

Gerald L. Hawk

THE NEXT STEP IN LABORATORY AUTOMATION - ROBOTICS

1. INTRODUCTION

Analytical chemistry is a rapidly advancing field, not only due to a better understanding of chemistry, but also because of improvements in physics, electronics and many other fields. During the past ten years, analytical instrumentation has made tremendous advances by incorporating microprocessor technology. Today, powerful microprocessors are commonplace in the laboratory. Another new technology - robotics - is on the horizon and has made significant inroads, especially in industrial manufacturing environments. In the future, this technology will also be adapted and incorporated into modern laboratory instrumentation. This report describes the developments incorporating the technologies of computers, analytical instrumentation, chemistry and robotics in a new field of analytical chemistry - automated sample preparation.

2. IN THE BEGINNING....

Entrepreneurship is often associated with great risk, and any career alternative involves risk. Even the largest, most traditional businesses are vulnerable to economic cycles, competition and changing customer demands. Starting a new business clearly involves risk but also offers large potential rewards - economic, career development and motivation.

Zymark Corporation of Hopkinton, Massachusetts was founded in March of 1981. We began with a dream and a customer definition but not a product strategy. Our approach to market research and strategy development was intuitive and, we believe, creative, compared to the analytical approach typically used in mature industries.

We hope our experience will be useful to others in planning to start new, high-technology companies.

Early during the formative process, entrepreneurs should examine their personal goals and develop a dream for the new enterprise consistent with these goals. Our dream is built on four elements:

- a) To create the most significant new laboratory instrument company of the 1980's.
- b) To build a unique corporate culture based on shared values towards our customers and fellow employees.
- c) To stimulate continuing innovation so that our products and services bring significant value to our customers.
- d) To generate sufficient profits to invest in our future growth and to reward our employees and stockholders.

3. STRATEGIC FRAMEWORK

There are many OK strategies available to new businesses and the potential choices must be narrowed quickly. A simple model (Table I), based on the following questions, led us to important insights:

- a) Do you want to build a large or small company?
- b) Do you want to create a new market or enter an existing market?

Although these questions appear simple, they have profound strategic implications. There are no right or wrong answers, but the thought process itself will help to define a strategic framework consistent with the strengths, experience and values of a new organization and its founders.

The matrix in Table I illustrates four possible answers to these questions. Some of the implications of each alternative are illustrated in Table II, Market Factors, and Table III, Company Size Goal.