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CREATING A COMPANY

THE ROLE OF A TEXT

IN THE RISE AND DECLINE

OF A NEW ORGANIZATION

STEPHEN DOHENY-FARINA

In early 1982 a group of graduates and undergraduates from Northland State University, a highly respected Northeastern technological institution, founded Microware, Inc., a microcomputer software company.¹ Shortly thereafter, Microware became a member of the university's Start-Up Project, a program designed to incubate new, innovative, "start-up" companies. These companies were to develop business applications of the technologies being researched and developed at the university. As part of the process of applying for acceptance into the Start-Up Project, Microware's president, Bill Alexander, wrote a business plan. This document detailed Microware's business goals and the strategies that the company would employ to meet those goals. That is, the plan described the types of software that Microware would produce, the potential market for that software and the ways that the company would go about producing and selling that software.

As Bill described it, Microware's 1982 Business Plan was a powerful document:

It was everything. Without a product, without money, without furniture, without machines, without anything, the Business Plan is it. That's your whole case for existence. That's what attracted money. That's what kept us in the (Start-Up) program. That's what

got most of the Board (of Directors) into it. That's what got a lot of the employees into it. It did a lot of things (Interview, 18 July 1983)

Microware was created in the writing of a business plan. The plan attracted investments and support, and it also gave direction to the fledgling organization during 1982.

In this chapter I will explore how the company arose from that plan and thus exemplify some of the ways that a text can shape an organization. I focus primarily on one text and one company, and do not wish to claim that I am exemplifying the typical way—or the best or worst way—that organizations are formed. One alternate way organizations can form is discussed in this chapter and compared to the way Microware developed. I do believe, however, that the case study of Microware and its 1982 Business Plan provides a particularly revealing glimpse of one way that a text can define and maintain an organization.

Microware's 1982 Business Plan defined the company by establishing its parameters. Before the company had tangible elements (employees, offices, equipment, products, bank accounts, organizational charts with names in the boxes, etc.), it was conceived in terms of three interrelated concepts: (1) a product, (2) a market for that product, and (3) a plan to bring that product to that market. Once established in the text, these concepts persuaded key individuals to act to create the physical, commercial, and interpersonal parameters that defined the organization. That is, the persuasive power of the plan encouraged individuals to take certain actions that brought the company from concept to reality. Thus, in one sense, the plan was an effective transactional document: it motivated individuals to act in ways that helped to establish the organization.

In another sense, however, the plan failed as a transactional document. It failed to give effective guidance to the continued operation of the company and was, therefore, deficient in the way it maintained the organization. As my analysis will show, the transactional quality of the business plan was the source of both constructive and destructive power.

Overall, this analysis reveals the ways that Microware's business plan both reflected and shaped the social and organizational environment. As such, this study is consistent with a growing body of research, some of which has explored how writers are influenced by social, organizational and disciplinary environments (e.g., Odell and Goswami; Selzer; Bazerman; Odell; Herrington; Larouche and Pearson; Broadhead and Freed; Spilka; Winsor). In these studies environmental factors are shown to affect the ways that writers construct their rhetorical situations.

Others have brought to light some of the ways that writing influences social, organizational, and disciplinary environments (e.g., Paradis,

Dobrin and Miller; Myers; Doheny-Farina). These case studies examine not only the ways that writers are affected by their perceptions of the communities in which they write, but also ways that their discourse, in turn, affects those communities. As Harrison states:

Communities of thought render rhetoric comprehensible and meaningful. Conversely, however, rhetorical activity builds communities that subsequently give meaning to rhetorical action. (9)

The rhetorical activity that I investigated in this study clearly helped to build a community. At the same time that rhetorical activity was shaped by forces outside the newly forming community.

Thus, my analysis assumes what Cooper defines as an "ecological" view of writing — a view that places the writer in a fluid and reciprocal environment: a writer is not only influenced by but also influences his or her environment. That is, writing is an inherently social activity (Bazerman; Faigley; Bruffee, "Social Construction"; Lefevre) which involves (and often entangles) the writer in a range of interwoven social and organizational dimensions. Cooper's primary metaphor for writing is that of a web, "in which anything that affects one strand of the web vibrates throughout the whole" (370). Indeed, as this chapter will show, Microware's 1982 Business Plan was entangled in a web of institutional, commercial, technological, and interpersonal strands.

I begin with a brief review of my research methods and an overview of the history of Microware. The analysis that follows these sections will uncover the underlying arguments that made the plan persuasive, examine the effects that these arguments had on key participants, discuss the deficiencies in the plan and the effects that these deficiencies had on the company, and assess the transactional nature of the business plan.

Research Methods

Much of my data gathering was geared toward reconstructing the writing of the company's first business plan and observing the writing of the second plan (Doheny-Farina). To do these things, I (a) conducted open-ended interviews that explored the interviewee's perspective on the history of the company, (b) observed and recorded the participants' daily activities (Shatzman and Strauss), and (c) tape recorded meetings that captured the participants interacting as they discussed organizational and rhetorical issues.² I collected data at Microware for three to five days a week for eight months in 1983. Each visit lasted from one

to eight hours and I typically collected data during formal and informal meetings in the offices and hallways of Microware's two buildings.

An Overview of Microware

From 1982 to 1986 Microware raised nearly \$750,000 in investments, loans, and sales. While the typical microcomputer software company consisted of a few programmers and marketers, Microware was amply staffed and supported. The company employed approximately thirty-five programmers, engineers, managers, marketing specialists, and salespersons. The company was well-equipped with a range of advanced microcomputers, peripherals, and printers. From 1982 to 1984 the company enjoyed status as a member of the Northland State University Start-Up Project. In addition, the company had attracted as a principal financier and advisor, Ted Wilson, a senior partner for one of the Metro region's most successful and respected law firms. By 1984 the company had produced MicroMed, a business systems product designed to computerize a range of operations in small to mid-sized hospitals. This product, which received a favorable review in a health care industry trade publication, attracted approximately \$340,000 in sales. Yet in 1986 the company went bankrupt. *While it undoubtedly failed for many reasons*, an examination of the role of the 1982 Business Plan can provide some insight into these events.

This plan played a significant role in the company's progress from January 1982 until the late summer of 1983 when Microware's executives began to write a new business plan (for a discussion of the collaborative process of writing this revised document, see Doheny-Farina). The executives decided to write a new plan because they were faced with the company's first major financial crisis. On 25 August 1983, the company's lawyer and principal financier, Ted Wilson, told the president and the other Microware executives that the company was in desperate financial trouble. "You are really a defunct corporation," he said. "You are bleeding to death. . . . You are not only looking at Chapter 11, you are there now." The executives agreed that writing a new business plan would be one of the first and most important steps in overcoming this crisis. As will be discussed later, the new plan was a better transactional document. That is, because key passages of the new plan were developed in far more detail, the plan provided much more specific and sophisticated operational guidance for the company's managers.

Even so, while the company continued on for three more years, the damage it had sustained in its first two years continued to burden the company until it finally went out of business in 1986. Even an improved

operation could not overcome the deep debt into which Microware had sunk by 1983. Microware began with much promise and support and yet ultimately failed. The 1982 Business Plan played a central role in that rise and fall.

What follows is an analysis of the transactional function of the business plan. Because of my intense focus on the role of one document, this analysis may seem, at times, to attribute an unreal amount of influence to that document. With this danger of distortion in mind, I will conclude the chapter by briefly discussing an alternate interpretation of the function of Microware's 1982 Business Plan.

The Constructive Power of the 1982 Business Plan

In order to illustrate the plan's power, I will first show how it persuaded three key persons: (1) Paulo Abruzzi, one of the directors of the NSU Start-Up Project; (2) Edward Murphy, the NSU professor who helped the original founders launch the company through an independent study course; and (3) Ted Wilson, Microware's lawyer and principal financier. Although these three were not the only persons who were persuaded by the plan, they were among the most important participants in Microware's rise. By examining the persuasive power the plan had on these three individuals, I will illustrate Bill's claim, quoted above, that Microware arose because his business plan (1) enabled the company to join the Start-Up Project, (2) attracted participants (employees and members of the Board of Directors), and (3) attracted financial support.

JOINING THE START-UP PROJECT:

PAULO ABRUZZI AND THE GENERIC FORM

Most of what Bill learned about the genre of business plans came through his initial experiences with the Start-Up Project. Joining this project was one of Bill's first goals when he and his colleagues founded the company in early 1982. Start-Up Project companies were allowed low-rent office space in what was known as an "incubator building" on the NSU campus. In addition, the Start-Up committee offered business advice to member companies. Most important, the Start-Up Project helped member companies approach potential investors. As will be discussed later, it was crucial for Microware to be portrayed in its business plan as a product of NSU.

Gaining membership into the NSU Project, however, was not a simple

task for Microware. The company's founders had to prove themselves before they were accepted. Paulo Abruzzi had made it clear that the Project Committee would give Microware a long, hard look before admitting the company. This heightened scrutiny can be attributed to the fact that Microware's origins were somewhat different from the other companies in the project. Microware grew out of an independent study course at NSU.

To enter the Start-Up Project, the first step for the founders of Microware – or for any potential candidate – was to write a business plan. Paulo Abruzzi placed great emphasis on such plans. Abruzzi, who had retired from General Electric Corporation before becoming a professor of technology management at NSU, was serving as a director of the Start-Up Project because his area of expertise was the management of technological innovations. While at NSU, Abruzzi had developed a new curriculum in the management of technological innovations for the university's MBA program. Abruzzi believed that business plans were important early steps in the development of companies that attempted to be technologically innovative. Abruzzi's emphasis on the importance of the business plan was reported in an NSU magazine article devoted to the Start-Up Project:³

Right from the start, the Start-Up Project encourages you to develop a business plan. Paulo Abruzzi, Professor of Technology Management and Start-Up Project consultant says, "we have seen many companies that have prevented major problems simply by thinking out a business plan: they decide what they want and how they're going to get it." The Project board members want the entrepreneurs, technicians, and managers in each company to construct a short, concise explanation of just what product, procedure, or service that the company wants to sell; and how they want to go about selling it. "The business plan," says Abruzzi, "is like a road map that shows how you're going to get there from here."

According to Abruzzi, then, a business plan should be a plan of action for management to follow. However, in addition to serving as a plan of action, a business plan must also serve as a proposal directed to potential supporters of the company. A business plan outline (figure 13.1) which was given to Bill by the Start-Up Project Committee posited a general proposal structure: after a summary, the writer lays out the proposed financing that he or she is seeking from investors, including the amount of money sought, the terms of the financing, and the planned uses of that financing. This proposed financial deal is then followed by descriptions of the products and the marketing and production strategies, all of which serve as evidence to support the proposed deal.

NORTHLAND STATE UNIVERSITY
SUGGESTED BUSINESS PLAN CONTENTS

- A. Brief Summary
 - B. Proposed Financing
 - 1. Amount
 - 2. Terms
 - 3. Use of Proceeds
 - C. Product Description
 - D. Business Strategy and Five-year Milestones
 - E. Marketing Plan
 - 1. Summary
 - 2. Market Segmentation
 - 3. Channels of Distribution
 - 4. Sales Strategy and Plans
 - 5. Five-year Sales Forecast
 - 6. Competition
 - F. Operations Plan
 - 1. Engineering Program
 - 2. Manufacturing and Materials Programs
 - 3. Facilities Plan
 - 4. Incentive Program
 - G. Financial Statements and Projections
 - 1. Past and Present Financial Statements
 - 2. Existing Shareholders and Ownership Percentages
 - 3. Five-year Pro Forma Projections
 - a. Items: Income statement, balance sheet, cash flow statement.
 - b. Format: By month for first two years and then by year for next three years.
 - H. Management and Key Personnel
 - 1. Detailed Resumes
 - 2. Organization
 - 3. Staffing Plan
 - I. Appendices
- 10/81

Fig. 13.1. NSU business plan outline

Although this outline suggests that writers include financial information, such was not the most important information according to Paulo Abruzzi. He emphasized three components: the product, the market, and the plan to capture that market. In an NSU magazine interview, Abruzzi elaborated on these components:

What we want in a business plan is first, a clear description of the product, process or service which this entrepreneur, this company intends to market. Second, what's the market for that

product, process or service – not how much, but who is the market going to be – the general public, some specialized companies, the government, lots of possibilities. In other words, who is going to buy this great innovation that they have in mind here?

Then (third), they have to delineate their strategy. What is their general strategy for going after this market? How are they going to get from here to there? What kind of resources do they need? Maybe human resources, maybe special equipment, computers. . . . Then maybe a timetable for the development, the manufacturing, and the marketing, if they are that far ahead.

By the end of the independent study course Bill Alexander had finished a draft of the business plan, and he and his fellow group members presented it to Abruzzi and the Start-Up Project Committee. In the plan Bill fulfilled the generic requirements in varying degrees of detail. The plan included sections that described the products, the market, and the production and sales strategies:

BUSINESS PLAN

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Fig. 13.2. Table of contents for Microware's 1982 business plan

Microware's products. The company's software products included several games, a business graphics package, and MicroMed, the business systems package. All of these were described in sections 1.3 and 4.1 of the business plan (see figure 13.2). As will be discussed later, none of these products were completed in 1982 and those that were completed in 1983 were soon found to be deficient in one way or another and had to be revised. The one product that was the furthest developed in 1982 was MicroMed, the company's most sophisticated software package. The following is a segment of the product description of MicroMed:

This system was designed to provide health care facilities with flexible, total control over their data processing requirements. The advantages of microcomputers in the business environment are just now being recognized. The ability to improve performance and, at the same time, decrease cost, is of the utmost importance to all facilities, including hospitals. The Microware system is designed for use by small and medium-sized hospitals, and is totally interactive and menu-driven. The users are able to manage all of their normal accounts, keep track of patients, perform their accounting and billing, print standard and custom reports, and perform a number of other vital functions. (7, sec. 1.3)

The most sophisticated – and unfinished – computer video game that the company had developed was named *The Web*:

This is an original and fast action color video game designed for implementation on microcomputers, home video game systems and arcade systems. *The Web* features real-time animation, high-resolution color graphics, and several challenging game scenes from which to choose. Microware shall market the initial version for the new IBM Personal Computer. (6, sec. 1.3)

The only graphics package close to completion was *Micrograph*:

This is a simple, low-cost (\$59.95), full color business graphics system that allows the professional to design full color line charts,

graphs, and pie charts. All information and graphs are sorted in a database, which provides for additions, deletions and changes to the information. All functions are performed by the use of menus. (7, sec. 1.3)

In addition to describing this software, Bill had to discuss the market for the products.

The potential market for Microware's products. The consumer market for microcomputer software was spurred by the production of microcomputer hardware. In section 2 and sections 3.1 to 3.4 of his business plan, Bill discussed the software market as an outgrowth of the expanding hardware market; for example:

1982 sales for home computers are estimated to be \$840 million, seven times the 1981 figures. By 1985, the home computer industry should have annual revenues of more than \$3 billion, according to a study done by Future Computing, Inc., a Dallas consulting firm.

The main reason for the rapid increase in sales of home computers is the rapid decreases by all hardware manufacturers, including the four leading home computer manufacturers, Atari (400), Tandy Corporation (TRS-80 Color Computer), Texas Instruments (99/4a), and Commodore International, Ltd. (12, sec. 2.1)

In addition, Bill also discussed the strategies necessary to produce the software and reach the markets.

Microware's production and sales strategies. The means to produce and sell software were outlined in sections 3.5, 4.1, 4.2. As will be discussed later, these sections were the least developed aspects of the plan. For example, the following passage describes the sales strategy:

Microware has a goal of becoming a major software and service company in the computer industry. This strong industry position will be secured by:

- 1) Superior Products
- 2) Superior Documentation & Support
- 3) Full Financial, Managerial, & Technical Support
- 4) Establishment of a National Distribution Network

(34, sec. 3.5)

The sales strategy, like the production strategy discussed in detail later in this chapter, was outlined in the broadest terms. In spite of these

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undeveloped "strategy" components, the Start-up Committee reacted favorably to Bill's plan and, as Abruzzi recalled, he began to help Bill fine-tune the Plan.

We required them to write a business plan. They wrote a first draft and I reviewed it and improved it and now (early 1983) it's a 70 page document. [Microware was accepted] once they met our requirements. (NSU magazine)

As reported in the NSU magazine: "Alexander worked with Abruzzi to develop the Plan and on June 14, 1982 Microware was accepted into the Start-up Project."

The company officially became a member of the Start-up Project after Bill and the other founders formally presented the business plan and fragments of working software to the Start-up Committee. In their presentation they provided an overview of the business plan (presenting an outline of the plan via overhead projector) and demonstrated some of the unfinished software on a microcomputer. This same type of presentation was used when Bill and the other founders made formal presentations to others, such as potential investors and/or potential members of the company's board of directors.

ATTRACTING EMPLOYERS AND A BOARD OF DIRECTORS: EDWARD MURPHY AND THE LARGE MARKET ARGUMENT

While dutifully including all of the generic elements that Abruzzi required, Bill had clearly emphasized one of these elements: Microware's potential markets and, more specifically, the idea that computers could reach "mass markets." Bill devoted approximately 22 to 47 pages of text (sec. 2 and secs. 3.1 - 3.4, see figure 13.2) to painting an enticing picture of the huge mass market potential for a microcomputing software company. In contrast, he devoted 7 of 47 pages -- relatively little -- to discussions of Microware's products (secs. 1.3, 4.1) and to Microware's production and sales strategies (secs. 3.5, 4.1, 4.2).

Bill's "market-driven" motivation was in evidence at the very inception of the company. When he and others decided to start the company through an independent study course at NSU, he did not seek out advice and direction from the computer science faculty. Indeed, he asked an NSU marketing professor, Dr. Edward Murphy, to direct the independent study. Persuading an NSU professor to support Bill's vision would be a crucial first step for the company and Murphy went on to play a key role in the founding of Microware. Murphy, who had been working with IBM personal computers since they were first made available, was persuaded by Bill's developing view of the potential market as he worked on the business plan for the inde-

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pendent study. Bill's view was that the computer software business was on the verge of entering the mass market because at that time (late 1981/early 1982) IBM was beginning to enter the microcomputer business. Bill was boldly enthusiastic about the potential of a company that produced software for the IBM PC. Dr. Murphy described his first meeting with Bill concerning the independent study:

Bill Alexander camen in here with a Xerox of an article from Byte magazine about the new IBM PC, and he threw it down on my desk and said that IBM had introduced this great machine, and that he and some other students, from computer science mainly, were going to write programs for it. (Interview, 15 July 1983).

Murphy decided to moderate the independent study and eventually he allowed the independent study group to use some of his facilities -- his office and computer. More important, after Bill had written the business plan and applied for incorporation, Murphy agreed to be on the board of directors even though he had some serious reservations about the company -- reservations that will be discussed later.

Before he had appoached Murphy, Bill and Greg Jerling, a computer science major and cofounder, had considered trying to sell the idea for an independent study course to the Chemistry Department at NSU, because Gred and another friend had designed computer graphics software for chemists during the previous year. But Bill recognized that "big money" was not to be made producing software for the Chemistry Department. Instead, with the growing success of things like computer arcade games, the microcomputer market seemed to have the potential to become a true mass market. This great potential dramatically attracted individuals to work for Microware. For example, during the independent study course Bill surprised the other students by telling them that he planned to incorporate the group. Bill laid out a grand vision that included his five-year marketing milestones which projected sales revenues in the millions. Greg Jerling recalled that upon seeing this one of the programmers said,

"Bill, don't you think those numbers are a little big?" And Bill blew up at her and he said, "If you don't believe that we can do this then you don't belong here, because I believe that we can do this. This is what I'm out for and if you're thinking small time then you might as well walk out now, and that goes for anybody else in the room." And everybody stayed. (Interview, 15 July 1983).

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According to Bill's vision they had to be aggressive if they were to take advantage of the lucrative possibilities before them.

In the business plan, Bill developed a powerful argument that emphasized how well Microware was positioned to take advantage of these possibilities. The major premise of the argument was that the total potential market for microcomputer software was extremely lucrative. The minor premise was that other companies, similar to Microware in that they were entrepreneurial start-up companies, have gained highly profitable shares of that potential market. The conclusion of the argument was that Microware is positioned to take a significant share of that market. Figures 13.3A, **13.3B**, and **13.3C** illustrate this argument with excerpts from the business plan.

Advertising Age estimates that the gross revenues for video games in 1982 will top \$6 billion, and will approach \$20 billion by 1985. (p. 3)

Today's computer revolution has been growing at a pace of well over 50 percent annually for the past several years. This growth, along with the expectation of future growth, has prompted several venture capital firms and public companies to invest significant amounts of money in recognized industry leaders, and in new start-ups such as Microware. (p. 10)

Video game mania is sweeping the country, and many consumers are finding that home computers, in addition to performing home tasks such as budgeting, finance, and education, are also very good game machines. (p. 12)

Only 10 percent of American homes have a video game system, which leaves 90 percent still to be conquered. (p. 13)

In 1981, Americans spent 20 billion quarters on video games, including arcades. That was more money than was spent on baseball, basketball, and football combined. That's quite substantial. (p. 14)

The release, in the summer of 1981, of IBM's new Personal Computer has brought significant attention to the microcomputer industry. The IBM Personal Computer is becoming the computer of the decade. By the end of 1982, less than a year after initial release, IBM will have 250,000 to 300,000 personal computers installed. Estimates place the number of IBM personal computers (to be) sold in 1983 at 3 million machines. (p. 19)

Figure 13.3A: Major Premise: Business Plan Excerpts That Illustrate the Lucrative Market for Microcomputer Software

Atari, owned by Warner Communications, has been the leader in the video games market since its humble beginning back in 1971 when Nolan Bushnell and Joe Keenan founded Atari. Warner Communications bought out Atari in 1976 for \$32 million, and in 1981 Atari had gross revenue of \$1.23 billion, with net profit of \$286 million. 1981 figures estimate Atari's revenue to be \$2.0 billion with net profit of \$504 million. Atari was obviously a very profitable acquisition for Warner Communications.

Other home game system manufacturers are hot on the trail of Atari and Mattel, and a number of them released new products at the end of 1982. This competition in the home game systems and cartridges market has already placed Atari in a difficult position. Atari's share of the games systems hardware market has slipped from 75 percent last year to 65 percent this year, and from 85 percent to 60 percent for the game cartridges market, due to increasing number of independent companies providing cartridges for the Atari VCS. (p. 130)

Activision was founded on October 1, 1979 by its current President Jim Levy and 4 ex-Atari game designers. . . . in 1980 Activision's gross sales were \$6 million. In 1981 gross sales were \$66 million, an increase of 110 percent. . . . From the original 4 (game) designers, the Activision designers have grown to 31 at five separate design centers on the East and West Coasts. Activision, which is privately held, now has about 15 percent of the game cartridge market. (p. 15)

Figure 13.3B: Minor Premise: Business Plan Excerpts That Discuss the Success of Other Entrepreneurial, Start-Up Software Companies

Microware's five year milestones include gross annual sales in 1987 of \$100 million; complete product lines in video games and business systems; a state-of-the-art commercial graphics facility; complete development of a national customer base; and initial expansion into the international market. (p. 2)

Microware recognizes that the growing versatility of the technology opens up the opportunity to invent programs and games radically different from today's war-type games, or shoot-em-ups, as they are called in the industry. Peter Odak, past president of Atari's Consumer Products Division stated, "the heart of the market for shoot-em-up" comprises about 20 million homes out of the 83 million homes that have TV sets. This leaves a tremendous void in the market to be filled. A void of 63 million households. (p. 17)

Figure 13.3C: Conclusion: Business Plan Excerpts That Explain How Microware Is Positioned to Gain a Significant Market Share

Even though there were serious problems with this argument, it attracted people. The fact that by 1983 Microware had still not produced a finished, marketable piece of software still did not deter others' receptivity to this argument. The production problems that undercut this argument — as will be discussed in detail later — did not become crucial until the second half of 1983. In 1982 the partial pieces of software indicated that the company was headed in the right direction and many people were excited by the seemingly unlimited potential of the market. In an interview a year and a half after the independent study courses began, Murphy recalled why Bill and his colleagues were persuasive: "They were in the right business, at the right place, at the right time, with the right machine."

ATTRACTING FINANCES: TED WILSON AND THE INSTITUTIONAL / ENTREPRENEURIAL MELD ARGUMENT

Once accepted into the Start-Up Project, Bill was able to add a significant argument to the plan. This argument was one of the most powerful of all because it attracted Microware's most powerful supporter, Ted Wilson, who, at 70 years of age, was a senior partner in a highly respected regional law firm. Ted first became interested in Microware when Bill was filing for both incorporation and for membership into the Start-Up Project.

From the time Ted became involved with Microware until the 1983 financial crisis that precipitated a new business plan, Microware survived primarily through the graces of Ted Wilson. He supported the company in four ways: (1) He afforded Microware hundreds of hours of legal advice without charge. (2) He helped Bill sell \$50-100,000 worth of Micro-

ware stock. (3) He rented to Microware some of the company's equipment and its downtown offices, and collected very little rent. (4) Most important, Ted had cosigned and guaranteed a loan of \$250,000 from the the Northland Bank to Microware. Thus, in the company's first two years, it existed not only on the fruits of its production, but on the fruits of Ted's confidence in Bill's vision.

What argument was so powerful that Ted would throw this much support behind a fledgling operation? First, Ted was impressed with many of the partially completed software products. He was especially impressed with MicroMed. But more significantly, Ted was persuaded by what I have labelled as the Institutional/Entrepreneurial Meld argument. This argument was built upon two visions: (1) university and city codevelopment, and (2) the entrepreneurial spirit of the Start-Up Project.

University/city codevelopment. As noted above, the purpose of the Start-Up Project was to help generate small, innovative companies that could develop commercial applications of the state-of-the-art technology being developed at the university. While the university offered office space, consulting advice, and technological resources, the Start-Up companies offered employment to university students and faculty as well as connections to the region's business community. This relationship was extolled by Michael Waller, one of the Start-Up Directors:

Individual academic departments at NSU, with which the new companies often interact, receive valuable input from new high technology developments in the business sector. The new businesses also offer research and employment opportunities for students who want to apply their engineering studies directly in a competitive environment. "What we have here," says Waller, "is a truly synergistic relationship between the educational and industrial communities." (NSU magazine)

It was hoped that this relationship could help the Metro region develop a stronger, more diverse economy similar to that of California's Silicon Valley, or Boston's Rte. 128, high-technology region. As Paulo Abruzzi stated in the NSU magazine:

The whole point of the program is to develop new markets and new businesses, to increase employment and to increase the wealth of this area.

Bill Alexander tapped this vision in his business plan and Ted Wilson was persuaded by it. Ted was also persuaded by entrepreneurial quality of these ventures.

The entrepreneurial spirit of the Start-Up Project. When the Start-Up Project began, it had fostered an unqualified success with its first entrepreneurial venture. In 1980, Macro Technologies was founded by two NSU graduates who had developed a potentially marketable computer graphics hardware project. Within a year, the company, through investments and sales, had raised enough money to move out of the Start-Up Project and go on its own. Shortly thereafter, to the disappointment of many in the region, Macro Technologies moved to new offices near Boston. Ted Wilson, whose law firm had worked for Macro, described his disappointment at the sudden loss:

Macro got themselves positioned . . . to get a million dollar commitment from VenCap, a New York City venture capital group. VenCap insisted on a consultant coming on board, a business advisor. He came from Boston. He was competent, and he served the company well. But he picked up the whole operation when it got going and brought it over to Rte. 128. Now that was a heartbreaker. A young man came in from Dale and Darwin, a Boston law firm, and picked up the file from us one day and the client was gone. (Interview, 31 August 1983)

Macro Technologies had given the Start-Up Project a taste of entrepreneurial success and then left.

Bill Alexander was another who had been excited by the entrepreneurial success of Macro Technologies. A year before he founded Microware, Bill offered his services to the company by proposing to analyze the computer graphics market, and the current and future position of Macro Technologies in that market. The proposal was signed, "Bill Alexander, President, Compu Advisors, Inc." Although nothing came of this proposal, Bill had clearly been interested in creating a vehicle for entering the microcomputer market in one way or another. When Microware was founded, Bill was twenty-one and possessed a strong entrepreneurial drive. From the beginning, he saw himself not as someone who had the technical expertise to produce innovative and profitable products, but as someone who could lead others who had the technical skills to build such products. This was one of the elements that the Start-Up committee was

looking for in a company's leader. Abruzzi painted a picture of the kind of person he thought should head a Start-Up company:

Someone who is motivated, independent, who has the entrepreneurial spirit: they want to get somewhere, do something special. Self-reliant people who would rather be their own boss than rely on the company. This someone would show the profile of high-technology: the entrepreneur. (NSU magazine)

Bill's entrepreneurial ambition was clearly evident to Ted Wilson:

Did he sell me? He certainly did. He is a consummate entrepreneur. . . . He is entrepreneur from head to toe, and as I told him early on. . . . I bet on people. He impressed me. I knew he'd provide the entrepreneurial spirit, the driving force to get things done. (Interview, 31 August 1983)

As an entrepreneur, Bill expressed his vision in his business plan and much of this vision was based on three interrelated enthymemes: (1) the Silicon Valley enthymeme, (2) the NSU enthymeme, and (3) the Macro Technologies enthymeme. Although these arguments proved to be appealing, they masked a serious deficiency in the company's ability to produce software. That is, the structures of these arguments are based upon an unstated premise that I will later show to be invalid.

The Silicon Valley enthymeme equated the goals of the Start-Up project with the successes of other university/city alliances:

MAJOR PREMISE: Silicon Valley and Boston's Rte. 128 region developed an extensions of major technological universities;

MINOR PREMISE: the Start-Up project has developed as an extension of NSU;

CONCLUSION: the Metro region can develop like Silicon Valley and Rte. 128.

The NSU enthymeme equated the level of innovative technology which was being developed at NSU to the level of technology that Microware would develop:

MAJOR PREMISE: NSU represents state-of-the-art technology;

MINOR PREMISE: as a Start-Up company Microware is an extension of NSU;

Stephen Doheny-Farina

CONCLUSION: Microware will create state-of-the-art applications of that technology.

The Macro Technologies enthymeme equated the origins and successes of Macro Technologies to the origins and potential successes of Microware:

MAJOR PREMISE: Macro Technologies, a successful company, was begun by NSU graduates as the first Start-Up Project company;

MINOR PREMISE: Microware was started by NSU graduates and undergraduates;

CONCLUSION: Microware will succeed as did Macro Technologies.

Even though these three arguments masked an invalid unstated premise, they enabled Bill to argue that Microware represented a new kind of venture: a company driven by the young technological entrepreneurs arising out of prestigious technological institutions and reviving the local economy. In making these arguments Bill could show that the relative youth of most of the key employees was not a liability but a boon – as long as he made NSU prominent in his argument. Below are excerpts from the 1982 Business Plan that illustrate the enthymemes:

Northland State University President Lawrence M. Highland had developed a plan called *Northland 21st Century*, where "NSU is with bold, calculated strokes, being transformed into one of a small number of first-rank, internationally renowned technological universities." . . . The Metro Region, its steel and textile mills long empty, will rival the Silicon Valley as a boom town. Our Governor also envisions the Metro Region becoming the hub of a high technology belt similar to California's Silicon Valley or Boston's Rte. 128. . . . The final element for the Northland 21st Century plan is the development of the NSU Start-Up Project, of which Microware is a member. The companies involved have complete access to faculty, students, and NSU facilities and equipment. One of the most recent Start-Up companies was Macro Technologies, founded in March 1981 by . . . two 1979 NSU graduates. (8-9, sec. 1.5)

We offer the "cutting edge of technology" in the information revolution through our existing management team and employees. The Company, through its affiliation with the Start-Up Project at

Northland State University, will continue to offer state-of-the-art technology well into the future. (11, sec. 1.5)

Microware IS PEOPLE. In its people, Microware possesses youth, intelligence, creativity and, most importantly, the maturity to seek out professional advice and direction in choosing its partners for the future. Through its association with Northland State University, Microware will have continuing access to the research and development resources of an institution which is at the forefront of high technology. (11, sec. 1.5)

Microware is strategically positioned to enter the educational games market with its association with Northland State University. The Company's objectives are to design games that have an element of fun for the child or young adult as well as being highly educational. (17, sec. 2.1)

By having *highly talented students* working on projects, and by using NSU facilities for certain functions, Microware has been able to achieve drastic cost savings. (37, sec. 4.1)

Without completed products, Bill constructed an intoxicating, double-edged image of Microware. On the one hand he portrayed a company that was the youthful, innovative, fast-growing, entrepreneurial venture characteristic of other high-tech success stories made popular in the national media (e.g., Apple, Microsoft, Atari). On the other hand, he balanced this against the stable, rigorous, and eminently successful institution that could give birth and guidance to such ventures (NSU).

In 1982, with the country in the midst of a severe economic recession, this dual image offered new hope to a region debilitated by the decline of heavy industry. Ted Wilson was persuaded by this hope. Even during Microware's first major financial crisis in August 1983, Ted was still persuaded by Bill's vision. At that time he explained in an interview why he supported Microware:

I'm a third generation resident [of the Microware's city] on my father's side. And my progenitors lived to ripe old ages, so I'm going back to the middle of the last century. And I am very concerned about this city. It was the heart and soul of the industrial revolution. And during my lifetime, I'm now seventy years of

age, I've seen it go downhill. . . . It's not the vibrant and creative driving force that it once was in our national economy. It's been in the backwater.

I had seen the possibility of its reemergence as a driving economic force in the American economy in the new high technology communications revolution with an unending stream of talent coming out of NSU, particularly in the computer science field. . . . I know of the university's efforts to develop that synergism between industry and university that has been spawned around Boston and out in Silicon Valley, and I want very much to play a role in developing that industrial complex for the new age.

It seems to me that we [the city] can again rise to a position of preeminence. It requires, however, more than just an intellectual resource. . . . If we're going to develop the way Silicon Valley has, and the way Rte. 128 has, we must have venture capital. We must have entrepreneurs. (Interview, 31 August 1983)

Accordingly, the 1982 Business Plan was written by Microware's entrepreneur to attract venture capital. Thus, the plan had a powerful impact on Ted Wilson.

The parts of the plan that persuaded Abruzzi, Murphy, and Wilson described a company that would be run by a young and ambitious staff and supported by a major technological institution, in order to produce a range of software products for wide-open markets that were projected to grow at very fast rates over the next five years. This image was Microware. This image enabled the company to join the Start-Up Project and attract initial investments. The investments then enabled the company to move into two fully equipped offices, hire more staff, and begin producing software. Unfortunately, this image was not enough to sustain the company in the long run.

The most significant unstated premise for all of the arguments described above was that Microware could design, build, and sell products. This unstated premise was the production strategy that the company would need to follow to capture that large market. Such a strategy was a key aspect of the "road-map" quality of a business plan that Abruzzi described. Therefore, while the plan created a company by attracting powerful supporters, the plan also created a company by setting goals and the strategies to meet those goals. However, because such strategies were not well-developed, the 1982 Business Plan proved to be a deficient road map and the company suffered because of it.

The Destructive Power of the 1982 Business Plan

By July 1983, more than a year after the independent study group incorporated, Microware was on the verge of bankruptcy even though the company was well-equipped with the resources it needed to produce marketable software. At that time Dr. Murphy observed, "Although there seem to be talented programmers working for the company, they have not produced marketable software." They had been able to generate outside support from investors, employees, the university, and a board of directors. The promotion of the primary arguments of the business plan attracted this support. The primary deficiency in that plan, however, inhibited the production of software. As I stated in a related report on this research, "the company achieved a tenuous existence: It was able to survive on outside investments, but unable to produce profit generating products" (Doheny-Farina, 170). Three issues help identify why the plan was deficient.

WRITING A BUSINESS PLAN VS. BUILDING A PRODUCT

Professor Murphy thought that Bill put the writing of a business plan ahead of producing marketable software. Although he was favorably impressed by the marketing goals set out by the business plan, Murphy thought that the group had to first establish that it could create the products that would grab a share of those markets. Murphy recognized that by starting the company via a business plan alone, Bill produced an organization before that organization produced marketable software.

In addition, Murphy felt that from the beginning of the course through to the establishment of the company, Microware had scattered its effort by following the prescribed path of the business plan. He believed that the independent study group should have concentrated on the production of a few well-defined products first, then formed an organization around the products that they created. As Murphy stated,

During the school year they were focusing on the business plan. I urged them instead to get some programs written. My feeling was that if they had programs I could very quickly show them how to write a business plan and get investors on board. (Interview, 15 July 1983)

What Murphy thought they should have done was to follow the model of Macro Technologies. As he recounted, the Macro people actually built products, showed them at trade shows and then went on to form a company. Murphy believed that Macro answered the two big questions before they became a company: Can we produce a product? And will the market accept it? In contrast, Bill and his fellow founders put together, not products, but an image of an organization and eventually sold the promise of that image in a business plan to investors. Although the image was attractive, the plans behind the image were deficient.

THE PLAN'S LACK OF SYNERGY

Microware, as described in the business plan, was a unique entry into the largely undetermined personal computer software industry. At one point in the business plan – to highlight the newness of the industry – Bill quoted Jim Levy, the president of Activision, then one of the nation's largest personal computer software companies.

"I feel that the personal computer is as fundamental a revolution in the way we entertain ourselves, live our lives, and educate ourselves, as television or any other development we have witnessed in this century, and therefore in all of history. We're in an industry that's only four or five years old. Many years of growth and change in the technology and the creative uses of it lie ahead." (15, sec. 2.1)

Microware was unique because it would go after three largely untapped markets: games, graphics, and business systems. No companies cited in the business plan had attempted to do that. If Microware gained shares of all three markets, the company would become a formidable presence in the software industry and would, in effect, redefine what a software company could be. This was an ambitious redefinition, but it belied a shaky foundation.

The heart of this deficiency was that the business plan did not explain how the three-way production goals related to each other. As Bill later recognized, he did not unify these three different directions with a common purpose. Instead, in the plan he created a company whose direction was diffused by too many unconnected goals. During an interview (5 October 1983) while he was writing the subsequent 1983 Business Plan, Bill admitted, "I didn't build a synergy in. So when a reader reads it he is confused as to what our direction is."

Bill's plan did not account for the relationship between product types.

That is, the plan did not state that the company develop products that were inherently integrated. Such products could proceed from an integrated production system out of which the fundamental elements of all the company's products could be produced. In the latter half of 1983 such a system was proposed. It would have at its center a group that produced "core" programs. These would then be used by an "applications" group — a group that would apply the core development in the company's products. Such a system was the "synergy" that Bill came to realize was missing from his plan and from the company's production system. This new integrated system, however, was not implemented in time to keep the company from squandering much of its resources through the inadequate production system fostered by Bill's original plan.

In addition to establishing three unconnected goals, the business plan stipulated as its primary goal the creation of games and graphics, and deemphasized the creation of business application software. When the company's lack of production threatened its existence, Bill recognized this problem:

In some cases I set my priorities wrong. In some cases I gave too much information on Graphics and not enough on the Business Applications products. (Interview, 5 October 1983)

This lack of focus came to a head in July 1983. Bill and the Microware's managers agreed that the company was trying to produce too many different kinds of software at the same time. They agreed that all of the company's production deadlines were continually being missed because the production effort for each type of software disrupted the production effort of the rest of the software. Bill was afraid that games in particular would "go down the tubes and pull the rest down." Overall, it had been very expensive for them to pursue three different types of software production. To do so, they had hired more and more employees during the company's first year and a half. When Microware had incorporated in the spring of 1982 it comprised approximately eleven employees. By July 1983, this number had risen to approximately thirty employees, who cost the company \$50,000 a month on payroll alone. Also, in order for these employees to do their work, the company had purchased or rented thousands of dollars in computer equipment, office space, furniture, and supplies. The company was in debt to financiers, banks, and other companies.

THE PLAN'S UNDERDEVELOPED PRODUCTION STRATEGY

In addition to not creating a synergistic production process, the plan did

not articulate a well-developed sequence of events that would lead the company to meet those goals. For example, the only page in the business plan that described the company's production process offered only a skeletal description of a linear production process:

Microware defines a two phase process in the development of all software.

Alpha phase—This includes the development of initial product concepts. Preliminary design and development is completed at this stage, with the full involvement of the Engineering Group and the Software Development Group.

At the end of alpha phase, the Technical Services Group evaluates the potential product according to product specifications. These specifications indicate product function, components, quality standards, and other vital information. Once approved by the Technical Services Group, the potential product begins *Beta phase*.

Beta phase—In the beta phase, products are completed to meet marketing requirements, including packaging and promotion. Products are then run through a series of tests by the Engineering, Software Development, Marketing, and Technical Services Groups to determine true marketability.

Upon approval by the Vice Presidents of Engineering, Software Development, and Marketing, the new product is released for initial test marketing. Final approval for regional or national distribution will be given after successful test marketing. (38, sec. 4.2)

These five paragraphs represent the flimsy foundation upon which Bill's most powerful arguments were based. This passage reveals that the goals of those arguments were not supported by specific strategies that could be actually carried out by Microware employees. The description of the "alpha phase" of production offers a few broad generalizations (e.g., "preliminary design and development is completed at this stage . . .") that do not specify any particular actions. Likewise, the "beta phase" describes a production process in the most rudimentary terms: products will be completed and tested. With an underspecified system, Microware was beset by production problems for well over a year after the independent study was over and the company had incorporated. Managers had difficulty in articulating design goals and schedules as well as getting their programmers to finish the programs on time; programmers had trouble writing programs that worked as they were supposed to work; and once products were complete they were found to be unacceptable for sale.

Overall, Greg Jerling noted that most of these setbacks were the result of short-sightedness and poor planning. The need for crucial design changes in a product were sometimes discovered long after the product was conceived, designed, and, in some cases, manufactured in large numbers. Often programmers who had been writing a program so that it would perform certain tasks were told in midstream to stop doing that and write programs that did something different. There seemed to be little consistent production direction.

For quite a while there was very little direction given programmers from the management because the production system was not structured for this to happen. Greg Jerling characterized the company's production system as "one fluid mass." For example, in April 1983, nearly a year after the company incorporated, one of its programmers, Larry Williams, was asked if there was a system for deciding upon production project. "No, everyone just does what they want, what they have ideas on," he said. "Some games are developed totally by one person. It depends. Some people are very organization-minded. Others are not." The freedom for product developers to do "what they want" resulted in chaotic production.

After more than a year of work, Microware did not have one finished product to be sold. By August 1983 the company was beginning to sell an unfinished product: their business applications system, MicroMed. These sales, however, were not yet covering the costs of producing the system. By the end of August a loan of \$110,000 from a major bank's venture capital arm was virtually all gone.

The company's executives needed to find a way out of this predicament. The only way out, they decided, was to completely revamp the company—the way it was run and what it produced. The first step in this process was to write a new business plan. The process of writing the new plan included the creation of an integrated production strategy. As a result, the new business plan outlined a more complex production system than that which was outlined in the original plan. The Appendix to this chapter contains this revised version.

Whereas the original version offered only a linear, two-stage production plan, the revised version describes a multilevel, multistage plan. In fact, the latter version incorporates the 1982 two-stage process as one part of the new process (under the heading "Quality Control").

Clearly, this overview of the improved production system (Appendix) was primarily directed toward potential investors and not the Microware production personnel. That is, this version merely describes the new system; if it had been directed toward production personnel, it would most likely be in the form of instructions on how to go about implementing

the system. Even so, the new version attempts to delineate some actions that can be carried out. For example, the scheduling of the production of a new product is explained as a series of steps that "works its way backwards" from a conception of the product sitting on the shelf in a store to the beginning of the production process (see the Appendix, under the heading "Product Engineering").

Conclusion

The 1982 Business Plan had conflicting influences. On one hand, the writing of the plan played a major role in designing an organization and attracting supporters to make that organization a viable commercial entity. On the other hand, the deficiencies in the plan led to deficiencies in the company. Microware was never able to extricate itself from its debts—debts that the 1982 Business Plan enabled it to incur.

This case study thus illustrates an instance of the relationship of a text to action. Bill's promotional language was effective in that it motivated others to act; his production language was unable to effectively guide production. The 1982 Business Plan succeeded as a proposal but failed in what Abruzzi labeled as the "road-map" function. Thus, the instance of the genre failed to live up to the ideal of that genre. The burden that the generic business plan would carry was too weighty for an actual document.

To better understand this striving toward the ideal, it is useful to place in a larger context my analyses of the writing of both of Microware's business plans (1982 and 1983). If we look at the rise of Microware, the writing of the 1982 Business Plan, and the subsequent writing of the 1983 Business Plan (see Doheny-Farina), we get a glimpse of the creation of a community. We see the social conversation (Bruffee, "Collaborative Working") that sustained and altered (and ultimately destroyed) that community. That is, we see how the actions of individuals were influenced by the community. And, most important, we learn that striving to write the ideal business plan was at the center of these processes.

*An alternate view.*⁴ Although it is tempting to paint the 1982 Business Plan as an extremely powerful document, it may seem quite implausible to place the company's failure squarely on the deficiencies of that plan. I have done this largely by presenting an uncritical depiction of Bill's and Abruzzi's claims that a business plan must serve as the complete "road map" for a company's operation and development. An alternate view

indicates that the failure of Microware demonstrates not just the deficiencies of Bill's plan, but the failure of Bill and Abruzzi (and others) to understand the limitations of business plans. This interpretation suggests that the business plan *as a genre* is insufficient to serve the function that Bill and Abruzzi claimed it could serve.

Supporting this view is the seemingly obvious assumption that even a "start-up" company cannot be solely constituted by discourse but must be composed of significant nondiscursive reality as well. Clearly, in this case, those nondiscursive elements – the technical means to produce software – were deficient and *no matter how exacting* the business plan, those deficiencies could not be overcome. This view, while suggesting a generic limitation of business plans, does not undercut their potentially constructive power. Indeed, this case shows how an entrepreneurial vision expressed in a business plan drew the attention of, ironically, experts in the assessment of technology *away from* the problematic technology of the company. Thus, while it may have been a mistake to assume that such a document could give direction to an entire organization, in this case the organization was left with little else to give it that direction. Therefore, we are left with a picture of a text that played a very important but not exclusive role in the rise and decline of a new organization.

APPENDIX

The Engineering Group

The function of the Engineering Group of Microware can clearly be broken down into two distinct areas:

- 1) Product Engineering
- 2) Product Production

PRODUCT ENGINEERING

The function of the Engineering Group in the product engineering area is to coordinate the activities of both the Marketing and Software Development Groups in order to produce a finished product which can be taken to market. This job consists of many different elements which must be effectively coordinated to meet a product deadline.

This process begins when a new product concept is conceived by either the Marketing or Software Development Group. After conception, the first function performed by the Engineering Group is a feasibility study. This study consists of

reviewing the product concept with both the Marketing and Development Group department heads to make sure it is consistent with the company's marketing and development strategies. Also, at this time it must be determined if the necessary resources (personnel, machine time, and financing) are available, or can be made available, to complete the project by a mutually determined product completion date.

If the new product concept fits in with these strategies and requirements, the Engineering Group then must begin working with the Software Development Group in the scheduling of the project.

In order to properly schedule a new product, the Engineering Group must, with the help of the Marketing Group, decide on what the product will look like when placed on the shelf. Once this is determined, the Engineering Group works its way backwards from a product completion date (determined by Engineering, Marketing, and Software Development Group department heads) and begins scheduling each individual task which will eventually form the finished product.

In general terms, this consists of working with technical writers to write documentation, artists to design the packaging, printers to do any necessary printing, software reproduction houses to schedule production runs and the Marketing and Software Development Groups in order to schedule all activities so they will culminate in a finished marketable product on a specific date.

PRODUCT PRODUCTION

There are five distinct task areas that the Engineering Group is responsible for within the overall area called Product Production. These are:

- 1) Production of Product,
- 2) Quality Control,
- 3) Inventory Control,
- 4) Purchasing, and
- 5) Shipping/Receiving.

Production of Product. Microware will use the services of outside firms which specialize in the manufacturing of the various components that will comprise the overall product. By using these speciality firms (professional printers, software duplication houses, etc.), the Company is able to produce a quality product with the economies of scale of a much larger firm, allowing for a greater profit margin for the firm.

Quality Control. Microware will continue in the future, as it has in the past, to do all final assembly work of their products. Doing this step in-house enables the Company to inspect all the components of the finished product before it is assembled, therefore guaranteeing a very high quality finished product.

Quality control is a very important consideration within our firm and for this reason we have developed a two-phase quality control process which is used during the development stage of our software products. These two phases are:

- 1) Alpha Phase, and
- 2) Beta Phase.

The Alpha Phase consists of the development of the initial product concepts into detailed design specifications, which then lead into the development of a prototype. During this stage, the Engineering Group coordinates the activities of both the Software Development and Marketing Groups to ensure that each is getting what resources it needs from the other group to efficiently develop a marketable product.

As the prototype is being developed, Engineering, Software Development and Marketing compare the prototype against the original product specification. This specification indicates product function, components, product attributes and other vital information. Once approved by the department heads of each of the three groups, the potential product begins the Beta Phase.

In the Beta Phase, the prototype product is completed to meet all marketing requirements, including all documentation and product packaging. The prototype product is then run through a series of tests by each of the three departments involved in its creation before it is released for test marketing.

By using this two-phase quality control process, the Company is able to make any needed product revisions at an early stage of the product's development, as well as guaranteeing that the Company will produce a high quality product.

Inventory Control. With the high cost of capital and the short shelf-life of some of the product components, inventory control is a very important issue for Microware. The Engineering Group is responsible for maintaining proper inventory levels on all product components, as well as for finished goods.

Since there are relatively few components that comprise the finished product, this task is not as difficult as it may appear. Also, by using speciality firms that have short lead times, the Company is able to keep its inventory and buffer stocks at a relatively low level, and therefore able to avoid having large amounts of money invested in inventory.

Purchasing. The Engineering Group also acts as the purchasing agent for the Company. This simplifies the purchasing process and allows the Engineering Group to build a good working relationship with its various vendors. This also helps maintain a high quality level.

Shipping/Receiving. The Engineering Group is also responsible for shipping and receiving of finished goods to dealers and distributors. As the volume and complexity of products shipped increases, this function will become a separate department.

NOTES

1. Pseudonyms are used for all individuals, organizations, programs, and products directly involved in this research.
2. Although my process of data analysis was somewhat intuitive and idiosyncratic, I generally followed the "Constant Comparison" method of data

analysis (Glaser and Strauss). For a discussion of the intuitive nature of data analysis in ethnography, see Doheny-Farina and Odell, 525-30. In addition to these research methods, I employed variations on the Discourse-Based Interview methodology (Odell, Goswami, and Herrington). Those interviews provided data that I used in my previous report on writing at Microware (Doheny-Farina). Although those interviews do not play a direct role in the analysis in this chapter, they do play an indirect role in that the interviews increased my overall understanding of the participants and their writing.

3. To insure complete confidentiality, I have not identified the university magazine that I quote from a number of times in this chapter. The magazine issue that I used as a source contained three major articles about the Start-Up Project: an interview with Paulo Abruzzi, an article about Microware, and an article about all of the companies in the Start-Up Project. All of Abruzzi's quotes come from these articles.

4. I am indebted to the editors and the unnamed reviewers for suggesting the direction of this alternate view.

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