants is to search for complementary resources. So, those who have the technology are most often searching for capital, and quite frequently for a management team candidate or a provider of professional services; those with the capital are regularly searching for a technology to invest in, and occasionally for a management team candidate to be a part of their professional staff or a provider of professional services; particularly the experts; management team candidates are usually most interested in finding a venture to work for, and sometimes a job with a professional venture capitalist or for a professional head-hunter who could help them get placed; and finally, professional service providers are more often than not just "peddling their wares," eager for a client from any quarter.

While finding complementary resources, and that too fairly quickly because of the weight attached to "timing" in the success of new ventures, is of crucial importance to the participants, I was constantly reminded that the search was not just for any source of capital or any promising venture or any job. Instead, desperation aside, the participants claimed that in most cases the search for complementary resources is

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more in the nature of a mutual search for the perfect "match;" the
"quality" of the "match" being the greatest determinant of the potential
value or success of a new business venture. As one entrepreneur put
it:

A venture is like a jig-saw puzzle. Each of the pieces is unique
and must fit together perfectly if you want to be a big winner in the
game. So the chase in which everybody - the entrepreneur, the
venture capitalist, the management team person and whoever else is
in the game - is equally involved, is to find that perfect "match" and
create that winning combination.

There are several reasons for the importance attached to "matching," in
the search for complementary resources. At the most general level, as
the earlier description of the division of labor has already indicated, the
complementary resources are highly differentiated and indeed are
ultimately conceived as specialized expertise. This creates one of the
basic compulsions to search for a "match." For instance, if you are an
entrepreneur promoting a business venture in the bio-technology area and
are looking for seed capital, there is little point in approaching a venture
capitalist who primarily specializes in later stage financing or has little
expertise in the biotechnology industry. The search, instead, must be for
a venture capitalist who has an interest in seed stage ventures and the
relevant complementary expertise. Aside from this basic compulsion to
search for a match that is driven by the specialization in the division of
labor, there are motivations that are more specific to the different types
of complementary combinations such as technology-capital, technology-
management, etc. Describing these specific motivations in greater detail
adds little to the general point made above, but I will digress slightly to
illustrate the specific motivations in the context of the Technology-
Capital match.
The Technology-Capital "match" is considered to be, by far, the most crucial in the business venturing process. Inadequate attention to this "match" and the problems caused by its neglect figured very prominently in the diagnosis of failed ventures. This is because the relationship between the venture capital investor and the new venture is rarely an arms-length relationship in which the investor is merely a passive source of risk capital. Instead, this is a fairly intensive relationship in which the venture capitalist may over time act as member of the board, interim officer, ad-hoc volunteer, active entrepreneur, fire fighter, project consultant, counsellor, and teacher. Moreover, the inherent uncertainty in the evolution of a venture makes the a-priori specification of contractual details difficult. Therefore conflicting interests may often surface over the course of the relationship. Mutual adjustment may be required to resolve these situations and prevent the intensive relationship from "going sour." This also makes "matching" an important concern.

From the perspective of the entrepreneur, there are some additional concerns, particularly in the early stages of a venture, that make the importance of a match even more crucial. The first major investor or "lead investor" in a venture can often greatly influence the further development of a venture by helping to secure additional rounds of financing and as well playing a lead role in larger syndicated loans. As one entrepreneur described it:

It is almost like becoming a part of someone's stable. Everything depends on who's stable you are a part of. If you belong to the right stable, everything is made.

The clique structure of the venture capital community poses another
problem for the entrepreneur in the early stages. The entrepreneur must exercise great caution regarding who he approaches to evaluate the proposed business venture or "deal" because a shot-gun approach can quickly cause the deal to be labelled as "shop-worn" and not worthy of further attention in the incestuous community of venture capitalists. In these early phases, therefore, greatest attention is given to finding a mutual match.

Indeed, the metaphor that was commonly employed to emphasize the significance of this match was to liken it to a "marriage" and to liken the search process to "finding a life partner:"

The relationship between a venture capitalist and a venture is like a marriage. It is intense! It can be immensely productive, but it inevitably has its ups and downs, and in some cases can end quite bitterly. So, one doesn't get into a relationship like this easily. One has to exercise the same caution as in finding a partner in marriage.

The specific concerns that characterize the Technology-Capital "match" underscore the general point that the search for complementary resources is much more than being just that. It is a mutual search for a very specific "match" which in addition to satisfying the complementarity of expertise must also satisfy a more idiosyncratic requirement that is generally described as the "right chemistry." A very important caveat is in order here. The 128 Venture Group's meetings are not seen as the place where "matches" are concluded. It is only a forum which can assist in the search process by bringing to notice "leads" that can be followed up; some of which may ultimately result in "matches." However, since the costs and efforts involved in the process - commonly called "due diligence" - of "checking-out" the "leads" to see if they are "matches" is considerable, the quality of "leads" is not taken lightly. The "due
diligence" sentiment of seriousness in searching for a match is usually also carried forward to the stage of searching for a "lead." To use a distinction drawn by Rees (1974), search in this situation tends to intensive rather than extensive: each case is examined very carefully one-at-a-time as opposed to a whole set of cases being casually compared simultaneously.

(ii) Establishing new social linkages or "networking": The most immediate and pressing motive of the participants in the 128 Venture Group is to find "leads" to complementary resources that could directly materialize into "matches." But participants may also attend to just try and forge social links with others who they expect, in the short or long term, to be sources of additional "leads" or information. This is how this "networking" motive was described to me by one professional "finder":

In this business, you need to constantly network. 99% of the deals that fall through do so because of some gap in the network. My principle is simple. Life is like a random walk. You never know when you might use some one in the network. Just the other day I came across a very interesting deal from a contact I had made here [the 128 Venture Group] over a year ago.

While the opportunities that flow from network contacts are like a random walk, the pattern of networking itself is not so random. One may not have a strong a-priori sense of exactly whom one wishes to establish a link with, but as the above finder described:

There is a general schema of areas of opportunity in which you know that a crucial link is missing, or else when you meet someone you have a sense that he or she somehow plugs a gap. So, I don't just network with anybody. It all depends on the picture that I have in my mind and what is missing in it.

(iii) Scanning or keeping a "window on technology": The need to keep abreast with technological developments and trends given the volatility of
the contemporary environment is often cited by participants as a motive for attending the meetings. As one entrepreneur described it:

Things move so quickly these days that you have to constantly scan the environment or else a competing technology could just blow you away. These meetings are a great window on these technological developments. Where else can you hear fifty new technological ideas and meet so many people who are all tracking these technological trends so easily.

Indeed, this is often a major motive of some participants like formal professional scanners from large corporations who may cycle through the meetings about once every quarter to maintain this window on technology.

(iv) Maintaining an established position or "staying visible": In some cases, participants attend the meetings to maintain their existing social position in the network. Like prominent established academics who attend the annual conferences of their academies, the motive in these cases is to preserve social standing and authority. A prominent venture capitalist described this motive as follows:

I get more deals coming to my office than I can handle; so why do I wake up so early in the morning to come here? I guess it is because I have to make sure that I stay on top of things. Things can change in this field quite quickly, so you can't afford to be left behind. Also, you have to once in a while be seen at such places. You have to let people know that you are out there, that you are for 'real' and that your reputation is based on some solid credentials. It takes time to build an image, but it takes an equal effort to maintain it.

(v) Finding particular information or "scouting": In some cases, participants may be looking for specific information as part of the "due diligence" process of checking up on an existing lead. This can take the form of checking on someone's references, getting the appraisal of an expert on a specific technological issue, etc. An analogy drawn by one participant to describe this motive captures it beautifully:
It is like scouting a promising basketball player. You go out where he may be known to some folks and ask a few questions. What's his personality like, does he have an attitude problem, can he play in the clutch, etc. It's the same reason I'm here. I have these ventures that I am looking at quite seriously and if I find someone who has worked with anybody on the management team before or has worked with a similar technology, I am going to ask a few questions and see what they have to say.

(vi) Looking for clients or "advertising": This is usually the motive of the "peddlers" of routine professional services such as lawyers, accountants, software documentation writers etc. For these participants, the Route 128 Venture Group's meetings are seen as a cheap advertising medium - "after all breakfast only costs $20/-" - with reasonable reach "you have a hundred or so people who are listening quite carefully". This is primarily the reason why providers of professional services is the only category of participants for whom there is a barrier to entry. After their first meeting they are only allowed to attend if they bring along with them a participant in another category, because the Chairman of the Group's has concerns that the meetings would otherwise degenerate into a "series of commercials."

(vii) Seeking appraisal or "getting a reality check": Given the uncertainties that shroud the evolution of any new business venture, there are many occasions when entrepreneurs need reassurance that they are on the "right track." So, in several instances, entrepreneurs attend the meetings to use the audience and the other participants as a "sounding board," or a "reality-check." In some cases, this may also be a way to get an "early reading" on an anticipated need. Consider for instance the following entrepreneur's "agenda":

Right now I think my venture is pretty much doing what might be expected. I am a little short of the targets in my business plan, but
then business plans are always a little on the optimistic side. In any event, I know that I am going to need second round financing in about 4-6 months, so I figured I'd come to get a reality check. You know, see if people were generally interested in the venture or felt that there were some problems that needed to be addressed before I seriously start looking for capital to expand. Who knows, I might even get lucky and meet someone who is willing to give me the money today.

(viii) Starting out or "learning the ropes": For the engineer working in a large corporation who has the entrepreneurial urge and feels he might have the "perfect idea that would revolutionize the whole microcomputing industry," or the frustrated middle manager who is tired of "working the monotonous 9 to 5 routine of the large firm," and is looking for a more "exciting career in a smaller firm," the 128 Venture Group meetings represent a way of "finding out what the game is all about," and "learning the ropes." It is seen as one way of "entering the loop," and getting socialized into the entrepreneurial network.

I have presented these motives as if they were independent and unrelated to each other. Nothing could be further from the truth. Participants inevitably have multiple agendas. So, "finding a match," "networking," "staying on top," "keeping a window on technology," etc., are all part and parcel of the larger motivations of the participants. Indeed, the overall agenda of the participants may best be described as a hawk-like readiness to seize upon any opportunity for gain that presents itself in the meeting, either for the present or the future. 21

The 128 Venture Group is by no means the only forum in which these motives may be realized, nor are these motives specific to the participants of this forum. 22 Why then do participants attend the 128
Venture Group’s meetings?

Participants generally recognize that these motives, all of which are information intensive, must be realized in what is for the region as a whole an admittedly noisy and difficult communication system. The similarities between their characterization of the information structure in which the business venturing process is conducted in the Route 128 region and Geertz’s (1979) description of the communication structure of the Moroccan “bazaar” are striking:

Information is poor, scarce, and maldistributed, inefficiently communicated, and intensely valued. Neither the rich concreteness of reliable knowledge that the ritualized character of non-market economies makes possible, nor the elaborate mechanisms of information generation and transfer on which advanced industrial ones depend, are found in the bazaar - neither ceremonial distribution nor advertising, neither prescribed exchange patterns nor product standardization. The level of ignorance about everything from product quality and going prices to market possibilities and production costs is very high, and a great deal of the way in which the bazaar is organized and functions can be interpreted as either an attempt to reduce such ignorance for someone, increase it for someone, or defend someone against it.

That is, these ignorances are known (or known about) ignorance, not simply matters concerning which information is lacking. Bazaar participants realize how difficult it is to know if the cow is sound or the price is right, and they realize it is impossible to prosper without knowing.[...]

[Therefore], the search for information - laborious, uncertain, complex and irregular is the central experience of life in the bazaar in the bazaar - an enfolding reality its institutions at once create and respond to. Virtually every aspect of the bazaar economy reflects the fact that the primary problem facing the farmer, artisan, merchant, or consumer is not just balancing options but finding out what they are.

For most of the participants, the 128 Venture Group is seen to be an institution that offers just this opportunity - finding out just what the options are. For most participants, it is a well defined “marketplace” - “a monthly flea market” - that is unambiguously devoted to addressing some of these communication difficulties, where the barriers to entry are
low, and the "playing grounds are as level as they get."

While the "market-like" character of the 128 Venture Group is widely acknowledged as being unique and distinctive, the Group is still seen as being only a part of the broader mosaic of other networking forums in the region, personal networks, directories of venture capital firms in the region, publications that track the latest developments in technology and venture capital, etc. - all institutions that respond to this complex communication situation, each offering some unique benefits and each having its limits. So, the limitations and inadequacies of the other institutions - e.g., not everyone can be a part of the "club-like networks" to get the "crucial reference that is required to get a fair hearing" from the venture capitalists; "head-hunters can only do so much;" "how many journals can one read, and even then how much would one learn," - are the general refrain offered by participants as reasons for why they chose to attend the meetings.

To see how these motives and interests are addressed in the 128 Venture Group, I now turn to an analysis of the patterns of interaction in the meetings.

V: INTERACTION PATTERNS IN THE ROUTE 128 VENTURE GROUP

While the espoused purpose of the 128 Venture Group is to provide a forum "where the technical innovators seeking to start or build a firm can meet informally with the venture community representatives and individual investors who provide seed capital and venture funding as well
as potential candidates for their management team," it is rendered pregnant with operational difficulty as realizing this instrumental objective or the myriad of other motives of the participants - finding an idiosyncratic match, knowing if a network contact will be worthwhile, judging the accuracy and value of information provided by someone, or checking the reliability of a reference - is predicated on very limited interaction opportunities: the brief conversational encounters at the beginning and end of the meetings and the one minute introduction that each participant is allowed. The difficulty of the situation is only exacerbated by the fact that over half the participants are attendees for the first time and very few of them know each other prior to the meetings.

Yet, such brief expressive "encounters", which may be defined as any joint act between two or more persons where the interactants are maintaining symbolic, visual, auditory, and at times tactile contact for a very brief period of time (Goffman, 1961; Lofland, 1976), can also be "encounters of significance", or those moments of co-presence where one or both interactants carry from the encounter an image of the other such that the probability of future encounters is increased (Denzin, 1974). This is because the 128 Venture Group is quintessential of what Goffman calls a "focussed gathering" - a set of persons engrossed in a common flow of activity and relating to each other in terms of that flow.

Social organization is the central theme, but what is organized is the co-mingling of persons and the temporary interactional enterprises that can arise therefrom. A normatively stabilized structure is at issue, a social gathering, but this is a shifting entity, necessarily evanescent, created by arrivals and killed by departures. (Goffman, 1967, p. 2).
Goffman goes on to argue that even in such temporary and minimal interaction situations, a powerful sense of organizational membership may be created and orderly social behavior may be obtained. This is because focussed gatherings such as the 128 Venture Group concentrate, amplify, and crystallize the shared stocks of cultural knowledge of the participants around a common interest and experiential base - in this case the business venturing process.24 "What we have, then, is a kind of interactional modus vivendi. Together the participants contribute to a single over-all definition of the situation which involves not so much a real agreement as to what exists, but rather a real agreement as to whose claims in what issues will be temporarily honored - a level of agreement that may be referred to as a working consensus" (Goffman, 1959). To see how this happens in the 128 Venture Group, let us examine at greater length the two major types of interaction situations, the one-minute introduction and the conversational encounters.

It will help to tolerate my rather elaborate analysis of the dynamics of interaction in the 128 Venture Group to remind the reader that what is at issue here is meaningful communication in a very difficult information situation. If the 128 Venture Group is to work at all on an ongoing basis, meaning must negotiated in the minimal interaction opportunities presented in the meetings. To see how this happens, then requires that the typical interactional encounters in the meetings be carefully unpacked to reveal just how meaningful action is rendered possible in this problematic situation.
The One-Minute "Pitch"

The one-minute introduction provides an opportunity for all the participants to present themselves to the rest of the Group. Like the salesman’s pitch, this is the opportunity the participants have to market themselves to rest of the Group. Impression management is the major concern during this one-minute "pitch": participants have to act so that they intentionally or unintentionally express themselves, and the others in turn have to be impressed in some way by them (Goffman, 1959; Schlenker, 1980).

From the standpoint of impression management, the one-minute "pitch" involves two different kinds of sign activity: expressions that are "given" and those that are "given off". The former involve signals that are consciously and admittedly used to create and foster an intended impression, and the latter are those that may be considered as symptomatic of the actor in the sense that they are the byproduct of instrumental activity; communicated without conscious thought or intention (Kolb, 1985, Barley, 1983, Manning, 1973, Goffman, 1959). Indeed, as in the case of the mediators in Kolb’s study (1985), on which this description is largely modeled, the participants are often unaware of the impressions they convey in pursuit of their instrumental objectives. 25

Dramaturgical analysis, with its theatrical metaphor of settings and props, fronts and appearances, dramatic realization and idealization, mystification and misrepresentation, as resources employed by actors in the management of their performance, provides an ideal framework for
considering the expressive dimension of the participants' one minute performance. In almost all cases the "performance" can be broken down into three "acts". Marking the entry, maintenance, and exit from the evanescent and episodic nature of the encounter (Lofland, 1976), these scenes involve the "starting activities" of creating an "idealized personal front," the "doing activities" of "maintaining expressive control" during a period of "guarded disclosure," and the "ending activities" of managing an exit with the greatest chance of preserving the "established front." (Lofland, 1976; Goffman, 1959).

The dynamics of the performance are discussed in more detail next. I focus on the performance of the entrepreneur. This is because not only is the entrepreneur's performance among the richest and most complex of all the performances, but also this maintains comparative consistency with the Kodak case where the focal character is the "originator" or entrepreneur.

The Entrepreneur's One-Minute "Pitch"

As mentioned above the entrepreneur's one-minute performance may be broken down into three parts: starting activities, doing activities and ending activities.

Starting Activities: These primarily involve the creation of an idealized personal front. "A front is that part of the individuals performance which regularly functions in a general and fixed fashion to define the situation for those who observe the performance" (Goffman, 1959, p.22). It consists
of distinguishable standard parts such as the "setting", personal "appearance", and personal "manner". Coherence among setting, appearance and manner are an important aspect of a social front as it then becomes a "collective representation" and a fact in its own right. This is evident in the context of the 128 Venture Group meetings. The setting is the Newton Marriot, a conservative business conference oriented hotel located in the heart of the Route 128 region conveying the impression of entrepreneurs being men of business and not merely ideas. The time of the meetings is early in the morning at 8.00 a.m. in keeping with the impression of the unusual industriousness of entrepreneurs and hence the early hour to accommodate a busy day. The abstract generality of this aspect of the front is embellished and transformed into an enduring cultural resource by a direct reference to this point by the Chairman and coordinator of the group's proceedings in his introductory remarks:

I recognize that you are all extremely busy people, so we will try to conduct this meeting as efficiently as possible, in order to enable us to catch-up with what I am sure for most of us is the usual hectic business day.

Even the props such as the high-tech cordless microphone system and minor aspects of the setting such as the very functional and frugal breakfast are in keeping with the abstract generalization of entrepreneurs as being technology driven, busy, action oriented, no-nonsense, "doers". The coherence of this impression is sustained by the conservative appearance (dark suits and ties) of most entrepreneurs and an articulate, aggressive, confident manner. The stable character of this generalized social front is revealed by the unusual behavior generated by a deviation. The impression evoked by a wild bearded, red bandanna toting, but
conservatively suited entrepreneur was one of shifting stances, but extreme curiosity. It was almost the interest evoked by an extra-terrestrial, for he was allowed to speak when his turn came for a period that was so long that ordinarily the interactional order would have broken down much earlier as "dramaturgical discipline" would have been invoked by the increasingly inattentive behavior of the audience or the more rude interruption by the Chairman of the group.

The starting activities of the entrepreneur's "performance" itself involve the creation of an "idealization" consistent with the social front. Idealization refers to the tendency of the entrepreneur to incorporate and exemplify the accredited values of the society, more so in fact than does his behavior as a whole (Goffman, 1959). These activities involve the entrepreneur slipping into his role or engaging in what may be called "role making" (Turner, 1986). Idealization or role making thus involves tactics that establish the credentials for inclusion in the Group and then makes credible the particular idealized impression of himself that the entrepreneur wants to promote. Maneuvers for inclusion may involve the use of external props such as references to having been part of a report in The Wall Street Journal or a periodical (such as Venture, or Inc.) targeted to an entrepreneurial audience, having graduated from Harvard or MIT, aspects of occupational history in the Route 128 region, or most simply membership in a previous meeting of the Group. Besides the use of such external props, "ingratiation", is the other tactic that may be employed to advance inclusion. This can take the form of a cloying expression of "sheer pleasure in being a part of the proceedings" or complimentary lines in praise of the social and economic utility of a
The second stage of the starting activities involves building on the general claim to membership towards establishing a particular idealized front that sets up expectations of a promising "backstage". This involves emphasizing the potential of the entrepreneur and his innovation. This is the stage when the expressive act is most susceptible to stray across the line from, what Goffman (1959) calls, "reality to contrivance" (p. 70). While not necessary, this stage may also involve "misrepresentation" (p.58) or "mystification" (p.67). Expressions during this stage are often declarations of the most promising aspect of the entrepreneurs innovative offering. Sustained and embellished by almost any external prop that can be brought to bear on the situation, this is the entrepreneur's song-n-dance about himself and his product. This is when the entrepreneur "plays with his condition to realize it" (Goffman, 1959, p. 76). This obligation is no different from the one that is placed on any individual whose occupation is to provide others a product or service. Their condition is wholly one of ceremony and the audience demands of them that they realize it as a ceremony. Just as Goffman's (1959) "grocer who dreams, is offensive to the buyer, because such a grocer is not wholly a grocer," (p.76) an entrepreneur who doesn't exhibit the expected enthusiasm by such declarations as touting his product as revolutionary or his budding firm as growing at a rate exceeding all averages, fails to "fill-in" a contrivance that is socially construed as being a part of his reality.

Intentionally or unintentionally expressions at this stage can also lead
to misrepresentation. "The tendency of the audience to orient itself in most social occasions," the 128 Venture Group being no exception, "by accepting performed cues in good faith, places the performer in a position to be misunderstood and makes it necessary for him to exercise expressive care regarding everything he does when before the audience, so also this sign-accepting tendency puts the audience in a position to be duped and misled, for there are few signs that cannot be used to attest to the presence of something that is not there. And it is plain that many performers have ample capacity and motive to misrepresent the facts; only shame, guilt, or fear prevent them from doing so." (Goffman, 1959, p. 58) Nonetheless, misrepresentation is rare in the 128 Venture Group meetings. This, I was informed is because discovery is often inevitable given the close scrutiny, or "due diligence," that is conducted to follow up on a lead. Moreover, honesty is considered very important in the relationships that are forged in the context of a new business venture, so even minor misrepresentations are taken as very serious signals of potential problems. In addition to the threat of the breakdown of the lead before a match can be established the more amorphous but in a sense more powerful threat is the reputational implications of such a misrepresentation. If one gets branded as being "unreliable" or one whose words can't be trusted, then the implications can be far more serious, because that can close other options too.

The process of strategic expression of deliberately controlled information can also lead to "mystification" of the entrepreneur. Claims of an "already financed" prototype that would render permanently uncompetitive the entire existing hot water holding tank manufacturers,
and might require additional financing at some indefinite time in the future, or offering shares of a firm that is poised on the verge of a takeover by a "well-known" giant, are instances of gambits that may lead to "mystification" by placing restrictions upon current information and providing a way by which awe can be generated and sustained. The Chairman of the Group and other prominent participants often employed this ploy of mystification by using the distance created by their superordinate status to build up an impression of their own choice regarding their interests.

**Doing Activities:** Starting activities lead to the creation of an idealized front which in some instances may also involve misrepresentation or mystification. The subsequent doing activities primarily involve expressions that are given as opposed to given off. These expressions are instrumentally driven and involve an articulation of the needs and interests of the entrepreneur. Requests for venture capital from seed to second-stage, managerial team candidates to assist with development, production, promotion, financing, marketing, or growth, and professional services to help write business plans or software documentation are examples of the kinds of expressions that are given. The tone is usually brisk and precise. In this process the expressions that are given off are attempts at maintaining expressive control. This involves a guarded disclosure of expressions to protect the carefully constructed idealized front that was built up in the starting activities. Synechdochic expressions maybe employed to convey an impression that is consistent with the overall definition of the situation that is being fostered. Thus, the entrepreneur may express his interest in finding a venture capitalist
that specializes in stages including and beyond the seed stage, to maintain the previously created impression of possessing a product in advanced prototype stage, or may allude to the expected pay-back period during his request for second round financing that is consistent with an earlier boasted growth rate.

**Ending Activities:** These involve managing an exit that preserves the impression created by the idealized front. It is also of crucial importance in determining if the encounter will become one of significance (i.e. will result in the increased probability of another encounter with someone in the audience). The performance of the entrepreneur is conducted "on-stage" but its instrumental purpose can only be realized "backstage" in the world of the entrepreneur outside the 128 Venture Group where interactional encounters of significance established at the meeting may be converted to longer-term economic relations. Establishing the backstage as an arena of promise is therefore an important aspect of the ending activities. Various strategies of holding forth backstage promise are employed. These range from such dull expressions as "I will be happy to talk with anybody interested in further details about my product after the talk," to such mystical expressions as "I will be happy to discuss my formula with anyone interested, but only in the presence of a patent attorney." The sanctity of the backstage is preserved in the above instances, but in some cases parts or almost the whole of the backstage might be brought on-stage, often with considerable effect towards reinforcing as reality the idealized impression. These are the cases when one suddenly pulls out a sheaf of documents purported to be the documented software which was the object of the idealized front, rolls
open a blueprint of a product design, or in an even more dramatic disclosure unbuttons the front of a coat to produce with an exaggerated flourish a prototype model of a portable heart monitor. The final act in this expressive performance is usually a ritual employing the printed list of pre-registrants as a prop. Participants usually end their performance by anchoring attention on a prop that brings the backstage onto the front-stage. Like the list of characters on the program in a play reminds the spectators that the actors are real people with real names, the entrepreneur ends his act by drawing attention to the position of his name on the pre-registrant's list -"Once again, my name is 'A' and I am third from the bottom on page four of your preregistration list,"- signalling the end of his performance and the return to backstage. Variations on this ritual that are often tried involve making some joke about either some aspect of ones name or some aspect of ones position on the preregistration list. The importance of this ritual can be seen in the ending activities of participants who are not preregistered. They face a structural disadvantage in this ritual by virtue of not being on the list at all and so usually end by repeating twice, for effect, their name and contact phone number. An embarrassed apology for not being preregistered is usually an accompanying face-saving device.

There are, of course, significant variations in content and style in the performances of different entrepreneur and more importantly between entrepreneurs and providers of capital and so on. While the pitch employed by management team candidates and the providers of professional services are usually just as complex, the established venture capitalist's complete "pitch" may just be - "My name is X, and I am
The one-minute pitch, as is true for any other performance, can create a considerable or negligible impression. But the impression that is created by the "pitch" is not common across the entire group. The pitch may in principle be directed at the whole audience, but its purpose is usually not to interest everyone but to impress only those in the audience who may have complementary interests. As one entrepreneur put it:

I don't care if just about everybody goes to sleep while I make my pitch. I would be perfectly happy if I could impress the hell out of those one or two guys who really have interests complementary to mine. After all, speaking to everybody else is mostly a waste of hot air and time in any event.

**Conversational Encounters in the 128 Venture Group**

The other major form of interaction in the 128 Venture Group are the conversational "encounters" among the participants during the first (pre-breakfast) and final (post-introductions) phases of the meeting. The importance of such conversational encounters has received widespread recognition following the linguistic turn in contemporary sociology. Their significance, however, was fully evident even in such classic studies as Strauss's (1978) brilliant analysis of how social order and the meaning attached to different situations in a hospital is constantly negotiated and constructed out of the informal conversational encounters among the patients, nurses, interns, technicians, and doctors in a hospital. The framework I am going to adopt to describe and analyze the conversational encounters in the 128 Venture Group is one advocated by Collins (1981a,b). This is because the picture, Collins paints, of social
organization as a "market" of conversational encounters applies with special force in this context.

It is useful to begin by briefly recapitulating the basic features of Collins's perspective. Collins's primary thesis is that macro-sociological concepts such as "organization," "culture," "property," "authority" and so on, can be made fully empirical only by translating them into a sample of the typical micro-events that make them up. Interactions in concrete social situations are therefore the only relevant methodological units. Moreover, Collins emphasizes that these "interaction rituals" rarely stand alone. They are always a part of a chain of interaction situations. As he puts it:

"The people one talks to have also talked to other people in the past and will talk to others in the future. Hence an appropriate image of the social world is a bundle of individual chains of interactional experience, crisscrossing each other in space as they flow along in time."

While these "interaction ritual chains," in Collins's view, form the "basic stuff" or microfoundations of social reality, there are temporal, spatial, and numerical aggregations of these experiences which constitute a macro level of analysis. This strategy of aggregation can reveal the central features of macro-social organization such as roles, norms, rules, etc.

Elaborating on this general program of bridging the micro-macro gap in social analysis, Collins focuses on the most common type of interaction ritual - conversations. According to Collins, "conversations are rituals creating beliefs in common realities that become symbols of group solidarity. Individual chains of conversational experiences over time thus
re-create both social coalitions and people's cognitive beliefs about social structure." Drawing an analogy with the traditional economic market, Collins views each conversational encounter as being equivalent to an economic transaction. The aggregate of all conversational encounters across the macro landscape makes up what he calls a "conversational market."

Conversational markets are considered more complex than traditional markets because the "currencies" of exchange include flows of both verbal symbols and emotions. Two elementary types of verbal symbols are distinguished to highlight the different social outcomes generated in conversational markets. Some conversation topics are "generalized": they refer to events and entities at some level of abstraction from the immediate local situation. Flows of such generalized conversational resources (impersonal topics) reproduce horizontal status-ties. Other conversational topics are "particularized": they refer to specific persons, things, and events. Flows of these particularized conversational resources (reputations of particular individuals) enact the social position of individuals. The importance of "emotional energies," that maybe manifest as positive or negative feelings of confidence, warmth, enthusiasm, etc., evoked by an interaction is the effect it has on the individual's motivation to enact or reject particular conversational rituals. Just as all transactions in an economic marketplace are not consummated, all conversational encounters in a conversational market are not successful. Like his economic counterpart, "interactional man" is influenced by his previous preference shaping experiences, motives, and expectations, and will enact or reject particular conversational encounters depending on the
emotional energies it produces.

In sum, to complete the analogy, just as the aggregate pattern of the transactions in an economic marketplace yields overall market features such as the market-clearing price, demand, and supply, so does the aggregate pattern of conversational encounters in a conversational market yield macro-social features such as rules, norms, etc.\(^\text{23}\) It must be emphasized that this is not a static model. The constantly negotiated aspect of conversational markets suggests that social structure is perpetually and dynamically shaped by the changes in micro-level patterns, tending to an aggregate stability only if individual fluctuations of emotional and cultural resources are local and temporary.

Based on the above general theoretical model, the research strategy that Collins advocates in substantive contexts is to sample across the macro-landscape for typical conversational encounters. These encounters may then be taken apart into yet more micro-processes that reveal the flows of cultural resources that take place in these encounters. Aggregating these encounters across the purely macro dimensions of space, time, and numbers can then reveal patterns that define the "conversational market."

Applying this strategy to the 128 Venture Group, from a sampling standpoint, it is difficult to identify a "typical" conversational encounter. Encounters in the 128 Venture Group differ according to the history of previous interactional experiences between the interactants (whether they have a regular interactional history as in the case of friends, episodic
interactional history as in the case of acquaintances, or no interactional history as in the case of strangers); the underlying motives of the interactants (as mentioned earlier these may include searching for complementary resources, scanning, scouting, etc.); and the specific expectations from the encounter (conversations may be open-ended such as in the first phase of the meeting or be very purposive such as situations where interactants are pursuing interests evoked by the one-minute 'pitch'). Nevertheless, all these conversational encounters are some combination or the other of the following sub-processes. Each of these sub-processes involves the exchange of different types cultural resources and more significantly forms the micro-foundation of important overall social outcomes.

1. **Production of trust**: For exchange to proceed at all in a conversational encounter, it is essential to establish a minimal amount of trust. While this is not problematic for interactants who are friends and may be more so for acquaintances, it is crucial among strangers and is, therefore, very important in the 128 Venture Group where most participants are strangers to one another. Introductions in this situation, then, are normally much more complex than the casual exchange of names and handshakes. They are driven towards getting a mutual "fix" on the position of the interactants. This is accomplished either by searching for a commonly shared contact or experience or by finding an anchor with which the other interactant is familiar. Mutual exploration of detailed occupational histories is the device often used to find such an anchor on which trust is constructed. The following script is typical:

   A: I've been involved in this venture for the last 2 years.
   B: And what were you doing before that?
A: Well, I graduated from MIT, worked in Raytheon for a while, then went on to GTE labs. During that time I was basically working on defense contracts. Then about five years ago, I joined a friend of mine in this instrumentation venture, but that was soon acquired and that's when I decided to start my own venture.

B: Which part of Raytheon did you work in? I used to know some folks who were also involved in defense contracts there?

A: Mostly I was working in the ultrasonic instruments lab, but I moved around a bit. Who were these guys you knew?

B: A couple of them I knew quite well. One's name was C and the other was D.

A: Sorry, never ran into them.

B: I also knew this other guy who was working in GTE, I can't remember his name now, but he was a pretty important person in their dealings with the Defense Department.

A: Was it E, or maybe F.

B: Yes that's it. F. I met him during a seminar we attended together a couple of years ago. If you meet him do give him my regards.

A: Sure! And what do you do?

As one can see from this script, this exchange serves to lay the foundation for a minimal shared membership and the production of trust by establishing a common link via person F. Of course it may not be possible in all instances to find a common reference point, and in those situations one may settle for trust based on institutional credentials such as affiliation with a well known institution such as MIT or DEC or personal credentials such as a history of having started up new ventures.

2. **Role Taking and Conversation Framing:** The enormous specialization in the division of labor and the variety of interests and agendas at hand makes it important for the interactants in a conversational encounter to take on specific roles and define the motives for engaging in the conversation. Again, this sub-process is more important for strangers since this role taking allows the interactants to orient themselves meaningfully with regard to the other. It "frames" the nature of the

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conversation and helps shape the expectations of the interactants, determining, for instance, if the conversation is to be a general open-ended conversation or a more serious encounter to search for a match.

The following scripts illustrate this difference.

A: So, what brings you here this morning?
B: Well, nothing in particular. I manage a small venture fund and though at present our portfolio is quite full, I just come here about once every quarter to keep on top of what's happening. What about yourself?
A: I'm a consultant. I develop presentational material for new products; things like pamphlets, videos etc. And I am here looking for clients.
B: Had any luck so far?

The script above shows the interactants take on specific roles of venture capitalist and consultant, spell out their motives and frame their encounter as a general conversation. Compare this with the following script:

A: Hi, my name is A. I just got laid-off from the chief operating officer's position when the medical instruments start-up I was running sold-out to X [a large firm]. I heard your introduction and I was really interested in learning some more about your operation to explore if there may be some opportunities there.
B: As I mentioned in my introduction, we are presently looking for a second round of financing and some key people because I think we are really poised to take-off. We already have a chief operating officer but we are looking for a senior person to manage our marketing push. If you are interested, maybe we should talk some more.
A: In my previous job, I had started out as the marketing manager, so I do have some skills in that area. Tell me a bit more about your plans.

This exchange just as clearly as the previous one defines roles and motives but here the conversation is "framed" (Goffman, 1974) as a much more purposive and serious conversation aimed at exploring the possibility of a match.25
Trust having been established, roles taken, and the nature of the encounter framed, conversations may then involve, to use the distinction drawn by Collins, different flows of generalized and particular cultural resources.

3. **Flows of Generalized Cultural Resources**: These flows center around impersonal conversational topics such as technological trends, the state of the venture capital industry, or the fortunes of well-known figures in the region. These conversational topics serve a vehicle for general information transfer that may have such overall social outcomes as the diffusion of innovation, the production of fads and trends, or the creation of conventions, ideal types and shared stocks of knowledge. The following scripts are examples of such flows:

A: I was out on the West Coast last Friday at a conference on Gallium Arsenide semiconductor devices. Everybody seemed quite excited about the potential it offers.

B: I think there is too much hoopla about Gallium Arsenide. For a long time now, they’ve been shouting that they are going to replace Silicon, but other than in a few very specialized applications such as high processing speeds, it just hasn’t been worth it. Right now, I don’t think any venture capitalist is going to touch a Gallium Arsenide venture. I know two ventures that have recently folded. The market just isn’t there.

The above script shows how technological trends diffuse and fads get created in the region. The next script that is a part of a discussion about the failure of a promising start-up and shows how conventional frameworks regarding the business venturing process may be created or reproduced:

A: Do you know what happened?
B: Oh, it was the classic problem. Great technology, good market, but no chemistry in the management team.
This illustrative exchange reiterates the importance attached to "chemistry" in the management team of a new venture. But one can easily see how exchanges like these are the micro-processes that create the multitude of commonly shared rules associated with the venturing process such as "sweat the details on the business plan," "don't say yes to the first venture capital who is willing to give you money," etc.

4. **Flows of Particular Cultural Resources**: Conversational topics are not restricted to impersonal topics. They often include specific references to particular actors and these flows, depending upon their form can create, alter, or monitor social reputations; thereby serving as the mechanism for social control and the production of norms. The following scripts illustrate these flows and the aggregate social outcomes they may have.

This first script shows how specific reputations, in this case the reputation of a new start-up, are created and diffused:

A: Aren't they [a recent start-up] in trouble?
B: I heard that they were having some problems getting the bugs out of their product, but last I met someone I was told that they now have it under control.
A: I thought it was more serious. I had heard about their quality problems but I also believe that they have had some fights internally and a few of the key people want to leave.

The script below shows how reputations are constantly being negotiated and altered and how they may influence trading patterns in the region:

A: I have been thinking of approaching someone like C to finance this venture once I have the B-test results and the market survey completed.
B: I don't know if this is really true, but I've heard that ever since D left them, C has become incredibly conservative. It's almost as if they want no-risk ventures. So, I'd think hard before I went to them. You know how these guys are. One of them rejects
your proposal and it bloody well triggers a chain-reaction.

The final two scripts are presented to show how gossip serves to monitor reputations and a mechanism of social control, thereby allowing norms to develop:

A: I should have known better. I knew that he had jumped ship at a critical juncture before he joined us.
B: I think people like that are plain foolish. Someday this is going to catch up with him. I don’t know if you know X, he was a colleague of mine at Y. Well, he was caught hopping for that extra dollar once too often. The last company he worked for sold-out, and now he has been looking for a job for over a year. But knowing his track-record no one wants to touch him.
A: Those guys [a venture being discussed] really got raped by Y [a venture capitalist]. They were really desperate for that extra $250,000. You know, there were bills that they had to pay and some frills they needed to add to the product. But it did appear that they were sure to round the corner and break-even. But I think Y knew they had them by the balls, so they damn well took the whole god-damned company in exchange. Somehow, I didn’t expect this from Y. I know it’s supposed to be a battle; and may the better man win, but there must be some decency. In any event, I was glad I found out because I’d been considering approaching them for an expansion round. Now that I know I am going to damn well search hard for someone well known for a fair shake.

These two examples were chosen in particular because they show how "opportunism" in different types of situations, which is a central concern in modern institutional economics, is kept in check. These examples show that one need not invoke sub-conscious or other-regarding behavior as explanations for the controls on opportunism and that in the 128 Venture Group as in Weimann’s (1980) discussion of the kibbutz: "Conversation networks play the role of social control mechanism: Gossip becomes one of the social forces suppressing deviants and keeping obedience to the common norm...By the transmission of gossip items, the kibbutz [and the 128 Venture Group as well] can keep solidarity, sanctions, and obedience in a heterogeneous, segmented social group."
5. *Purposive talk:* While purposive talk may well be considered a sub-set of particularized conversational items, I discuss it as a separate conversational sub-processes to highlight those aspects of conversational encounters that are very instrumental and in many instances directed towards finding a mutual match. The dynamics of this sub-process may best be described as a mini-interview. The interactants engage in intensive and pointing probing through which they refine their understanding of each other's occupational histories, references, and present situation. The ultimate object is to see if there is prima-facie evidence that warrants a more extensive follow-up after the meetings. Face-to-face contact is considered crucial in the process; "a face is worth a thousand words" being the well-worn aphorism that is often quoted. Considerable importance is also attached to face-work because it is also seen as the only way to gauge the "chemistry" between the interactants, and as I have mentioned earlier, chemistry is the magical ingredient that is often considered most vital to success in the venturing process.

Not all conversational encounters evoke the same amount of emotive energy. The criteria on which this is usually predicated are at once calculative and fuzzy. In an interaction that is conducted in the spirit of mutual sizing up, there is the distinct possibility that one or the other interactant may not "compute" upto the other's expectations. One or the other of the interactants may realize that there is little to be gained in the present or in any future interaction and may therefore walk away from the encounter with little change in their interactional order. Of course, the emotive response may not be so purposeful or rational. Links
are sometimes forged because the interactants "hit-it-off" for reasons that have little bearing on their motives for being at the 128 Venture Group or any rational calculus of gain.

In sum, the 128 Venture Group may be considered a conversational marketplace, a forum in which the flow of words and the flow of values are not two things, but aspects of the same thing. These flows take place in the conversational encounters in the meetings, analogous to the flow of material resources in the individual transactions in an economic market. The one-minute pitch, then, plays the same role that advertising does in the economic market.

VI: THE PERFORMANCE OF THE 128 VENTURE GROUP

Given the wide range and multiplicity of interests and motives of the participants of the 128 Venture Group, and the intrinsic ambiguity of assessing the performance of any organizational model with respect to some of these objectives such as "scanning" or "staying on top," it is somewhat difficult to analyze the overall performance of the Group. However, based on the experiences narrated by the participants I interviewed, the Group appears to offer the potential to realize all the different types of motives - finding "leads" that led to a "match;" establishing a valuable "network contact;" learning of a technological development that had key competitive implications; getting some key "intangible" facts on a "deal" being scouted; "staying on top;" discovering a major flaw in current plans during a "reality check;" and so on. Of course, neither all nor the specific motives of each and every participant
are always fully realized. However, overall, no one that I interviewed felt that their participation was a total waste of time and effort. At the very minimum, they felt that they had "learnt something new."

While all these activities in some way or the other influence the business venturing process, the 128 Venture Group's performance with respect to the search for complementary resources is of particular interest here. This is because facilitating the search for complementary resources vital to the business venturing process is the overarching espoused purpose of the 128 Venture Group's meetings and is the substantive problem that is central to both the cases in this thesis. Therefore, as reported in the methodological appendix to this chapter, I conducted a more systematic examination of the performance of the 128 Venture Group from this standpoint. The results are reported in Table 2.1.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number Interviewed</th>
<th>Leads</th>
<th>Matches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>42</td>
<td>15 - Capital</td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>7 - Management</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - Services</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26 - Sub-Total</td>
<td>7</td>
</tr>
<tr>
<td>Capital</td>
<td>29</td>
<td>16 - Technology</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 - Management</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>2 - Services</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 - Sub-Total</td>
<td>6</td>
</tr>
<tr>
<td>Management</td>
<td>20</td>
<td>6 - Technology</td>
<td>2</td>
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<tr>
<td></td>
<td></td>
<td>1 - Services</td>
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<td></td>
<td></td>
<td>7 - Sub-Totals</td>
<td>2</td>
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<tr>
<td>Services</td>
<td>12</td>
<td>5 - Technology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - Management</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 - Sub-Totals</td>
<td>4</td>
</tr>
<tr>
<td>TOTALS</td>
<td>103</td>
<td>59</td>
<td>19</td>
</tr>
</tbody>
</table>
Of the 103 participants interviewed, a little over half (56) found a total of 59 "significant" leads via the meetings. A "significant" lead is defined as an opportunity that was followed up by at least one meeting between the parties within a month of the meeting.\textsuperscript{26} This is to distinguish such leads from the numerous business cards one inevitably collects by the end of a meeting. It must be noted that not all these leads were "direct" leads. That is, they didn't necessarily involve a participant one had directly met during the meeting. In 12 of these cases, the leads were "indirect," based on references provided by someone whom the interviewee had met during the meetings.

Of the 59 leads, 19 led to "matches" or "deals" within an additional 2 months.\textsuperscript{27} These matches are listed and described briefly in Table 2.1. The majority of the leads (31) were of the Technology-Capital type, involving providers of technology or entrepreneurs looking for capital, or providers of capital looking for ventures in which to invest (This result, though, may in part be an artifact of the reporting bias in the interviews). Of these leads, 7 resulted in "deals" or a formal new resource combination.\textsuperscript{28} 2 of these "deals" involved "seed-stage," 2 "start-up phase," 1 "expansion phase," and 1 "acquisition." The providers of capital involved in these deals included 1 individual investor in a seed stage venture, 1 large corporation, and 4 private institutional investors. The range of investments was from a minimum of $50,000 in one of the seed stage ventures to a maximum of $2,500,000 in the case of the acquisition. Of the 17 leads involving the placement of management team candidates, 6 led to matches. 5 of these were in new ventures and 1 as a professional in a venture capital firm. 5 of these "matches" were the
outcome of direct searches between the employer and the candidate, and 1 was as the result of a professional "headhunter." Finally, providers of professional services were involved in 6 matches based on 13 leads. This included 2 consultants who were retained by ventures, 1 industry expert retained by a venture capitalist, and 1 headhunter who placed a chief financial officer in a small venture.

These findings are in no way indicative of population characteristics. The sampling procedure I employed was far too coarse given the fine division of labor among the participants and their varying motives to make them precisely representative of the population being studied. In any event, some general observations may be made with confidence. First, is the most obvious observation that this "market-place" actually "works." It is amply evident from this data that the 128 Venture Group can successfully facilitate the search for "matches" and hence help in the creation of new business ventures. Second, the different types of "matches" realized indicates that the 128 Venture Group works in a wide variety of search situations ranging all the way from the placement of a management professional to a major acquisition.

While the findings described above allow one to assert with some conviction that the 128 Venture Group facilitates the search for a "match" in a wide variety of situations, it does not include enough cases to detect biases in the search process. That is, there is insufficient data to distinguish the types of situations, if any, in which there is a positive bias or a systemically greater probability of finding a match from those in which there is a negative bias or a systemically lower probability of
finding a match. Such systemic biases may result in Type I errors - situations when a positive bias may lead to poor quality matches, or in Type II errors - situations when a negative bias may lead to the rejection of potential high quality matches. In short, the data do not allow a definitive assessment of the quality of the selection mechanisms that mediate the search process in the 128 Venture Group. Nonetheless, based on more anecdotal data and a careful reassessment of some of the patterns that emerged in my earlier discussion of the dynamics of interaction in the 128 Venture Group, a more tentative analysis of the quality of the search mechanism is offered below.

Quality of the Search Process: Positive and Negative Biases

Two systemic sources of positive bias can be seen to affect the search process in the 128 Venture Group. The first is the bias introduced by the imitation or bandwagon effect since search in many instances may be influenced by technological "fads" or widely shared perceptions of "hot" business opportunities. "Fads" tend to occur because of the enormous importance attached to first-mover advantages and the magical lure of hooking the prized fish - the first generation leader of a new technological domain, as Digital Equipment Corporation was for microcomputers, Lotus for electronic spreadsheets and computer software, and Biogen for biotechnology. While these fads are usually part of the participants predispositions they tend to be reproduced and reinforced in the conversational encounters in the Group. Thus, over the course of time that I have been attending the meetings, "fads" have swung from expert systems in 1985 when everybody wanted to get into that area, to the recent interest in neural nets. This herd mentality, particularly in
the institutional venture capital community and the perverse consequences such a positive bias can have has been documented more carefully by Sahlman and Stevenson (1985). Their research describes how the bandwagon investment pattern in new ventures in the Winchester disk drives area ultimately led to one too many ventures in this industry and a painful subsequent shake-down and consolidation.

The second systemic source of positive bias arises from the enormous emphasis placed on reputation and previous performance history as an indicator of expected performance. This may sometimes lead to a "halo effect." For instance, in one case a venture recruited a chief operating officer based on a previous record and reputation that was prima-facie perfect. Blinded by the "halo" of his reputation, they ignored concerns they had about the "chemistry" between him and the founders. This reliance on reputation proved to be a mistake as the venture fell apart over the next year as the management team got embroiled in infighting and dispute.

On the other side of the coin, several sources of negative bias in the search process may also be pointed out. First, is the bias in terms of technology. There is very little interest in traditional technologies, nor is there much interest in advanced technologies that lie outside the general domain of technological competence that exists in the region-microelectronics, biotechnology, information services. Providers of these technologies confront a negative bias in the search process because intuitive judgement which often plays such a crucial role in the search process is most often guided only by an intimate familiarity with the
relevant technological domain. The following example illustrates this point clearly. An engineer with a great idea to increase the efficiency of the Rankine Cycle, a technology with a potentially major impact on thermal energy plants, evoked little interest as he was touting a technology that was beyond the domain of expertise and experience of most participants in the 128 Venture Group. That this bias can sometimes lead to the rejection of perfectly viable ventures or Type II errors was demonstrated when a Canadian thermal plant decided to license the above engineer’s technology with considerable benefit. 29

Second, is the regional bias. Search is usually restricted to finding a match with someone who is a resident of the Route 128 region. Since trust is largely process-based and relies on reputational credibility built upon occupational history, certification by a mutually known other, and the prospect of repeated exchange, extra-regional participants encounter a systemic negative bias in the search process. For instance, a participant representing a famous German auto manufacturer, aroused considerable interest but had a hard time finding "significant" leads because as one prospective provider of technology put it - "I know they have a flawless reputation as a company, but they have no track-record in a venturing situation with anybody that I know: nobody I can call up to find out how they are going to react in crisis situations." 30

Third, the reliance on idealized models of the perfect "match" that are often used as a way to make the search process less idiosyncratic and more "scientific," reduce its scale, and cope with bounded rationality, systematically biases the search process against options that do not fit
this idealization. This is particularly true for private institutional venture capitalists who have stringent check-lists as part of their idealized models. I heard of numerous cases of immensely successful ventures that were turned down by venture capitalist because they "didn't compute" on some dimension on their idealized models, but were financed by "angels" who didn't employ such detailed analytical models. 31

Finally, the existence of incestuous information cliques such as those that exist in the venture capital community can also lead to systemic negative biases. While this information sharing strategy is used by members of the clique to economize on search costs, it also makes them vulnerable to Type II errors. Thus, the admission by an entrepreneur that he had unsuccessfully approached a venture capitalist who belonged to the same clique as the venture capitalist he is wooing is equivalent to the mark of Cain, inevitably leading to a break-down in the search process that may sometimes be unwarranted.

This assessment of the biases in the search process in the 128 Venture Group must be tempered by two caveats. First, most of these sources of bias are double-edged swords. As discussed earlier in this chapter, they are also the mechanisms by which the complex information problems presented by this situation are solved in the first instance. These biases are, therefore, the price one must pay for coordination to occur on an ongoing and regular basis. Second, the biases evident in the 128 Venture Group are not peculiar to the Group alone. They are broader patterns that are manifest in the region more generally. Indeed, comparatively speaking, the 128 Venture Group has relatively fewer systemic sources of
bias in the search process than may be the case in other formal or informal forums in the region, primarily because of the extremely low barriers to entry for participation and the extremely open process of interaction in the meetings.

Role of the 128 Venture Group in the Broader Context of Route 128

In assessing the performance of the 128 Venture Group it is important to remember that business venturing in the Route 128 region was vibrant even before the founding of the 128 Venture Group. Nor is the search process in the founding of each and every venture in the region mediated by the 128 Venture Group. On the contrary, the 128 Venture Group almost certainly could not have existed in a vacuum; its performance is fundamentally dependent on being a part of the more ramifying institutional pattern in the region. To make this point more clear, if the 128 Venture Group was placed in a completely different context, it is doubtful if it would perform as well as it does in its present context. As evident in the earlier analysis of the dynamics of interaction in the 128 Venture Group, the embeddedness of the Group in the region is crucial to its performance. This is not to suggest that the 128 Venture Group serves no useful institutional role in the performance of the overall regional network. To better appreciate the significance of the 128 Venture Group in this regard requires another short theoretical digression to introduce an enormously influential concept that relates micro-level interactions to macro-level patterns in network analysis - Granovetter's (1973, 1974, 1982) notion of "the strength of weak ties."
Granovetter recapitulates the basic features of his argument in the following fashion (1982:201-202):

The argument asserts that our acquaintances (weak ties) are less likely to be socially involved with one another than are our close friends (strong ties). Thus the set of people made up of any individual and his or her acquaintances comprises a low-density network (one in which many of the possible relational ties are absent) whereas the set consisting of the same individual and his or her close friends will be densely knit (many of the possible lines are present).

The overall social structural picture suggested by this argument can be seen by considering the situation of some arbitrarily selected individual - call him Ego. Ego will have a collection of close friends, most of whom are in touch with each other - a densely knit clump of social structure. Moreover, Ego will have a collection of acquaintances, few of whom know one another. Each of these acquaintances, however, is likely to have close friends in his own right and therefore to be enmeshed in a closely knit clump of social structure, but one different from Ego's. The weak tie between Ego and his acquaintance, therefore, becomes not merely a trivial acquaintance tie but rather a crucial bridge between two densely knit clumps of close friends. To the extent that the assertion of the previous paragraph is correct, these clumps would not, in fact, be connected to each other at all were it not for the existence of weak ties.

It follows, then, that individuals with few weak ties will be deprived of information from distant parts of the social system and will be confined to the provincial news and views of their close friends. This deprivation will not only insulate them from the latest ideas and fashions but may put them in a disadvantaged position in the labor market, where advancement can depend on knowing about appropriate job openings at just the right time. Furthermore such individuals may be difficult to organize or integrate into political movements of any kind, since membership in movements or goal-oriented organizations typically results from being recruited by friends. While members of one or two cliques may be efficiently recruited, the problem is that, without weak ties, any momentum generated in this way does not spread beyond the clique. As a result most of the population will be untouched.

The macroscopic side of this communications argument is that social systems lacking in weak ties will be fragmented and incoherent. New ideas will spread slowly, scientific endeavors will be handicapped, and sub-groups separated by race, ethnicity, geography, or other characteristics will have difficulty reaching a modus vivendi.

Granovetter's theory has subsequently been tested empirically in various settings and the arguments outlined above have been widely supported (Friedkin, 1980, Granovetter, 1982).
Granovetter has also argued that for a social network to have many weak ties that bridge, there must be several distinct ways or contexts in which people may form such ties. To illustrate this argument, he points out that Charlestown (in Boston), which successfully fought off urban renewal, as compared to the West End, which did not, had a much richer organizational life that provided the context for the formation of weak social ties that were likely to be bridging ties.

Seen against this theoretical framework, it is readily evident that the institutional importance of the 128 Venture Group is that along with the numerous other "networking forums" in the Route 128 area, it is one of the several foci for the formation of social ties in this larger network. Of these foci, the distinctive characteristic of the 128 Venture Group is the extremely high likelihood that the social ties created here are bridging ties. This is because in every meeting a large proportion of the participants attend the meetings for the first time and very few ever know of the others before they attend the meeting. Even among those who may have been present together at previous meetings, or those who may have met in other organizational contexts, links tend to be weak. There is little evidence of strong cliques within the set of participants attending any meeting. For sure, there are a few small cliques, such as those centered around the venture capitalists who are "regulars" and the founder's close friends and associates. But the dominant pattern is that the majority of the participants have strong affiliations in very different constituencies, and very few links with each other. The weak ties created between some of the participants, and it should require little
persuasion to be convinced that the ties forged by the interactions in the 128 Venture group are disproportionately weak as opposed to strong, are, therefore, very likely to serve as bridges between the different network segments in which the participants have strong ties. It is not enough to show that the 128 Venture Group creates bridging ties to conclude that this leads to all the social effects attributed to weak ties. As Friedkin (1980) points out, it is essential to also show that something flows through these bridges and that whatever it is that flows actually plays an important role in the social life of the situation at hand. The nature of these flows in the context of the 128 Venture Group have been previously described in my discussion of the interaction patterns in the meetings. This description may now be joined with several of the more general effects that have been associated with the strength of weak ties to show the broader social role of the 128 Venture Group in the Route 128 regional innovation complex.

Network Matching Efficiencies: As first pointed out by Schumpeter and reiterated by the practices observed in the Route 128 region, the business venturing process is essentially a process of putting together the right combination of ideas, capital, and skilled managerial talent at the right moment in time. What makes this process problematic is that in a large network, such as the Route 128 regional innovation complex, the matching pieces that constitute the right combination may be located in network segments that have no ties between them. Using mathematical modelling techniques Boorman (1975) and Delaney (1980) established that the introduction of weak ties, particularly bridging weak ties, greatly enhanced the matching efficiency of the overall network, i.e. the
probability of the right combinations being formed. Moreover, the
damage to the matching efficiency caused by the elimination of a
randomly chosen bridging weak tie was several orders of magnitude
greater than the damage caused by the removal of any other tie.
Applying this result to the situation at hand, a key institutional role of
the 128 Venture Group is the increased matching efficiency in the overall
Route 128 network. Indeed in some cases it may facilitate the generation
of new combinations or business ventures that may never have been
formed in its absence. While it is impossible in the context of this study
(because of the lack of complete knowledge of all the ties in the overall
network) to strictly assert that any of the numerous combinations
(described above in Table 2.1) that were created as a result of the 128
Venture Group’s meetings could not have been created in the absence of
the bridging ties forged by the Group, the following example does lend
plausibility to this hypothesis.

In 1979, Tom Bigger came up with a great technical idea: a small
optical device that would correct for surface defects on the material
and ensure high tolerances in microprocessor based machine-tools.
Working for a large corporation, Tom tried to sell his idea within the
company. This is how he tells his story: "For a couple of thousand
bucks of equipment on each of our machines we could cut our
rejection rates by half - can you believe that no one was interested!
All I wanted was a budget of about ten thousand dollars to start.
The questions I had to answer, it felt like I was asking to buy a
whole company. So the idea just sat on the shelf for more than four
years -- it never occurred to me that anyone outside would be
interested enough to give me the money. [...] Sure, I'd heard of
venture capital, but what do you think I could have done -- picked
up the yellow pages, looked under venture capital and called up
saying - Hi, my name is Tom Bigger, I need ten thousand bucks to
see if a crazy idea I have is going to lead anywhere.

In July 1983, I still remember the date, I was flipping through
some magazine, I can't remember which, and there I came across a
news report describing the activities of the 128 Venture Group.
Almost on a whim, I decided to attend. After all breakfast was only
twenty dollars. How much could I lose?
What happened that morning transformed my life. At the meeting,
after a bout of stage-fright when the microphone was first passed to
me, I met the man who would one day make us both millionaires."
Tom met an individual investor, who understood machine tools, saw the potential in the idea, and agreed to put the capital and "sweat time" in exchange for an equal partnership in the project. A year later, after developing a working prototype and writing a brief business plan, Tom and his partner returned to the 128 Venture Group to find institutional investment, which they also managed to obtain, though the search took longer than they expected; they had to return for three consecutive meetings before they ultimately found a "lead" that led to a "match." An ardent believer in the efficacy of the 128 Venture Group, Tom also claimed to have recruited a key member of his management team via the meetings. At the time of my meeting with Tom, the project had a positive cash flow, though it still was not profitable and Tom had just returned to the 128 Venture Group meetings for a second stage of expansion capital.

Labor market mobility: The role played by weak ties in the search for a new jobs and hence the effect they have on labor market mobility was the empirical finding that first led Granovetter (1974) to propose the notion of the strength of weak ties. He found that in a random sample of recent professional, technical and managerial job changers living in a Boston suburb, 16.7% reported that they saw their contact, who helped them find a job, often at the time, 55.6% said occasionally and 27.8% rarely. This led him to conclude that weak ties are perhaps the most crucial locus of labor-mobility. By establishing such weak ties among people who are a part of different cohesive clusters, the 128 Venture Group meetings opens new employment options, thus creating career paths that may otherwise not have been available. An example is illustrative:

An engineer from a large local corporation whose agenda in attending the meeting was to figure out a strategy to become an independent entrepreneur, discovered an option he had "never imagined" before the meeting. He decided to make a transition to a job in a small entrepreneurial start-up as an intermediate stage before he ventured to "strike it out on his own" as an independent entrepreneur. And it all happened because he established contact with someone at the meeting who felt that his skills perfectly matched the needs of a friend who was the founder of a start-up. Furthermore, this engineer told me that he had encouraged another friend of his working who was working in a different organization to also quit his job and join this start-up. "Of course," he reminded me, "this is just a transitory move. When this venture cashes-out.
we hope that the two of us can use the money and the experience to launch our own venture."

This example clearly shows how the weak ties created by the 128 Venture Group opens up entirely new mobility patterns. It points out the important role the 128 Venture Group plays towards the creation of a more efficient regional labor market. The importance of skilled labor to innovation has been emphasized in numerous public policy oriented studies (OTA, 1984), and the rich variety of options and improved labor mobility produced by institutions like the 128 Venture Group play an important role in helping to attract and hold skilled professionals within the region.

Dynamic Flexibility: The nature of business venturing not only presents the static problem of putting together the right combination, but also presents the dynamic problem of flexible adaptation. The elements that are required to be combined to create a new venture are relatively specialized but the venture into which they are combined are relatively short-lived. As mentioned earlier, the typical venture in the Route 128 area lasts about 3-5 years; at the end of this period it would either have failed and gone bankrupt or succeeded and reorganized itself into a more stable organization or have been acquired by a larger firm. Even in the latter case the initial specialized elements are often withdrawn: the founding managerial team replaced by a more "professional" management group, and the highly speculative venture capital replaced by more solid long-term debt financing. The entrepreneur, venture capitalist, and management team member who formed the initial combination are again in search of new opportunities. In this situation, the 128 Venture Group is the equivalent of the hiring-hall in the construction industry, the shape-
up in the maritime industry, or the rosin in the motion picture industry: it sustains investment in the specialization that is so crucial to the business venturing process by providing an economical way to search for new combinations. Thereby, it "provides continuity in an industry where any given enterprise is too short lived to justify an investment in the search that would otherwise be required to put together the requisite resource combinations." (Piore, 1986:18) 34

The Diffusion of Innovation: The importance of weak bridging ties in the diffusion of innovation has been extensively documented by Rogers (1983). It follows, therefore, that the 128 Venture Group also plays a role in the diffusion of innovative ideas. Since knowledge in the high technology industry has increasingly come to be embodied in human beings, the gathering of 80-200 new people every month provides invaluable information to an astute observer. As mentioned earlier, several participants use the meeting as a scanning source for information on new technological developments. While the bridging ties created by the 128 Venture Group promote the general diffusion of innovation in the region, the bridges that lead to technology transfers between large and small firms deserves special mention because this represents a symbiotic collaboration that is increasingly viewed as being extremely important. The occasional presence of participants who represent international interests, such as a representative of the Japanese Mitsui Trading Company, an R&D manager from BMW, and the Director of the largest venture capital firm in the UK, suggest that bridges are perhaps also being created for the diffusion of technology on a global level.

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Social Integration and Control: While facilitating matching efficiencies, labor market mobility, and dynamic adjustment, the 128 Venture Group by its very advantages creates conditions that could be pernicious to the continued innovativeness of the overall network. Consider, for instance, the following conundrum: Lured by the promise of greater personal gain, a talented technologist leaves a venture mid-stream to join another firm or start his own venture. He may even take with him several other key members of the project team who were working with him, thus beggaring the original firm of its intellectual capital and causing its failure. Of course, the cycle may repeat itself, ultimately making it increasingly difficult to retain a research team for a long enough duration to develop a product. This conundrum, real cases of which have been documented amongst semiconductor firms in Silicon Valley if carried to its logical extreme of vicious and predatory competition, might well lead to the very breakdown of regional high technology innovation complexes.

While competition is certainly a driving motivation for innovation in these regional contexts, it needs to be tempered by some norms that create a sense of community. Norms that stretch beyond complete self-interest to include communitarian interests are essential to the continued vitality of high technology regional innovation complexes. The crucial question that has been raised in this regard is the possibility of establishing these norms and control mechanisms in the absence of strong-ties such as common religion, ethnic background, or political interests: the mainstay of solidarity in previously studied cases of successful and robust entrepreneurial communities such as Modena and Prato in Italy (Piore and Sabel, 1984).
By providing bridges for the dissemination and diffusion of cultural elements such as war stories, reputations, and membership norms, organizations such as the Route 128 Venture Group also serve as the basis for community. Bridging ties are as efficient in the diffusion of cultural information as they are for economic information; this has been established by previous studies on the creation of youth subcultures (Fine and Kleinman, 1979). Personal opinions and prejudices, and reputations spread as quickly as the news of a technological breakthrough. Thus, as I concluded in my analysis of the conversational markets in the 128 Venture Group, the Group helps to institutionalize norms of behavior that are fairly well accepted in the region; for instance, while leaving a company to pursue a personal idea is a lauded ambition, the marauder who has changed four jobs in the past year for personal gain, or the opportunist who sold out on a projects secrets are considered reprehensible, and the violation of these norms are policed and controlled by the importance attached to reputation and its rapid diffusion throughout the network, a control structure that Axelrod shows can secure cooperation by leading to the stabilization of meta-norms.

Creating cognitive flexibility: A not so obvious but extremely important effect of weak ties that has been suggested by Coser (as discussed in Granovetter, 1982) is the development of individual cognitive flexibility and self-direction. Coser argues that the individual who has several weak ties is exposed to a wide variety of different viewpoints and activities and hence develops cognitive flexibility and a cosmopolitan outlook. The value of such a personality in the business venturing
process cannot be overstated as it permits one to assess the needs, motives, and actions of a variety of different people and their ideas simultaneously, providing the resources to recognize and evaluate the numerous options that must be considered before one settles on a particular combination. The 128 Venture Group is a fertile socialization ground in this regard. Attendance at even one meeting exposes the uninitiated to almost the complete range of talk that must be learned to keep apace with the tumult of the business venturing process.

4. Institutionalization

Since its first meeting in 1983, the 128 Venture Group has been meeting regularly every month for over five years now. Attendance in the meetings, despite the high degree of turnover, has never been a problem. Though inevitably between half and two-thirds of the total number of participants are those attending for the first time, at least 80 participants invariably show up. The composition of the participants has also been fairly constant; about the same proportion of providers of technology, capital, managerial skills, and professional services are present at each meeting. Moreover, it is the founder's opinion that the quality of the participants - i.e., the number of really serious investors, entrepreneurs with viable technologies, highly experienced and skilled management team candidates, and reputed expert providers of professional services - has also been consistent. While five years, and particularly five years during which, as I caution later, the venture capital industry and the microcomputer technology sector has been buoyant, is not long enough to assert the institutionalization of an organization, it appears, for the moment at least, that the 128 Venture Group is a well
institutionalized aspect of the organizational milieu of the Route 128 region. The robustness of this claim, however, can only be judged by analyzing the forces that shape the process of institutionalization of a new organization.

The starting point for such an analysis are the conditions that led to the creation of the new organization, following which one needs to understand the processes that create, legitimate, diffuse, and continuously reproduce the organization's public theory. Throughout this analysis one must bear in mind the interests and political motives of the actors involved, for successful institutionalization ultimately rests upon a widely shared public opinion that the new organization satisfies these interests.

To start, then, as DiMaggio (1988) points out, "new institutions arise when organized actors with sufficient resources (institutional entrepreneurs) see in them an opportunity to realize interests they value highly." As mentioned earlier, the 128 Venture Group was created out of the interests of its entrepreneur to create for himself a vantage position in the information network of the Route 128 region. Also vital to the creation of the Group was the ability of the founder to mobilize the support of some of the prominent members of the local venture capital community who endorsed the publicly espoused theory of the Group.

The early legitimacy of the Group, then, was based on its claim of satisfying an unmet demand for a open marketplace for business venturing in an environment in which both the supply of venture capital and technological ideas was plentiful but the mechanisms for establishing

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connections or finding a match relatively limited. While initial legitimacy was secured by the presence of prominent participants, particularly big name venture capitalists, the diffusion and reproduction of this legitimacy was problematic. This was due to the high turnover as a result of which stories of successful performance of the public theory of the Group were not widely disseminated. The paradox, of course, was that the high turnover in itself was not an indicator of failure. Indeed, it could well have been an indicator of success; participants found the complementary resources they came looking for and therefore had no reason to return. The legitimacy and reproduction of the public image therefore relied upon casual word-of-mouth recommendations by previous participants; the only indicator of their satisfaction being the stability in the number of participants. The only other process by which the public theory of the Group was diffused and reproduced was the practice of the founder to hold at least one meeting a year in partnership with some other major entrepreneurial association in the region, such as Boston Computer Society's Entrepreneurs and Consultants club, and the Entrepreneurship Club at MIT, Babson, and Harvard. By now, though, the 128 Venture Group is a widely recognized forum in the region, having been exposed to a critical mass of participants and been reported in almost all the newspapers, magazines, newsletters, and other popular mass communication media in the area.

In terms of satisfying the interests of the individual participants, my observations, as mentioned earlier indicate that the Group has been enormously successful. While the "wish-list" behind participation - the expectations of extraordinary fortune such as finding just the right
venture capitalist - are rarely realized, the downside is negligible. The extremely low barriers to entry, and minimal cost of participation as acknowledged by the nearly universal refrain - "At worst, I ate an expensive breakfast," make failure relatively innocuous, particularly since there is always something interesting that most people learn from the meetings, either during interactions with other participants, or from the speech of the invited speaker. While some of the more perceptive participants recognized that a not so obvious cost of participating in the meeting was the risk of creating an unfavorable impression, the reputational implications were only viewed as being slight. This was because a poor performance at the meeting by someone was considered unlikely to be remembered for too long, positive leads more often being the focus of the meetings, the remainder merely being redundant information discarded in the interest of avoiding cognitive overload.

Finally, from a political or conflict sociology standpoint, the analytical question is - are there any groups whose interests are in conflict with the 128 Venture Group? Since attendance in the Group's meetings is basically unrestricted and no hierarchical class dominates interaction in the Group, the 128 Venture Group, in general, does not encroach upon the interests of any constituency in its environment. Indeed, as a non-profit organization that functions largely as a "matching marketplace" it is only consistent with the interests of almost everybody in its environment because they are all confronted with the common problem of "finding what the options are" in an extremely difficult and noisy communication network. The only group whose interests may be adversely affected by the 128 Venture Group are some of the prominent
established members of the regions status hierarchy. By providing a forum in which those who are not members of this privileged class can participate in the business venturing process and reap profits, the Group raises the possibility of undermining the power of these groups. This potential conflict has, however, not been an issue thus far since the supply of venture capital, since 1983, has been abundant and everybody, their reputations and status notwithstanding, have been forced to look beyond their traditional incestuous information resources for new options for investment. Besides, in an environment in which social position is tightly tied to continued performance, a privileged position in the network can only be maintained by "keeping on top everything." From this standpoint, the 128 Venture Group offers a way by which those in the center of the network can remain aware of developments in the periphery; information that is vital to the maintenance of their social standing. This explains the initial endorsement that the 128 Venture Group received from some of the regions' established venture capitalists and their fairly regular attendance in the meetings. Nonetheless, it is interesting to speculate on what would happen in the event of a serious downturn in the supply of venture capital. This situation may well lead to a withdrawal of some of the established venture capitalist from the meetings which could undermine the normative legitimacy of the Group, deplete the supply of a critical resource on which the Group depends, adversely affect the quality of the participants, and thus set up a vicious circle of decline. A severe downturn in the technological sectors in which the majority of the ventures are based might have similar implications, though in this case it would be due to a bottleneck in the other critical resource besides capital on which this system depends-
technologies that present profitable business opportunities.

In sum, the 128 Venture Group successfully fulfills most of the interests of its participants including the search for complementary resources essential for the creation of new business enterprises. It also plays a vital bridging role in the information flows of the Route 128 region leading to increased efficiency in the creation of new enterprises and increased social cohesion. Finally, the 128 Venture Group appears to be firmly institutionalized at the present time, but may be vulnerable to a major technological discontinuity or drying up of the venture capital industry.
METHODOLOGICAL APPENDIX TO CHAPTER 2

The genesis of the research on which this chapter is based may be traced back to the Fall of 1985. At the time, in the wake of Piore and Sabel's book, *The Second Industrial Divide*, I became deeply interested in the phenomenon of regional innovation complexes that Piore and Sabel argued was an emerging pattern of industrial organization competing, and seemingly winning, against the paradigmatic system of industrial organization - the mass-production system. Being a foreign graduate student living right in the midst of one of the exemplars of this model - the Route 128 innovation complex - I think had just as much to do with this interest. The phenomenon was all around me.

Reading the literature, one of the most important characteristics that appeared to lie at the heart of the success of this model was the enormous capacity of this model of organization to dynamically create innovative new business enterprises. Yet, other than the somewhat dissatisfying explanation that regional concentration created external economies or "agglomeration economies" that allowed small new ventures to compete with established firms, there was little research that addressed the question: How are these new ventures forged and what is the role that different institutions play in this process. So when Michael Piore, in September 1985, pointed me to the 128 Venture Group, an institution that he felt both mirrored this process and played an important role in promoting its dynamism, I seized upon the opportunity to study it at some depth. There was no elaborate calculus for choosing the 128 Venture Group as an object of study: Its espoused goal of
facilitating the creation of new business enterprises was of great interest to me, and it was there to be studied.

Starting in September 1985, I attended 8 successive monthly meetings of the 128 Venture Group. My role in these meetings may best be described as a participant-observer. I was a participant because I too made a one-minute presentation of myself and my research interests in attending the meetings, and sought out conversational encounters just as everyone else did. Over the course of this research I must have met well over a hundred participants through these conversational encounters. The topics I pursued were not invariant across conversations, my approach being more in the spirit of Glaser and Strauss’s (1967) strategy of grounded theory, building and saturating different categories relating to the business venturing process and the role of the 128 Venture Group in this process that inductively emerged from these encounters. In most cases though I focussed on asking the participants questions on their motives for coming to the meetings, why they considered themselves representative of the category they chose to be identified with, what meaning and role that had in relation to the business venturing process, how they identified whom they spoke with in the meetings, what cues they paid attention to in these encounters, what benefit they felt they had derived from attending the meetings, and so on. My only guide as to whom to approach were the one-minute introductions of the participants and the pre-registrant lists. I did try, though without any systematic sampling logic, to meet with participants of as many different types as I could discern.
As an observer of the meetings, I tape-recorded all the one-minute introductions delivered by the participants on two separate occasions. I also engaged in the less respectable act of eavesdropping on many of the conversations among the participants. Since conversational encounters are most often private encounters between two interactants and rarely an open discussion to which any one is privy, it was the only recourse I had available to study what I quickly realized was the heart of the interactional order of the meetings. Given this strategy, I have, of course, no way of knowing how biased or representative my scripts and findings are in this regard, my only defense being that there was no systematic pattern to my eavesdropping.

In addition to the data gathered during the meetings from the above mentioned sources, which I wrote up at the end of each meeting as field notes, I also interviewed several of the participants after the meetings at their place of work or a common meeting place. The number of people I interviewed outside the meetings numbered 23 in total. In most cases, the interviews were about 1 to 2 hours long. 7 of these interviewees, though, became expert informants and I spent considerable more time with them to refine my understanding of what I observed. 1 of these informants was the Chairman of the Group, Michael Belanger. The other 5 included two entrepreneurs, both of whom were old-hands in the venturing process and had been involved in more than one start-up situation; two venture capitalist, one of whom was a partner in a private institutional venture capital firm and the other an informal investor who had been in the venture capital business for over 25 years; one management team candidate who had just been laid of from his position as chief operatining
officer in a firm that had sold-out to a large corporation; and one consultant or provider of professional services who helped new ventures with their marketing communications needs. There was no basis on which I chose these participants to be informants. They were merely the ones that appeared most willing to talk with me again.

The only systematic data gathering exercise in this research was directed at attempting to determine if the 128 Venture Group really worked. So, starting with the December 1986 meetings, for four successive meetings, I randomly picked a total of 45 participants from the final participants list mailed at the end of each meeting. Of these 45, I chose 15 who were providers of technology, 10 providers of capital, 10 management team candidates, and 10 providers of professional services. This ratio reflected the broad proportions in each of the categories in the meetings I had attended till then. I then conducted a brief telephone interview with each of these participants two weeks after the meeting they had last attended. In this interview which usually lasted less than 5 minutes, I explained my research interest and asked basically one question: Had the participant found a significant lead via the 128 Venture Group, defined as a someone with whom the participant had had a subsequent meeting; and if so, had that lead progressed to anything further such as a "match." I followed up on this initial telephone interview with two more telephone calls over the next two months to check if any further developments in this regard had taken place. The number of participants in each category with whom I was successfully able to conduct all three interviews are reported in Table 2.1. This table also summarizes the major findings of this part of the research.

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As mentioned earlier, the bulk of the research was done in the Fall and Spring of 1985-1986. It was heartening, therefore to revisit the 128 Venture Group over two years later in June 1988, after I had completed the other case study reported in this study and prepared an initial draft of the 128 Venture Group case, to talk with some of the participants, record the one-minute introductions again, and eavesdrop as well on some of the conversational encounters, and find that very little had changed and that the data on which I have based this study still appear to be meaningful.
ENDNOTES TO CHAPTER 2


2. This successful model diffused through what DiMaggio and Powell (1983) have called "mimetic isomorphism" and thus had an influential role in shaping the present division of labor and institutional structure of the region.

3. Unleashed after the reduction in the Federal capital gains tax from 42% to 28% in 1978, the venture capital pool in the US grew from about 2.5-3.0 billion dollars in 1978 to over 16 billion dollars in 1986. Of this amount about 12% is concentrated in the New England area. The causal relation between the growth of venture capital and new business activities is somewhat of a chicken-and-egg problem, because while venture capital was essential to the formation of new enterprises, venture capitalists are only attracted to regions where the number of business opportunities and incidence of start-ups is high. Venture capital and start-ups more likely form a symbiotic "circle of goodness" that feeds upon and reinforces itself.

4. The role the state government played in the evolution of the Route 128 innovation complex is the subject of considerable controversy. There is a strong opinion that runs counter to the one I present here, which argues that the state may actually have played an obstructive role.

5. A caveat is in order. This is true only in terms of labor mobility. At the pre-employment stage, Route 128 is a strong magnet for some of the best intellectual talent in the world because of the strong university system in the area.

6. Of course, these spin-offs may also lead to embitterment and cleavages. For instance, the most famous spat in Route 128 involving Ken Olsen, the founder of DEC, and Ray Stata, the founder of Analog Devices had fairly serious consequences since Ken Olsen refused to become a part of the Massachusetts High Technology Council, an important regional political interest lobby that was the brain-child of Stata. But, aside from the chasm between these individuals, there are many ties between engineers lower down in the corporations who were previously colleagues and for whom this spin-off was a less personal issue.

7. A compendium of networking organizations may be found in Lipnack and Stamps (1986).

8. Indeed, about once every year, the 128 Venture Group may hold its meetings in collaboration with other area groups such as the Boston Computer Society Entrepreneurs and Consultants Group, or the Entrepreneurship clubs that exist in universities such as MIT, Harvard, and Babson.
9. In keeping with the inevitable pressures of inflation, this amount has recently been increased to $35/-, and pre-registration, earlier $20/-, to $30/-. 

10. I was surprised, for instance, by how many people whom I spoke with later remembered what I had said in my introduction.

11. A very similar model has been described by Ruhnka and Young (1987) based on a general survey of venture capitalists.

12. For a distribution of the participants by different categories, see the table below. This table is based on the sample of meetings that I attended.

**Distribution of Participants in the 128 Venture Group by Functional Category**

<table>
<thead>
<tr>
<th>FUNCTIONAL CATEGORY</th>
<th>RANGE</th>
<th>MEAN</th>
<th>% OF TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>23 - 76</td>
<td>35</td>
<td>32.4</td>
</tr>
<tr>
<td>Capital</td>
<td>13 - 20</td>
<td>22</td>
<td>20.4</td>
</tr>
<tr>
<td>Management Team</td>
<td>18 - 39</td>
<td>23</td>
<td>21.3</td>
</tr>
<tr>
<td>Professional Services</td>
<td>20 - 45</td>
<td>28</td>
<td>25.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>------</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>

13. These are based on my impressions formed by listening to the introductions of the participants. It was not possible to do a formal count as no one stands up and explicitly announces what stage their venture is at, and there is no unanimity in any event on the number of stages and what they are called.

14. See Pratt and Morris (1985) for a comprehensive guide to the various sources of venture capital.

15. The notion of strategic groups in the venture capital industry are developed at greater length by Robinson (1987).

16. The pattern of syndication in the venture capital industry is described by Bygrave (1987).

17. See Dore (1983) for a discussion of the Japanese sub-contracting system.

18. As one entrepreneur put it: "Timing is everything."
19. This is not a conventional market where producers had a product to sell and consumers had money to spend and what mattered was the aggregate demand and supply and not the individual trades. On the contrary, attention centered on the individual trade and what was crucial was finding the perfect match.

20. For instance, the venture capitalist may be interested in cashing-out or cutting their losses and getting out of a venture whereas the entrepreneur might want to invest further to build that one extra feature in the product that could make the venture take-of'. However, the conflict between the venture capitalist is often seen as being much more serious; entrepreneurs often calling them "vulture capitalists," ready to swoop down and take away the last penny from the entrepreneur at any signs of weakness. While there may be some truth to this caricature, in that venture capitalists undoubtedly would attempt to get the largest portion of the total pie that is possible, their avarice is checked by the simple fact that their fortunes are often tied to the expertise and efforts of the entrepreneur and an unhappy entrepreneur is rarely in the best interests of the overall venture's success. As one venture capitalist told me:

   "I know that we are called 'vulture capitalists,' and the general impression is that we would squeeze the entrepreneur for the last nickel in the venture. I think that is a naive view because we are the biggest losers if the entrepreneur doesn't have his heart in the venture. Some venture capitalists might think that they are just as qualified to run the venture as the entrepreneur, but I think the record would show that it just not true."

21. The distinction between "in-order to" and "because" motives that is drawn by Schutz is useful here. The motives enumerated above are the professed "in-order-to" motives, but the deeper "because" motive is most often the strictly economic motive to truck, barter, and trade for personal gain. The pursuit of individual wealth figures very prominently in the calculus of the participants of the 128 Venture Group, though some may also be seeking a entrepreneurial occupational lifestyle adorned as that is with images of rugged individualism, independence, a non-bureaucratic working atmosphere, excitement, challenges, and the lure of untold riches.

22. Kanai (1988), for instance, surveyed the motivations of the participants of the MIT Enterprise Forum and came up with a very similar list. At the same time he found that the motivations of the participants of SBANE's Dialog Group were quite different, which led him to conclude that different networking organizations satisfy different parts of a range of motives that may arrayed along a instrumental to expressive dimension, the former indicating more strictly economic motives such as finding complementary resources and the latter more psychic motives such as avoiding loneliness, sharing similar experiences, etc. This led him to distinguish between two ideal types of networking organizations - the "circle" and the "club." The former, based more on weak ties was in his view more geared towards instrumental objectives, and the latter based more on strong ties towards satisfying expressive motives. According to this distinction the Route 128 Venture Group is
clearly of the "circle" type.

23. Not surprisingly, the 128 Venture Group is rarely the only forum which the participants attend or the only channel they employ to deal with the complex information situation presented by the business venturing process. Indeed participants are often affiliated with other formal organizations such as SBANE, MIT Enterprise Forum etc. Moreover, Kanai's (1988) research indicates that multiple membership in such forums is a general phenomenon in the region. The participants of both the MIT Enterprise Forum and SBANE's Dialog Group, the cases he studied, were also members of multiple institutions.

24. The idea that shared stocks of knowledge are the well-spring from which social order and organization flow is the central theme in the phenomenological sociology of Alfred Schutz (1970).

25. This raises some interesting methodological problems in both studying and writing of the expressive dimension of the entrepreneur's performance. While participant-observation is almost mandatory in any study of interaction (Denzin, 1974; Blumer, 1969), ethnography, its dominant form of expression, with its emphasis on key-informants, is hardly appropriate in this situation, since the ability of the entrepreneurs to define the strategic categories of their expressive behavior is seriously limited. The researcher has to find ways to extract and communicate sociologically meaningful accounts of expressive behavior from the close systematic examination of numerous instances of such behavioral materials as glances, gestures, positioning, and verbal statements that people continually feed into the situation, whether intended or not (Goffman, 1967). Communicating this observation in a written report that is attentive to the inherently interpretive process by which meaning is established in each interactive link of the observed-observer/writer-reader triad is the other problem which has until recently been seriously overlooked (Van Maanen, 1988). Goffman's own work is a brilliant example of how a formal theoretical framework can be built from units that are characteristically impressionistic in that it relies upon the ability of the audience to absorb the spirit of the tale and not just the literal words that contain it (Van Maanen, 1988). Its use as a heuristic device to provide an illuminating reading of the face-to-face interaction in specific situations has been widely hailed (e.g. Kolb, 1985; Messinger et al, 1962, Denzin, 1974), but the mere fact that it does so, does not mean it is the only reading possible (Manning, 1973) and in fact, may also be susceptible to the problem of "textualization" in that it requires data to be put in a particular theoretically manageable form (Van Maanen, 1988).

21. While there is inevitably some conversation at the breakfast tables, but it is usually very restricted as it would constitute a disturbance to the performance of the one-minute pitch violating the dramatic order which requires that the audience be silent and attentive listeners.

22. While several perspectives may be employed to analyze the conversational encounters in the 128 Venture Group, I adopt this approach because I don't have the detailed conversational scripts nor the formal training that would be required to conduct a proper linguistic
analysis (which in any event would almost have had to be a whole thesis in itself) and because the negotiated order perspective advocated by scholars like Strauss is really better suited to situations in which there is a more stable set of interactants engaged in ongoing interactions than is the case in the 128 Venture Group.

23. It is important to note that the micro-translation strategy proposed by Collins is fundamentally different from the strategy of methodological individualism on which economics and social psychology rests. In the latter fileld, all social phenomena are argued to be the aggregate of the psychological dispositions of the individuals involved, whereas the individual's psychological profile is of little significance in micro-sociology. Interaction processes in concrete social situations are the only explanatory mechanisms admitted in this view.

24. As Zucker (1986) has pointed out, trust may be built upon process, characteristic and institutional based sources. Process based trust relies upon past or expected exchange; characteristic based trust on features of the individual such as social status, education, etc; and institutional trust derives from formal institutional sources such as membership in a bank or any organization that has a well defined public or legal status.

25. An interesting aspect of this script that is unrelated to the role taking and framing outcome is the easy candor of the management team candidate in admitting to having been laid-off. This illustrates an important social feature of the region. There is little stigma attached to failure, since everybody recognizes that the business venturing process is a perpetual cycle of combination, dissolution and recombination that may be prompted by success or failure, much of which depends on chance and good luck. Of course, if a person has only been associated with failure, people are less inclined to concede that to chance, so that an entrepreneur who has failed with three ventures in a row is almost certain to develop a reputation as a loser and have a hard time finding resources for a fourth proposal.

26. Form letters mailed to all the participants are not included as leads.

27. I only tracked participants for a period of 3 months. This was done by a telephone interview in which I asked them if they had followed up on any lead found via the 128 Venture Group, if an initial meeting had taken place, and if any further commitment had been made pursuant to an initial meeting.

28. "Deals" is the term popularly used to describe "matches" involving capital and technology.

29. This account is based on the engineer's self-report. He was one of the participants I had tracked for 3 months after the meetings and in my last conversation with him, he informed me of his successful link up with this Canadian Agency.
30. Participants from outside the region are trying to circumvent this problem either by setting up local offices and thus creating a place for themselves in the social network, or else by partnering with a prominent local agent who provides the network credibility.

31. Broader evidence of this bias may be found in the work of Bruno and Tyebjee (1985).

32. The notion that different social foci serve as the locus of formation of social ties and overlapping social circles is developed at greater length by Feld (1981).

33. It is important to note that ties are not created between all the participants in the meeting, only among some of them. This is because some interactions have minimal significance and create no ties at all. The mere fact that everybody listens to everybody else’s one-minute pitch and receives a list of all the participants names, addresses, phone numbers, and interests is not sufficient to constitute a weak tie, because nothing may flow through these ties.

34. I am indebted to Michael Piore (1988) for pointing out this effect, not mentioned in the previous literature on the strength of weak ties.
APPENDIX 2.1: MAILING ANNOUNCEMENT OF THE 128 VENTURE GROUP

APRIL MEETING

Our April meeting will be Thursday, April 10th at the Newton Marriott Hotel (Route 30 at 128).

7:30    Check-In

8:00    Sit down to Breakfast

During Breakfast

8:05    Each registrant representing "Technology", "Capital", or "Management" is given an opportunity (sixty seconds) to make an announcement to the group about the needs a venture has or resources/expertise available to a venture.

9:00    Speaker:  Alison Taunon-Rigby  
         VP/GM of Vivotech  

Topic:  Financing Biotechnology in the 80's

9:30    Our informal meeting ends, networking begins.

A pre-registration fee of $20.00 and a completed registration form must be received by April 7th. Pre-registration must include payment by mail to the address indicated. Phone registrations will NOT be accepted. Attendance is subject to availability. Late registrations received after April 7th or at the door will be charged $25.00.

The 128 Venture Group is a not-for-profit forum to stimulate increased technology venturing where the technical innovators seeking to start or build a firm can meet informally with the venture community representatives and individual investors who provide seed capital and venture funding as well as potential candidates for their management team.

CHAIRMAN MICHAEL P BELANGER  
Emerging Technologies  
Bedford Road, Lincoln MA 01773  
617 259-8776

SECRETARY STEPHEN C FORD  
Carpenter Consultants Inc  
824 Boylston Street Chestnut Hill, MA 02167  
617 731-3730

DESIGN STEVEN J GUENOFF CO 119 GORDON ROAD WABAN MA 02168 PHONE 617-244-9780  
129
1. **SPEAKER:**

   Alison Taunon-Rigby is the VP 'CM of Vivoteck. Before joining Vivoteck she was VP of Business Development at Biogen, Inc. She is also Director of the University of Bristol, England’s association of biotechnology companies which is the leading organization representing both domestic and international biotechnology companies.

2. **MAIL LIST:**

   If you are a first-time attendee, you will receive a pre-registration form for the next month. Thereafter, you must pay the $15 annual mail list fee to continue to receive the forms.

   You do not have to be on the mailing list to attend. Being on the mailing list means you will be notified of each meeting and be able to pre-register at the reduced rate. Prepare a check for $15 made out to the 128 Venture Group and mail to Carpenter Consultants. You must include the category (Technology, Venture Capital, Management or Professional Services) in which you attend the meetings.

3. **PRE-REGISTRATION:**

   Pre-registration is **essential**. We don’t want to have to turn people away but the percentage of door registrations is too large. If you do not mail your pre-registration check early enough to be received three business days prior to the meeting, then you will have to pay $25 per person at the door.

4. **PROVIDERS OF CAPITAL:**

   Providers of Capital must be Venture Capitalists or other direct investors. Investment bankers and other sources of assistance should enroll as providers of professional services.

5. **PROFESSIONAL SERVICES ATTENDEES:**

   A Provider of Professional Services is welcome at his or her first meeting to learn more about the group.

   Since our meetings are valuable contact forums for service providers, they are allowed to attend their second and subsequent meetings only when each brings a pre-paid first-time participant from one of the other three groups: Capital, Management or Technology. We require that they pre-pay for the guest they are introducing to Venture Group activities.
REGISTRATION FORM

___April 10    ___May 8    ___June 12

A registration fee of $20 is enclosed for each person attending. DOOR REGISTRATIONS OR REGISTRATIONS NOT RECEIVED THREE DAYS PRIOR TO THE MEETING ARE $25. Checks payable to 128 Venture Group.

Name (1):

Name (2):

Company:

Address:

Telephone:

___ PLEASE CHECK IF YOU ARE ATTENDING FOR THE FIRST TIME.

On the ATTENDANCE ROSTER, please describe as a (Check One)

* ___ A Provider of Capital. (See Notice before registering)

* ___ A Management Team Candidate, Expertise: ____________________________

* ___ A Provider of Technology. Describe products/technology: ______________

______________________________

Tell us about the stage of your Venture has reached:

___ Concept Only ___ Business Plan Complete ___ In Operation

Need: Capital ___ Management ___ Services ___

Provider of Professional Services. Expertise: ____________________________

Introducing: Name: _____________________________________________

From: Capital ___ Technology ___ Management ___

His/Her registration form must be attached with a pre-paid $40 minimum payment.
ATTENDANCE LIST
April 9, 1986

Speaker: Alison Taunton-Rigby, VP/GM of Vivotek

TECHNOLOGY

William Ansley
Box Co., In., 56 Howard Street, Cambridge, MA 02139
576-0892 Window books: electronic media-based reference books

Max ben-Anlon
Xenophase Inc., 61 South Road, Bedford, MA 01730 275-7257
An improved indication motor

John Bliss
InfoProcessing Inc., 60 State Street #3330, Boston, MA 02109
227-3323 Specialized terminal product

Milton Brown
Insurance Information Inc., 45 Palmer Street, Lowell, MA 01852
453-2557 An information service that allows consumers to shop for the most competitive life insurance policies.

Avner Butnaru
Videk Inc., 81 Grant Street, Needham, MA 02192 Split screen video systems

Noel Dill
Venmar Inc., 6 New England Executive Park, Burlington, MA 01803
273-4668 Local area network (LAN) design, installation & supp

Richard Eckhardt
Cyber Research, 51 Lockeland Avenue, Arlington, MA 02174 646-43
PC based engineering workstations for CAD/CAM, CAE DAS, instrumentation, etc.

Curtis Forbes
P.O. Box 816, S. Lancaster, MA 01561 A new and exciting concept in recorded entertainment

John Galeros
Protek Inc., 32 Beacon Street, Woburn, MA 01801 933-2993
Low cost ate, automatic test program generation

Carl Good
Integrated Chemical Sensors Corp., 44 Mechanic Street, Newton, MA 02164 965-6950 Microelectronic biosensors - development manufacturing and sales

Edward Housman
Information Environments Inc., P.O. Box 3480, Framingham, MA 01701 466-2323 Software/hardware videodisc CD-Rom databases

Bradlee Howe
CNC Corp., 150 N. New Boston Street, Woburn, MA 01803 933-0090 numerical motion controllers

S. Kogan
IVS Graphics, 5 Clandenne Lane, Framingham, MA 01701 877-1547

Nancy Korman
760 Associates, 36 Lansing Road, W. Newton, MA 02165 969-3678

Ken Kulesza
Execucomp Systems, 167 Washington Street, Norwell, MA 02061
871-5928 Management Systems/software

Scott Mize
National Datacomputer, 34 Linnett Circle, Billerica, MA 01821
663-7677 Hand-held computers

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Agriculture Applications
Robotics of RI, P.O. Box 1435, E. Greenwich, RI 02818 401-885-1470 Mobile intelligent robots
Lenco, 661 Mass Avenue #7, Arlington, MA 02174 648-7559 provide software programmers/analysts
113 Everett Street, Concord, MA 01742 369-2075 High capacity high data rate disc systems
Liverpool Realty, 171 Main Street, Ashland, MA 01721 881-4711 Looking for investors in office buildings, hotels and motels
1 Launching Road, Andover, MA 01810 686-0899 Invasive medical products
The Wohl Engine Co., Ltd., 8200 Shore Front Parkway, Rockaway Beach, NY 11693 718-945-0299 Orbiting-piston Brayton-cycle diesel engine

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305 Sudbury Road, Concord, MA 01742 369-7242 Laboratory Mgt
12 Ridgefield Road, Norfolk, MA 520-0023 Mkt/Sales Consulting
13 Woodlawn Road, Sturbridge, MA 01566 347-9667 Mkt/Sales Mgt
34 Juniper Drive, Bedford, MA 01730 603-472-3866 Sales Mgt/CW
76 Fletcher Road, Bedford, MA 01730 275-1956 Biomedical R&D project evaluation
272 Summer Street, N. Andover, MA 01845 685-0801

6 Lantern Lane, Chelmsford, MA 01824 256-6324 Finance/Turnaro
Regina Weg 7, 2220 Davos Plaza, Switzerland 083-51835
38 Heartbreak Road, Ipswich, MA 01938 267-0690 Business Dev
80 Prescott Street, Newton, MA 02160 964-4349 GM/Mkt
102 Charter Road, Acton, MA 01720 264-0330 Mkt/Sales
Krauss Associates, P.O. Box 789, Marblehead, MA 01945 639-1182 GM/Operations
Start-ups, Finance/Operations/Administration - GM
41 Cranmore Road, Wellesley, MA 02181 235-5598 GM
Encore Computer, 225 Walden Street, Cambridge, MA 02140 576-2X Marketing
13 Colonial Road, Dover, MA 02030 785-0445
72 Dunster Road, Bedford, MA 01730 275-0752 GM
P.O. Box 479, Brookline, MA 02146 734-4388 Messbuster
Howard Johnson, 35 Wake Robin Road, Sudbury, MA 01776 443-8681 Consumers Goods Marketing

133
38 Sears Road, Wayland, MA 01778 358-7287 Eng/Tele/Computer based systems
7527 Centenary, Dallas, TX 75225 214-739-2476 Accounting
1173 Commonwealth Avenue, Boston, MA 02134 787-9636 Mkt/Financ

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Joseph Freeman
Jules Fried
Burton Horne
Thomas Hollyday
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Bender & Associates, 34 Prospect Street, Needham, MA 02192 444-3246
Wang Computing Services, 20 South Avenue, Burlington, MA 01803 270-8331
Claflin Capital Management, 185 Devonshire Street, Boston, MA 02110
Phoenix Venture/Lease, 6 Station Street, Simsbury, CT 06070 203-658-1947
Nichimen Corp., P.O. Box 57, Stoughton, MA 02072 341-3353
Freeco Inc., 86 Lovett Road, Newton, MA 965-2663
McDermott, Will & Emery, One Post Office Square, Boston, MA 02109 357-0200
North American Properties, 100 Summer Street, Boston, MA 02110 423-4405
Holly Corp., 45 Judith Road, Newton Centre, MA 02159 244-4051
Bank of Boston, 421 Stuart Street, Boston, MA 02116 434-7320
Venture Capital Fund of New England, 100 Franklin Street, Boston 02110 451-2575
MTDC, 84 State Street, Boston, MA 02109 723-4920
Enterprise Leasing, 510 Chapman Street, Canton, MA 02021 821-22
Concept Research Inc., 96 Freeman Street, Auburndale, MA 02166 964-5225

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Chinter Corp., 303 Congress Street, Boston, MA 02210 439-4410
P.O. Box 1385, Cambridge, MA 02238
Parker, Sholl & Gordon, 440 Totten Pond Road, Waltham, MA 02154 890-0340
Fenwick Partners, 450 Bedford Street, Lexington, MA 02173 862-3370
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CHAPTER 3
INTERNAL BUSINESS VENTURING AT EASTMAN KODAK

INTRODUCTION

From the perspective of business venturing, Kodak for a long time was the epitome of Schumpeter's big corporate industrial R&D model of business venturing. New business ventures in the form of innovative products and processes, resulted primarily from the planned efforts of its centralized corporate R&D facilities. But, more recently, changes in Kodak's external environment have sparked a major reorientation in Kodak's overall strategy and structure. This has also led to important changes in Kodak's approach to business venturing. Not only has Kodak restructured its traditional monolithic, centralized research lab into smaller, decentralized research organizations that are more closely aligned with its new business group and line of business structure, it has also adopted a whole range of new internal and external venturing approaches. These include an internal venturing program, acquisitions, joint ventures, equity investments, etc.

While these multiple venturing approaches are all different facets of an overall shift in Kodak's strategy for the generation of new business opportunities, and must be seen as interrelated parts of a broader technology strategy, the focus of this chapter is confined to Kodak's internal venturing program. In the context of this thesis, Kodak's internal venturing program is particularly interesting for two reasons:
First, it quite explicitly conceives of itself as being, among other things, an organizational unit that helps establish links between the different members of the corporation who have the complementary resources necessary for the creation of new business ventures. It is in this sense a network-creating organization in a corporate context, much as the 128 Venture Group is a network-creating organization in a market (or regional) context. In fact, Kodak's internal venturing program was explicitly modeled in various respects on the approaches to business venturing in successful regional contexts. From a comparative standpoint this offers a fascinating opportunity to explicitly examine the widely imputed but little studied parallels in the emergence of network forms of organization in market and corporate contexts. Second, Kodak's internal venturing program has attracted considerable attention from academics (Kanter, 1987) and practitioners for being an innovative corporate model for business venturing and has inspired several other corporations to establish similar programs. Therefore as a widely acknowledged organizational innovation, it is worthy of more careful study in its own right.

My account of Kodak's internal venturing program is based on intensive field-work conducted in Kodak in March 1988. The methodological details of this field study and the empirical material on which this case study is built are presented in the Appendix to this chapter. The account, itself, is organized as follows:

In Section I, the historical back-drop is set against which Kodak's recent changes may be properly situated. I start by describing the
The evolution of Kodak's immensely successful traditional strategy, structure and approach to business venturing. I then discuss the environmental conditions of the mid-'70s that triggered Kodak's reorientation, and Kodak's response which included a major strategic and structural reorientation. In particular, I highlight the changes in Kodak's general approach to business venturing and the scope and significance of its internal venturing program in this context.

In Section II, I describe the major components of Kodak's internal business venturing program. The focus in this section is to present the formal rationale underlying the creation of the different components of the program and to describe how this transposes into formal structures, processes, and conventional operating procedures. The perspective I present here is that of the founders and administrators of the different components of the program.

In Section III, I portray in richer detail how this formal internal venturing program plays itself out in practice. The perspective I present here is that of the people who have participated in the program. The questions I address include: Who participates in the program? What sort of ideas do they submit? What are their motives for participation? What do participants view as the primary dynamics of interaction in the various stages of the venturing process at Kodak - starting with the generation and development of an idea for a new business opportunity to its culmination in a fully established business venture? What are the costs and benefits of participation?
Finally, in Section IV, I assess the performance of Kodak's internal business venturing program on several dimensions: its outputs, its quality, its role in stimulating innovation more broadly within Kodak, its unintended consequences, and the extent to which it has been institutionalized.

I: THE HISTORICAL CONTEXT

The Early Years: The Legacy of George Eastman (1880-1931)

Kodak was founded at the turn of the century, in 1880, by George Eastman, one of the classic inventor-entrepreneurs of corporate America, a group that includes such illustrious heroes as Edison, C.C. Washburn, Henry Bessemer, Edward Norton, etc. Alfred P. Chandler (1977) clearly describes the early evolution of the company in the following passages:

In 1884, George Eastman invented and by the end of the decade perfected, a continuous-process method for making photographic negatives by using gelatin emulsion on film instead of glass plates. However, because the new film required a new or rebuilt camera with holders and because the developing of the film was so complex that it had to be done at the Eastman factory, it found little favor with professional photographers. Eastman then turned to a still untapped mass market, the amateur photographer. He and his associates concentrated on inventing a small, standardized camera which was easy to build and easy to operate and on finding a more satisfactory roll film to be used with the camera. In April 1888, Eastman patented and then immediately began to mass produce the Kodak. Then by 1889, he and his colleagues had perfected a celluloid-based roll film of high quality. Eastman combined the new film and camera for the mass market by selling each Kodak loaded with film for 100 exposures. Once the 100 pictures had been snapped, the camera (later the film) was returned to the Eastman factory in Rochester where the film was developed and printed and the camera reloaded. To sell and distribute his new camera and film and to service their purchasers, Eastman immediately created a worldwide marketing network of branch-offices with managers to supervise salesmen and demonstrators and to coordinate flows of cameras, films, and funds. In 1890, Eastman built production and servicing facilities in Britain. As the production of camera and film soared, the company set up a
purchasing organization to buy massive quantities of paper, celluloid, lenses, and other material. Before 1900, Eastman Kodak, the towering giant of the industry was beginning to manufacture several of these items in its own plants. By 1917, Eastman Kodak had a fully integrated production facility in Kodak Park, Rochester, was functionally organized, and among the largest industrial corporations in the world with assets of $63.9 million.

The company that George Eastman built, continues to dominate the photographic industry to this day. In 1987, it was ranked 25th in the Fortune 500 with sales of $13.3 billion and profits of $2.1 billion on an asset base of $14.5 billion.\(^2\) Often referred to by its employees as the "yellow-box company", its identity is still shaped by the color and packaging of its principal product - photographic film.

George Eastman had an equally important role in shaping the company's approach to innovation and the generation of new business opportunities. In his fascinating history of the photographic products industry, Reese Jenkins (1975: 184) writes of Kodak:

[By the turn of the century], patents began to play a diminished role, while continuous innovation became a more effective strategy... In 1896, George Eastman set up his experimental department with managers trained in Chemical Engineering at MIT and other universities. He summarized the problem and the strategy in this manner in a memorandum written April 23, 1896: "I have come to think that the maintenance of a lead in the apparatus trade will depend greatly upon a rapid succession of changes and improvements, and with that aim in view, I propose to organize the Experimental Department in the Camera Works and raise it to a high degree of efficiency. If we can get out improved goods every year, nobody will be able to follow us and compete with us. The only way to compete with us will be to get out original goods the same as we do.

As is evident from the above accounts, Kodak emerged at the turn of the century as the giant in the photographic products industry, with a strategy of growth based on mass production and planned innovation in its photographic products. To accomplish this strategy, it had all the
necessary organizational elements in place, a fully integrated continuous-process production facility in Kodak Park, Rochester, a world-wide marketing and distribution network, a highly professional organization structured along functional lines, and a large industrial R&D organization that had, for all purposes, routinized the process of innovation.3

The Golden Years - Doing More of the Same, Only Better (1932-1975)

Through the rest of this century, until the mid-70s, Kodak's basic strategy and structure remained unaltered. Kodak continued to grow on the foundation that George Eastman had laid, constantly improving and perfecting its mass-production base, international marketing and distribution network, and functional administrative organization. In fact, Kodak was one of the few companies of its size that persisted with a functional or U-form organization through this period that many other companies diversified into other businesses and came to adopt the multidivisional corporate form or what is popularly known as the M-form organization.4

Kodak Research Labs (KRL) remained the crown jewel of the company and was primarily responsible for its continued dominance of the photographic products industry. By the end of the '70s, KRL boasted more than 600 Ph.D.s with a total staff approaching 1500 people. It served a central research function for the entire company and consisted of ten major divisions: Emulsion Research, Color Photography, Black and White Photography, Instant Photography, Electrophotography, Physics, Chemistry, Analytical Chemistry, Bioscience, and Administration. KRL's
mission at the time was two-fold: first, to develop new photographic products for the company, and second, to conduct basic research in the fields of photography, chemistry and analytical chemistry. KRL's research focus on products was complemented by the efforts of an equally large manufacturing research and engineering organization that focussed on process improvements and innovations that enabled the company to mass produce its products more efficiently, reliably, and with higher quality. The company also had a few international labs with the one in Britain being the most prominent.

For the effective operation of its research labs, Kodak not only relied on hiring some of the best scientific and technical personnel and providing them with superior research facilities and slack resources, but also on an institutionalized process of innovation. This process centered around what were called "P" projects. In most instances, key members from KRL would form the core team of a new product "P" project along with members from other local development groups, manufacturing and engineering research groups, and even marketing divisions. In this way, these "P" project teams spanned across the various functional organizational units in Kodak. From a coordination standpoint though, while "P" teams reported to a corporate project coordinator, they stayed in their respective organizational units and simply met through team meetings. The focus of these "P" projects was to take a concept that had been defined as a potentially important business opportunity by top management and bring it to market as expeditiously as possible. "P" projects were typically managed in what may be described as a "top-down" manner, with the various development activities planned,
distributed, scheduled, and monitored by the project coordinator and a small group of project leaders. In sum, this approach allowed a committed, concerted, and coordinated approach to developing new business opportunities that were deemed to be valuable to the firm. And till the mid-70s, there seemed no compelling reason to tinker with a process that obviously seemed to work. Kodak, at this stage, clearly dominated the photographic products industry with an estimated 80% of the market. But, the success story was not to last forever.

In the late-'70s and '80s, a torrent of what, at first blush, seemed like small independent problems that would just run their course, suddenly converged to create a major crisis for Kodak, rudely bringing to an end what are now wistfully remembered as the "golden years." Recalling these years, a manager who had worked for over 30 years at Kodak reminisced:

In the Golden Years, nobody really cared what you did as long as the present products came out of the door, and the next generation was in the pipeline. For the most part the competition was insignificant and demand greater than what we could supply. Energy was basically free. All that mattered was producing ever larger quantities of product with improved quality. You worked eight-hour days, had plenty of time to tinker with new ideas if you wanted, and as long as you did your job, you got your salary and a pretty good year-end bonus. But then, suddenly, everything changed!!

The Shell-Shocked Years: A Company Under Siege (1975-1983)

During the late '70s and the early '80s, a number of factors resulted in flat and subsequently declining return on equity, net profit margin, and discretionary cash flow. Several internal and external company observers
attribute this crisis to a combination of three broad forces.

First, there was a deterioration of several macroeconomic factors during this period. The oil crises triggered both an inflation in input costs and a recession in consumer spending. These problems were only exacerbated by the sustained strength of the dollar over this period and the rising prices of silver (a critical input).

Second, and perhaps foremost in the opinion of most analysts, Kodak for the first time had "real competition". The principal challenger was Fuji, a Japanese company whose bright green boxes of film soon began contesting Kodak’s yellow in several countries, including Kodak’s homecourt - North America. Traditional competitors like Agfa and Polaroid were no less of a threat and were wrestling away market share in many markets. Moreover, competition was not restricted merely to Kodak’s primary "cash-cow" photographic film business. Even in its secondary lines of business, like copiers and cameras, companies like Canon, Ricoh, and Nikon were taking-off. Even worse, this competitive challenge was not based on lower prices alone, but also on the grounds of technological leadership, a domain in which Kodak had considered itself invincible since the early days of George Eastman.

Third, Kodak's future looked just as bleak as its present, because Kodak was staring in the face of what was undeniably the beginning of a major structural change in the market from which the company derived 80% of its revenues, the photographic materials industry. This market was maturing rapidly; its growth had slowed from the healthy 10-15% of
the past to a current rate of 6%. Moreover, the market was also vulnerable to a technology-led transformation, with electronic imaging threatening to substitute traditional silver-halide photography. This imminent change was a source of extreme concern for Kodak, since it threatened to render Kodak's existing distinctive competencies worthless. 6

It is little wonder, then, that in describing this period, one top management executive remarked:

"We were shell shocked. It was as if we were under seige from every quarter and it was becoming more and more difficult to hold out."

The Transformative Years - A Company in Transition (1983-present)

"Shell-shocked" as it was, Kodak reacted in fits and starts during the first few years of the crises of the late 70s and early 80s. Kodak made several changes in its strategy and structure during this period, but it was difficult to discern a clear vision or focus. Since 1983, though, under the leadership of its new CEO, Colby Chandler, Kodak has articulated a much clearer corporate strategy and implemented several major structural changes. Driving these changes is Colby Chandler's statement of the corporate mission:

The Kodak goal is straightforward: to use the company's world class status in the disciplines of chemistry, imaging, optics, and information management with new strengths in electronics and life sciences to maintain leadership in current markets while establishing strong positions in new areas of opportunity. The new organization provides the framework for this strategy. 7

Notable in this broad statement are three strategic thrusts: (i) the
requirement that all businesses be more sensitive to the needs of the market-place, (ii) the importance attached to growth driven by new business opportunities, and (iii) the emphasis on simultaneously leveraging and broadening the company's existing bases of competence. Also notable is Colby Chandler's emphasis on:

A new spirit, one that nurtures innovation and change. The new organization is customer-oriented and allows decisions to be made at lower levels in the company. It encourages risk-taking and rewards innovation.8

The new organizational structure (circa, 1986) represented in Figure 3.1 provides the framework for this strategy. Kodak has abandoned its functional organizational structure for a multidivisional structure. The Eastman Kodak Company is now organized into five major business groups: Photographic Products, Commercial and Information Systems, Life Sciences, Eastman Chemicals, and Diversified Technologies.9 The first four business groups have clearly defined charters based on separate focal technologies and markets and serve as coordinating umbrellas for the several lines of business (LOB). (For instance, the Photographic Products Group has 7 LOBs that fall in its domain.) While the transition is still not complete, each LOB is now an independent profit center that has formal responsibility for all the strategic and tactical decisions required to respond to the market.

The charter of the Diversified Technologies Group is more open-ended: that being, to create new businesses that fit the corporation, but which lie outside the present charters of the other four business groups. Included under the Diversified Technologies Group is Eastman Technologies Inc., a wholly owned Kodak subsidiary that acts as a holding
FIGURE 3.1: ORGANIZATIONAL STRUCTURE OF EASTMAN KODAK

SOURCE: EASTMAN KODAK COMPANY, NOVEMBER 1986
company for internally launched independent business ventures. Kodak also has two shared resource groups: Manufacturing and Customer & Marketing Support, and five international (non-U.S.) divisions. Reporting directly to the Office of the CEO are the various staff organizations including the Venture Board and NOD that are discussed at greater length later.

In addition to the overall organizational structure the traditional monolithic centralized R&D organization has also been restructured. In the new structure, as depicted in Figure 3.2, R&D is represented at three levels. At the highest level now is the much smaller Corporate Research Lab whose primary focus is exploring "blue-sky" type of research or technological directions that are more than 5 years into the future. At the next level are the seven Group Research Labs, distributed as shown in Figure 3.2. The objective of these labs is to focus on the development of technologies that are more closely aligned with the strategic charter and vision of the Group. The final level are the development organizations in most of the lines of business that are aimed at facilitating the integration of design, manufacturing, and marketing for specific products. In addition there are R&D organizations in some of the overseas divisions of Kodak.

Besides the restructuring of the traditional R&D structure, a much broader range of approaches have been employed for generating new business opportunities, particularly in areas outside Kodak's domain of core competencies. This has included a variety of external venturing approaches such as university funding relationships, equity investments,
FIGURE 3.2: STRUCTURE OF THE RESEARCH LABS AT EASTMAN KODAK

OFFICE OF THE CEO

CORPORATE STAFF GROUPS
- FINANCE
- LEGAL
- CORP RELATIONS
- CORP COMMUNICATIONS

CORPORATE RESEARCH LABS

CORPORATE PLANNING

VENTURE BOARD

NOD

CANADA

EUROPE

LATIN AMERICA

JAPAN

CUSTOMER & MARKET SUPPORT

WORLDWIDE MANUFACTURING

RESEARCH LABS

PHOTOGRAPHIC PRODUCTS

RESEARCH LABS

COMMERCIAL & INFO SYSTEMS

RESEARCH LABS

LIFE SCIENCES

RESEARCH LABS

EASTMAN CHEMICALS

RESEARCH LABS

DIVERSIFIED TECHNOLOGIES

RESEARCH LABS

EASTMAN TECHNOLOGY INC

SOURCE: EASTMAN KODAK COMPANY, NOVEMBER 1986
licensing agreements, joint-ventures and acquisitions; the recent $5.1 billion dollar acquisition of Sterling Drugs by the Life Sciences Group being the most notable. Table 3.1 below summarizes some of the major external venturing investments that Eastman Kodak had undertaken by the end of 1986.

An additional corporate focus is a set of formal corporate institutions designed to stimulate internal business venturing in Kodak. The objectives of this system, as defined by Colby Chandler, are:

The primary object of the new system is to increase the quality and quantity of well-evaluated ideas on which to base new venture pursuits, product line expansions and program improvement decisions. A second objective is to encourage broader participation in the generation and implementation of ideas.¹¹

The internal venturing program at Kodak, therefore, attempts to identify, nurture and develop grass-roots or bottom-up ideas for new business opportunities that "fit" Kodak's strategy (either within or outside an existing line of business) but originate outside their logical area of sponsorship. There are three key components of the internal venturing program in Kodak: the Office of Innovation Network (OIN), New Opportunity Development (NOD), and Eastman Technologies Inc. (ETI), which is overseen by a Venture Board. These institutions and the internal business venturing activities centered around them demarcate the central interests of this study and are discussed in greater detail below.
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<tr>
<th>Division</th>
<th>Technology Strategy Linkage</th>
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<td>Diversified Technologies</td>
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<td><strong>Totals</strong></td>
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Equity = Equity Investments (total about $100M);
JV = Joint-Ventures (total about $125M);
ACQ = Acquisitions (total about $700M);
VBU = Venture Business Units (total about $250M);

SOURCE: EASTMAN KODAK COMPANY, DECEMBER 1986
II: THE FORMAL STRUCTURE AND PROCESS OF THE INTERNAL VENTURING PROGRAM

Overview

The organization of Kodak's internal venturing program is defined in terms of a three-staged model of the evolution of a new business venture. Each stage is distinguished basically in terms of the degree of development of the new business venture and Kodak's resource commitment. Different components of the overall internal venturing organizational framework have primary responsibility for each of these stages. This is shown schematically in Figure 3.3 and is discussed below.

The first stage is called the Idea Development or "Bootleg" phase. During this period, ideas for new business opportunities that originate outside their logical area of sponsorship are identified, nurtured, developed, and evaluated so that may be "reduced to practice". This is done with a view to facilitate the idea's "connection" to an interested "sponsor" within the corporation who is willing to make a formal resource commitment toward its further pursuit. No financial resources are formally committed during this phase; the originator of the idea is expected to be motivated and resourceful enough to invest the extra effort and scavenge or "bootleg" any resources that may be required to develop the idea to the point where it may be sponsored. The primary responsibility for this first phase of the evolution of internal ventures at Kodak lies with the Offices of Innovation, a network of 19 offices spread all over the corporation. About 20% of the ideas submitted to the Offices of Innovation ultimately connect with a sponsor. 80% of these
FIGURE 3.3: OVERALL ORGANIZATION OF EASTMAN KODAK’S INTERNAL VENTURING PROGRAM

KEY:
O.I. = Office of Innovation

SOURCE: EASTMAN KODAK COMPANY
are sponsored by the various operating units and become line items in their plans and budgets. The remaining 20% that do not have a clear current fit with any of the existing organizational units, but "fit" Kodak's corporate strategy are sponsored by New Opportunities Development (NOD), the second component of Kodak's internal business venturing organization.

The proposals entering the NOD organization, are considered to have made the transition to the second stage in the evolution of a venture that is called the "Seed Stage". It is important to note that only half of the proposals entertained by NOD come from the Office of Innovation Network. The other half come from other organizational units and include truncated line projects. From a resource standpoint, the seed stage consists of a series of formal resource commitments made by NOD that permit the further development of the proposals and the evaluation of their worth as new business opportunities. During the Seed Stage proposals are developed and evaluated not only from the perspective of securing the approval of the Venture Board for final adoption as an internal venture under Eastman Technologies Inc., but also as far as possible for adoption by existing operating units. Central to the management of this interface between NOD and the operating units is a coordinating body called the Venture Advisory Panel.

Proposals approved for adoption by the Venture Board progress to the third stage in the evolution of an internal business venture at Kodak— the "Start-Up Stage." During this stage, Kodak makes a commitment to help the venture mature into a healthy business and the venture becomes
a part of Eastman Technologies Inc. (ETI). From a resource standpoint, these ventures may now be assisted with several rounds of financing. The growth and development of these internal ventures is overseen by ETI and the Venture Board. Finally, in 4-7 years it is expected that the ventures would be either "sold" to an internal operating unit, divested to an external customer, or else abandoned.

Flesh and blood can now be added to this skeletal overview of the internal venturing program at Kodak. It is to this task that I turn below. For each of the three major components of the program, I will describe the underlying rationale for its establishment, as articulated by its top management in written and verbal form to both members inside Kodak and interested outsiders. I will also describe how this espoused purpose manifests itself in terms of formal organization structures, processes, and standard operating procedures. The material I draw upon for this purpose are interviews with the top management of these units, and the artifacts they employ for self-presentation such as written documents, pamphlets, articles in internal newsletters, videotapes, etc.

The Office of Innovation Network - The "Idea Connection" Process

Origins of the OI and the Rationale for its Establishment

The raison-d'-etre of the Office of Innovation Network is deeply rooted in its history. In 1979, the first Office of Innovation was established from the ground-up, without any formal corporate mandate, policy, or initiative. Central to its history is Dr. Robert Rosenfeld, one of the initial architects of the system, its present Director, and popularly known
in Kodak as the "innovation man." He describes the genesis of the system in the following way:

As a research scientist in the labs (KRL) I was very aware of the difficulty people faced in getting ideas "heard" in large organizations. It had happened to me. In addition to being a scientist I also had a strong personal interest in people and in utilizing techniques that would bring together groups which historically have been antagonistic toward one another. In January 1979, my Lab Head and Division Director at KRL provided me with the opportunity to combine these interests and develop a system for handling ideas which were outside ones assigned work. That opportunity resulted in the first Office of Innovation, frequently referred to as the OI process. What started as a local experiment in the Emulsion Research Division, soon assumed greater responsibility, and in September 1980 became known as the Photographic Division Office of Innovation with responsibility for all five photographic divisions of the Research Labs.

In 1983, the formal corporate mandate for internal venturing led to the replication of this initial model in many other parts of the corporation. While the number of Offices of Innovation have grown to a total of 19, the OI process as it exists today still has its roots in Mr. Rosenfeld's experiences in KRL and in his conceptualization of the innovation process and the problems it encounters in large firms like Kodak. The foundation of the Office of Innovation rests on his depiction of the innovation process:

Innovation is almost always a collaborative exercise, requiring the cooperation of numerous individuals. Between the conception of an idea and the actual product lie considerable effort, time and risk. Many good ideas never get beyond the originators mind. The originator fails to "connect" with others who may possess the knowledge, tenacity, clout, or money necessary to transform the idea into a tangible process or product. Such unclaimed thoughts dissipate into thin air. Those that undergo a material transformation do so because of a tremendous investment of time and energy made by teams of individuals.

According to Mr. Rosenfeld, innovation may fail because of the numerous "communication gaps" that exist within large corporations. He describes the source of these failures as follows:
Getting an idea through an intricate corporate labyrinth is best likened to a relay race. If one does not appreciate the complexity of the process or does not know when the baton should be passed, ideas will falter. An idea may be dropped (i) by the originator, (ii) by middle management, and (iii) across organizational boundaries.

[Originators may drop ideas because they are] "ideators"; individuals content with generating ideas but easily bored with the long and difficult process of transforming ideas into something tangible.

[Middle management may drop ideas because they are] chronically overextended and may view an idea that is outside their normal line of work as merely an annoyance interfering with assigned objectives. Thus, some ideas that are young and undeveloped are readily greeted by such "killer phrases" as -"its not in the budget"; "its never been done before"; "lets form a committee"; or "is that really part of you job?" In other cases, the idea may be beyond their [management's] realm of competence. Management may not perceive the potential value of an idea owing to a narrow perspective, a lack of information or vision, overextension, or differences in creative style.

[Finally], the expertise needed for evaluating the potential value of an idea is housed in different sectors of large, highly bureaucratic, and mature companies: in R&D, marketing, manufacturing, administration, finance, etc. However, the physical separation, differences in jargon, and differences in mode of operation present a third barrier to communication: the fragmented expertise possessed by individuals isolated by organizational and cultural barriers.15

In Mr. Rosenfeld's view, then, the key to innovation is ensuring "idea connection" and that defines the primary objective of the Office of Innovation. The Office of Innovation claims to bridge the communication gaps that inhibit idea connection, thus letting Kodak avail itself of business opportunities it would otherwise have lost.

Formally, the Office of Innovation declares its "mission" as consisting of two components:16

First, based primarily on an originator's drive to avail to him/her a pathway to personal development by giving ideas not related to his/her immediate job assignment a fair chance to succeed through counsel, enhancements, and idea connections.

Second, to avail to all levels of the corporation's management a maximum of quality ideas (evolutionary and revolutionary) generated primarily by Kodak employees, which will strengthen the company's
position for the future, financially, strategically, and image-wise, predominantly through the creation of new business opportunities.

The Formal Structure of the OI System

The formal structure of the OIN consists a network of 19 OIs distributed across Kodak world-wide. 11 of these 19 OIs are in Rochester (2 in Kodak Office, 4 in Kodak Park, 3 in Kodak Research Labs, and 2 in Kodak Apparatus Division), 1 OI serves the Eastman Chemicals Division in Tennessee, and the remaining 7 OIs serve Kodak's international operations (1 each in Germany, France, Sweden, Austria, United Kingdom, and Australia). Each OI is staffed by a facilitator (a key administrative figure whose multi-faceted role will be evident in my subsequent discussion of the formal Idea Connection process employed by the OI) and an assistant/secretary. Each OI is linked to all the others electronically and via the Innovation Network Development (IND), a coordinating staff group with offices in the NOD facilities. IND is headed by Mr. Robert Rosenfeld, the initial founder of the OI system, and is responsible for facilitating and negotiating the opening of new Offices and the shut-down of non-functioning ones; monitoring the performance of individual OIs and taking corrective action when appropriate; maintaining the computer database; building and maintaining unity within the network by training facilitators and arranging regular meetings among them; conducting applied research on innovation and intrapreneuring; and serving a human development function.

The Formal Idea Connection Process of the OI

The formal process by which the OI operates is conceived in terms of a multi-staged "Idea Connection" process that is depicted in Figure 3.4.
This is a prop that is prominently displayed in all the OIs and serves as the key framing device employed by the OI management (IND and the facilitators) to explain the functioning of the system to both insiders and outsiders. Each stage of the process is described below.

Generation: The process begins when any Kodak employee - an "originator" - comes to the OI with an idea. The range of ideas that are considered suitable for submission to the OI are defined in a way that poses the minimum barriers to entry:

Generally speaking, the OI deals with any idea that has the potential to be highly valuable or profitable to the company. Specifically, we're looking for ideas that have the potential to generate new products, new manufacturing methods, new approaches to sales and customer service, or new internal management structures. Beyond this, the OI requires only that an idea falls outside the immediate job assignment of the employee who originated it, and that the employee take an active role in the idea's development.

The guideline that the idea fall outside an employee's immediate job assignment is to avoid any potential conflicts with the employee's immediate management. These restrictions for submitting ideas can be waived with the concurrence of the originator's supervisor. The other requirement emphasizes that the OI is not a place where ideas can be "handed-off." The originator, akin to the entrepreneur, has to be the primary "mover and shaker" of the idea:

Remember, however, that the major responsibility rests with you. You'll be expected to play a vital role in fanning your spark into a flame. Your idea must be hot enough to excite you. Hot enough to kindle a fire of commitment within you, because, at the Office of Innovation, the originator of an idea must play an active role in its development. You participate fully in decision making throughout the process.

The ultimate purpose of the Idea Generation stage is for the "originator" of the idea to detail and document the idea in the form of a
concealed typed statement called an "Idea Memorandum" or IM which is then formally logged into the OI system as an "active" idea. According to a "handbook" prepared by a veteran facilitator, an "ideal" IM is:

An accurate and concise statement of the idea, its ramifications, costs of implementation, and advantages and disadvantages to Kodak.19

This does not imply that an idea has to be fully developed before the individual can approach the OI. In fact, the OI promotional material encourages individuals to come talk to a facilitator with ideas that may well be just "an initial spark". The OI facilitator is supposed to act as a devil's advocate and consultant to help the "originator" develop the idea till he can, as one facilitator felicitously put it, answer the question- "where's the beef?" The facilitator may also provide secretarial and editorial assistance to document the idea as an IM. After the idea is submitted, typed, signed, and documented as an "IM", it is ready for the "Initial Screening" stage.

**Initial Screening**: At this stage, the OI process claims to correct a fundamental flaw in the traditional approach to the "screening" of ideas. As opposed to having an idea "screened" for its value in its infancy by management, which can easily "kill" ideas, the OI offers an initial consultative review of the idea by "peers" so that it maybe enhanced and developed to its full potential before it is "screened" by management. As the OI brochure claims:

There is a right way and a wrong way to treat the initial spark of an idea. At the Office of Innovation, we know the difference. Here, we focus on what's good in an idea and how it can be improved. The Office of Innovation will help put you in touch with the appropriate consultants whose knowledge can help enhance and develop your idea. We'll provide you with guidance and support.20
To accomplish this, the facilitator helps the originator identify a set of "consultants" to whom the IM may be sent along with a cover letter and questionnaire eliciting their review. The OI conceives of consultants as "company-wide experts in the areas where the idea might apply" and the role they are expected to play is to "review and enhance the idea and strengthen its potential." While consultants, who are not paid in any way for their "consulting services", may respond in any way they please, they are encouraged to fill out a standard review form designed by the OI to solicit "constructive" feedback.

In keeping with the objective of making this stage as non-threatening as possible, originators are at liberty to choose the consultants that they feel are best suited to help develop the idea and veto any recommendations the facilitator might make. The "originator" is encouraged to use the consultants' inputs to revise and improve upon the idea as far as possible. The originator may also decide, based on the inputs, not to proceed any further.

**Group Review:** Once the originator has evaluated the initial inputs from the consultants, revised the IM if he/her felt it useful to do so, and still wants to pursue the idea further, the facilitator tries to arrange a meeting of some of the key consultants with the originator with a view to seek more specific inputs on the kind of information, experiments, etc. the "originator" would have to put together to establish as the "handbook" would say - "an unequivocal and urgent need for the idea." Group Review usually takes the form of a series of meetings between the originator and the consultants over which the idea is developed to its
fullest potential under the constraint of using "bootlegged" resources only.

If the Group Review process leads the originator to feel that the idea warrants no further action, the process may be stopped at this point prior to management perusal; thus avoiding what OI officials see as the risk of "tarnishing the originator's reputation in the eyes of management." If the idea still looks promising the OI works to find it a "champion" or "sponsor."

Seeking Sponsorship: A sponsor is considered to be "anyone in a position to provide resources," for the further pursuit of the idea. This includes anybody with the authority to commit resources in any of Kodak's operating units, or else the NOD organization. "In any case, this individual must have the enthusiasm and resources to see the idea through." The facilitator is expected to play a very prominent role at this stage. He or she "finds and opens doors where the originator may present the idea." At this stage the facilitator's role is likened to that of a "defense attorney who goes before the jury and presents a case."

Seeking Sponsorship is the final stage of the idea connection process of the OI system. It ends with either a sponsor being located in a line organization or in NOD, or else the facilitator and originator arriving at the prognosis that all potential sponsorship routes have been explored without success.

Normative Principles that Shape the Actions of the OI

In addition to following the above-mentioned formal procedures of the
OI's idea connection system, the behavior of the facilitators within this framework is supposed to be directed by two explicitly articulated normative guidelines.

First, is what is referred to as the OI "philosophy." Thus, the Director writes of the OI in its newsletter:

"The OI process is firmly rooted in its philosophy, a set of values to which we adhere and that directs the behavior of each OI, as well as IND." 21

This "philosophy" has been codified in the form of a list of aphorisms that appear in almost every written document that describes the OI process:

"Ideas are fragile (so are people);
Ideas are organic and need to be nurtured (so do people);
All ideas have value and should be given a hearing;
The originator of an idea needs assistance in idea enhancement and in promoting the idea internally;
Both marketing and technical issues need to be addressed;
Only ideas which have been enhanced and demonstrate potential value will be brought to the attention of management;
The differences among people constitute a strength, not a weakness;
The most effective way to proceed is not necessarily the most efficient." 22

The second guiding principle is that the OI's role is that of a "facilitator, not of a direct participant." Thus, facilitators are warned against becoming too involved with the idea and playing the role of the originator or being judgmental at any stage of the process and playing the role of management. This is manifest in the OI Director's definition
of a perfectly functioning system:

If the system were functioning properly, then whether or not the outcome of the system is positive from the standpoint of the originator, he gets the feeling that we are interested in his idea and furthering it as best we can. The innovator must feel that his idea received a fair hearing. It is critical that we establish a general trust in this system.23

The responsibility of the OI system ends when the originator is connected to a sponsor or champion. The further development of an idea to the point of "commercialization" is the task of the sponsoring organization - either an operating unit or NOD.

New Opportunity Development

Origins of NOD and the Rationale for its Establishment

NOD was also conceived and initiated by the R&D community. It was seen as the obvious next extension of the Office of Innovation. In fact NOD then led to the formation of the Venture Board and was endorsed as a major corporate initiative by Colby Chandler, Kodak's CEO. In his view, the raison-d'être for NOD's formation is:

To nurture ideas that don't fall within traditional lines of business, the company has instituted the Venture Board, a management group that reviews promising ideas for new businesses. Kodak management realized that the company had to become "venture operative" and that there had to be some organizational changes to provide a more entrepreneurial environment for employees.24

The organizational implementation of this mandate was entrusted by the Venture Board to Mr. Robert J. Tuite, the present Director of NOD. Mr. Tuite had spent most of his time in the photographic divisions of KRL and had risen to become Assistant to Director of Research in 1981. He then attended the Advanced Management Program at Harvard, and shortly

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after his return was asked to set up a "venture" program for the company.

According to Mr. Tuite, three sources of input had an influential role in the design of NOD: (a) academic research on venturing done at MIT, Harvard, Stanford, etc., (b) the experience of other large company approaches to venturing, and (c) an understanding of the venturing process in regional innovation complexes like Route 128 and Silicon Valley and the practices employed by highly successful external venture capital organizations. Hence, external venture capital organizations not only provided an explicit initial model on which NOD's structure and operating procedures were in part based, but continue to be a "benchmark" against which NOD evaluates its ongoing performance.

NOD is equally cognizant of its "internal" responsibilities. Thus, NOD functions in two capacities. First, it acts as an internal investor for proposals that may become independent new businesses and part of NOD's portfolio of investments under ETI. NOD's role in this regard has been defined by its Director in an article in Idea Connection, a semi-annual newsletter that reports on Kodak's internal venturing activities:

Proposals for new businesses can usually be divided into those which fit the existing charter of a Business Unit and those for which there is No Clear Logical Fit (NCLF). An NCLF designation indicates that the idea does not have a current fit with the organizational structure. Such proposals are generally forwarded to the NOD to assess whether they possess sufficient value to warrant development of a business and launch as a new start-up venture through the Venture Board and Eastman Technology Inc. Unlike the typical Business Unit, which has its own implementing organization including development, manufacturing and marketing, NOD has no implementation ability. It therefore operates like an internal venture capitalist - an investor backing others in their efforts to start new businesses.25
Second, NOD invests in the further development of proposals that may ultimately be new businesses in the existing line operations. This is how NOD’s Director defines this aspect of its functions:

NOD’s charter is [also] to take up where the line leaves off and to play the role of an investor of last resort for projects that are deemed to small, too risky, or too early for the line to take on. Conversely projects that are too large, require too much upfront R&D effort, or have too many strategic interdependencies are not within the province of NOD. Such proposals may be enhanced through early contact with NOD - whose staff would guide the advocate in putting the proposal into better business terms and establishing contacts with potential sponsoring organizations.26

This dual purpose is clearly manifest in NOD’s formal statement of its mission, which is to:

Promote and foster the development of an innovative and entrepreneurial climate throughout the Eastman Kodak Company.

Create and establish significant new start-up businesses (both inside and outside the traditional lines of business) that would not otherwise have been formed by regular company organizational channels, using mechanisms patterned after the external venture capital process (for example, rapid implementation and efficient use of capital).

Provide genuine opportunities which attract, retain, and develop the creative, innovative, resourceful, and entrepreneurial general management talent within the company.27

Thus, NOD needs to manage both its role as an investor and its role as a temporary intracompany sponsor that helps nurture and develop ideas into more complete business packages for absorption by the LOBs. This has resulted in a complex organizational structure and process.

**NOD’s Formal Structure and Process**

At the core of NOD’s formal operations is an elaborate and comprehensive "due diligence" process that is modeled very closely on the external venture capital process and provides the basis for making
FIGURE 3.5: SCHEMATIC REPRESENTATION OF NOD'S OPERATING PROCEDURE

OBJECTIVES

MARKETABLE
PRODUCT

VENTURE

VAP
ASSESSMENT
VB REVIEW

VAP
FAMILIARIZATION

VAP
NOTIFICATION

PROPOSAL

LOG-IN

SEED
GRANT

preseed

early
seed

certified
opportunity
analysis

late
seed

approved
business
plan

post
seed

business
feasibility

BUSINESS
RATIONAL

VERIFY
OPPORTUNITY

WORKING
BUSINESS
PLAN

*DRAFT PROPOSAL DESCRIBING
- Product Concept
- Business Definition
- Market Opportunity
*CAPABLE CHAMPION
* NO LOGICAL LOB SPONSOR
BUT FITS CORPORATE VISION
* UNREASONABLE TO PURSUE
WITH CURRENT RESOURCES

*BUSINESS RATIONALE DEFINED
* MARKET CONFIRMED
* CAPABILITY EXISTS
* NO OBVIOUS STRATEGIC FIT PROBLEM
* CLEARLY WITH AFFECTED DIVISIONS
* CHAMPION PARTICIPATION CLEARED
* MILLION-DRIVEN SEED PLAN

*INDUSTRY ASSESSMENT
* SUSTAINABLE COMPETITIVE ADVANTAGE
* SIZE OF OPPORTUNITY CONFIRMED
* CRITICAL SUCCESS FACTORS AND RISKS
* PRODUCT FEASIBLE
* INVESTMENT SIZE
* FUTURE BUSINESS DIRECTIONS SCOPE
* CHAMPION AVAILABLE FULL TIME
* VAP CONSENSUS
* FORMAL LINE RELEASE

*APPROVED BUSINESS PLAN
* VAP/VB CONSENSUS
* CORPORATE ADVOCATE
* STAGED OPERATING PLAN
* COMPETENCE BALANCED TEAM

*CONFIRMATION OF BUSINESS PLAN
* CUSTOMERS/REVENUE
* PRODUCT MANUFACTURABILITY
* MANAGEMENT CAPABILITY

SOURCE: EASTMAN KODAK COMPANY
investment decisions. This is a highly detailed multi-staged process which lists very comprehensively the set of activities to be performed at each stage and the criteria that guide the performance of these activities. The various features of this multi-stage process are schematically summarized in Figure 3.5 above, and discussed below.

There are four broadly defined stages of the process: (i) Pre-Seed Stage: This commences after the log-in of a proposal at NOD. The primary objective at this stage is to judge a project's market value; (ii) Early-Seed Stage - where a seed grant is awarded to conduct what is known as an Opportunity Analysis; (iii) Late-Seed Stage - where additional resources are committed for the development of a Business Plan; and (iv) Post-Seed Stage - wherein a final business feasibility analysis is conducted before the project is given the final go-ahead signal to appeal to the Venture Board for adoption as a new venture within ETI. The activities and the decision-making criteria at each stage may now be described in greater detail.

**Pre-Seed Stage:** About 50% of the proposals logged in at the pre-seed stage come from the Office of Innovation network. The other 50% find their way from various other sources, including truncated line projects. At this stage, it is necessary that the proposal qualify as a "No Clear Logical Fit" (NCLF), i.e. while there is no current line of business to sponsor this venture, there exists a fit with Kodak's corporate vision. Also, it is required that the project be cleared on legal grounds, particularly with respect to Kodak's liability. Each draft proposal logged in is expected to contain a business definition, describe the product
concept and the market opportunity. Its champion must also "demonstrate the ability" to carry the project through the various phases of the seed process.

Funding is nominally about $5,000 for this stage. NOD personnel assist in conducting initial feasibility studies which include identifying and interviewing potential customers, developing market estimates through secondary data, and clearing of the product concept by experts. In keeping with the NCLF (No Clear Logical Fit) objective, any existing line organizations that could be potentially affected by the venture are contacted for their approval. NOD also assists in clearing the champion’s time to ensure that they can devote the necessary time required at each stage of the process.

The package containing the initial feasibility study and a seed grant application is then presented to the Business Concept Development team (consisting of 3 members from NOD, including an assigned Seed Portfolio Manager) that can either reject the proposal or issue a seed grant, permitting the proposal to move to the next stage.

**Early-Seed Stage:** At this stage, the proposal receives a funding of $25,000 as a seed grant. In addition 20% of the champion’s time is cleared to be devoted solely to the new project. The champion is then required to formulate a detailed seed grant plan and the milestones that are to be attained. The focus at this stage is to conduct an "Opportunity Analysis" which includes a clear definition of the business rationale, detailed market research including cost information collection, industry and
competitor analysis. Also, personnel at NOD initiate the process of recruiting a team that would need to be in place if the project were to receive the go-ahead signal. The members of this team could be existing Kodak employees, or external consultants if the need so arise. In addition, NOD also tries to gain broader political support by obtaining formal clearances from existing business lines. NOD’s attempt at this stage is to ascertain that a proposal would have at least a 50% chance of approval on presentation to the Venture Board (VB).

Before a proposal moves to the Late Seed Stage, NOD organizes a Venture Advisory Panel Familiarization wherein VAP members - they are representatives from various parts of the company - provide their suggestions for alteration or a consensus to proceed to the next stage.

Late-Seed Stage: The end deliverable of this stage is a formal Business Plan that is first assessed by the Venture Advisory Panel, which at this point is given the final chance to alter the course of the venture by adopting it in an existing line organization or recommending that it be abandoned. If the Business Plan is approved by the VAP, it is then reviewed by the Venture Board. NOD expects that by this stage the plan address the following issues: Product Concept, Market Analysis, Competitive Assessment, Manufacturing and Development Strategy, Financial Analysis, Risk Assessment/Contingency Plan, Implementation Plan and Long Term Opportunity Analysis.

Some of the criteria used by the VAP and VB to evaluate the plan include proper staging (mile-stone based financing), size of market,
revenue projections, nature of competition, assessment of costs and probable earnings, and feasibility demonstrations. The Venture Board also assesses if the venture management team would be adequate to fill all key roles. With the identification of critical success factors as well as key risks and a discussion of possible future directions the business could take the VB Review provides a signal to proceed to the Post Seed stage.

**Post-Seed Stage:** By this time, as much as $100,000 could have been spent on the project and a management team has been identified for it. The champion is now available full time to concentrate on the post-seed stage, assisted by a larger management team. A General Manager for the project is also recruited and confirmed for the team.

At the end of this stage, the Venture Board will vote to determine final business feasibility and commit financing for the project. During the post-seed stage, typically team members work on refining the manufacturing prototype and beta-test the product to gain VB approval. This approval could result in abandonment of the project or sponsorship—either as a new venture or by a line organization. Of the 17 projects in the Post Seed Stage on which a decision was made in 1987, (generally only 3 or 4 would reach the post seed stage in a given year), 9 were abandoned, 5 were taken up for sponsorship by line organizations and 3 were "launched" as new ventures.

**Normative Principles that Guide Actions in NOD**

Being an investor with limited resources, NOD, unlike the OI, has a key decision-making role in addition to its facilitative role. This means that
the behavior of NOD administrators must be driven by a very critical evaluation of each proposal to see if it is a viable venture:

As an investor, NOD has limited funds: Kodak has limited its commitment to internal ventures to less than 1% of its total investment in R&D and capital spending. Thus, NOD has to make rigorous choices about how its funds will be allocated. ²⁸

These choices are driven by NOD's conception of an "ideal" business opportunity. NOD's Director describes the "ideal venture proposal" as:

An innovation with a large untapped market potential, a good strategic fit with Kodak, a small investment requirement, high barriers to entry for competitors, a rich technology base with multiple potential future applications, and an experienced, dedicated management team which has internalized the business envisioned.

But, he is also quick to point out:

So much for dreaming! In reality we are faced with proposals that are significantly short in one or more of these attributes and we are forced to prioritize. In principle, because the risk is high for any venture we look to build a company which in five years would have a market value 10 times the investment we have to put at risk to get in underway. [Then] based on the experiences of the outside venture capitalists we expect our portfolio of ventures to achieve an average value of 3-4 times our investment at cash-out versus the 10X multiple we use as the criterion going in. ²⁹

The second set of guiding principles prescribes how NOD's top management feels it must interface with the line organizations. This relationship with the line organizations is clearly described by NOD's director in the following passage from an article in Idea Connection:

Before it invests too much, NOD ensures that it will have a customer for the proposal, either the Venture Board, or an existing line organization. For projects where a significant overlap exists with a line organization, NOD will only invest with their concurrence that downstream it will be a potential customer.

Throughout the venture process, NOD tries to maintain an ongoing relationship with the line organization through the venture Advisory Panel (VAP). The VAP consists of representatives from various parts of the company. They preview ideas which are in the seed stage of proposal development. Before NOD grants a seed grant, the personnel of NOD clear the project both with the advocate's management as well as with any line organization with which the
potential line venture may have a conflict. Notification of seed grants are sent to members of VAP in order to solicit input and comment. Seed projects are reviewed by the VAP after the bulk of the market research has been done and NOD feels fairly confident that the project has a greater than 50% chance of approval by the Venture Board. At this point, line organizations are given a final chance to alter the course of the potential venture ie, either sponsored by the line or launched as a venture. Given an OK to proceed, the business plan is put together and the venture management team is recruited. To side-rail the management team after they have invested so much time and energy would be unfair.

The Start-Up Phase: New Ventures in Eastman Technologies Inc.

Origins of ETI, the Rationale Behind its Establishment, and the Principles Guiding Its Actions.

ETI is a part of Kodak's Diversified Technologies Division, and was established in 1972 when Kodak bought Spin Physics; however, it was not fully utilized until 1984 when Kodak started using it as a holding company for new ventures. Thus, after launch, a venture becomes one of the divisions of Eastman Technologies Inc. While one of the primary purposes for ETIs establishment was to limit Kodak's liability in these new ventures, an important rationale for the establishment of ETI is the claim that it manages its portfolio of ventures unlike the way any of Kodak's other line organizations would manage a new business venture. The motivation for choosing to manage these ventures differently stems from, what an internal document described as:

"Top management's frustration that while the firm was successful in running existing businesses, it historically had struggled with starting new small businesses."31

The reasons for this problem are ascribed to the conception that while Kodak's traditional hierarchical bureaucratic administrative practice was well suited to managing existing businesses efficiently, it was hardly the
freewheeling, flexible, entrepreneurial management style that was characteristic of successful new start-ups. The basic organizational approach of ETI is, therefore, shaped by the conviction that the ventures should be allowed to function in as autonomous and entrepreneurial a fashion as any independent start-up, and that no attempt should be made to "Kodak-ize the ventures endeavor." Instead, all "assistance should be provided in the nurturing of the venture's entrepreneurial spirit." Again, the ideal model that Kodak explicitly wants to imitate is that of the external venture capitalist and its management relationship with its portfolio of ventures. This is evident in the following passage from a company document:

Kodak's influence is manifest more in the way a venture capitalist manages through a Board seat rather than via the typical hierarchical management role, characteristic of large organizations.32

While, this external venture capital model has a dominant influence on the actions of ETI, there is an equally explicit recognition that ETI is not exactly a venture capital organization and must satisfy some of the constraints and expectations of being a part of Kodak. This component is most clearly seen in NOD's Director's discussion of the ultimate fate of these new ventures:

Ventures are viewed as business experiments in which corporate strategic commitment is deferred until more information is available. Thus, the size and time duration of the investment in a venture are limited. Mutual dependencies between the venture and Kodak are kept to a minimum and are restricted to those of a vendor-customer relationship (albeit a friendly one). One of three things will happen to a venture within the 4-7 year time-window anticipated: (i) internal acquisition whereby the venture becomes a business (or part of one), thereby signifying corporate strategic commitment to the venture's business; (ii) abandonment, whereby continued financing is stopped; and (iii) divestiture, in which the venture (or part of it) is sold.33

This view that the ventures are basically "experiments in which
corporate strategic commitment is deferred" has important implications. It makes it clear that Kodak wishes to restrict its liability in these ventures, and that the ideal target customer for a mature venture is an internal line organization.

Structure and Process in ETI

The governance structure and management procedures of ETI reflect the above concerns. From the standpoint of the governance structure, each new venture must formally break with the Eastman Kodak Company and become a division of ETI which is a wholly owned subsidiary of Kodak. This is done with a view to restrict Kodak's liability in the new venture. For instance, the venture may not use Kodak's name or corporate logo as the rest of the company can, though it can call itself "A Kodak Company"; and its employees cease to remain Kodak employees and are not privy to Kodak benefits such as standard pay-scales, bonuses, retirement benefits, etc.

Kodak formally governs the new venture through its presence on the firm's "Board of Directors." The nominal make up of the Board of Directors consists of seven people: two from the venture of whom one is the venture's general manager; a Venture Portfolio Manager whose role is to provide ongoing guidance, monitoring, support, and communication; another person representing the investor (usually someone from NOD, the Venture Board, or ETI staff); a Kodak "sponsor" at the Group or Business Unit level to provide some assurance that an eventual long-term home will be found in the corporation for the venture if it were to be successful; and two people from outside Kodak. The Boards are expected
to meet at least quarterly. They are seen as "a resource" which can:

Bring to the venture management, business acumen, experience, a macro view of Kodak, and additional resources with which the venture general manager may have little familiarity to complement the energy, enthusiasm, and industry knowledge of each venture's management team.34

The Board of the ETI venture attempts to exercise its governance and control very much like a venture capitalist would in an external business venture. This translates into what an internal document calls the "breadth of organizational rights" assigned to the ventures as compared to those offered to a regular line organization project. This document reviews three organizational rights assigned to the ventures:35 (i) decision rights regarding product development, manufacture, etc.; (ii) resource selection and control; and (iii) performance assessment and compensation.

From the standpoint of some of the customary decision rights, the venture possesses the rights to identify alternatives regarding technology development; product design and development; manufacturing methods; marketing plans including positioning, pricing, revenue generating methods, advertising and promotion; distribution plans; selling methods; and accounting policies. Decision initiatives on work-force policies are usually reviewed by ETI staff to limit corporate exposure. The decisions of the venture in these matters form the basis of the venture's five year Business Plan outlining the projected financial, business, product and marketing goals and directions; investment requirements; and program time-tables. Additionally, each venture possesses an Annual Operating Plan that specifies the current business challenges; product development, manufacturing, and marketing focuses; financial objectives and
performance. Decision initiatives requiring significant directional departures from these business plans would require review and approval by the venture's Board of Directors as would requests for additional investment. Within the approved business plans and investment limitations, the venture management team has full rights to plan, schedule and implement the decisions, with the Venture Portfolio Manager acting as an ongoing mentor and monitor. The venture team’s performance is not assessed on a "decision by decision" implementation basis, but rather there are periodic reviews by the Board of Directors of performance measured against the objectives laid down in the plans including financial goals, product development and marketing objectives, etc.

The ventures also have tremendous latitude in the determination, selection, and usage of the critical resource that may be required to implement these decision. Table 3.2 is a summary of the venture's organizational rights in this regard compared to those of an internal project.

It is clearly evident from this table that a venture has much greater control over its cost structure than an internal project. In fact, the internal study which drew this comparison argued that certain projects that could not clear Kodak's "hurdle rate" for investments if proposed in the context of an internal line organization would do so in the context of ETI because of their lower operating costs.

Finally, this internal report discusses the organizational rights related to performance assessment and compensation. Basically, a venture is held
**TABLE 3.2: DIFFERENCES BETWEEN VENTURES AND LINE PROJECTS IN TERMS OF THE LOCATION OF ORGANIZATIONAL RIGHTS**

<table>
<thead>
<tr>
<th><strong>Resource</strong></th>
<th><strong>Venture</strong></th>
<th><strong>Internal Project</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw Materials:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Handling</td>
<td>Yes</td>
<td>No.</td>
</tr>
<tr>
<td><strong>Direct Labor:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selection</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Determination of Labor Rates</td>
<td>Yes</td>
<td>No (Determined on corporate-wide basis)</td>
</tr>
<tr>
<td><strong>Overhead:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Variable Costs/% Fixed Costs</td>
<td>72%/28%</td>
<td>50%/50%</td>
</tr>
<tr>
<td><strong>Indirect Labor:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usage Determination</td>
<td>Yes</td>
<td>Yes (but amount used is limited)</td>
</tr>
<tr>
<td>Labor Rate Determination</td>
<td>Yes</td>
<td>No (Corporate contracts)</td>
</tr>
<tr>
<td>Benefits Determination</td>
<td>Yes (Limited)</td>
<td>No (Corporate determined)</td>
</tr>
<tr>
<td>Research Sourcing</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td>Distribution Systems</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td>Equipment Service Support</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td>Manufacturing Control Systems</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td><strong>Plant:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>Yes</td>
<td>No (Allocated)</td>
</tr>
<tr>
<td>Rent ($)</td>
<td>Yes</td>
<td>No (Allocated)</td>
</tr>
<tr>
<td>Facilities Engineering</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td>Sales Methods</td>
<td>Yes</td>
<td>Yes (Limited control)</td>
</tr>
<tr>
<td>Pricing</td>
<td>Yes</td>
<td>Yes (Limited control)</td>
</tr>
<tr>
<td>Advertising</td>
<td>Yes</td>
<td>Yes (Limited control)</td>
</tr>
<tr>
<td>Financial Control Systems</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td>Administrative Support</td>
<td>Yes</td>
<td>No (Limited to EKC)</td>
</tr>
<tr>
<td>(ie. Market Research, Payroll, Food Services, etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SOURCE: EASTMAN KODAK COMPANY**
accountable by ETI as a profit center and is monitored and rewarded as such. This is accomplished through three incentive plans. First, is the Venture Manager Incentive Plan that evaluates and rewards the individual venture General Manager's performance for product and process development; marketing; revenue attainment; cost and expense management against budget; resource management; and organizational development and control. However, financial performance is most heavily weighted (70%). The second is the Short Term Incentive Plan (excludes the general manager) which recognizes the venture team's achievement against business plan goals including product and process development; marketing achievement; administrative accomplishments; etc. Again, the venture's financial performance is most heavily factored (50%), driving the importance of revenue and cost management down to the individual employee level. The third is the Long Term Incentive Plan which allows the venture's key principals to invest in the firm's future, and to share in its success or failure. The formula used to determine the Plan's payout at the time of "cash-out" is an ROA/Net Earnings calculation which is expected to provide an incentive to the venture's principals towards maximizing the value of the venture.

It is clearly evident from the above description of the distribution of organizational rights between ETI and the ventures that there is a serious effort to manage this relationship like an "on-going close working partnership similar to that which exists between a venture capitalist and its start-ups."

In keeping with the notion that ETI ventures are "experiments in which
corporate strategic commitment is deferred until more information is available"; of the 14 internal ventures that have been launched since 1983, 9 are still ongoing "experiments" and 5 have reached this terminal stage. 2 have been absorbed within Kodak, 2 have been abandoned, and 1 has been divested and sold to an external customer.

Ancillary Components of Kodak’s Internal Venturing Program

The Office of Innovation Network, NOD, and ETI are the three principal components of the internal venturing program at Kodak. In addition there are a number of ancillary activities. Many are the standard fare - internal seminars by invited speakers, a bi-annual newsletter, creativity workshops, internally sponsored studies assessing different aspects of innovation at Kodak, etc. There are three components that warrant separate attention because of the significant amount of resources that are expended in maintaining them.36

The first, is an annual event called Techfair, an internal technology fair intended to expose currently unsponsored "off-the-shelf" Kodak technology to manufacturing, marketing, and business personnel who can identify possible areas for commercial development. In 1987, the last year it was held, over 1,100 people invited from within Kodak visited the 34 exhibits that were on display and within days of the event, several company organizations had expressed an interest in adopting the products and processes displayed in at least 5 of the exhibits. In this way Techfair is seen to both "generate new businesses and help in the transfer of technology within the company, usually in existing LOB or
shared resource organizations.\textsuperscript{37}

The second, is an internal restricted publication called Matchmaker which periodically lists unadopted technological opportunities and unmet market needs with the hope of securing a "match" within the organization. The periodicity was not fixed, though on average about 4-6 issues were produced per year. Circulated to over 600 people in the organization this is the equivalent of a highly specialized "want advertiser" which has over the 3 years of its existence generated a steady trickle of combinations; its editor estimated that approximately 1-2 items out of the 20 items that appear on the list found a "match."

The third activity is by far the most significant because it involves the largest commitment of resources and is ongoing in nature. This is the recent establishment of an internal "Incubator," which is intended to spawn and nurture new ventures under the umbrella of a large company. Modeled on the approximately 200 incubators that exist in the US, most sponsored by not for profit state agencies, universities or venture capitalists, Kodak claims that this is the only one of its kind within the context of a large corporation. The Incubator at Kodak is an environment which provides a variety of shared resources located in a common physical facility, to ventures that may be at seed or start-up stage. As described in Idea Connection:

Like the incubators on the outside, Kodak's incubator provides a variety of resources. A person who receives a seed grant from NOD can opt to move in. The rent is cheap and covers office space, as well as the use of a computer terminal and phone. [Ventures] also have access to various equipment, including photocopiers and Telex machines, as well as secretarial and administrative services - all for a reasonable fee. A Kodak purchasing agent and a marketing communications specialist also make their services available at
reasonable fees.38

The use of shared resources at a reduced cost is seen as just one of the benefits of the Incubator which Kodak hopes will enhance the success rate of their new ventures in keeping with academic research on external incubators. Indeed, Kodak's incubator is explicitly motivated by this research which claims that while "the general statistics indicate that nine out of eleven or twelve businesses fail in the first five years, there's a 60-80% success rate for firms that begin in incubators."39

The other benefits that Kodak believes the Incubator will provide are the ready access the ventures will have to the staff of NOD and ETI that is located in the same facility and the learning opportunities across the ventures. These advantages were described in the following manner in the Idea Connection newsletter:

Of great importance is ready access to the staff of NOD and ETI. Seed grant recipients residing in the incubator find themselves in close proximity to the staff which help them assess and develop their business proposals; write business plans; acquire new skills; monitor their expenditures; recruit complementary talent; and assist them in meeting milestones..

There's something magical about an incubator. Two plus two no longer equals four, it equals five. You learn through osmosis. There are people here who have just received seed funding and others who have gone all the way through the venture process, remaining in the incubator as full-fledged Kodak ventures. People frequently turn to each other for help and advice.40

The Incubator is of too recent vintage to know if its performance is as Kodak expected, but some of its residents whom I met had high praise for its benefits. One of them described it this way:

I know the atmosphere in Rochester and Kodak don't compare with your Route 128, but if you live in this Incubator, it comes darned close.

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This completes my description of the formal mechanisms that define Kodak's internal venturing program. I turn next, to a discussion of the view of this process from the perspective of the participants in the process, in particular those who submit ideas for consideration as new business opportunities.

III: THE DYNAMICS OF THE INTERNAL VENTURING PROCESS

The Participants: The Idea "Originators"

One of the key objectives of Kodak's internal venture program was to leverage Kodak's existing knowledge base by encouraging the submission of ideas from all quarters of Kodak. The question I therefore begin with is: Who submits ideas to the OI?

The people who submit ideas may be broadly classified into three basic categories: "professionals," "technicians," and "managers." "Professionals" include engineers, scientists, and administrative staff whose jobs are considered to require professional expertise that is most often defined by their college education. However, the degree of specialization at which their expertise is commonly defined varies by the different types of professions. For scientists in Kodak, this professional expertise is often defined by highly specialized sub-fields within basic disciplines such as organic chemistry, polymer chemistry, solid-state physics, etc. For engineers, professional expertise is defined somewhat more broadly, the first distinction being the basic discipline such as chemical versus
electrical engineering, but often within each discipline some finer distinctions are drawn such as chemical process versus chemical reaction engineering. Expertise for administrative professionals is perhaps most broadly cast, the distinction usually being made between lawyers, accounting, marketing, finance, etc, with very little further differentiation by specialization within these broad domain areas such as for instance between liability versus patent lawyers.

"Technicians" are subordinate to professionals in the corporate hierarchy and can often be assigned to their supervision. Technicians are defined by the skilled trade they possess such as glass-working, electrician, or chemistry-lab technician.

"Managers" are often professionals, have college degrees and work in areas of their professional competence, but they also supervise the work of other professionals and therefore have resource allocation and control responsibilities.

In a survey conducted by the Office of Innovation in 1981, the majority of the ideas were submitted by the professionals (81%), followed by technicians (13%), and finally managers (6%). More recent distributions may not be exactly the same, but the general ordering has certainly not changed. Professionals continue to be the largest contributors followed by technicians, and management.

This distribution may in part be explained as the resultant of hierarchical status, free time, and the propensity to generate innovative
ideas. Thus, managers submit the lowest number of ideas because they are either too preoccupied with managing current responsibilities and don't have the time or the energy to pursue new ideas or because they use the hierarchical status and control over resources to initiate a project in pursuit of their idea and hence have no need for an alternate route like the internal venturing program. Technicians, on the other hand are constrained by their status on the bottom of the totem pole, which leads to strong pressures to work solely on their narrowly defined jobs and offers them little access to resources that may be "bootlegged" for the initial development of their pet project.

"Bootlegging" or finding free time and some corporate resources that don't have to be strictly accounted for are critical to the development of an idea. Resources that may be "bootlegged" are often available in greatest measure to "professionals" who usually work independently on assigned projects whose progress is monitored periodically but not on a day-to-day basis leaving them some control over their time and resources, of which a portion may be "bootlegged" for the development of an idea. The importance of having access to resources that may be bootlegged is evident in this description by a professional scientist of the way in which he initially pursued his idea:

About 5-10% of my time is [now being] spent on the idea. This was true even before the idea was finally submitted as an IM. I guess I must have spent a week's worth of time developing it before I spoke with the Office of Innovation. Of course this time was not distributed in any regular way. I think there were perhaps two occasions when I spent 2-3 days in a concentrated burst of activity to develop the heart of the idea. I don't really know how much money I spent towards this because all of the expenses just went under my discretionary expense account.

The influence access to such resources can have on who submits ideas
is more sharply evident in the following technician's lament:

It has taken me three years to develop my initial idea to the stage where I knew it was worth talking about. It was just impossible to find any time and the use of some of the equipment I needed. I was so bogged down in my everyday work. Those people in the labs, they have it much easier!

The prominence of professionals, particularly those with a technical background, in the submission of IMs also reflects itself in the type of ideas received by the OI system. The distribution of ideas is definitely skewed in favor of being technology driven or what in the literature on innovation may be known as "technology-push" type ideas. The greatest number of ideas are for new products, followed by ideas for new services, followed by technology development ideas without a clear final application, followed by manufacturing process technology ideas, with the lowest number of ideas being of an administrative nature. Ideas also vary immensely in terms of how fully developed they are before they are submitted to the OI. In some cases individuals had complete working prototypes which they had developed in their garage at home or on bootlegged time in their labs, and in other cases they were purely "blue-sky, dream ideas" that were hardly developed at all before they were submitted to the OI.

The above discussion provides some indication of who at Kodak, in terms of their formal station in the company, submits what sorts of ideas to the OI system. But, not all professionals, technicians, or managers submit ideas to the OI. Who are those that do and what circumstances and motives drive them to do so?

The Motives and Interests of the Originators
Individuals are driven by very different motives and interests to submit ideas to the OI. However, one general observation dispelling a popular misconception can be made. Individuals did not submit ideas primarily because they were entrepreneurs who were driven by an indomitable desire to develop their idea into a new business or because they were "ideators" - extraordinarily creative people relative to the rest of the organization - who were perpetually bubbling with new ideas. Instead, as the following choice quotes from some of the different individuals I interviewed indicate, the different motives of "originators" may be:

(i) Looking for a new growth opportunity in the corporation because their current career trajectory appeared to have reached a dead-end:

   My career progression in my own lab is quite restricted. There are only so many senior positions, and the ones at the top are currently filled, and even if they were to magically open, there are already a few others in line before me. So, I need to find another career path in the company or else leave... and that was my motivation to submit an idea to the OI, because that seems to be one way I can move ahead;

Or else because they were highly ambitious and were looking for a fast-track:

   If our project succeeded, we would suddenly rise from being just one of the many good guys in the labs to really being in charge of this activity in this new and growing division. I think at that point we could really take control over our careers and grow in this company.

(ii) Looking for ways to enrich marginal or routine jobs and enjoy a more meaningful and emotionally rewarding work experience:

   I'm in it only for the self-satisfaction, I don't expect any career rewards or monetary rewards. After a time every job becomes routine and what you do is try to figure out a way to enrich your job experience.
(iii) A way to establish a "reputation" among peers for successful innovation which could result in membership in the elite; a position which also conferred the benefits of greater access to resources and the enhanced probability of working on projects of one's choice:

It's the same as in academe. There you get recognition for your publication record, in industrial research you get recognition for being a person who comes up with ideas that work. The advantages of having a reputation is exactly like Tracy Kidder describes in the Soul of a New Machine. It's a pinball arcade. I like to play the game and I want another quarter. If I win I get more quarters and I also get to play with the big boys on the machines I really like.

(iv) A way to formally document intellectual ownership of an idea so that the originator could ultimately claim some credit if it were adopted:

I know this idea will someday be of great importance. Its adoption is really a question of time. So I want to get on the record for having proposed it first. Every IM is recorded and given a number and date, so even if my idea is not adopted today, I can always say I was the first to propose because I am sure it will be adopted tomorrow.

(v) Fulfilling the responsibility of being a good corporate citizen and keeping one's end of a moral bargain with Kodak:

I had stumbled upon something I thought was really "neat", so I really wanted the idea to be made available to any other potential fellow users in Kodak. My reaction was - 'this is a way for Kodak to make some money and we really ought to be doing it.' Kodak has been a good employer to me and I thought I owed it to the company. It didn't even occur to me that there maybe career or monetary benefits for me personally in this. Besides, I guess I just have a blind faith that if I do something that has value for Kodak, I will get my fair share.

(vi) Despite my initial disclaimer, there remained the fanatics who wanted to pursue their dream-idea:

I really think this idea is going to turn into a landmark patent. That's what keeps driving me;

And the "ideators" who churned out numerous ideas and submitted them all to the OI:
I must have submitted over 20 ideas to the OI in the last few years. I think I am inherently a creative person. I like to play with ideas. I really don't see myself doing a job. I think Kodak has some really exciting technologies and businesses, so it really is a great sand-box to play in.

Of course, there is also the rare Schumpeterian "entrepreneur":

I believed that my idea represented a whole new way of doing this business. And I wanted to manage my own operation. The idea of running a new business venture really excited me.

While some of the motives above might indicate that people thought up ideas with an explicit a-priori intention of submitting them to the OI, that was almost never true. Except in one case, none of the individuals had proactively decided to come up with an idea that would be suitable for the Office of Innovation. In most cases, they "stumbled" upon an idea, and did not approach the OI as a first resort for its pursuit. Indeed, in many cases they learnt of the existence of the OI only after their initial attempts to pursue their idea had been thwarted. Why, then, did they approach the Office of Innovation?

The reasons offered by individuals who wished to pursue their ideas and ultimately had to approach the OI had to do with either the breakdown of vertical, horizontal, and alternate channels for the sponsorship of ideas within Kodak or else with the propensity for certain ideas to fall through the cracks created by the structural reorganization of Kodak into divisions and LOBs.

**Vertical channels**: The first channel explored by most "originators" for the pursuit of their idea was usually their immediate supervisor or some other individual higher up in the vertical hierarchy of their own sub-unit whom they felt would have the authority to sanction the resources
required for the development of the idea. In many cases, though, as the following narratives indicate, that proved to be a dead- end. Some of the more common reasons imputed by originators for this break-down of vertical channels was the propensity of middle management to "kill" ideas because:

(i) They were strapped for time and too busy with day-to-day operational responsibilities to deal with additional work:

    I had directly approached my Director with my idea, but it then just sat on her desk, despite her acknowledgement that it was a good idea. I guess she was just too busy with other things. When I approached her again she came up with a set of concerns based on which she felt the idea was not really workable. It was at that point that I decided to approach the OI. [The same Director later sponsored the idea after it had been developed further through the OI process and was indeed the key player in its speedy and successful implementation]

(ii) The idea was outside their realm of authority and they had little incentive to support it:

    I approached my supervisor with the idea and then even went to his manager, but they dismissed the ideas as - "No! It can't be done. It's technically not feasible.' But, by then I had recognized that my idea was so different from my current work that my own lab or even my divisional lab couldn't sponsor it. I had seen the OI notices on the bulletin board, so I decided to just go and speak with them and see what happened.

(iii) The idea could have had adverse political consequences for them:

    The usual reaction of management is to shoot down the idea for a variety of lame reasons, because it can reflect badly on them. After all, if the idea exposes a grave oversight in a business they are responsible for, it is not going to look terribly good for them.

(iv) They were operating under serious resource constraints or didn't have the technical competence required to recognize the worth of the idea:
The idea was well within our business domain, it could improve efficiency by an order-of-magnitude, but required a very high initial investment to demonstrate its feasibility. This investment is difficult for them [management] to make because they have tight budgets to meet. Also, they really don't have the expertise to judge, because being managers they often can't keep pace with advances in modern technology because they just don't have enough time.

(v) They were often still operating under the traditional conservative Kodak operating style that was really not geared to deal with "bottom-up" innovation:

Management is often so steeped in the traditional "Kodak way" that the criterion they employ to judge an idea will almost always squash it. Traditionally the way to succeed at Kodak was - 'don't make waves and cover your behind,' so managers continue to be very reticent about new ideas.

Unlike the above narratives, middle management is not always painted in a purely villainous role. Indeed, in some cases, originators described them as having played a key role in their initial willingness to pursue the idea:

Our supervisor felt that this idea had some potential and suggested that we might want to pursue it; though he didn't really know how. But, this sort of gave us the hunting license and we ultimately hit upon the OI.

But, the potential conflict with middle management was often the most serious concern expressed by idea originators who were contemplating the submission of their idea to the OI. In many cases they felt that approaching the OI after they had approached their supervision was tantamount to side-stepping the authority of their supervision, an act which could have serious repercussions:

You want to pursue your idea, but you don't want to make enemies with your manager. After all, careers are also at issue.

It was therefore not very surprising that many of the originators
submitting ideas to the OI were in career situations where they really felt they had nothing to lose, as the following confession indicates:

By the time we approached the OI, we were frustrated enough to try anything. We didn’t have a care about the down-side. 46

**Horizontal Channels**: Often originators have ideas that they recognize as having potential benefits in other parts of the corporation. Establishing these horizontal connections, however, can be extremely difficult. First, the appropriate horizontal channels may just not be known to the originator because of the huge size of Kodak, and the physical and cognitive distance among groups that this creates:

I had heard that there were several other groups working in Kodak on similar problems. But, Kodak is so large, I had no idea who or where they were and how to approach them. Then, some friends who were really excited about the idea, told me that I should try the OI.

Second, attempts to push ideas through horizontal channels could be smitten by the NIH syndrome or by attempts to protect existing power distributions:

I went directly to him [the potential sponsor] for help, he checked the idea with his local expert who felt his own position might have been threatened by the idea, so he just squashed it by saying - `It’s naive, we’ve tried it before, and it’s just not workable.

And third, some ideas could be direct competitors to the current efforts of the relevant horizontal group and there could be some genuine concerns of cannibalization or duplication of effort:

We were working on this project for an internal customer and hit upon this idea for a totally different process. We approached the sponsor with our idea but were turned down. Our project at this stage is still uncertain and would threaten the current development efforts of our potential sponsor. So, we felt that by going through the OI process for now, we can avoid stepping on their toes for some time, and still keep some momentum on this project and develop it further till the time comes when our sponsor may be more interested.
**TABLE 3.3: DIFFERENCES BETWEEN THE OFFICE OF INNOVATION AND THE SUGGESTION SYSTEM AT EASTMAN KODAK**

### I. Idea Characteristics

<table>
<thead>
<tr>
<th>Suggestions</th>
<th>Innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve on what exists</td>
<td>Innovations beyond normal business, totally new application</td>
</tr>
<tr>
<td>Relatively small investment in evaluation</td>
<td>Relatively high cost to determine potential</td>
</tr>
<tr>
<td>Each idea has potential for improving company in a small to moderate way</td>
<td>Each idea has potential to make monumental improvements to the company's business</td>
</tr>
<tr>
<td>Ideas fall within current business interests</td>
<td>Ideas extend beyond current business interests</td>
</tr>
<tr>
<td>Generally low to moderate complexity</td>
<td>High complexity requiring multidiscipline evaluation</td>
</tr>
<tr>
<td>Implementation can be completed within months</td>
<td>Implementation may be years</td>
</tr>
<tr>
<td>Value of system is collective</td>
<td>Each idea has potential to justify system</td>
</tr>
</tbody>
</table>

### II. Process

<table>
<thead>
<tr>
<th>1. Submission Requirements</th>
<th>2. Idea Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some originator involvement and no on-going responsibility to help evaluate by originator</td>
<td>Subject matter expert may add value, but generally processed as is</td>
</tr>
<tr>
<td>Continued originator involvement and responsibility required</td>
<td>Very little interaction</td>
</tr>
<tr>
<td>Interactive expert review &amp; enhancement to add value</td>
<td></td>
</tr>
</tbody>
</table>

**SOURCE: EASTMAN KODAK COMPANY**

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Alternate channels: In Kodak, as mentioned earlier, the Suggestion System is a very popular and highly institutionalized forum alternative within Kodak for the submission of ideas. Established by George Eastman himself, the Suggestion System has a long and successful history. For instance, in 1985 it handled 89,051 ideas, of which 30% were adopted resulting in a one-year net savings of $18,596,079 to Kodak. Both the Directors of the Suggestion System and the OI have attempted to make it very clear that the two systems are not competitive, or alternatives, but complementary institutions designed to encourage very different types of ideas. Table 3.3 above summarizes some of the key differences they attempted to highlight in a recent issue of the Idea Connection newsletter.

As Table 3.3 indicates, the Suggestion System differs from the OI process in that it entertains ideas that are not directly related to the submitter’s job and may be directly implemented to yield operational efficiencies in Kodak. Thus, the ideas are often incremental and the benefits resulting from them easily measurable. So, the Suggestion System rewards submission of ideas commensurate with the savings that the idea produced for Kodak, up to a maximum of $50,000.

The distinction between the Suggestion System and the OI is however, not so clear from the perspective of the idea originators and in fact, the Suggestion System, by virtue of its historical prominence, continues to be in many cases the first channel associated with the pursuit of ideas. However, as the following accounts indicate, in recent years many ideas have been submitted to the OI because this alternative proved to be a
dead-end:

I knew that the Suggestion System was not really suitable for me, because my idea would be considered part of my job. That is a basic problem if you are in research. Also they are really not equipped to handle technical ideas of any serious complexity. But, I first approached them anyway. If you have an idea you naturally tend to first think of the Suggestion System. In fact, they suggested that I submit the idea to the OI.

Processing an idea submitted to the Suggestion System requires some work on the part of my management and they don't particularly relish that. In fact, I have been chewed up in the past for submitting ideas to the Suggestion System. My management felt that I should have learnt by now that for technical people most technical ideas are considered part of their job. So, this time when I had an idea, I decided to try the OI system.

**Structural Reorganization:** The final set of reasons offered by originators for the need to find an alternate channel such as the OI for the pursuit of ideas, was the impact of the corporate reorganization. This led in some cases to the disenfranchisement of previous positions and the closing of traditional channels of influence:

In the old management I had an established reputation. With the restructuring many of them have been moved and some took early retirement. My new management is very different. They have a totally different view of what's important. I therefore need some other channel to prove my point to them.

In other cases, the reorganization created internal boundaries where none existed previously and these often presented barriers to ideas that required coordination across these boundaries:

These days, there is an organizational problem because the idea cuts across multiple boundaries and requires bringing together a group of people who could start the project. In the days of the centralized labs, this would have been no problem because a project team could easily have been structured around this proposal, but now there are all sorts of boundaries to bridge and that can be very problematic.

This problem was echoed by several other people in R&D who felt that in addition to the boundaries created by the restructuring, the breaking-
up of the centralized organization had also forced a short-term profit orientation because of the internal competition among the LOBs which often led to more risk-averse choices by LOBs when it came to uncertain, time-intensive R&D projects.

Summary and Discussion

In sum, the above discussion indicates that the person submitting ideas to the OI is more often than not in the periphery of Kodak's internal stratification of power and influence. These are the "ordinary people" and not the elite. For them the OI is a new channel, almost a "court of last resort," that offers them a "gambling chance" to change their status and gain admittance to the elite or else to at least make their ordinary everyday existence more satisfying and fulfilling. This general interpretation was driven home for me with telling honesty by one "originator":

If you have to approach the OI to get an idea funded, chances are, that, like me, you aren't among the elite of this company in the first place. Those guys would never need to use the OI. If you are a "guru" in photographic products, believe me, you can just about propose anything and it will get "sponsored".

THE DYNAMICS OF INTERACTION AT DIFFERENT STAGES

The discussion till now centered on who the "originators" were, the circumstances that lead them to consider submitting an idea to the OI, and their underlying interests. I will now describe the unfolding dynamics of the different stages of the venturing process from the vantage point of their experiences and the interpretations they offer to explain these dynamics.
The Dynamics of Interaction in the Idea Connection Process

I begin by describing the dynamics of interaction in the Office of Innovation’s Idea Connection Process. Each of the four formally defined steps in the process - idea generation, initial screening, group review, and sponsor seeking - are examined in turn.

Idea Generation: Frustrated as they may often be from their previous attempts to find an appropriate channel for the pursuit of their idea, "originators" often approach the OI facilitator with some initial trepidation. As one originator described it:

I didn’t really know what to expect. But I was prepared for some corporate type who would lead me through my song and dance and then say: "But..."

However, after the fact, most speak glowingly of the facilitator’s "open-door," "unbiased," "friendly," "non-threatening," "careful listener," attitude towards them and their idea. For some, this can be a truly energizing experience:

Our facilitator really saw the potential in our idea and did a world of good for our morale and spirits. I think he really gave us the energy to go ahead.

But, the difficulty of the facilitator’s role at this point when he/she is on the one hand trying to establish trust with originators who are highly defensive and on the other hand is trying to maintain a neutral facilitative role, is clearly evident in another reaction:

My first reaction was that [my facilitator] wasn’t terribly excited about the idea, but in retrospect I guess he was just trying to be professional and not get emotionally involved in the idea.
For both the originator and the facilitator, the most important aspect of this stage of the process was establishing a good mutual working relationship and the originator's trust in the facilitator. This phase was also seen as one that serves to recruit potential helpers. In some cases, the facilitator may also play a substantive role by actually helping the originator shape the idea in a way that leads to its clarification. This stage can sometimes act as an initial screen as the originator may quickly realize that the idea is fatally flawed:

Sometimes technical people [like me] can be very naive about the market perspective. For my first idea, B [the facilitator] helped me look at that aspect more closely and I soon realized that my idea was actually not worth pursuing at all, and so I dropped it. This time though, I think I have a winner!

The OI's espoused norm that the idea be outside the originator's immediate job assignment is much more ambiguously interpreted by both originator and facilitator. For the most part, this screen operates only if pursuing the idea within the OI system would constitute a flagrant violation of the authority invested in the originator's supervision.

In most cases the experience of the originators was that the OI facilitator provided all sorts of assistance including some administrative help such as typing, etc. to help the originator produce and document his idea in its best light before it was crystallized in the form of an Idea Memorandum (IM):

The OI facilitator really helped take my rambling idea and shape it into a coherent business idea. I think with his inputs, I was really able to present my idea in its best light. He finally even helped type it up into an IM.

Facilitators claimed that they tried very hard to treat all originators
equally. But they did confess to getting a little more involved when they expected that the idea could be a "quick" or "big winner," and conversely to being a little less enthusiastic about those that were clearly "flaky." Facilitators also showed a preference for originators that had previously been through the process and had a positive experience. The facilitators' "only human biases" also come into play in determining how quickly an IM moves from the stage it is formally documented as an IM to the next stage where it is reviewed by consultants.

**Initial Screening:** Idea "originators" view the initial screening process as serving four basic purposes: certification, appraisal, sponsor-search, and further development of the idea. These four purposes present trade-offs that need to be taken into account in choosing consultants.

Most originators feel that at the very minimum, their idea needs to be "certified" by at least a few consultants, if it is to have "any chance at all." Therefore, to achieve this minimal "certification," they inevitably end up picking at least a core set of consultants who are likely to respond most favorably such as close colleagues, positively predisposed customers, other "experts whose opinion they can trust," and any supervisor or manager who may be a supporter.

At the same they recognize that they need to support what may otherwise merely seem to be a "biased" or "incestuous" certification with consultants that prima-facie would seem to offer a more objective "appraisal." For this purpose, they may pick some "experts," usually technical "gurus," whom they consider "unimpeachable". In most cases,
they delegate this responsibility to the OI facilitator, though they may veto some names whom they consider "poisoned" towards their idea.

The third force that drives the choice of consultants is the view that the initial screening phase represents a first chance to find a potential sponsor or champions. While originators often rely upon or work together with the facilitator to identify potential sponsors, in some cases these are known a-priori to the originator and then it is considered only appropriate to nominate them as consultants and "keep them in the loop."

Most idea originators seem to attach relatively little importance to using the consultant review process as an opportunity to solicit complementary information or expertise that would allow them to develop their ideas more fully. Or even if they do, they expect this will naturally follow from the responses of the consultants they choose with the above three objectives. Only rarely did originators proactively seek out consultants who may have had complementary expertise critical to the development of their idea. Consultants who can help with the development of an idea are often recommended by the facilitators who often try and get business and marketing inputs that may have a bearing on the IM.

The initial number of consultants to whom the IM, a covering letter, and a review questionnaire are sent varies from 6-12. The consultants are drawn from two pools. One pool is the originator's social circle as described above, and the other is a much larger pool that the facilitator may draw upon. Each facilitator has by now identified and developed a
cadre of trusted expert consultants for different technology areas and business inputs. If these consultants cannot help directly, the facilitators will use them as a source of referrals to other consultants. They also rely heavily on referrals from each other which is facilitated by their being connected to each other electronically, and the regular meetings that they attend. In addition to these two sources they may sometimes use company charts, the Kodak directory, or special intra-company lists of experts. External consultants are employed on very rare occasions.

Getting input back from the consultants may take 2-4 months and is a function of the initiative of the facilitator in "following-up," the degree to which the consultants are well known to the IM originator, their hierarchical status, etc. Consultants can also often seek additional information or else direct the originator to some additional consultants that he/she considers particularly suitable; both of which can be time-consuming. This is the period that often generates some impatience because the originator at this point usually has a lot of energy about the idea, and has little patience with what is in any event considered a stage "when no real action takes place but the motions must be gone through."

About 50-75% of the consultants respond to the IM. At this stage almost all the responses primarily address the technical feasibility of the idea and some very basic business concerns. The key question is - "Is it doable?" Responses fall into three categories: rejections, approvals, and constructive critiques. Rejections maybe cursory, politically motivated, or serious. Serious rejections are those based on previous attempts to do the same thing that didn't work, other attempts reported elsewhere,
technical flaws, or crucial erroneous market assumptions. Approvals are
two kinds - those from friends who were chosen to certify the idea, and
others from those who really like the idea. Constructive suggestions take
various guises - "have you thought about X," "do the following tests," "I
have the following market information that may be useful," "this is what
X study did," etc. Their importance is that they can often have
consequences that were unintended when they were solicited. In many
cases, constructive suggestions from consultants have led to informal or
formal partnerships, study groups, etc. as the following cases indicate:

I connected with these people who had tried this idea a few years
ago and now we are pursuing this idea as a team. Particularly, there
is this one guy who has, in a sense, now become an equal partner
because he brings to the table a key expertise without which we just
wouldn't be able to proceed.

I had chosen 15 consultants. More than half sent back comments.
About 4-5 expressed an interest in meeting with me to discuss this
further. As a result, we now have a study group of 4-5 people and
meet fairly regularly. I think if the idea proceeds further, we will
present it as a team.

The consultant review process ends when the originator has had the
opportunity to reflect on the inputs and decide whether it is worthwhile
to continue. The originator may then make any improvements to the IM
he considers useful and work with the facilitator to set up a group
review meeting of the consultants that they felt would be most useful for
the development of the idea from those who had expressed a willingness
to help in the further development of the idea.

The Group Review: Most originators viewed the initial group review
meeting as the first major hurdle which establishes the prima facie
credibility of the idea. As one originator put it:

This is the threshold which separates the wheat from the chaff.
You are now a legitimate entrant in the race.

Ironically, though, several originators also expressed the opinion that if they did "make the cut," in the initial group review meeting, their control over the next stages of the process actually declined. If the first group review meeting is a collective assessment of the potential "interestingness," "workability" and "business merit" of an idea, its outcome is most often a set of criteria established by the group that the originator is expected to meet to "establish" more unequivocally the merit of the idea. These criteria can include recommendations for some preliminary experiments, market surveys, etc. While the group's support often opens access to other avenues for bootlegging resources, such as offers to conduct experiments on one's facilities etc., several originators felt that the group sometimes recommended activities for the further development of the idea that could really not be reasonably pursued with bootlegged resources alone. Moreover, many of the originators felt that at this stage, they really had no choice but to meet the recommendations of the group if they wanted the idea to move any further. The evolution of this process was further cloaked with uncertainty as many originators felt that the group's expectations for what they would consider an "established idea" seemed to grow with every meeting they conducted.

This sentiment is captured in the following originator's complaint:

At the first group review meeting, they [the group] recommended that I conduct some simple experiments which would establish the feasibility of my idea. I have the results from these tests, but now they want me to build a simple prototype before I try to seek sponsorship. With only bootlegged resources, I think this is most unreasonable.

Several other problems also surfaced in trying to develop the idea further. These were not attributed to the unreasonableness of the
recommendations of the group, but to the problems of attempting to simultaneously juggle bootlegged development and a regular job, particularly if the idea involved a team of originators:

To develop this idea further, me and my partner need 2-3 days of free time when we can work together. Unfortunately, his supervisor and he don't get along, and even if they did, it would be a minor miracle if our regular projects allowed us both slack at the same time. So, while we believe that our consultants have asked for some reasonably critical information that would help in determining the feasibility of our idea, it is something that we might never have the time to do, unless we could get both our managements to jointly agree to give us some spare time at the same point. Right now that looks like a pipe-dream.

If the originators meet the several challenges or what are more often thought of as "a series of hurdles" thrown up by the group review process to establish the feasibility of an idea, the idea then proceeds to the "seeking sponsorship" stage. In a few cases, though, the sponsor may well be a member of the group of consultants, an outcome that for any originator would represent a fantasy come true.

Seeking Sponsorship: The dynamics of the sponsorship stage are very complex. This is because sponsorship inevitably disequilibrates the existing resource and power distribution by requiring a formal allocation of resources (albeit a small amount initially) from a constrained resource pool, a release of at least 20% of the originator's time from his/her present assigned responsibilities, and the initiation of a project that could evolve in a way that affects the interests of other members of the organization. Thus, originators maintained that sponsorship was driven by politics, negotiation, and judgments of the objective merit of the idea, and often in that order of importance. When pushed for an explanation of why the "objective" merits of the idea figured at the bottom of their
list, every originator agreed that it was certainly true that clearing the initial screening and group review process endowed the idea with a prima-facie credibility that made it difficult for sponsors to pass totally arbitrary or politically motivated decisions. At the same time, they felt that political considerations could easily outweigh the merits of an idea, because ultimately:

Everything boils down to a judgement call by the sponsor, and on that count, there really is no higher court in which you can appeal the sponsor's judgement.

The originators felt that the only way a sponsor's judgement could be exposed as being flawed was if another line unit or NOD sponsored the project and it turned out to be a big winner. But since everybody recognized that the chances of failure of any innovation were typically greater than the chances of success, most sponsors were discouraged from taking a chance, particularly given Kodak's historical emphasis on reliability. As one originator put it: "Nobody wants to be the front man." Nonetheless, some others opined that in more recent times the corporate emphasis on innovation had changed the attitude of some managers who now perceived a benefit in looking "progressive." While managers' attempts to "live up to this progressive attitude" was generally seen to benefit the originators, the possibility of a more perverse consequence was raised by one originator:

In attempting to look "progressive" some managers will initially sponsor projects, because it costs them a relatively small amount to do so, and they think they can earn some brownie points with corporate. But, later on they really don't make the additional commitment or take some of the bigger risks required to make the idea succeed.

The idiosyncracies of sponsorship notwithstanding, there appeared to be general agreement on the importance of five key parameters of an idea:
(i) size of investment; (ii) immediacy of payback; (iii) size of revenues; (iv) fit with strategic charter, and (v) its risk. The estimation of these parameters, however, was by no means a straight-forward affair. They were hotly contested and "negotiated," with most of the bargaining advantage lying on the side of the sponsor. One originator described this process of determining the "true" estimates of the various parameters of an idea as a "haggling match":

Every stage of the process was like a haggling match. Our estimates were discounted at each meeting. When it ended we were glad that we had such a huge margin to begin with. That's the main reason why I think we made it.

Other factors that both influenced the estimation of these parameters and also served as independent parameters in determining the "worth" of an idea were the "reputation" of the originator, and the way the sponsor valued the opinions of the various consultants. One originator who had submitted several ideas that had reached the sponsorship stage summed this up in the following way:

What matters is that the idea be novel, patentable, require a modest investment, be above the minimum size that interests Kodak, and be doable right away so that there is little uncertainty attached about its performance. These are the objective features. Of course, some other subjective things matter just as much: having the 'right' people on the list of consultants who support your idea, where 'right' is really someone whom the sponsor knows and trusts; managing the political channels and making sure you don't badly upset someone's apple-cart; and getting your supervisor to at least agree enough to be willing to release your time.

A factor that could potentially override all other parameters in securing sponsorship was a previously successful experience between the originator and the sponsor. The following story reveals the enormous value of "good credit":

Given the lukewarm reaction to our proposal by the consultants, particularly the surprisingly damaging comments of this expert who
was at the interface of the very technologies we were proposing to integrate, we were skeptical about getting sponsored. But, we had worked previously on a project for our potential sponsor, and our work on that project was so good that I figure it makes us very credible in her eyes. Secondly, on a previous OI project that had been considered not workable, I had managed to produce a working prototype. She knew about that too, so I guess my proposal got sponsored because my "good credit" is still alive.

Aside from these general observations on the seeking sponsorship stage, it was also clear that there were different dynamics depending on who the potential sponsor was - the originator's top-management, a different line organization, or NOD.

In those cases when the anticipated sponsor was the top management of the originator's group, the key to sponsorship seemed to be presenting the idea in a way that clearly showed how one's supervisory management could improve their performance, take some credit for it, and not be saddled with any political headaches in the bargain. This is evident in the following observations of originators who had either already been sponsored or were seeking sponsorship by their own management:

I need to present the idea in a way so that everyone can take some of the credit if it succeeds, and no one, particularly my supervisor, would end up with egg on his face.

The key problem with my idea was that the technicians felt that it would put their jobs in jeopardy. My manager was only willing to sponsor the idea after she was convinced that was not the case and she would not have to cope with an uprising on that front if she went through with the implementation of the idea.

Another very critical issue in sponsorship from the standpoint of one's immediate management was how the idea would affect the performance of existing operations. Management concerns in this regard could range from:

(i) Direct concerns about releasing some of the originator's time from
an ongoing project in which his/her involvement was critical:

Right now I am working on these two major projects in which I have a key role. So, I won't be surprised if my management refuses to sponsor my idea because in their view releasing 20% of my time for this idea at this stage could well jeopardize the success of these projects.

(ii) Indirect concerns such as displeasing some key customers of ongoing projects:

The problem with our idea is that some of our key customers are concerned that it might lead to some of their work taking a back-seat while we process these external orders which would make us more money. I think management is most concerned about upsetting them.

And, even (iii) such subtle concerns as the kind of signal this would send to their organizations on the importance of ongoing operations versus innovative activity:

By allowing some people to work on innovative ideas, management also risks exposing other key people whose involvement in such projects could lead to job transitions that could be very problematic for them. In these times, losing key people can be disastrous. So, management may well feel that it more useful to keep the blinders on and stay clear of sponsoring OI projects.

In situations in which the potential sponsor is a line organization other than the originator's own, the primary dynamics affecting sponsorship are the potential conflicts with the interests of existing groups in the sponsoring organization and the need to negotiate a mutual adjustment between the originator's principal management and the sponsoring management on the relative distribution and control of the originator's time. Conflicting interests with existing groups may take different forms such as threatening a group's expertise which may lead to the well known Not-Invented-Here (NIH) syndrome, creating additional competition for scarce resources, and cannibalizing existing operations. The impact such
conflicts can have on sponsorship is clearly seen in the following account of a proposal that first didn't find sponsorship, but was later sponsored:

At the time [when I first put forth the proposal], the market my technology would satisfy was already being met by an existing product in the LOB. So, in spite of the acknowledged superiority of my technology, the idea went nowhere. My proposal then sat on the shelf for about 2 years, but recently it has started moving again. I've been approached again by the same LOB who have now expressed an interest in sponsoring the idea because their market dynamics have changed and their existing technology is apparently no longer adequate.

The concerns about securing the release of the originator's time from the parent organizational unit have all the problems associated with the situation of sponsorship in the parent organization. However, the situation is exacerbated because of the added reluctance of the parent organization to release the originator for a project whose success or failure has little bearing on their own performance; particularly given Kodak’s new organizational structure which promotes some internal competition among the LOBs to "look better than thy neighbor." A more subtle point was made by one originator who felt that sometimes other line organizations may be reluctant to sponsor a project if it involved moving a key individual because of concerns that it might create "bad blood" between them and the originator's LOB or be seen as the equivalent of "raiding" an internal unit for its talent.

For sponsorship in NOD, in the opinion of most originators, the thing that mattered the most was that the idea be a "big business" type of idea which could generate revenues of at least 20 million dollars in 3-5 years. This was considered critical because it was felt that NOD's interest in creating independent new internal ventures offered them little incentive to sponsor ideas that didn't offer this potential. The other factor that
was considered critical for sponsorship within NOD was establishing that the idea met NOD's criteria for a "no clear logical fit" with existing line organizations. This was explained as being related to NOD's incentives in setting up internal ventures that created a potential conflict between NOD and the LOBs. This conflict was seen to be the outcome of the fact that while NOD was supposed to nurture ideas for final adoption in the LOBs, it didn't want to create a situation where the LOBs would deliberately refrain from sponsorship till NOD had invested its resources and further developed the idea, which was in effect, as an astute observer in Kodak rightly identified, "a potential free-rider problem."

In terms of actually managing the dynamics of the sponsorship process, most originators felt that this stage was the one where they had least control. The facilitator was really seen to play the key role at this stage. As one originator put it:

Unless your facilitator is a bulldog at this stage, is always willing to barge in and open doors, and is just not willing to take "no" for an answer from a sponsor without a good reason, you may as well kiss goodbye to your answer. No matter how good your idea, the perseverance of the facilitator is the key to finding a sponsor.

In this process, the facilitator was, therefore seen as, the "blood hound who sniffed out the potential sponsors," the corporate representative who could "open doors," the initial advocate "who at least got you a hearing from the sponsor," your lawyer and representative who tried to "ensure that you received as fair a hearing as possible," and an "ombudsman" who attempted to resolve as many conflicts of interest as possible. While most originators were in high praise of the efforts of their facilitator some complained that in contrast to the very open character of the rest of the OI process, this stage of the process was often opaque to them as

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they were excluded from many aspects of the decision making process, particularly the final meetings when the most senior management met to discuss whether to eventually sponsor the idea or not.

The sponsorship seeking stage also had its fair share of unintended positive outcomes. The efforts of the facilitator often resulted in sponsorship from quarters least expected by the originator or the facilitator. I could discern no pattern in the cases brought to my notice except that the sponsors were often located through weak ties in the extended network which the OI facilitators had created. The following case is a powerful illustration of the strength of these weak ties.

At one point after six months of running all around Kodak it had looked like there was going to be no sponsor for my idea. But my facilitator decided to make a last-ditch attempt with this guy whom he vaguely knew from a project that he had been involved in a long time ago that had some similarities with mine. Well, he called him up and guess what happened. This guy had just been recently approached by someone else in the company who had a need for a product just like mine. To make a long story short, after a series of meetings we finally got sponsored by this other person to whom we had been recommended. One thing is for sure, we would never have thought to approach him by ourselves.

As discussed earlier ideas may either be sponsored by line organizations or by NOD. This also marks an end to the part of the internal venturing process in which the OI plays the central organizational role. While the data I have gathered for the remaining stages of the internal venturing process are not as rich as for the OI process [the closest analogue organizationally to the 128 Venture Group], I will now discuss the evolution of ideas into business ventures from this stage onwards; again from the perspective of the originators.

*The Seed Stage: Chasing after the Perfect Business Plan*
In NOD, originators felt that the process was really driven by two desiderata: a business opportunity of the right size (somewhere between $20-50 million in 3-5 years after start-up) and the perfect business plan. To achieve these desired objectives, NODs "due diligence" is considered by most to be fairly detailed and fine-grained and follow closely the procedures and criteria it has formally laid down [as described earlier in this chapter]. Indeed, the process was described by one originator as "checking-off one-by-one every element on NOD's check-list." This, in the view of a current venture manager, who had previously been an entrepreneur outside Kodak, resulted in a process that was "lacking street smarts" and was "overly academic."

However, two additional features of the process surfaced in my interviews with the originators that were not fully captured in the formal description of the process. The first aspect was how greatly NOD was influenced in its screening by sources outside Kodak. This should really not be surprising given NOD's strongly espoused ideology of benchmarking themselves as closely as possible to the external venturing process. The importance NOD attaches to external opinion at all stages of its "due diligence" was clearly evident in this originator's account:

In the first stages of the process at NOD [the pre-seed stage], I went with a NOD administrator to this conference. I think it was really the reception that my idea received at that conference that convinced NOD to give me a seed-grant of $25,000. Even later on, NOD continued to place a very heavy emphasis on getting real market information. I think one reason why NOD is still interested in my idea and has given me additional resources to build a better prototype is that in a survey that I conducted of potential customers, all the educators I approached indicated a willingness to be a β-test site for my product.

This originator felt that NOD's use of external sources to satisfy
concerns about the market for an idea was really justified because:

Till the idea reaches NOD, it has really been reviewed only by people inside Kodak and these are, for the most part, "techies." You know how techies are when it comes to estimating the market potential of an idea. They just feel that if it works, someone ought to buy it.

Based on his experiences, another originator was not so approving:

Soon after I got my seed-grant, NOD's lack of confidence in the venture-orientation of Kodak employees resulted in their bringing in this external consultant. He was considered an expert in this business, so he was given charge of evaluating the worth of the idea and putting together the business plan. In fact, shortly afterwards NOD felt that this guy would be the better venture general manager, and if the venture was approved, it would be better if I was just responsible for the technical end. Well all this time, this consultant was still submitting time and materials bills, and we still didn't have a business plan. There was always something else that we had to check. When the plan was finally finished, I think it was quite good, but it left a bad taste in most everybody's mouth because it really ended up costing Kodak a couple of hundred thousand dollars more than it should have. I think NOD's zeal to put together the perfect business plan and their lack of confidence in the ability of internal Kodak employees may be partly justified but it runs the risk, as in this case, of being taken too far. Particularly since the business plan was ultimately turned down by the Venture Board for being outside the scope of Kodak's broader corporate strategy, this case was a premature overkill.

The second feature of the process that appeared more complicated than NOD's formal description was NOD's relationship with Kodak's line organizations. Of paramount significance was the opinion of the originators that the balance of power and influence in this relationship lay overwhelmingly in favor of the line organizations. This was reasoned to be in keeping with Kodak's recent reorganization that had really pushed the LOBs to the positions of greatest power in organization. So, in the opinion of the originator, NOD in one sense was really a corporate service for the line organizations, devoted to stimulating internal innovation which the line organizations might not have the resources or inclination to otherwise sponsor. In this role, NOD was expected to
nurture ideas that the line organizations were reluctant to sponsor, and
help nurture and develop them till the line organizations were able to
determine more clearly if they wanted to have anything to do with the
idea, the right to first refusal always being the province of the line
organization. NOD, therefore, had to bear all the risks associated with
determining whether an idea was worth something or not, and the line
organizations always retained the right to walk in and claim ownership to
the idea without really compensating NOD for having borne the risk (they
usually merely paid the costs incurred by NOD till that point). At the
same time, NOD was not evaluated as a corporate cost center that
provided this service, it had to earn its keep by managing to make money
on its venture fund. This clearly induced a conflict of interest between
NOD and the line organizations, because from the standpoint of its
venture fund's performance, NOD's incentives were clearly biased towards
finding proposals that didn't fit any LOB's charter, and for which they
could claim unambiguous ownership, a task that was undoubtedly
complicated by the requirement that the venture fit Kodak's strategy and
ultimately be "sold" back to a Kodak line organization. These tensions in
NOD's relationships with the line organizations are clearly evident in the
following comments of some originators:

While NOD was interested in my idea, they had to actually go and
secure the "go-ahead" from the LOB [which had decided at that point
that the idea did not fit their strategy].

My idea had reached the post seed stage in NOD, when the market
studies showed a slight turn in what the market wanted. All this
meant was a minor change in my product, but at that point it would
compete with an existing product coming out from one of the line
organizations [the LOB which had initially rejected my idea]. Now
despite my product costing $500/- compared to theirs at $3000/-,
[admittedly at a slightly inferior quality], it had to be suspended
because of the conflict with the line organization. NOD could do little
in this situation, because they can't really play hard-ball with the
LOBs. They [the LOBs] really control NOD's performance - being the
customers that NOD has to ultimately approach to sell the ventures.

We first found our sponsor [in a line organization] through NOD's contacts. NOD found us a sponsor despite their own interest in the idea at the end of the OI process. But, while NOD performed this service for the LOB, I think there is still a basic tension between NOD and the LOBs. Even after our project was killed by the LOB for lack of fit with its future strategy, I think NOD may have still been interested, but they wanted to own it outright. The LOB that initially sponsored our project, however, would not part with the rights to the project unless they got the $300,000 they had already spent in its development. But, NOD does not want to put that much money down up-front, because it has resource constraints and the amount is quite large, but I suspect also because it really does not know if it will be the ultimate owner so that it can fully recover the investment. So, they [NOD] discouraged us from submitting the idea to them. The LOB is still looking for a customer for the project, but I doubt that they will find one.

While these tensions are undoubtedly difficult to manage NOD has still managed to keep a healthy balance between the number of proposals that were ultimately sponsored by LOBs versus those that became independent ventures. In 1987, for instance, out of the 8 proposals that reached the final stage of the NOD process, 5 were adopted by the LOBs and 3 became independent ventures. This data provides no indication, though, of the proposals may have fallen through the cracks because of the tensions between the line organizations and NOD.

Seed Sponsorship in Another Line Unit:

As mentioned earlier, about 80% of the ideas that are sponsored at the end of the OI process, are sponsored by line organizations. While formally speaking, ideas sponsored by line organizations become "another line item, just as any other development project on the line organization's budget," the experience of some originators indicated some important differences. It appeared that ideas that came through the OI
process were more vulnerable to being terminated than regular projects and often had to face unusually stringent periodic reviews to receive continued support. This was especially true if the sponsoring organization was other than the originator’s own. This is how one originator described his experience:

We were asked to make a presentation three times to get the additional resources for the complete development of the idea. They grilled us in these sessions. I don't think we would have to be half as well-prepared in our regular projects. When people know you are working on your pet project, they are really looking for weak spots. In any event, we had done our home-work so well and prepared so hard for these presentations, that we managed to persuade them all three times. Well, after all these hurdles we finally had a prototype that did what we had promised it would do, but by then our original sponsor who gave us the seed-grant retired and the manager who replaced him killed our project. He was not interested in pursuing this new business area because he felt the market was too different and not large enough for Kodak to get involved. That was it! We approached NOD again, but they were not interested. So, we just had to drop the idea.

The vagaries induced by the shifting priorities of line organizations was also evident in another originator's story:

My idea was initially sponsored by a new venture under NOD who felt this could be their next generation of products. Soon afterwards, the venture was absorbed by a line organization, and the old management merely became minions in the line. The internal manager didn’t feel that the product fit his strategy and I got a definite rejection from him in 3 months.

These unexpected rejections by line organizations left originators feeling quite dissatisfied, particularly because it often meant that they had to return to their old jobs, or find new positions within Kodak, and pick-up from where they left with very little to show for the time spent on their project in the interim.

The Start-Up Phase: New Ventures in ETI
For most originators the dominant facet of the start-up stage is the requirement this entails of breaking-off from Kodak and becoming a part of ETI.\textsuperscript{47} Not surprisingly, this is an extremely difficult decision to make because it involves trading-off the job security and certainty of salary, bonus, and benefits associated with employment at Kodak with the much riskier prospects of higher monetary rewards, job satisfaction, and growth opportunities associated with the ventures. As a result, those who make this leap often tend to be those who are "really frustrated with their jobs in Kodak", either because they see no growth opportunities or because they find the routine of being "just another cog in the wheel" in a large corporation unsuited to their personality and life-style expectations.

The ventures do in fact meet their expectations of having a totally different atmosphere both operationally and in the culture of the work environment. Kodak lives up to its espoused ideology of giving a free rein to its ventures to manage and organize their operations any way they choose. An ETI venture currently housed in the NOD incubator that I was able to visit is a classic example: each member of the venture has full responsibility for their part of the operation, there is a profit-sharing scheme for everyone, dress is casual as opposed to the conservative suits that are the norm at Kodak, every year the top-management goes on a rafting and survival training trip to build team-spirit, they have a small brightly colored stuïfed toy goblin that serves as a mascot and good luck charm and is displayed all over the organization (even visitors are encouraged to take a few home with them), and they have a catchy slogan for action - "the need for speed." From a business
standpoint they have very low fixed costs; both production and marketing are contracted out and their office space has been rented at subsidized rates in NOD's Incubator. The only capital-intensive work done in-house is design and development. The venture general manager felt that the control exercised by NOD, his Board of Directors, and his Venture Portfolio manager was not overbearing and indeed was very helpful. In his view, as long as he remained within a reasonable margin of his business plans and yearly plan, he really had complete freedom to manage the business both strategically and on a day-to-day basis as he chose.

The major concerns of the venture general managers stemmed from Kodak's attitude of treating these ventures as "experiments", so that, even if successful, the ventures have a nominal life-span of about 5 years. First, venture general managers felt that by considering these ventures as experiments, Kodak had somewhat unwarranted concerns about liability. Thus, Kodak's unwillingness to let the ventures use the Kodak logo for fear of jeopardizing a billion dollar intangible asset if the ventures supplied a poor quality product was viewed as a serious opportunity lost from the standpoint of the new venture. The advantages, though, of not having to be burdened with the organizational overhead of Kodak were also acknowledged. Second, most venture managers felt the weakest aspect was the incentive structure, because there were few incentives aside from the motivation of working in the more engaging work environment offered by a new start-up, especially since Kodak viewed the venture as a 4-7 year experiment, at the end of which they assumed no responsibility for the fate of the venture's employees. Even if the venture employees did benefit at this point from the "phantom
equity" they held in the venture, venture managers felt that didn't amount to much, particularly since they had little control over when they redeemed their share. A third concern was that for most venture employees their jobs at the point of "cash-out" could well be in Kodak itself, a situation which they joined the ventures to escape in the first instance. Several other problems were also attributed to this experimental attitude of Kodak. One venture manager complained that it led to a lack of true emotional and administrative commitment on the part of Kodak, such as not necessarily finding the best people for the management of the venture, etc. Another critical implication was the additional burden this imposed on the venture manager to find a final internal sponsor within Kodak; an activity on which one venture general manager claimed to devote at least a quarter of his time. In fact, in this manager's view the only way in which there could be a "worthwhile after-life" was if he could structure a whole new LOB with different pieces of another new venture, a new venture within a division, that could then be another LOB in one of Kodak's four line divisions with him retaining the general management of the new LOB.

The Maturity of New Ventures: For ETi, a ventures maturity signals the time for re-absorption into Kodak - a reentry that if prematurely or inadequately planned and implemented may be crippling from an economic and organizational standpoint. The classic problems of large firms acquiring small entrepreneurial firms may be observed. Once the ventures become a part of Kodak, they may be forced to change some aspects of their operating strategy such as contracted manufacturing or marketing, be burdened with all kinds of Kodak corporate overheads, and be

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constrained by Kodak's bureaucratic administrative culture in place of their freewheeling entrepreneurial culture. On the other hand, ventures may be just ready for take-off and the clout provided by Kodak could really help them blossom into major businesses. The history of the internal venturing program at Kodak is still too young to discern any clear patterns in this regard, but the initial evidence seems to indicate that the hand-off from ETI to the corporation is not without some of these problems.

From the standpoint of the originator of the idea the transition from the venture to the line is never an easy transition. From complete ownership the originator has to now take a back-seat as the business opportunity becomes a part of the regular operations of the line organization, often treated no differently from the other businesses in the LOB's portfolio. The originator, is therefore, at best "just another business manager," though in some cases, he may even have to adjust to a lesser role if an experienced line manager is considered more appropriate to handle the business now that it needs to operate as a part of the line organization. Adjusting to this limited role can be very difficult and this led one current venture manager to forewarn all employees who joined him in his venture:

If you join, remember there is no going back! It's not that Kodak won't hire you back. They would be crazy not to, but I don't think that after you have worked in this venture for 4-5 years, you are ever going to be satisfied working in Kodak again. But, the fact that you joined probably means that you are enterprising enough, so that you will always find something else to do that will be just as exciting for you.

But for those who do decide to join Kodak again after the venture, they must be prepared, in the words of some observers, "to run the risk
of being reduced to minions," or "just another cog in the wheel" in the new LOB environment.

Costs/Benefits of Participation in the Venturing Process

As the above discussion has shown, at any point in the internal venturing process the benefits of participation are unclear. In fact, many originators raised concerns about the "costs" of participation, irrespective of the outcome, i.e. whether the idea was successfully adopted or not. It is important to understand how the originators view these benefits and costs in greater detail because they form the heart of the incentive system for participation in the process and as discussed later, are critical to its long-term institutionalization.

There was complete agreement among the originators that there really was no significant monetary benefit or reward for submitting innovative ideas to the OI system. As one originator bluntly put it:

"There are no instantaneous rewards, not even - 'You can go to a conference and live it up for a while.' They might give dinner coupons for you and your wife, but at this stage I hardly need Kodak to go out to dinner!"

The only loop-hole by which an originator could get monetary rewards was if the idea was co-submitted to the Suggestion System and was successfully adopted. This strategy is increasingly being attempted by the OI facilitators and one originator recounted a successful attempt:

"After it had been successfully adopted, the idea was resubmitted to the Suggestion System. They gave us $50,000, the maximum award. This is ironic because the Suggestion System had initially rejected our idea. But from the OI system itself, we got no rewards. We might be able to patent our process and get a few dollars there but I don't think that will amount to anything real."
As this case indicates, the originator does have some property rights to the idea which may be redeemed in the form of a patent for which a small "phantom royalty" is paid to the individual by Kodak. But, the individual really loses all property rights to the idea if its development was sponsored by Kodak. The following case is illustrative:

Whether we will ever get any monetary benefits, I don't know and I don't dare ask. We did get a dinner and a plaque from NOD, but our sponsor currently 'owns' our idea and we can do nothing with it. I think if we wanted to take the idea and start a business outside Kodak, we might be able to do so, but we would first have to pay the sponsor the development money to buy back our idea. Even then Kodak has a pretty tight control for some time over our business, particularly if it appears competitive.

For many originators the rewards of participation came in the form of recognition by their peers and an enhanced reputation.

My rewards has been "recognition" among my peers. I am now known as the guy who proposed this idea and that gives me a good feeling.

However, it was pointed out by one originator that this benefit was in large measure realized fairly early on in the process, leaving little incentive for the originator to pursue the idea till it was commercially adopted:

What the OI has done is get me some visibility through the consultant review process. Now that that is finished, there is really little incentive for me to continue because beyond a few additional pats on the back, I really can't expect anything else.

For some originator's though, the reputational implications of submitting an idea to the OI system, weren't as favorable, despite the successful adoption of the idea:

I am already regarded as being a 'trouble-stirrer' and that has only been worsened by my involvement with NOD which is seen as further evidence of 'swimming against the stream.'
In keeping with the motives of the originators discussed earlier, the originators who felt most satisfied with the system were those who perceived that involvement in the process had benefited their careers or altered their status so that they had a preferred position when it came to the allocation of resources and choice projects. Uncommon as this benefit appeared to be, the following originator’s comments illustrate that on rare occasion there may be true glory:

There has been widespread recognition of my idea in my own area. I think this experience has positively affected my career and my ability to conduct research of my choice.

For some others, involvement resulted in a positive career outcome, but hardly in an intended way:

For me the rewards came in an unanticipated fashion. As I got more involved in the NOD project, it made people realize how important I was in my normal job. It shone the spotlight on me. So, I was offered this promotion and raise if I would drop the NOD project completely.

Another reward of participation that was observed was the opportunity this provided for being someone of significance, albeit briefly. The following declaration by an originator shows how important the modest attention that the originator receives in this process can be:

I met with some senior management and got to eat lunch with them. I don’t think I would have had the opportunity to meet with them otherwise. I got two dinner coupons and I got covered in Quest [the local unit’s newsletter]. I think that’s great!

A more subtle benefit pointed out by one originator was the enlarged network of people from different parts of the company that he had inherited as an outcome of the venturing process:
In the process, we established contacts with a number of great people inside the company. I think that has been the real reward, we've sort of inherited a network that I think may be useful at some future date and who knows it might lead to new opportunities, or something else.

To summarize, different individuals perceive different benefits from having submitted ideas to the OI process. These varying perceptions of benefits generally fall into one of the following categories: enhanced reputation, career growth, improved status, improved access to resources, heightened sense of personal importance (even if temporary), and enlarged network of friends and associates throughout the company. A more universal reaction was the agreement about the unfairness of the lack of any significant monetary benefits for participation in the internal venturing, a failing which only seemed worse when compared with the Suggestion System. One originator summed up this universal reaction:

I realize it is much more difficult to assess the contribution of an innovative idea than a suggestion. But it does seem unfair that you can get $50,000 for a fairly straightforward idea on the Suggestion System and nothing for the creation of a whole new business opportunity for Kodak.

In addition to these concerns, several other limitations with regard to incentives were highlighted by the originators.

First, most originators felt that while they had personally learnt a great deal from being involved in the process, there was little organizational recognition or credits for this personal growth. This was brought home by the following originator:

This was a great learning experience. I learnt a lot from the process and from my collaborator. There was a great cross-fertilization of expertise. I have brought back into my job a fuller sense of the business perspective, a broader vision of the company, and a better sense of how I can add value. The way I prioritize the different aspects of a task has changed and new things have been
added to the list of things I now pay attention to... But there is little appreciation from management. They don't see the subtle benefits of this process. For them it is like sending a Quality Control Engineer to an Art Class. They see no connection. So, my NOD experience doesn't really appear on my resume, though in a sense it has been a superior learning experience than any training course the company could have sent me to. But I think my ability to do my job better will ultimately pay off.

Second, there was widespread agreement that much greater significance was attached to involvement in projects sponsored by top-management than to innovations that emerged out of the OI process. Consider the following remarks from which it is evident that this is true at all stages of the process, from the submission of IMs to the successful adoption of an innovative proposal:

The IMs are listed on my performance appraisal, but they are not given equal credit as the rest of the items. The weight attached to them is quite insignificant. But, they don't hurt and if anything, have only been mildly encouraged by my supervisor.

Recognition for success on an OI project is certainly not quite the same as success on a top-management sponsored project. It is, after all, only by playing a key role in those big company projects that you really achieve 'recognition' in this company.

Indeed, some originators even felt cheated about the way successful involvement in an OI project was feted by their parent organization.

One can get celebrated and feted like a 'hero' after the fact, but its more like being celebrated for a United Way Fundraising Drive than for the accomplishment of a project of key economic value to Kodak.

Closely related to this second observation, a third issue was that if the innovation was sponsored by someone other than the originator's parent unit, there were no credits transferred for the innovation to the originator's parent unit. This, in the opinion of most originator's offered little incentive for their immediate management to encourage their participation in the venturing process or give them any credit for it.
My division gets absolutely no credit for the innovation. My sponsoring organization is the going to reap all the benefits from my innovation. Therefore, I have not added any brownie points to my record, because it [the innovation] doesn't help my division. After, all in organizations you only grow if you can make your boss look good.

For one individual I interviewed this problem didn't just involve not getting due credit, but in fact had serious adverse implications:

My supervisor has actually told me that my involvement with NOD was the reason for my poor performance appraisal.

A fourth problem raised by the originators was the problem of carrying ones credit history over the unplanned transitions that are often inevitable in the venturing process. This story illustrates this problem:

We are now both working for a different supervisor in a totally new area than before we took on the OI project [involved development work in a new division for about 18 months after which the project was shelved]. So, we've lost our previous track-record and have had to establish a new one. For our new supervisor, there is no memory of our past.

Finally, the benefits and costs of being involved in a NOD venture were shrouded in ambiguity and not fully appreciated by most originators. Here is how a couple of them felt about the benefits and costs of the venturing process:

The rewards are very ambiguous and there is no clear information. They (NOD) says that you own a part of the ventures and that can result in monetary rewards. Most people feel that's not really correct. For instance, X [a venture in ETI] was a golden goose that Kodak took in before the original founders had the chance to get the golden eggs. Kodak got the golden egg and these people basically had to return to pretty much their old jobs. [This is actually incorrect, the founders of X did make a considerable monetary gain from the venture when it was absorbed by Kodak. But the perception is still indicative of the ambiguity and lack of information that shrouds the rewards associated with the process.]

The incentives for participating in the OI process are really unclear. Do I have to wait until the business becomes a multi-million dollar deal? Do I have to completely sever ties with Kodak? If so, why would the best people who really have the strongest stakes
inside Kodak ever participate in the process?

Most originators felt that the costs of pursuing an idea that ultimately failed were not terribly high, particularly if it happened early enough in the process so that the originator had not invested too much time on the idea as opposed to the regular projects. At that stage, most felt that their management would in all probability merely smirk and say - "I told you so!"

Opinions were much more mixed when it came to failure later on in the process (especially after sponsorship). Everybody agreed that there were real risks at that stage, particularly if the originator's assigned project had suffered in the process. But, while one person felt that the effect of failure was as damped as the benefits of success:

I think the effect is damped on both sides. If you win, you'll probably get something but not a whole lot, but if you lose, you probably won't lose your shirt. The effects are clearly less pronounced inside Kodak than they would be outside, say in Route 128.

Another originator was much more emphatic about the costs of failure:

The 'stigma' of failure can be incredibly permanent. I know someone who has never been given a critical project in his line organization after he failed on a NOD project quite late in the process. So why risk it for an ambiguous chance of gains.

There was universal agreement among the originators though, that there were little costs of failure in terms of their ability to approach the OI process with another idea. In fact, several originators whose ideas had failed had the perception that they would only be more welcome because they had at least been through the process, and were less likely to repeat previous mistakes.
IV. THE PERFORMANCE OF THE INTERNAL VENTURING PROGRAM

The performance of the internal venturing system at Kodak may be evaluated on the following grounds: (i) Outputs of the process, (ii) The quality of the process; (iii) Its effect on stimulating innovation more broadly in Kodak; (iii) Unintended effects not related to business venturing; and (iv) The institutionalization of the process.

A. Output

From the standpoint of output, there are several considerations. The first, is the scale and yield of the system: how many ideas are submitted and how many are finally adopted as new business opportunities.

Figure 3.6 summarizes the historical record of the effectiveness of the system with regards to ideas originating in the OI network.

Over the eight year period 1979 -1987 the cumulative number of idea memorandums that have been submitted to the OI network exceeds 3000. The number of ideas submitted to the system has been increasing steadily over the period. This increase is however not so much an increase in the submission of ideas to each office of the OI network, but a reflection of the fact that the number of ideas submitted is broadly proportional to the number of offices in the network, and the number of offices has rapidly increased over this period, particularly since the formal corporate endorsement of the internal venturing effort in 1983. In the last couple of years the number of ideas submitted per year to the network has been
FIGURE 3.6: DEAL FLOW DYNAMICS OF THE OFFICE OF INNOVATION

SOURCE: EASTMAN KODAK COMPANY, 1988
about 1000 from a total of 19 offices. This means that approximately one idea is submitted every week to each office in the OI network. While there is some variation across different offices in terms of the number of ideas they receive, the differences are not large, and is related to the number of employees and number of professionals (particularly engineers and scientists) in the vicinity of the particular office. Thus the OIs in the Kodak Research Labs and in Kodak Office receive the largest number of ideas, the former because it is in the midst of the largest concentration of scientific and engineering professionals in Kodak, and the latter because it is the only office in a physically separated location - Kodak Office - which has a very large number of employees.

Of the ideas submitted to the OI network, the historical record indicates that approximately 10% were sponsored and got seed grants to help determine more fully their business worth. About 80% of the ideas have been sponsored by line organizations and the remaining 20% by NOD. Nearly 25% of these sponsored ideas or approximately 4% of the total number of ideas submitted to the OI network were finally adopted as new business opportunities by Kodak.

In 1987, the latest year on which data were obtained, NOD reviewed 112 proposals, about half of which came from the OI process, the other half coming directly from the line organizations. 38% or 43 of these 112 proposals were logged into the pre-seed stage for further analysis. 21% or 9 of these 43 pre-seed proposals were awarded full seed-grants ($25,000, approximately). This led to the addition of 9 new seeds in NODs existing portfolio of 15 seeds which it had carried over from
SEED PORTFOLIO AS OF 1/1/87

112 PROPOSALS REVIEWED → 43 PRESEEDS LOGGED IN → 9 NEW SEEDS

EXITED

17

8 SPONSORED { 3 NEW VENTURES
9 ABANDONED 5 LINE ORG.}

SEED PORTFOLIO AS OF 1/1/88

7

SOURCE: EASTMAN KODAK COMPANY, 1988
previous year. Of these 24 proposals in its seed portfolio, NOD arrived at a final decision on 17, leaving 7 proposals still active at the end of the year. Of the 17 seed-grant proposals on which final decisions were made, NOD sponsored only 8, and abandoned 9 others. Of the 8 sponsored proposals, 3 were sponsored as new internal ventures and became independent subsidiaries of Eastman Technologies Inc. (ETI). These statistics are summarized in Figure 3.7 above.

In terms of ETI's performance, over the period 1984-1987, 14 new ventures have been incorporated under ETI. 5 of these ventures have already reached their terminal stage from the standpoint of Kodak's internal venturing program. 2 have been absorbed by line organizations as new businesses, 1 has been sold to an outside buyer, and 2 have been abandoned. Interestingly, 3 of these 5 were incorporated in 1984, and reached their terminal stage in late 1987, thus keeping with Kodak's policy of attempting to bring closure to these ventures in 4-7 years.

During my field research, I could not obtain data regarding the distribution or pass-through (adopted versus submitted) of the ideas by their type: such as product, process, or administrative ideas; or their scope: evolutionary versus revolutionary ideas. There were some data available in the form of the distribution of the ideas adopted in terms of the "preliminary estimate of the size of the opportunity, (PESO);" a dollar estimate of the eventual worth of the idea, that is produced during the OI process itself. However, there is no way of determining the accuracy of these estimates, because the internal accounting of Kodak does not allow the ultimate worth of adopted ideas to be easily calculated.
FIGURE 3.8: DISTRIBUTION OF IDEAS SUBMITTED IN TERMS OF THE PRELIMINARY ESTIMATE OF THE SIZE OF THE OPPORTUNITY (PESO)

KEY:
IM = Idea Memorandum
PESO = Preliminary Estimate of Size of Opportunity in $

SOURCE: EASTMAN KODAK COMPANY, 1988
Keeping this in mind, Figure 3.8 summarizes the distribution of ideas adopted by their PESO values. Looking at this figure it is clear that the majority of ideas adopted are fairly small (less than $1 million), though there are certainly quite a few that represent big business opportunities (over $10 million).

My discussion of the performance of Kodak's internal venturing program from the standpoint of the output of new business opportunities has been primarily descriptive. This was done with a view to provide the reader with the data to arrive at an independent valuation, because an objective evaluation in this situation is very difficult. First, this a fairly unique model of internal venturing; there is no study of any other internal venturing program that can serve as an adequate comparative point to Kodak. Second, I was unable to get detailed data on the resources invested in this activity by Kodak and the benefits that were obtained. Third, a crucial aspect of internal venturing at Kodak (as in many other firms) is that it represents a corporate attempt to create new business opportunities outside its traditional domain of competencies and therefore is a strategic option that need to be valued accordingly. Unfortunately the techniques for valuing such technology options are still in their infancy.

The only data I have that allows any evaluation are the estimates of the Director of the OIN who judged that even the most conservative "PESO" estimate of the ideas that had been adopted by Kodak represented a return that at was at least hundred-fold Kodak's total investment in the process as measured by the OIN's budget. This does not include the
investments made by the sponsor, only the cost of facilitation by the OI. It needs to be further discounted to account for "hidden" costs like the "bootlegged" time and resources invested by the originators and the enormous amount of effort and time spent by the "consultants" and other participants in the OI process who are not paid by the OI for their services. Even then, if one accepts this estimate to be true, one can only conclude that the OIN system has been extremely effective from the standpoint of financial performance.

The administrators of the program were also emphatic in pointing out that even if one didn't account for the generally increased emphasis on innovation that the system had created in the culture of Kodak, a few of the new business opportunities generated through this process were big winners in domains outside Kodak's traditional lines of business and distinctive competencies. In their view, these new ventures in and of themselves represented the attainment of a critical strategic objective that more than adequately justified the existence of the system.

B. Quality of the Process

In essence the internal venturing process at Kodak takes ideas that may originate in any part or level of the corporation and converts some of them into new business opportunities that are adopted by Kodak. The "quality" of this process may in one sense, therefore, be judged analogously to statistical quality control in a standard production process: What are the chances of committing Type I errors (idea adopted but should not have been) versus Type II errors (idea should have been
adopted but was not), and are there any systemic factors that lead to these errors.

With regard to Type I errors in the final output of the process-adopted business opportunities - I have insufficient data evaluating those ideas adopted in the line organizations. For NOD, the data provided by the company, though limited in numbers, are more clear. In the view of NOD's administrators, they made several Type I errors in the ventures they adopted early on. The primary reason given was their propensity in the initial stages to place a greater emphasis on the technological aspects of the proposal as opposed to its market/business merits and the quality of its management team. NOD's officials felt the process had evolved to correct for these "flaws" and believed that NOD had made fewer glaring Type I errors in more recent years, particularly in the ventures started since 1987. Of course, some failures were considered inevitable in an activity that is so shrouded with uncertainty as the creation of a new business, but inasmuch as that may be due to unsystemic factors, NOD believes it has Type I errors pretty much under control.

In the context of internal venturing, there is a trade-off between mitigating the risks of making Type I errors and increasing the dangers of making Type II errors. By tightening the constraints on the decision making process, one also runs the danger of snuffing out ideas that could well have been great new business opportunities. Moreover, this failure may not be random but may be systemic. The routine communications failures identified by the Director of NOD that provided the rationale for the design of OI system are just one instance of such a systemic effect.
Since my interviews were restricted to a very small sample of those who submitted ideas to the OI network, it is difficult to make any rigorous estimation of the pattern of Type II errors in Kodak’s internal venturing process. Nonetheless, a few observations may be made that are grounded in the experiences and opinions of the originators I interviewed.

These originators perceived some clear patterns in the types of ideas that, ceterus paribus, had a greater likelihood of not being sponsored: First, at the point of entry into the system itself, it was felt that the requirement that the idea not be in the originator’s immediate realm of responsibility might well satisfy the desire of the internal venturing program to avoid circumventing the authority of management over the work of the originator, but it could also stifle healthy internal competition and kill ideas that may be legitimately superior to projects endorsed by the line organizations. The uncontestable right of the line organizations to kill any idea submitted to the internal venturing program that they perceived to be in conflict with their operations at any stage of the process was felt by many originators to be a systemic source of Type II errors.

Second, it was observed that ideas that did not appear to be big business opportunities (at least worth $20 million) were more likely to be rejected because they were dismissed as "loose change" in Kodak’s huge operations, and not worth Kodak’s effort. As one originator pointed out, given the uncertainty of accurately predicting market potential at the initial stages of an idea, this may well lead to Type II errors and a systemic repetition of such classic failures as the initial rejection of
Xerography because the estimates of its total market were very small. But, aside from the more unusual Type II error of letting a really big fish get away, the concern voiced by many more originators was that the emphasis on "big size" and "businesses that involved consumables" led to a rejection of "small runners" that appeared as "noise on Kodak's radar." But these, smaller ventures, in their view, could have well been highly profitable "add-ons" to Kodak's existing product offerings, allowing Kodak to reap additional economies of scope. Or else, they could have been very profitable albeit limited windows of opportunity on which Kodak could have capitalized to help subsidize larger development efforts.

The third source of Type II errors that was mentioned were the unusual problems confronted by those proposals that fell in the interstices of the charters of multiple line organizations, i.e. ideas that fell in the intersection of several line organizations without a clear sense of who the logical sponsor should be. While these ideas potentially offered significant economies of scope to Kodak as a corporation, they often fell through the cracks, because the line organizations were unable to syndicate or jointly sponsor the idea given the difficulty of structuring an internal accounting scheme that would allow them to equitably distribute the revenues from the new business opportunity among themselves. Also, NOD was generally reluctant to sponsor such ideas because they violated its principle of only considering those ideas that had "no clear logical fit" with existing line organizations, and in most of these cases NOD felt that some line organization should step forward and sponsor the idea.
Finally, while most originators agreed that Kodak's concerns about corporate liability were legitimate, (Polaroid's recent, huge patent infringement lawsuit was at the top of everyone's mind), they felt in some cases it tended to be overly conservative and killed projects that may well have been profitable business opportunities.

A good way of determining the incidence of Type II errors at Kodak would have been some indication of the number of people who left Kodak to pursue their ideas and were successful. While a few of such cases were brought to my attention, it appeared to be a less prevalent route adopted by the originators, presumably because of the absence of a strong external venturing market in the Rochester area and because of Kodak's stringent control over the release of ideas for independent pursuit by its employees.

In weighing the quality of the internal venturing process at Kodak, I have concentrated till now on discussing the originators' opinion of the failures of the process. It is equally important to consider their positive reactions to the quality of the process. There was nearly universal agreement that overall the process was "fair" and "equitable" even though it was susceptible to failures. One originator articulated this widely shared opinion quite clearly:

The process introduces a sense of fairness. It provides a record of your intellectual property and provides a clear process which takes away many of the idiosyncrasies that may otherwise come into the picture. Because the process is so public and so many people are involved, you tend to get a reasonably fair hearing. It's not that the process guarantees that the best ideas will get through, but it does reduce foul play. At least you feel that the process treats everyone equally.
In addition, as discussed earlier, there was an abundance of stories about "serendipitous" routes that the process had opened which led to the adoption of ideas that may otherwise never have seen the light of day. These unintended success stories suggested that the process greatly reduced the Type II errors that may have been anticipated a-priori.

C. Stimulating Innovation in Kodak

The internal venturing process at Kodak has not only stimulated the generation of a larger number and greater variety of innovative ideas but has also stimulated the participation of people who may previously not have been involved in the innovation process. By providing a channel for ideas that are outside one's direct line of work, and are technology or business intensive and require a development effort that the Suggestion System cannot adequately handle, the process has created a channel for the pursuit of innovative ideas that in the opinion of most originators would have had almost no chance of being "heard" before this process was established. This contribution of the process may be clearly discerned from the following remarks of some of the originators:

Before they appeared on the scene, I don't know if there were any channels at all to move ideas up through the organization. If you were unable to convince your immediate supervisors of the merits of your idea, it was over. Now you have an alternative.

They are a great channel for ideas that have technical or business content because the Suggestion System can't really handle such ideas.

If an idea is not really in your direct field of work, you can at least give it "air-time." It [the process] therefore legitimizes your right to think.

They are the only hope for ideas in Kodak!

It was also clear that the venturing process opened up a channel for
the submission of ideas by people in the corporation who were traditionally peripheral to the innovative process. It opened the doors to managers, professionals, and technicians who would otherwise be only marginally involved in the innovative process. The following remark from one of the originators is typical:

If an ordinary technical fellow like me can approach someone in the OI, it has certainly opened a channel that didn’t exist earlier.

It is important to note that the number of people involved in the internal venturing process at Kodak is at least one order of magnitude greater than the originator alone. This additional order of magnitude includes the consultants, sponsors, champions, etc. - participants that are integral to the business venturing process at Kodak. At the same time, participation is not as widespread as it may seem because several originators submit multiple ideas, and facilitators often rely primarily upon a limited number of trusted consultants and sponsors.

The internal venturing process at Kodak has not only increased the number of innovative ideas that are generated and the number of people participating in the process, but has also created a greater awareness of the nature of the innovative process, an understanding of the different roles involved, and a new vocabulary and "jargon" unique to the business venturing process. While this learning, no doubt, is restricted to a limited number of people, they constitute a network that cuts across most organizational boundaries within Kodak. Through them, the lexicon of Kodak has been embellished with such words as "deal flows," "champions," "sponsors," "idea connection," "business plan," "PESO," "due diligence" etc., terms that would have been foreign to most Kodak employees a few
years ago. The value of this new process and the language it has provided was brilliantly captured by one originator:

NOD provides a basic framework which defines a process of interaction that everyone quickly learns and comes to share. This avoids someone with an idea just dropping in clear out of the blue sky expecting Kodak to turn cartwheels or two people who need to talk to each other about a new business opportunity doing so without sharing any common language at all.

It is clearly evident from the above discussion that, as Colby Chandler had hoped, the internal venturing process has had moderate success in making employees in all positions of Kodak more "venture operative."

1. Unintended Positive Outcomes

Any organizational process such as the internal venturing process at Kodak may have effects other than those for which it was specifically created. While I have very fragmentary data to ground my analysis, three important unintended effects of the internal venturing program can be tentatively reported.

First, the process forges new horizontal links within Kodak, that would otherwise have little occasion to be created. This informal horizontal network initially created in the context of the venturing process may endure even after the process ends. This network can serve many other functions. As one of my informants noted:

The process creates a communication network that spans across most parts of the corporation. These contacts don't die. They can be often used for purposes other than business venturing such as getting competitor intelligence etc.

A second effect, closely related to the first, is the more encompassing
view of Kodak's corporate strategy that this process creates among its participants. This is because the process puts people in situations where they may submit ideas outside their regular jobs or be required to participate in the evaluation and development of ideas that lie outside their regular domain but "fit" with Kodak's overall corporate strategy and create value for the company as a whole. This interactive and discursive process is bound to lead to a richer understanding of the overall corporate strategy. As one originator observed:

The Suggestion System has been the base for promoting people to think about how to improve things near by their jobs, but the OI/NOD system gives them the license to think more broadly about Kodak as a whole company.

A third important unintended effect is the individual learning that results from this process. As noted by several originators, the process was a wonderful educational experience for them - giving them a more holistic perspective of the various dimensions of business such as marketing, accounting, strategic planning, etc; knowledge which they could transfer back to their regular jobs.

E. Institutionalization

A final and perhaps most crucial indicator of the performance of the internal venturing process at Kodak is the extent to which it has been institutionalized. While there are several meanings associated with the term institutionalization,50 the meaning with which I am concerned involves answering the following questions: does the program have a well-defined image that has widespread legitimacy; is there a broad-based demand for its services; and is the maintenance and evolution of the
program secure over time. An affirmative answer to all these questions would indicate a highly institutionalized internal venturing process.

While the chances are good that if one had an innovative idea within Kodak, the formal venturing process would probably cross their mind as a potential channel, the general perceptions about the process remain quite vague. As mentioned earlier, for most of the originators I interviewed, (and that is very small select sample) the Suggestion System was still the first process that came to mind as the channel for the submission of an innovative idea. The commonly shared image of the internal venturing program was that it was "primarily in the business of starting new ventures." This very limited view of the scope of the program is somewhat puzzling given the widespread publicity received by the internal venturing process in most of Kodak's internal newsletters, the flyers describing all facets of the program that are ubiquitous on notice-boards throughout the company, the public endorsements of the program by Kodak's tcp management including the CEO, and the large number of people who have already participated in the process.

The failure to generate a richer and more accurate public image of the process may be the result of three problems. The first problem is the undue visibility and attention given in most public presentations to the new ventures created by NOD, which in reality represent only the tip of the iceberg of the venturing process. This biased image has only been strengthened by physically locating the entire management of the internal venturing program, including NOD and IND, in a new facility popularly known as the "NOD building" which is also shared by many of the new
ventures and is the home of Kodak's internal Incubator. It is little wonder that most people associate the venturing process with the creation of these new independent ventures.

The second problem is that people don't read notices carefully unless they have an urgent need to. Notices in Kodak, as in most other corporations, are often dismissed as "just more corporate hype."

Thus, while there may be widespread name recognition of the OI and NOD, the task of disseminating a "real" understanding of the process rests primarily on the "talk-and-tell show" that the OI facilitators periodically put on in various locations of their "beat." However, the facilitators' schedules are often so tight that presentations end up having a very low priority in their calendar. Moreover, facilitators have little control over attendance at the presentation, and as one originator put it:

The only real information was from M [a facilitator] talk-and-tell show but not everybody attended that and the supervisors later didn't say much except - 'here's some literature from the OI, read it if you are interested.'

The other potential channel for dissemination, the information gained from peers who may have participated in the process, is also often limited because as one originator put it:

There is a tendency to not really talk about your OI activities and that must somehow be changed.

The reason for this reluctance to talk about their experiences may stem, as mentioned earlier, from the low status and importance accorded to these activities relative to operating responsibilities or assigned development projects in line organizations.
Finally, there are very few success stories about the program that are commonly known. This may merely be a reflection of the infancy and teething problems of the process, but as one originator put it:

That's why I think they have not caught on yet. What they need is for someone to make a really big splash!

In sum, then, the internal venturing program has been unable as yet to develop a public image that is accurate and is widely shared.

The second major consideration from the standpoint of assessing the institutionalization of the internal venturing program is the demand for its services and ongoing and sustained participation in the process. At the moment this appears to be no problem. As shown in Figure 3.7 earlier, the trend in terms of the number of ideas being submitted to the system has been steadily increasing over the years, though that is in large part a reflection of the number of OI offices that have been added over this period. To control for this, if one looks at the number of ideas submitted to each office the trend indicates a S-shaped or logistic function. But, in no case has the decline in ideas submitted to the OI office been so drastic as to indicate the local atrophying of the process.

The present support for the process was also evident in a recent survey conducted by the Office of Innovation - of all those who submitted ideas, 89% expressed satisfaction with the system and felt that if they had another idea, they would definitely go through the OI process again. The large number of people submitting multiple ideas (one facilitator estimated
that about 25% of the ideas are submitted by about 10% of the
originators) is testimony to this response. Most of the originators I
interviewed also expressed the opinion that they would recommend the
process to their peers (though they may not go out of their way to
advertise the process).

All this would suggest that there is little danger of the process falling
apart because of lack of participation. But a deeper analysis reveals
some signals that warrant caution. While still nascent and not felt very
strongly, the ultimate threat to continued participation in the system may
lie in the failure of the incentives to participate. Many of these failures
have been highlighted in the previous section. But the problem is most
evident if one compares the reactions of those who were new participants
in the process with those who had been through the process several
times. As described earlier in this chapter, for most of the originators
who were new participants, there was a basic perception that there was
little to lose by participating in the process and much to gain. Most
were not a part of the corporate elite in any event and viewed this as an
opportunity to make their careers grow or their jobs more meaningful.
Participation, at the very least, provided some emotional satisfaction for
having done something in which they were the lead characters as opposed
to their routine jobs where they were just one of the many characters in
a large cast. At the same time, the newer participants all felt reasonably
confident that if the idea really succeeded they would be big winners.
As one originator put it:

The OI process has opened up a whole new set of possibilities. It
is like suddenly being able to buy a lottery ticket.
Every originator recognized that there were some real costs to participating in the lottery, particularly if one failed, such as adverse reputational implications, performance appraisals, etc. For most originators though these "costs" did not amount to much because they felt that they were in organizational positions where they had little to lose. The problem, though, is that a lottery can only be institutionalized if there are frequent "real" winners. But, as discussed in the section on rewards and incentives, the way the reward structure of the process is currently set-up there are precious few winners. So, for those who ultimately realize that there are no winners in the lottery, this failure in incentives can be very demoralizing as the following originator's reaction shows:

I have tried 5 times. On 3 cases my ideas have failed but on 2 other occasions they were sponsored. But I still have nothing to show for it. If anything I am perhaps in a worse position in my career than I was before I started out. I don't think I have the energy to engage in it again.

The limited number of people I interviewed make it impossible to say definitively that this is a more general reaction. At the same time, as my previous discussion of incentives indicates, there are some basic structural sources of incentive failure that stem from the bias in Kodak of rewarding performance on assigned projects much more than performance on projects involving the internal venturing system. The above originator's experience may, therefore, not be an aberration, but may really be a signal of potential decline in the participation in the process.

The final consideration with regard to the institutionalization of the internal venturing process at Kodak is an analysis of its critical resource
dependencies and vulnerabilities. Presently, the internal venturing program derives its normative legitimacy and its critical resources from the highest levels of corporate sponsorship, notably the personal conviction and commitment of Colby Chandler. Its management is a part of Kodak's corporate staff and its budget is a corporate allocation. But, the sustainability of the program ultimately rests on its legitimacy in the eyes of the line organizations, as these LOBs are really the power centers towards which Kodak is gravitating. Normative approval by the line is particularly crucial because they also control the crucial resource dependencies of the internal venturing process. Not only are they the sponsors or ultimate customers of the new business opportunities that bubble up through the system, they are also the authority that must be persuaded to permit the originators and other participants to participate in the process. As one originator remarked:

They [OI/NOD] are merely facilitators and can't really do anything. The power to really do something eventually lies with the line organizations. Thus, while NOD may have some legitimacy by virtue of being a corporate initiative, the LOBs are the real power centers around which this process revolves.

I was unable to interview enough line managers to gauge their support for the internal venturing process. Based on my interviews with the originators, however, it would appear that the support is at best tenuous and that the OI and NOD are seen as "nothing but satellites in the overall system." This was attributed to the fact that for line management there is an inherent and unavoidable tension between managing their resources from the standpoint of their own sub-unit's performance versus endorsing innovative activities that may have no contribution to their own performance but are useful for another line organization or Kodak as a whole. The possibility that they may well benefit from ideas that
emerged through the venturing process was usually far less tangible than the clear problem of allowing a key person in a major project to spend time on an OI project.

In sum, while the internal venturing program enjoys the support of Kodak’s top-brass, its institutionalization is highly dependent on the continued support of the line organizations; and that is not easily forthcoming. It is little wonder then that one of the originators I interviewed, in reflecting on the future evolution of the internal venturing process at Kodak remarked:

OI and NOD exist because of the present top-management’s belief in the importance of this program for innovation within Kodak. The problem is that the LOBs are not so convinced and that’s where the power of this company is moving. So, who knows what would happen if the top-management changed or if the resource situation suddenly became very tight. It would be easy to just terminate this process with one single decision. After all, it is merely getting rid of these little guys in their little offices. It’s not like closing a whole division or even an LOB.

The other problem is that NOD attracts attention so easily. Look at what happened recently. This whole Sterling deal had Wall St. breathing down our necks and suddenly the perception was that Kodak was squandering all its resources in experiments like its internal ventures. That really put the heat on NOD. To think of it, NOD is barely a drop in Kodak’s investments but it was singled out for mention. So, I think the next few years are going to be quite crucial for the program. They really need a few big winners with so that they grow beyond their present stature. Otherwise, I don’t know...

**Summary and Discussion**

In sum, the internal venturing program at Kodak had reasonable success in terms of generating new business opportunities, stimulating innovation more broadly within Kodak, and producing unintended benefits by forging new horizontal links across different parts of the company. For the moment, it also has strong corporate support. But, the process is still
far from being fully institutionalized and over the next few years it must cope with several significant challenges if it is avoid becoming just another chapter in the "rise and fall of internal corporate venturing."
The field study of Kodak was conducted after I had finished my fieldwork in the 128 Venture Group and arrived at some preliminary findings. The purpose at this stage was to find a corporate site that had as many surface similarities as possible with the 128 Venture Group. The accounts in the literature describing Kodak’s internal venturing program indicated that it would be a good site to consider. I was fortunate to gain access to the company through a Director of Kodak’s Manufacturing Engineering and Research Department, a previous Sloan Fellow who was well known to one of my advisors. It was arranged that I would visit Kodak for an initial period of interviews over a period of one week and then negotiate a follow-on visit, if necessary. Permission for a second visit of one week was successfully obtained at the end of the first visit.

Not having the luxury to do a detailed ethnography based on a long period in residence, I was very focussed in my research strategy. An initial list of areas of interest and questions were defined before the field-visit to try and make the most of the limited time I was going to have and to try and restrict my attention to only those issues that I felt would be most interesting from a the standpoint of comparison with the 128 Venture Group.

My sponsor in Kodak was extremely helpful in making my field-work efficient. Between 3 to 5 interviews were arranged for me on each day of my visit. The down-side was that I was able to exercise little control over whom I got to meet. I did outline some basic guidelines about the
categories of people I wanted to interview, but the specific choice of individuals within these categories was left to my sponsor and the constraints of who was available on the days I was going to be at Kodak. I have no way, therefore, of knowing whether there were any selection biases. But since I met with just as many people who were in praise as those who were disillusioned with the program, I feel there may have been little bias in the selection. I was not exposed to only the converted. In addition I was able to develop a close relationship with two members of my sponsor's organization who could serve as expert informants because they had been personally associated with the new venture program. These informants also corroborated my sense that I had met with a fairly representative sample of participants in the program.

In terms of the data collection strategy, data were obtained on the founding of the various components of Kodak's internal venturing program, their charters, and their role in Kodak's overall strategy for generating new businesses. Their internal administrative structure, the coordinative roles of the key members, their relationship with the rest of the corporation, including the allocation of their budget and their performance appraisal were also studied. It was also possible to obtain some aggregate statistics on the internal venturing activity over the history of the program. Documents describing the basic operating procedures of the various organizational components of the program and advertising material (including pamphlets and a videotape) that they used to increase the awareness of their services and function throughout the corporation were also made available to me. In addition, I had access to three earlier studies of different aspects of the internal venturing
activities at Kodak.

In all, thirty people were interviewed. These may be divided into two basic categories:

In the first category are the various administrators of the program. A total of nine administrators were interviewed. Their distribution by administrative role is indicated in Table 3A.1. The interviews were unstructured and lasted approximately one hour in each case. It was possible to make tape recordings in only 4 cases. In all cases, though, I took extensive notes during the interview, which I subsequently wrote-up as more detailed interview records. In each of these interviews the discussion centered around the following major themes: (1) a detailed description of the aspect of the business venturing process with which the administrator was most intimately involved; (2) the administrator's characterization of his own role in the business venturing process and the basic procedures (including any screening criteria for judging different business opportunities) he employed in carrying out his role (everybody I interviewed was male); (3) based on the administrator's experience and with reference to specific examples, his view of the features of the system that facilitated or constrained the generation of new business opportunities; (4) the administrator's own motivations, incentives and expectations about performance appraisal.
### Table 3A.1

**Distribution of Administrators Interviewed, by Job Title**

<table>
<thead>
<tr>
<th>Title</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director of NOD</td>
<td>1</td>
</tr>
<tr>
<td>Director of IND</td>
<td>1</td>
</tr>
<tr>
<td>Director, Special Projects, NOD</td>
<td>1</td>
</tr>
<tr>
<td>Director, Operations, NOD</td>
<td>1</td>
</tr>
<tr>
<td>Seed Portfolio Manager - NOD</td>
<td>1</td>
</tr>
<tr>
<td>Venture Portfolio Manager - NOD</td>
<td>1</td>
</tr>
<tr>
<td>Office of Innovation Facilitators</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

In the second category are twenty-one participants who were at different stages of the business venturing process ranging all the way from the idea generation stage to fully established internal business ventures, both within NOD and within the lines of businesses (LOBs). Their distribution by stage (some active and others terminated) of the venturing process is indicated in Table 3A.2. In most cases, respondents did not wish the interview to be tape-recorded, so records based on interview-notes are the data sources. While these interviews were also largely unstructured, I usually began by inviting the respondent to tell me the story of his business idea and its passage through the business venturing process. I then directed the discussion towards the following areas: (1) their experience, what features of the system facilitated and what hindered the development of the idea into a business venture; (2) their view of the
overt and covert screening criteria at each stage of the process; (3) their motivations and incentives; and (4) the conflict of interest between their venturing activities and regular jobs.

**Table 3A.2**

**Distribution of Participants in the Venture Process, by Stage**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea Generation to Review</td>
<td>4</td>
</tr>
<tr>
<td>Seeking Sponsorship</td>
<td>5</td>
</tr>
<tr>
<td>Sponsored by a LOB</td>
<td>4</td>
</tr>
<tr>
<td>Sponsored by NOD</td>
<td>4</td>
</tr>
<tr>
<td>Adopted by a LOB</td>
<td>3</td>
</tr>
<tr>
<td>Adopted by ETI</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>
ENDNOTES TO CHAPTER 3

1. The emergence of multiple approaches to business venturing "simultaneously" has been described by Horwitch (forthcoming) as one of the most important features of "post-modern" strategic management.


3. For a much more comprehensive history of this period in Kodak's development, see Lutz Alt (1986).

4. Kodak was one of the few companies of its size that didn't change its structure to the multidivisional form. The history of this major structural transformation that swept American corporations after the War is described in Chandler (1977).

5. The theoretical underpinnings of the advantages of the project approach to industrial R&D are developed in great detail in Allen (1977).

6. The idea that certain types of technological changes may render existing technological bases obsolete was first proposed by Abernathy and Clark (1985) and has been empirically established by Tushman and Anderson (1986).

7. See, Colby Chandler (1986).

8. See, Colby Chandler (1986).

9. This organizational structure has changed following Kodak's acquisition of Sterling in 1988, but the basic multidivisional structure remains.

10. The Customer and Marketing Support organization is valid only for the 1986 organizational chart. This structure has since been changed.


12. These are projects that were initiated by a line organization and then abandoned prematurely because of development difficulties, change of plans, lack of resources, disillusionment with market potential, or any other reason.


22. See Note 19.


26. See Note # 23.


29. See Note # 26.

30. See Note # 24.


32. See Note # 27.

33. See previous note.

35. See Note # 29.

36. Even the administrators I interviewed singled them out for special mention.


39. See Note # 36.

40. See Note # 36.

41. This was also one of the key findings in Burgelman's (1983) research on the ICV process.

42. For a distinction between "technology-push" and "market-pull" type of innovations, see Freeman (1982) and Allen (1977).

43. There are a few occasions when a team of individuals (inevitably teams of 2 individuals) may submit an idea jointly. Teams more often develop at a later stage of the process, but more about that later.

44. See Kidder (1981).

45. The resistance to innovation posed by the conservatism of middle management is a theme that is repeatedly found in studies of large corporations. See, for instance Kanter (1983).

45. The Office of Innovation was, in a sense, a "Court of Last Resort."

47. This rule has been relaxed very recently - two venture general managers have been brought in who retain their rights and status as Kodak employees.

48. It is important to note that Kodak owns the patents and not the individual.

49. I have since been informed that these data are available, but I am unable to report them at this time.

50. See Scott (1988) for a review of the various institutional theories. The meaning I have chosen here follows from DiMaggio's (1988) discussion of the requirements that a new institutionalization project must meet.

51. Norman Fast (1979) chronicles the rise and fall of new venture divisions in the 70s. In his view, new venture division are extremely vulnerable to shifts in the firm's environmental context, strategy, and dominant political coalition. Since New venture Divisions always stand apart from the rest of the organization, they are often suffer the most in periods of transition.

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CHAPTER 4
CONCLUSIONS

The basic premise which served as the point of departure for this thesis was that conventional categories of discourse and analysis, in particular as defined by the Schumpeterian tradition, do not yield an adequate understanding of some of the important contemporary trends in the social organization of business venturing in both market and corporate contexts. The two cases, by describing in-depth these developments in a specific market (Route 128) and corporate (Kodak) setting, provide a solid empirical foundation on which this premise can be more critically evaluated.

A comparison of the cases throws into sharp relief some of the common features of the emerging "network" model of organization that we observe in Route 128 and Kodak, and clearly exposes the limits of Schumpeter's framework. While a social network perspective provides a broad alternative theoretical framework that allows a more meaningful interpretation and analysis of these cases, the comparison of the cases also highlights important differences between Route 128 and Kodak that warn against treating the concept of a "network" as a determinate, unitary form of organization. A social network is a particular way of looking at a field of collective activity - networks themselves can, and do, take different forms in different contexts. The Route 128 and Kodak cases also show that, in the context of innovation, the idea of institutional convergence is flawed. Unlike Schumpeter's predictions, we have not seen the large corporate R&D model become the sole locus of
innovation; and it would be equally wrong to conclude that the regional market model has reemerged as the dominant model in the contemporary context. These cases suggest that institutional pluralism must be admitted in industrial organization. Thus, corporate networks, like Kodak, and market networks, like Route 128, similar and yet different, can, in principle, be equally viable models of creating new ventures. This does not suggest that we abandon the idea of institutional effectiveness. One can still say something about the relative strengths and limitations of different institutional forms. Again, Schumpeter's framework does not prove very useful in making such an assessment. The differences between Kodak and Route 128 suggest that a new set of theoretical principles are needed if we are to conduct such an assessment on a sound footing. While it is beyond the scope of this thesis to offer a complete theoretical alternative, some promising lines of enquiry are suggested during the course of this chapter.

With that as an introduction to this chapter, I now turn to the comparative analysis itself. Such an analysis may be conducted under four inter-related headings: (1) The Division of Labor; (2) The Interaction Structure (3) The Problem of Agency and Conflicting Interests; and (4) The Extent of Embeddedness in the Social Context.

The Division of Labor

Schumpeter's independent entrepreneurial system centers around only one major actor - the entrepreneur - a man of multifaceted and extraordinary talents and energies who provides the critical resources and mobilizes (under his control) the complementary resources he must garner.
elsewhere. The entrepreneur is exemplified by such figures as Carnegie and Vanderbilt in Schumpeter’s writings. In this social system, no real division of labor is conceived in the venturing process: the only economic actors accorded any significance are the entrepreneur and the creditor.

In Schumpeter’s large corporate industrial R&D model, on the other hand, the unique and special talents of the entrepreneur are replaced by specialized R&D professionals who are routinely engaged in the creation of new business ventures. As opposed to the transcendental nature of business venturing in the entrepreneurial system, the creation of new business ventures in this system is deterministic, following automatically from the specialized skills of the R&D staff.

A much broader set of actors is involved in the business venturing process in the network models of Kodak and Route 128. In these cases, business venturing is neither the result of the special skills of a unique individual (the entrepreneur) nor the result of the routine actions of teams of trained R&D specialists who turn out what is required and make it work in predictable ways. Instead, venturing is a collective activity: it is the result of people with different specialized skills and information acting together. The creation of new ventures is the result of the joint effort of knowing, acting people and not merely the combination of resources like information, capital, and labor. This is evident if we look at the nature of the division of labor in the two cases.

There is a striking similarity in the division of labor in Route 128 and Kodak. In both cases, the division of labor takes the form of four basic
roles relevant to the creation of new business ventures: (1) the providers of technology or the business idea - the entrepreneurs in Route 128 and the originators in Kodak; (2) the providers of capital - the venture capitalists in Route 128 and the sponsors in Kodak; (3) the providers of management skills; and (4) the providers of professional services or consultants. Moreover, within each of these broad categories, there is a finer division of labor defined in terms of specialized domains of knowledge such as a technology (e.g. robotics vs optical physics); an administrative talent (e.g. marketing promotions or human resource planning); a professional expertise (e.g. patent law or corporate taxation); or a market (e.g. defense contracts vs computer software OEMs).

At the same time, the pattern in the division of labor in Route 128 and Kodak diverge in one important respect. While specialization in Route 128 is primarily defined in relation to the creation of new ventures, in Kodak it is primarily related to the running of existing businesses. Indeed, a clearly segmented market for different types of specialized skills may be seen in Route 128: those who specialize in the creation of new businesses are often wholly different from those who specialize in the running of existing businesses. The technologist who applies his knowledge to the creation of new firms is regarded as a breed apart from the corporate scientist, the venture capitalist as possessing very different skills compared to a traditional banker, a manager of a new start-up very different from the executive who manages mature organizations, and the peddler of expert advice to small businesses distinct from the consultant who is useful to large corporations.
Moreover, the segmentation in Route 128 is not just cognitive; it is legitimized and institutionalized in the form of formal organizations such as institutional venture capitalists, special divisions of consulting and accounting firms, formal recruiting firms that specialize in finding management team candidates for new ventures, and so on. As described in the Route 128 case, the bridge between these segmented markets is forged at the stage when the new venture matures. At that point, the resources combined for its creation are withdrawn and new resources specialized to the running of an established business are substituted.

In Kodak, on the other hand, specialization is defined primarily in terms of the activities related to the running of existing businesses. These same specialized skills are also deployed in the creation of new ventures. Other than a few specialists affiliated with NOD, most often the providers of capital are line managers who apply the same skills they employ for making investment decisions in the running of existing businesses to the creation of new ones, the managers of new ventures manage them with skills developed while managing a regular line of business in Kodak, and the consultants offer advice based on their expertise developed in the running of existing businesses.

To assess how this difference in the nature of specialization in Kodak and Route 128 influences the creation of new ventures, we need a theory of the relationship between the different activities involved in the process of creation of a new business venture and the benefits of specialization in each of these activities.
Schumpeter provides few insights in this regard. In Schumpeter's independent entrepreneurial system, innovation is conceived purely as the outcome of the special and rare skills of the entrepreneur. It thereby denies any possibility of influencing the creation of new ventures. In Schumpeter's large corporate industrial R&D model, on the other hand, innovations are seen to be the automatic and deterministic outcome of skilled actions of the specialists in the R&D labs and market research departments. As pointed out by Ruttan (1959), this stark contrast shows the absence of a clear theory of the process of innovation in Schumpeter's work and requires that we look elsewhere for such a theory.

A framework proposed by Usher (1954) that distinguishes between different modes of action and relates them to the process of innovation is useful in this regard.

Usher distinguishes between two modes of action: acts of skill, and acts of insight. Acts of skill include all learned activities and in its most general form extends to fields of conceptual activity including skill in the interpretation of codes, rules for group behavior, and the execution of policies for individual or group activity. Acts of insight are unlearned activities that result in new organizations of prior knowledge and experience. In Usher's view, acts of skill and acts of insight are not unrelated. Acts of skill are forms of recurring action which fall within a definable range of variation; and, skill is defined by the ability to act over time over the whole range of variables. Novelties emerge, but within limits that are defined by the possible changes in conditions. From time to time the performance of an act of skill may result in a new
observation of the properties of materials or a new perception of relationships or a new mode of action. Acts of insight thus occur in the normal course of the act of skill. Thus, the act of insight which results in the perception of a new relationship is not a freak stroke of genius but requires a highly specific conditioning of the mind within the framework of the problem that is to be solved. As Ruttan (1959) underscores, "it is not an accident, in other words, that a bicycle mechanic contributed to the development of the automobiie."

Claiming that all social action involves an interweaving of acts of skill with interspersed acts of insight, Usher proposes a model of the process of creating innovative new ventures in terms of these modes of action. Usher envisions a 4-staged process: (1) Perception of the problem, usually an act of insight in which an incomplete or unsatisfactory pattern or method of satisfying a want is perceived; (2) Setting the stage, in which the core elements or data necessary for a solution are brought together. Among the elements of the solution is an agent who possesses sufficient skill in manipulating the other elements; (3) The act of insight, in which the essential solution of the problem is found; and (4) Critical revision, in which the newly perceived relationships become fully understood and effectively worked into the context in which they belong. While primarily dependent upon skills this stage also calls for new acts of insight.

This model represents quite well the process by which new business ventures are created in Kodak and Route 128, with the exception of one stage. In none of the cases I encountered was the stage that Usher
conceived as "the act of insight" clearly distinguishable. Instead, after the stage in which the core elements of the solution were combined the process appears to be an iterative one of periodic synthesis and critical revision involving an intricate interweaving of acts of insight with acts of skill. A modified version of Usher's model which is more true to the cases I observed would be: (1) The Genesis of the Idea for the venture, usually an act of insight driven by the perception of a gap or a new relationship during the routine performance of skilled activities. (2) Setting the Stage, the process by which the elements of the solution are brought together. Since the search for complementary elements must conducted in an inherently ambiguous information situation, skilled judgement plays a key role.1 (3) Iterative Synthesis and Revision, a multi-staged evolutionary process in which acts of insight are interwoven with acts of skills for the successful translation of the idea into a new business venture.

As pointed out by Ruttan (1959), the advantage of Usher's theory is that it clarifies the points at which conscious efforts to influence the creation of new ventures can be effective. One can not only see how specialized skills in general enhance the effectiveness of the overall process of creating new ventures, but also identify the stages at which the development of skills related to the creation of a new ventures may be most beneficial - namely the final synthesis and revision stage.

We can now apply this framework to assess the relative strengths and limitations of Kodak and Route 128 on a surer footing. Overall, the nature and extent of specialization and the number of options in each of
the four roles is richer in Route 128 compared to Kodak. Specifically, Kodak suffers relative to Route 128 most noticeably in terms of the sources of capital. It compares more favorably in terms of the providers of technology, with the variety of options in terms of professional services and management team candidates also being quite restricted. Thus, in terms of Usher's model, Kodak compares well with Route 128 at the stage of the "genesis of ideas" but falls short in terms of the potential combination of elements during the "setting the stage" phase and the final "revision and synthesis stage." The most important limitation of Kodak, though, is the general lack of expertise relevant to the creation of new business ventures in all these categories. There is a legion of stories within Kodak of how some of the people involved in the internal venturing process acted in ways that would be considered naive to a skilled actor in the business venturing process in Route 128. Some choice tales include the case of the venture manager whose first act after being funded was to rent a whole new office space and furnish it with brand new furniture thus putting precious resources to the most unproductive use; or the technologist who insisted on setting up an entire production facility when the product could just as easily have been produced by an external manufacturer without consuming the precious capital resources available to the venture; and so on. As one venture manager who joined Kodak to manage a new venture after having started his own venture outside the corporation remarked: "People in Kodak just don't have the street smarts that is second nature to anybody who has been involved in the venturing process on the outside."

From this comparison, it appears that an internal corporate network for
business venturing such as the one at Kodak has some inherent limits when compared to a regional network that is as fully developed as that at Route 128. The primary reason is that it is difficult to replicate within any corporation the specialization of skills related to the creation of new business ventures that is possible in Route 128. This is because of the obvious limits on the extent of an internal market for resources specialized to the creation of new business ventures.²

While there are clearly limits on the extent of specialization relevant to the creation of new business ventures in a corporation like Kodak,³ it does not mean that a corporation cannot make its internal venturing network more effective than is presently the case in Kodak. A corporation could certainly improve its effectiveness in creating new ventures by creating and legitimizing positions in the internal labor market in which the specialized skills relevant to the creation of new business ventures are more fully developed. That these skills can be developed is evident from the experience of many participants in Kodak who claimed that they had learned a whole new set of skills from their experience of being involved in the business venturing process. Unfortunately, in Kodak these experiences are not considered an integral aspect of the internal labor market, and so the skills developed that are relevant to the creation of new business ventures have little legitimacy, recognition, or value and are rarely put to use again.

In fact, by developing these skills corporate networks might also enhance their effectiveness in a domain in which they may well have a comparative advantage over the division of labor in regional networks like
Route 128. The sharp segmentation of skills in Route 128 between the creation and the running of businesses means that the transition across this divide is prone to failure. This is evident from the widely documented evidence of the difficulties that large firms have in integrating the small firms they have acquired and the failure of so many small firms after they have gone public and been turned over to new management. This presents a domain in which a corporation like Kodak may have a comparative advantage over Route 128. It is certainly possible to develop within Kodak skills that encompass all three fields of activity - the creation of new businesses, the running of existing businesses, and managing the transition from the former to the latter. While a specialist in any one of these fields is likely to have a comparative advantage in that field relative to the generalist in Kodak, a generalist may well have a comparative advantage in understanding the linkages between these fields of activity and hence in making the transitions more effective. Moreover, one could argue that these skills might also allow a corporation to manage its external venturing activities such as acquisitions, equity ventures, etc., more effectively.4

From a broader theoretical standpoint, Usher's framework forces us to examine more carefully our conception of specialization and skills. The first point Usher makes is that specialization not only makes performance over a certain range of variation automatic and therefore more efficient (as Adam Smith conceived) but also has an important generative component in that it is the source of acts of insight that enables innovation and creation. The second point he makes is that skills are not context-free but are intimately related to the context in which they
are exercised. The specialized skills of a technologist who has worked all his life in the context of a large corporation are quite different from those of a technologist who has the same technical base of knowledge but has had experience working in the context of a start-up. However, Usher does not go so far as to discuss the differences between the skills relevant to the running of existing businesses versus those relevant to the creation of new businesses and the relationship between these bases of skills and the generation of insights germane to the creation of new ventures. Understanding these relationships more fully can further our understanding of the relative strengths and limitations of different models of business venturing and invites further empirical and theoretical work.

The Interaction Structure

In Schumpeter's view, the information structure of the market system was ill-suited for business venturing because of the novelty involved in innovations, the inherent uncertainty in the evolution of new ventures, the information asymmetries in the market between the entrepreneur and those who possessed the complementary resources he required, and the threat of imitation. Therefore, Schumpeter felt that in this context coordination could not be accomplished by the invisible hand of the price mechanism but required the heroic determination and venturesome efforts of the entrepreneur. In contrast to the market system, Schumpeter believed that the large corporation circumvented many of the information failures inherent in the market. Therefore, in his view, coordination of the activities involved in the business venturing process could quite easily be accomplished by central planning and managerial direction in the large corporation.
Unlike Schumpeter’s conception, in both Kodak and Route 128, business venturing proceeds in an environment in which the information structure may be characterized as being "inherently ambiguous" - "situations where information is scanty, conflicting, unreliable, or otherwise of a high order of uncertainty." (Levine, 1985, p.19) A comparative assessment of these models of business venturing must, therefore, be conducted by analyzing the "interaction structure" in these situations in terms of the following two elements: (1) The various linking mechanisms that help bridge unconnected information clusters in the network and determine the extent of the search (i.e. the fraction of all the potential elements that are identified). (2) The rules of interaction or "conventions" that enable collective activity or coordination to proceed on an ongoing basis in these ambiguous information situations. Conventions as a concept provides a point of contact with such familiar sociological ideas as norms, rules, understandings, custom or folkway, all referring to the ideas and understandings people hold in common and through which they affect cooperative activity (Becker, 1982). It is important, therefore, to understand the dynamics of the processes by which these conventions are created, interpreted, regulated, and altered. Moreover, since conventions while enabling collective action also restrict the forms it can take, it is also critical to assess the "openness" of the conventional framework.

Network Bridging Mechanisms: The search for complementary elements in Kodak centers on the Offices of Innovation network that acts as a linking-pin organization between the originator of the idea and the potential complementary elements such as the consultants and sponsors
(Aldrich and Whetten, 1981). Since the facilitators serve as the focal nodes for information flows in the network, the extent to which the different information pools are connected in the network is limited to their resourcefulness and "bridging capacity" as well as that of the other key individuals involved in the process. These limits are well recognized within Kodak and ancillary activities such as the Matchmaker and the annual Techfair represent an attempt to compensate for this limitation.

In 128 Venture Group, on the other hand, search relies upon direct contacts or "leads" established in the meetings. Information flows through the weak ties that are established through the conversational encounters in the meetings. Because of the high degree of turnover and the fact that most participants are strangers to one another before the meetings, these weak ties often bridge across otherwise unconnected information clusters. Of course, because there is little control over attendance in the 128 Venture Group, the risk does exist that one may get no lead at all, whereas in Kodak the more stable nature of the network makes it more likely that the originator will find some leads. In sum, the extent of the search may span across a wider domain and more unconnected information clusters in the 128 Venture Group, but the reliability of the search (the probability of it working every time) is much poorer than is the case in Kodak. In both cases, though the pattern of linkage facilitates the generation of enormous amounts of variety as it induces unconventional information flows that often lead to serendipitous outcomes.

The Conventional Framework: In both Kodak and Route 128, there is a
highly developed set of conventions that enables people to interact with each other meaningfully without expending an enormous amount of energy. But the form of the conventional framework and the processes by which it is created, interpreted, regulated, and changed is quite different in the two settings.

In Kodak, these conventions take the form of a highly formalized and codified multi-stage set of standard operating procedures and decision making criteria that serve to frame what the venturing process entails and defines the interactions among the participants. The dynamics of interaction by which these formal conventions are interpreted and choices regarding the combination of elements are made can be characterized as an amalgam of rational, bureaucratic, and political processes. The evolution of the one-page Idea Memorandum submitted by the originator, that serves as the locus of interaction in Kodak, depends as much on its meeting the rational objective that it "fit" Kodak's strategic purpose as (e.g. be of a particular scale), as it does on a series of bureaucratic routines (e.g. presentations before various committees) and political negotiations (e.g. disputes regarding cannibalization of existing operations). Adherence to the conventions in Kodak is monitored and regulated by bureaucratic authority. Finally, the conventional framework in Kodak alters very slowly, since it depends upon and requires a formal change of policy.

An equally elaborate though much less formal conventional framework guides business venturing in Route 128. But, unlike Kodak, where these conventions are the result of formal analysis and design, in Route 128
they are more emergent - the distillation of years of experience, tested by successes and failures, and transmitted by word of mouth. In contrast to Kodak, the dynamics of interaction that influence choice in Route 128 may be seen as a discursive struggle between competing frames of interpretation. The meaning of objects, events, and selves is constantly being defined and negotiated, presented in front of an audience and dramatically enacted. And while these conversational encounters and self-presentations are certainly evaluated against a variety of conventionally defined criteria about what determines a good match, the emotional energies or sense of "chemistry" evoked during these interactions are just as important in shaping choices. However, the most crucial resource enacted and negotiated in these interactions is the reputation of the interactants. The importance of reputations also provides the mechanism by which adherence to the conventional norms are monitored and regulated, since malfeasance quickly translates to a loss of reputation that is widely communicated through the conversational chains that criss-cross the region. Finally, conventions in Route 128 are seldom rigid and unchanging. They are constantly being altered as they are open to new views and successful reinterpretations.

While conventions enable collective action on an ongoing basis they also constrain the forms it can take. Different conventional frameworks can therefore be more or less "open." This includes considerations such as the barriers to entry, the transparency of the interaction processes, and the openness to multiple interpretations. From the standpoint of barriers to entry, in both Kodak and Route 128 there are constraints on participation. While in Kodak these follow from a set of a-priori
guidelines, in the 128 Venture Group they follow from the importance attached to reputation, which therefore participation primarily to those who are residents of the region, have previous experience in the venturing process, and are involved in technologies that are prominent and widely understood in the region. In terms of the transparency of the interaction processes, though, the 128 Venture Group is far more open than Kodak. Each participant in the 128 Venture Group's meetings is in effect exposed to a hundred other interactants since the one-minute pitches are all public, whereas in Kodak the process is often opaque to those not involved in it, nor is it for participants to know and learn from what's happening in the other cases. Finally, conventions in the 128 Venture Group are more open to competing interpretations than is the case in Kodak. This is because all participants stand on an equal footing in the 128 Venture Group and each brings an independent frame of interpretation into this interactional arena. Thus, ones options are not a-priori restricted. For instance, if a particular venture capitalist does not like your idea, someone else who has a very different interpretive frame may. In Kodak, on the other hand, interpretations are highly restricted. The originator usually has only a limited number of options in term so the sponsors to whom he can make his plea and his fate often depends on the interpretive whims of a particular sponsor.

In sum, the interaction structure in Route 128 may be considered more "open" than is the case in Kodak. The importance of an "open" structure of interaction for the business venturing process has been one of the most frequent and unequivocal findings in the literature. What one means by an "open" system, however, remains unclear. Starting with Burns and
Stalker's (1968) notion of an "organic" organization, several theorists have attempted to describe the various features of a more open interaction system. The only element that appears common across these studies is the high frequency of ad-hoc encounters and interactions.\textsuperscript{5} But, as Klein (1977) has pointed out, while random communications are no doubt important for innovation, some constraints are also necessary for collective action to recur meaningfully at all. In his view, what is required, instead, is a theoretical framework that helps decide the "requisite degree of openness" or "disorganized organization" in different situations. It is beyond the scope of this thesis to offer such a theory. I merely wish to point this out as a promising and important area for future theoretical work.

**Agency and Interest**

Business venturing is an inherently uncertain activity.\textsuperscript{6} Far more new ventures fail than succeed. The available empirical evidence in the literature, as well the cases in this study, suggest that less than 5% of innovative business ideas eventually grow into successful new ventures. To join in the business venturing process, therefore, is not without risk. In fact, even successful new ventures in Kočak and Route 128 present risks to the participants since their success is often marked, as described earlier, by a transition to a different mode of organization (less entrepreneurial and more professional) for the venture and the withdrawal of the resources that were initially combined in the new venture.

In Schumpeter's view, since the market system has poor risk-bearing properties in the context of innovation, bearing this risk is a special
economic function: one that is undertaken by the entrepreneur who is willing to assume this risk in return for the possibility of extraordinary profit or "entrepreneurial rents." The entrepreneur, therefore, is a distinctive type of economic and social personality - a venturesome, risk-taking type of individual - present only in a small fraction of the population. In this view, therefore, to induce entrepreneurial activity, one must ensure that entrepreneurial rents may be earned.

According to Schumpeter, one of the great advantages of the large corporation over the market system in the context of innovation was that it made failure far less risky for the salaried R&D professional who under the patronage of the corporation could afford to experiment with many more options without worrying unduly about the success of any particular outcome. But, the problem with the large corporation was that the entrepreneurial rents earned by innovation were lost in the aggregate of the firm's overall accounts. This, Schumpeter felt, would ultimately ensure that the individual entrepreneur would be wholly appropriated into the class of the salaried executive. Since in Schumpeter's eyes, the entrepreneur was the necessary architect of innovation, the ultimate consequences, in his view, of the rise of the large corporation were likely to be the demise of innovation and the atrophying of the capitalist engine:

The modern businessman, whether entrepreneur or mere managing administrator, is of the executive mind. From the logic of his position he acquires something of the psychology of the salaried employee working in a bureaucratic organization. Whether a stockholder or not, his will to fight and to hold on is not and cannot be what it was the man who knew ownership and its responsibilities in the full sense of those words. His system of values and his conception of duty undergo a profound change. The modern corporation, although the product of the capitalistic process, socializes the bourgeois mind, it relentlessly narrows the scope of
capitalist motivation; not only that it will eventually kill its roots. (1928, p.156)

If we were to agree, and let me immediately say - wrongly so, with Schumpeter that only the lure of entrepreneurial rents induces entrepreneurship, then one would have to conclude that an internal corporate network for business venturing like Kodak's would always have sharp limits because it lacks an entrepreneurial class and just does not have the venturesome personalities required for the business venturing process.7

The prima-facie evidence in the cases would lead one to agree that the entrepreneur in the 128 Venture Group resembles the classical economist's conception of the entrepreneur far better than the originator in NOD. The participants of the 128 Venture Group do appear highly motivated by profit in contrast to the participants in Kodak, who appear more motivated by the aspiration of rising to prominence in the corporate pyramid.

But it would be wrong to conclude from this evidence that business venturing in Kodak is necessarily handicapped as a result. Participants in Kodak are intrinsically no less motivated to engage in the business venturing process than their counterparts in Route 128. In fact, at a deeper level of analysis one can see that the interests of both the "economic man" of Route 128 and the "corporate man" of Kodak are remarkably similar. In keeping with Polanyi's (1957) more general observations, both to be sure are maximizers. But what it is that they maximize is socially rather than biologically or psychologically determined.
This stands in stark contrast with conceptions holding that man is motivated to act either to increase his material want-satisfaction (wealth-maximization) or to fulfill private psychic needs (e.g. the pleasure of creation, the need for achievement, etc.). As Polanyi said, "man's economy as a rule is submerged in his social relationships. He acts so as to safeguard his social standing, his social claims, his social assets. He values material goods only in so far as they serve this end." Thus the participants in both Route 128 and Kodak are primarily driven by the similar motive of differentiating themselves in the social network in which they are embedded. Attaining high social status, reputation, power, and prominence in the social community is what drives them both to entrepreneurship. The difference is that for the entrepreneur in Route 128, this social position closely ties in with the pursuit of profit, whereas for the originator in Kodak, a few extra dollars have lesser significance in comparison to a higher position in the corporate hierarchy. 8

Moreover, even in the context of Route 128, populated as it is by properly profit-seeking actors, it is important to deflect attention away from the notion that entrepreneurship is restricted to a certain psychological profile defined by someone willing to take risks. After all, if the creation of new ventures demanded the propensity for taking risks possessed only by that small portion of the population that one might call entrepreneurs, Route 128 may long have exhausted its total supply of this rare breed. Inasmuch as business venturing is becoming a collective enterprise in these network models, the entrepreneurial function of bearing risk may become less important. Risk, undoubtedly a part of the business venturing activity, can be spread across all the participants in
the collective network as well as across the portfolio of new ventures funded by most venture capitalists.

To induce entrepreneurship on the collective scale necessary to spread these risks, what is required in these contexts is not merely the impetus provided by economic incentives but also a highly developed external labor market in which the numerous dislocations that are a central feature of the business venturing process is not overly costly to the participants. A discussed earlier, one of the most important contributions of the 128 Venture Group is to make this inter-temporal adjustment less costly. Moreover, by facilitating the development of norms that do not consider failure a catastrophic event, but one that has only a minor impact on the individual's reputation or ability to be part of another new venture in the future, the 128 Venture Group along with the mosaic of other institutions in the region helps create a highly efficient external labor market that mitigates the risk of participating in the creation of new business ventures.

The problem in Kodak is that NOD provides insufficient incentives for "corporate man". In keeping with the liberal economic hypothesis that the only incentive which secures entrepreneurship is monetary gain or the more idealistic notion that the entrepreneur engages in the business venturing process "just for the fun of it," Kodak has put in place either monetary incentives that resemble the Route 128 model by offering such incentives as "phantom equity" to the founders of its new ventures or else offers no real incentives at all except the personal satisfaction of seeing an idea materialize into a reality.
What Kodak has failed to do is institutionalize an internal labor market that provides the opportunity to be engaged in entrepreneurship as a legitimate and valued corporate activity. No one gets promoted for having successfully launched a new venture. Even symbolic rituals that recognize such actors as being valued corporate citizen are rather limited. Indeed, those who get involved in the creation of a new business venture not only gain little in the climb up the corporate ladder as a result of this activity, but in fact may end up being losers in the bargain. This is because at the end of a venture, whether successful or unsuccessful, few corporate credits are earned for the experience of having been involved in the process, new positions in the corporation (in fact, even old ones) are hard to find and one may have lost one’s place in the corporate ladder. Unlike Schumpeter’s view, an internal labor market for innovation related skills does not just automatically exist in the large corporation. It is prone to failure and must be carefully managed. Therefore, the problem that corporations like Kodak face is: How does one succeed in creating an internal labor market that legitimates and values participation in the business venturing process?

In these cases, then, the risk-bearing efficiencies are precisely the reverse of what Schumpeter believed to be true. The regional market model actually has better risk-bearing features than the corporate model. This is because in the regional market context the network creates an externality in terms of employment options such that the pay-off structure in the event of failure is very different than in the neoclassical market model, since reputation (which is the most important determinant
of new opportunities) is more closely tied to performance as opposed to final outcomes, whereas in the corporate context the risks are much greater since the activity lies outside the traditional institutionalized internal labor market.

It is easy enough to say that a corporation like Kodak should address the problem of creating an internal labor market for enterprise. It must be recognized, though, that creating such an internal market is bound to meet with the resistance of the traditionally entrenched political groups in the corporation as it opens up a new flank of competition that threatens the traditional pattern of authority and domination in the corporation. As Gouldner (1954: 27, 237) emphasized, institutions have never "developed and operated without the intervention of interested groups...which have different degrees of power," and that the persistence of an institution is often the "outcome of a contest between those who want it and those who don't." While NOD draws its support inside Kodak from the very highest quarters (the CEO's office), it must still wage a difficult, and often losing battle, with the existing organizations in situations where the latter perceive their traditional institutionalized lines of authority and domination might be eroded. This is evident in the highly circumscribed domain of ideas that NOD may consider as a proposal for a new business venture: any activity that may be considered at odds with the interests of existing organizational groups is outside its mandate. Moreover, at almost any stage in the business venturing process, a line organization may exercise the option of asserting that a new business venture represents a conflict with its existing business and bring to an end the development of the new venture, whatever its
relative merits. Working at the margin of the corporation, it is little wonder that NOD attracts ideas primarily from those who have little to lose and see participation in NOD more as a forum for "voice" (Hirschman, 1970) in the corporation and one of the only channels of opportunity that offers the potential of entry to the privileged club of the elite in Kodak.

The 128 Venture Group must contend with its own political pressures. Its existence certainly represents a competitive threat to the incestuous and closed networks of the "inner circle" (Useem, 1987) of venture capitalists and entrepreneurs. Therefore, the fact that its founding was actually endorsed by this inner circle deserves explanation. The reason why the inner circle endorsed the founding of the 128 Venture Group was that around the time of founding of the 128 Venture Group, the pool of venture capital and the number of new technological opportunities were growing so rapidly that it was beyond the scope of those in the core to keep track of all the developments in the periphery of the field. Since this potential competition could not be contained in Route 128 by authoritarian decree as is it could be in Kodak, it was just as important, then, for those in the inner circle to have access to a forum where they could "keep on top" of what was happening in the rest of the field and to leverage the "halo effect" of their reputations to capture prize opportunities and thus maintain their membership in the inner circle. The growth in the field of business venturing has not abated since the founding of the 128 Venture Group. So, for the moment at least, there is little conflict of interest presented by the 128 Venture Group.
The Social Embeddedness of the Business Venturing Process

in an influential recent article, Granovetter (1985) has argued that "a sophisticated account of economic action must consider its embeddedness in ongoing structures of social relations." This program emphasizes the multiplex character of social linkages, and reminds us that social interaction involves several linkages other than economic and that these relations impinge upon economic action. If we look at Route 128 and Kodak in this light, it can be claimed that while the business venturing activity in Route 128 is richly embedded in the ongoing structures of social relations in the region, it is only marginally embedded in Kodak.

I have shown in the case study of the Route 128 network how the conventional framework that governs the business venturing process in the region is continually shaped and regulated by the flow of general and particular information through chains of conversational encounters that are forged in numerous ways including business venturing marketplaces such as the 128 Venture Group, other forums of association such as professional societies, the universities, and the ties created by ongoing business relations as well as the enormous labor mobility. The various institutions in Route 128 play a mutually reinforcing role. They create a widely variegated web of social and economic relations that overlap with each other and links that are multiplex, in that they serve as lines for multiple types of information flow including those most essential to the business venturing process. The most important outcome of this richly embedded web of social and economic relations is that it produces what may be called a "language community" in the region, in which "members share a common mode of discourse about the productive process," (Piore,
that can be brought to bear on a wide range of economic action that includes the creation of business ventures a particular case.

In Kodak, on the other hand, the business venturing activity stands distinctly apart from the ongoing structure of social relations. The wedge is driven at the entry point itself by the requirement that all ideas for new business ventures be unrelated to the originator's immediate area of work. The originator is therefore forced to find the requisite complementary elements in unfamiliar territories not spanned by the originator's customary social network. The separation of the business venturing process from the ongoing structures of social relations is only reinforced by the requirement that members of new ventures formally sever ties with Kodak and incorporate themselves as an independent subsidiary of Eastman Technologies Inc. Even if the idea is sponsored by an internal line of business the originator may have to temporarily take leave from his present assignment, a situation that may be viewed by the members of his former group as an act of desertion. This separation severely handicaps the business venturing process since mobilizing the elements that need to be combined in the creation of a new venture often relies crucially upon one's informal network which can now be drawn upon only with considerable difficulty. Another important outcome of this separation is that it has limited the reproduction and diffusion, and therefore the institutionalization of the business venturing process inside Kodak. A strong parallel may be observed between the experience of Kodak and the experience of some traditional societies undergoing economic modernization. "When institutional elements differ sufficiently, as in economic modernization, then dual systems tend to form in which
the new economic structure is largely isolated from the traditional aspects of social life' (Zucker, 1988) and come to occupy what may be called an interstitial position in the society. This is precisely the condition of the internal business venturing network in Kodak today.

Conclusions

There are three broad lessons that emerge from this thesis: The first is the clear recognition that Schumpeter's framework is seriously inadequate for understanding the emerging models of business venturing and we need alternative theoretical categories. Towards this end, an interactionist social network perspective offers a set of discursive categories that fit the empirical observations in the cases more closely. The underlying principles on which this perspective rests were spelt out in the introduction to this thesis. The general approach, however, that an interactionist social network perspective entails was brilliantly outlined by Howard Becker (1982) in his study of the social organization of art worlds. I use his exposition not only because the similarities between art worlds and the business venturing world are actually quite striking, but to use the seemingly far-fetched comparison as a way of establishing the general theoretical power of the alternative framework proposed here. If one considers the artist to be the analogue of the entrepreneur, what Becker shows is that the creation of a work of art is much like the creation of a new business venture. To understand the creation of a work of art as the sole product of the artist is just as myopic as understanding the creation of a new venture as the work of an individual entrepreneur. In both cases, larger social networks of skilled people acting together is what truly produces new art works or new ventures.
And it is only by understanding how the activities of different people are related to each other in this network and the conventions they employ to interact with each other on an ongoing basis, that we can understand either the worlds of art or the world of new ventures. Becker’s elaboration of this perspective is compelling and is therefore quoted at length below:

The discussion of art as collective action reflects a general approach to the analysis of social organization. We can focus on any event (a general term which encompasses as a special case the production of an art work) and look for the network of people, however, large or extended, whose collective activity made it possible for the event to occur as it did. We can look for networks whose cooperative activity recurs or has become routine and can specify the conventions by which their constituent members coordinate their special lines of action. We can use the term social organization or social structure as a metaphorical way of referring to those recurring networks and their activities. To pursue the general version of the theory developed for artistic purposes, we can study social organizations of all kinds by looking for the networks responsible for producing specific events, the overlaps among such cooperative networks, the way participants use conventions to coordinate their activities, how existing conventions simultaneously make coordinated action possible and limit the forms it can take, and how the development of new forms of acquiring resources makes change possible (p.369-371).

Variants of this social network approach have also been adopted by many other scholars to describe the social organization of several other fields of activity such as publishing (Powell, 1985), investment banking (Eccles and Crane, 1987), multinational corporations (Ghoshal, 1986), motion-picture production (Storper and Christopherson, 1986), etc. Moreover, in many of these fields the conditions found in the business venturing process are to be observed: collective action that involves the coordination of highly specialized modes of action; a complex information situation that is intrinsically ambiguous; a delicate balance of competing and cooperative interests; and an embeddedness of economic relations in a
web of other social relations and institutions. Therefore, it is perhaps not so outrageous to claim that the pattern of organization observed in the context of business venturing may well be a mirror of a more fundamental way of examining emerging patterns of industrial organization.

The second theoretical lesson offered by these cases is that we should abandon modes of functional reasoning that lead to the idea of institutional convergence. Consider, for instance, the mode of reasoning in the new institutional economics, also a feature of Schumpeter's writings, that views markets and corporate organizations as substitutes and contends that the replacement of one by the other is a common event that follows the dictates of economic efficiency. The general dictum of this line of reasoning is that internal organization has a comparative advantage over external organization where uncertainty is great and informational difficulties exist. If one looks at the creation of new business ventures, this is certainly an economic activity in which uncertainty is great and the informational difficulties acute. This theoretical tradition, therefore, would join with Schumpeter in predicting that corporate organization would be the only efficient institutional form for business venturing.

But, a comparison of the cases in this study would indicate that the regional market has several advantages compared to the corporate organization in the context of business venturing. While these cases falsify the general dictum of the new institutional economics, it would be equally erroneous to conclude from the cases in this study that the
market is more efficient than the organization in the creation of new business ventures in all cases. If I had only chosen a less successful regional network such as the numerous languishing regional industrial districts throughout the worlds such as Sophia-Antopolis in France or Sheridan Park in Toronto and contrasted it with a more decidedly successful corporate network model such as that to be observed at 3M for instance, the comparison may well have resulted in a completely opposite result.

It is also important to put the comparison of such cases in their historical context. While from an absolute standpoint it is fairly clear that the 128 Venture Group is more effective at creating new business ventures in the context of Route 128 than NOD is in Kodak, it must be remembered that the 128 Venture Group started from a level of institutional development in the Route 128 region that was far more conducive to the formal institutionalization of entrepreneurial networks than NOD enjoyed within Kodak. The fact is that until 1983, Kodak was the epitome of the hierarchical functionally organized corporation with a centralized R&D structure. It is little wonder that NOD has had to confront more difficulties in becoming as fully institutionalized and effective as the 128 Venture Group. If one looks at the performance of NOD in this light, the advantages of Kodak's new internal venturing program relative to its traditional centralized R&D approach may now be seen very clearly. The first advantage of the new NOD system over the traditional one is that legitimate acts of insight are no longer restricted to the specialized R&D staff or market research departments. There is a recognition that the genesis of a worthwhile business opportunity may
arise in any quarter, and indeed that acts of insight routinely occur in the conduct of everyday acts of skill. A much greater variety of ideas for new business opportunities can therefore be explored in comparison to options uncovered by the traditional R&D system. Second, the new system is attentive to the fact that the set of elements that need to be put together is not a determinate problem that can be readily solved by the traditional "p" project" approach in which Kodak relied almost exclusively upon the vision and skills of the project leader to bring these elements together. Kodak's internal venturing program is more "open" in that a much broader set of elements that may be relevant to the solution of the initial perception of the problem can be brought together. The advantage of bringing such diverse and multiple perspectives to bear on the innovation process was observed in numerous cases in Kodak where the crucial insight or element for the creation of the new venture came from the most unexpected quarter.

The theoretical approach, then, that is advocated by this study is to accept the possibility of institutional pluralism in the context of economic development. The fallacy of viewing development as being associated with a convergent set of institutions was first shown by Geertz (1963) in his study of the process of modernization in two different Indonesian towns. In this study he showed that while both towns were similar in that they were slowly evolving towards becoming "modern" societies, the institutional form that development was taking in these towns exhibited sharp differences. Thus, while one town was evolving from a "bazaar" background into a modern market system, the other was evolving from a feudal background to a modern firm-oriented system.
The general point that Geertz makes in this study that is also of interest to my thesis is that different institutional arrangements can be equally effective in the organization of the same field of economic activity. This point has also been made by Westney (1987b). Looking at the institutional pattern of the Japanese construction companies, she shows that while they are organized as fully integrated firms, a pattern that has been regarded as being inefficient and unstable in this context by more functionally oriented scholars, these same firms are now competing and indeed wrestling the edge away from US firms who are organized in what the functional theorists (Eccles, 1981) consider the more efficient general contractor type of institutional arrangement.

What this line of argument suggests is that internal corporate networks could well be as effective as regional networks in the creation of new business ventures, without the two networks having to be identical. As the comparison of the cases in this thesis has shown, there are some intrinsic differences in the problems confronted in the mobilization and institutionalization of networks for the creation of new ventures in these two contexts. Corporations, regional planners, and theorists must be warned against the pitfalls of taking the hypothesis of convergence too far and of thinking that the processes that help in the mobilization and institutionalization of networks in one context are readily applicable to the other. The ineffectiveness of trying to imitate the features of regional models of business venturing inside the corporation such as the attempts to replicate market incentives within Kodak offers a clear example of these limits.
The third contribution of this thesis was to identify a set of general theoretical concerns that provide a framework for further comparative work. Future work examining different cases of venturing networks will profit by analyzing such networks in terms of (i) the nature of specialization in the division of labor to see how that actually relates to the activities involved in the creation of new ventures, (ii) the nature of the interaction structure that mediates coordination to further our understanding of "the requisite degree of openness," (iii) the "opportunity structure" in terms of its ability to satisfy and reconcile the cooperative and competing interests of the actors, and (iv) the "extent and nature of embeddedness" to further our understanding of how different forms of overlapping social and economic links influence each other. These theoretical concerns are also the coordinates that must guide practice, since any attempt at introducing change must wrestle with these same issues.

Finally, it is important to note that in thesis I have focussed on the emergence of network models of business venturing in regional and corporate contexts as organizational alternatives that are shown to have several advantages over the traditional Schumpeterian models. While their emergence has no doubt led to a decreased importance of some of the traditional models of business venturing, it is not my intention to assert that the independent entrepreneurial or the centrally planned corporate R&D system for the creation of new ventures are going to disappear. These new models will not replace the traditional organizational models but will exist side-by-side with them. The independent entrepreneurial
system will persist and some of the most important and radical
discoveries may still come from the sort of entrepreneurial hero that
Schumpeter had in mind. As I mentioned earlier, in any organizational
system (the network models being no exception), coordination can only be
achieved at a price - the constraint of convention. So, innovations that
represent a complete breakaway from convention are still likely to come
from the entrepreneur. Bureaucratically planned and coordinated
innovation will also not disappear. There will always remain the mega-
projects such as the development of a new generation of a
telecommunications switching system or a new optical computer where the
resource mobilization and coordination problem may well be beyond the
loose coordination of the network model. In these areas the large
industrial R&D lab will continue to play a dominant role. Network modes
of organization, then, are best suited to evolutionary types of innovation,
though the rate of change can be often be so rapid that if one took snap
shots after reasonably long intervals, it would appear that the change was
revolutionary.

It is also important to point out that in this thesis I have drawn a
sharp boundary between the corporate and regional models. But as
several observers have noted, this boundary is increasingly becoming
epiphenomenal as a whole host of hybrid institutional arrangements that
bridge across these two contexts in an attempt to simultaneously
incorporate the strengths of different organizational systems may be
observed. A more comprehensive examination of emerging patterns of
business venturing must attend to these developments. One must,
therefore, not just look at corporate networks and regional networks
separately but also examine the way these networks overlap and connect with each other.
1. An analogy helps to highlight the importance of skills at this stage. Just as it takes a serious and knowledgeable audience to recognize and appreciate innovative art forms such as a ballet in which running, falling, and stumbling are presented as art as opposed to the more formal glides, rolls, and pirouettes (Becker, 1982:50), the person skilled in the creation of new ventures has an advantage in judging whether a particular combination of elements "fits" or not.

2. Some observers have also puzzled about how the high degree of specialization in activities related to the creation of new business ventures is sustained in regional networks like Route 128 given that the emerging new venture has an intrinsically uncertain and limited life. If specialization were specific to any particular venture, then this would clearly represent a violation of Stigler's (1951) axiom- "The division of labor is limited by the extent of the market." But the specialization in skills in Route 128 is not considered to be venture specific. They are more like the specialized skills in the performance of different activities such as pipe-laying or woodworking found in the construction industry. The skills in Route 128 are flexibly redeployed in different new ventures. In fact they may be redeployed in different capacities; for instance, an entrepreneur after making a fortune may become a venture capitalist. The similarity between the construction industry and the field of business venturing with regards the division of labor also creates a demand for similar institutions. The role of institutions such as the hiring hall in construction industry that facilitate intertemporal flexibility is equally important in the world of business venturing. As, discussed in the case study of the 128 Venture Group, this is a critical role played by the network-creating institutions in the region.

3. As one manager in Kodak reminded me - "We are not, and don't want to be, just in the business of creating new ventures whereas the venture capitalists in Route 128 are. So we don't ever expect to match the variety found in such contexts."

4. I am grateful to Robert Eccles for drawing my attention to this possibility.

5. See for instance, March and Olsen (1976); Kanter (1983); Mintzberg and McHugh (1985); Tushman and Nadler (1986) and Van de Ven (1986).

6. By the time he wrote Capitalism, Socialism and Democracy, Schumpeter, mistakenly I would contend, believed that the entrepreneurial function had lost its importance since innovation had been rendered routine, familiar, and therefore risk-free by the large corporation and its specialized labs. As Klein (1977) points out, there is no sound theoretical reason or historical empirical evidence to agree with Schumpeter. Innovation is as uncertain an activity now as it has ever been.
7. For even if Kodak had any entrepreneurial types, given the existence of an alternative such as Route 128, these entrepreneurs would leave Kodak to pursue the significantly better economic incentives offered by these alternate markets for their special talents.

8. The possibility that interests other than narrow utilitarian interests may underlie economic behavior has long been recognized in economic analysis. That this behavior may include entrepreneurship was empirically shown to be true by Geertz in his study of economic development in two Indonesian towns. In this study the entrepreneurial class in Modjukoto, a town with a traditional bazaar economy, was drawn from the traders who were driven by the economic impulse of profit, whereas the entrepreneurial class in Tabanan, a town with a traditional feudal economy, was drawn from the aristocracy who were driven by the political impulse of maintaining their privileged status in society.

9. Indeed, that is one of the central limitations of this study. The cases I have selected allow me to say speak far less to the institutional entrepreneur confronted with the challenge of mobilizing an entrepreneurial network in a region that does not offer the supporting historical and social resources available to the 128 Venture Group; I have far more to say to the institutional entrepreneur in the corporate context.

10. This was a point that was also emphasized by Kanter (1983) in her book, The Change Masters. She also emphasized that an important feature of innovative companies was the legitimacy of the innovative ideas from all quarters of the corporation. The importance of this has also been captured in the notion bottom-up innovation and so on.

11. The value of diversity of elements in the creation of new business ventures was also observed by Nonaka (1987) in the new product development efforts of Japanese corporations.
BIBLIOGRAPHY


Technology and Regional Development." Regional Studies. (Forthcoming).


Granovetter, Mark S. 1985. "Economic Action and Social Structure: A


Ragin, Charles C. 1987. The Comparative Method: Moving Beyond


Saxenian, Anna Lee. 1985. "In Search of Power: The Organization of
Business Interests in Silicon Valley and Route 128." Mimeoographed. Cambridge, MA: Department of Political Science, MIT.


Stigler, G.J. 1951 "The Division of Labor is Limited by the Extent of the Market." Journal of Political Economy 59 (June): 185-93.


