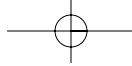


## Chapter One

# What Drives New Product Development

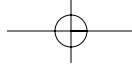
Breakthrough products result from the appropriate combination of style and technology and help to create experiences that people find both rewarding and valuable. In this chapter, we focus on the first step in developing a breakthrough product: learning to interpret the interconnected factors of Social change, Economic trends, and Technological innovation. Interpreting these SET Factors leads to the identification of Product Opportunity Gaps in the marketplace. Converting product opportunities into breakthrough products requires a combination of vision and sound methodology. As highlighted in the case studies in this chapter, the comprehensive approach introduced in this book applies equally to the development of products and services.



## Redefining the Bottom Line

This book introduces ideas and methods for companies that want to be market leaders through the development of breakthrough products. Breakthrough products create new or redefine existing markets, support the customer's experience in using the product and create a lifestyle fantasy about who that customer is, and generate higher profit for the company that produces them.

We have found the process of product development to be analogous to rock climbing, a challenging, invigorating, and empowering experience. To succeed at rock climbing, you need to have a set of appropriate tools, a good plan for the climb, and an interdependent team that works together to use the tools when appropriate. The climb is constant and well thought out, but the team has the training to adapt to issues that emerge along the way. Successful product development also requires a well-planned process using tools to help you negotiate difficult terrain. Teams of engineers, designers, and market researchers must work in unison to recognize promising product directions and work through the Fuzzy Front End of the product development process to create a product that meets the needs, wants, and desires of the customer. Managing the Fuzzy Front End is an underlying theme that permeates this book. The Fuzzy Front End is the part of the product development process that starts with the general goals of the program and covers the early stages of new product development. Making the most of the Fuzzy Front End is essential in creating breakthrough products. Companies that see the



process as a climb see every part as essential and understand that the preparation and the climb have equal importance. The process requires the skill and patience necessary to use the tools successfully to develop products that you are confident will succeed in the marketplace.

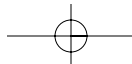
There are many companies that approach product development as if it were parachuting instead of rock climbing. They have a core technology (their plane) and capital (the parachute) and then they free fall through the Fuzzy Front End to quality programs for manufacturing, expecting a smooth landing. These companies think the free fall will take care of itself, or in product terms they quickly jump to a focus on one product concept that they think will become a marketable product if it meets manufacturing quality standards. Product development in this way succeeds only by chance. By failing to maximize the Fuzzy Front End, these well-manufactured products fail in the market because they do not respond to customer's needs, wants, and desires. The result is a loss of brand equity, profit, time, and investor confidence.

New product development is a climb, not a free fall. The more prepared you are for the challenges of the terrain, the better the climb will be. This book will help you climb through the Fuzzy Front End of the product development process and will give you the tools that make your product more likely to succeed in the marketplace.

■ The goal is to increase profits while simultaneously maintaining a healthy internal structure that balances innovation and continuity.

There are a number of challenges that make it difficult for companies to maintain a leading position in a particular product category. These challenges are forcing companies to redefine the bottom line and the path to get there. The goal is to increase profits while simultaneously maintaining a healthy internal structure that balances innovation and continuity. So, while companies are trying to realize their stated goals in sales and profit projections, they are also trying to resolve the following issues:

- Finding the right opportunities for new products and appropriate innovation to improve existing products;
- Designing products and services that customers perceive as truly valuable by appropriate integration of style and technology;
- Maximizing front-end decisions to minimize downstream corrections;
- Reducing cycle times without reducing innovation and quality;
- Building and maintaining brand equity through a strong product;
- Integrating design, marketing, and engineering by reducing “perceptual gaps” and producing products that are considered useful, usable, and desirable by the customer;
- Appropriately positioning the role of technology in product development;



- Recognizing the significance of industrial and interaction design in the product development process;
- Attracting, preparing, and retaining the best people.

To be successful in meeting these challenges, a shared vision must flow from top management through middle and lower management down to individual members of product development teams. While an opportunity for new products can be identified at any level, the vision of the product potential must be shared and championed at all levels. Not only do successful products help customers create maximum experiences in their everyday lives, but the process of developing the products themselves must be an equally powerful and rewarding experience for the product team. Developing products should be a form of serious fun. If everyone on the team is enjoying the process, it usually means that everyone in the company profits from the experience.

### Positioning Breakthrough Products

Consumer demand for better products has been continually increasing during the last three decades. During the 1980s and early '90s, quality development programs, reengineering, and concurrent design were the initiatives that drove companies worldwide to constantly improve their products. At the beginning of a new century, the emphasis has shifted from the back end to the front of the product development process. It is increasingly harder to find the right product concept and the time and processes needed to bring that concept to market. Technological innovation and maintenance of manufacturing standards are still intrinsic parts of developing successful products. But if, however, a product does not connect with the values of consumers, it will fail.

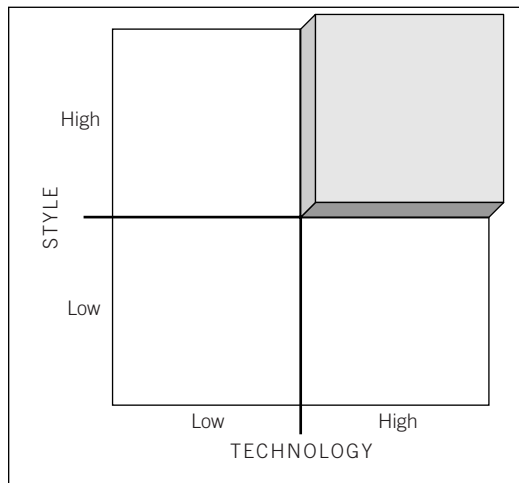
■ Form and function must fulfill fantasy.

People use products to improve their experience while doing tasks. They relate these experiences to their fantasies and dreams. Successful products fulfill a higher emotional value state, whether it is the excitement and security of driving in an SUV, the comfort and effectiveness of cooking in the kitchen, the relaxation and escapism of sipping coffee in a coffeehouse, or the independence and adventure of using a two-way communication device. The mantra that form follows function is no longer relevant; we are now in a period where *form and function must fulfill fantasy*.

What is it that makes some product programs fail and others succeed? How did Black & Decker corner the flashlight market from 1994 to 1997 with a product called the SnakeLight? How could OXO evolve from a single product, GoodGrips, to a full line of products, a significant market penetration, the most prominently displayed product line in stores that carry the OXO line, and reinvent the profit margins in the industry?

How could Motorola develop a major presence in the consumer product category with the hit of one new product, the Talkabout? How could Starbucks, initially a small coffee house in Seattle, reinvent how Americans drink coffee and turn a 50 cent cup o' Joe into a \$3.00 Café Latte Grande (make that skim milk)? How could car companies look to the past for ideas that would sell so effectively in the present, as they did starting with the Mazda Miata, following with the Volkswagen Beetle, and continuing with the Chrysler PT Cruiser?

In evaluating the value impact of all these products, we found that they were all highly successful in communicating value in the key categories that connected them to their customers and moved them ahead of their competition. If you look at most positioning maps, the optimum quadrant is usually the upper right, where each positioning attribute is maximized. In this book we introduce a Positioning Map (Figure 1.1) that charts style against technology through added value. The Upper Right, with integrated style and technology and the only place with *significant* value, is the place to which a company must move and be positioned in order to best differentiate itself from the competition and to succeed. All of the breakthrough products mentioned above are positioned in that quadrant. Getting there is not easy because of the third dimension, which acts as a cliff that needs to be climbed. As mentioned previously, product development is akin to rock climbing. This “Sheer Cliff of Value” is the rock that the product development team must climb to succeed. Every progressive company sets its strategy to move there, but it often fails to find the methods to achieve the goal. This book will help you get there. We call this approach *Moving to the Upper Right*.



**Figure 1.1** Positioning Map of style versus technology; great products are value-driven and found in the Upper Right.

## Products and Services

This book primarily focuses on physical products. Products succeed when they play a major role in creating optimal experiences for customers. Service companies need to provide support that optimizes experiences as well. We recognize that the development and realization of products and services require similar approaches. In order to be successful, it is necessary that both approaches utilize the integration of a number of areas of expertise, and a solid understanding of the customer and their desired experience.

A *product* is a device that provides a service that enhances human experience. It is always part of a company that provides a service to its customers. That is why Xerox became “the document company” (now “the digital document company”). The service they provide is the production of documents, which they do by producing printing and copying equipment. A *service* is an activity that enhances experience; it requires an array of products to deliver its core activity. If your company is a web service provider, you use and produce products to provide that service. If your company produces automobiles, the service you provide is transporting people and things. The auto industry produces automobiles; one of the highest profit areas for GM is, however, financing automobile purchases, which is a service. Where would UPS, a delivery service, be without their brown trucks, jets, and information management products? We will discuss both products and services in this book, for the issues that make a product or service successful are the same. Both products and services are connected to understanding the experience that the end customer wants and then translating that understanding into a product or service that enhances a particular interaction with objects, environments, and/or other people.

It sounds simple but understanding customers and then translating customer understanding into products and services is extremely difficult. The number of people and resources that must be brought together to produce a successful product is enormous. The complexity of this task explains why so many product attempts fail. In larger companies, by the time a customer buys a product, hundreds or thousands of people and thousands of man-hours went into the identification, planning, development, production, distribution, and sales. Understanding of the customer can easily be lost in the product development programs in large companies as secondary factors come to dominate decisions about cost, features, and form. While small companies have a better chance of keeping the customer in the loop throughout the process, they often lack the balance of disciplines necessary to generate the research and development of product characteristics for the market. No matter what the size of the company, all of the people involved are *stakeholders* in the product process, and the success of the product depends on the coordinated involvement of all of them.

We also see products and services as the core element of a company's brand (discussed in detail in Chapter 4). If all elements of a brand are effective, they all play a roughly equal role. The interaction of a customer with the product or service is the heart of the brand delivery. While corporate mission, strategic planning, advertising, and identity programs are all essential, they cannot offset weak, non-competitive products or services.

We have found that there are three key factors that must be present to guarantee the highest potential of success.

■ In order for products to be successful, they must have features and forms that consumers quickly recognize as useful, usable, and desirable.

- First is the ability to identify product opportunities. As cultures continue to change, opportunities emerge for new products. These products do not just solve existing problems, they also create possibilities for new experiences.
- The second is a heightened understanding of customer needs translated into actionable insights that define attributes. These attributes serve as a guide in developing the product's form and features. In order for products to be successful, they must have features and forms that consumers quickly recognize as *useful, usable, and desirable*.
- Third is a true integration of engineering, industrial design, and marketing. Merely putting teams together in a multidisciplinary context is not sufficient. They must be supported and managed effectively in an atmosphere where each discipline respects and appreciates the perspective of the others.

Failure to achieve success in any one of these areas can significantly jeopardize the success of a product, yet most companies are fortunate to be good in even one area. The successful companies have found ways to incorporate the product development trends of the '80s and early '90s into new ways of developing products by including deeper consumer insight and better integration of teams. These companies have strategically "Moved to the Upper Right."

While a number of companies claim they use a customer-centered interdisciplinary approach, they have failed to make a total company commitment to this approach. Their management structure encourages a turf mentality through a vertical, or "silo," reporting structure. Customer characteristics are often generated by mass-marketing methods that provide limited insight because they are based solely on highly quantitative surveys. These companies are often hammers looking for nails as they seek new ways to package or repackage impressive but inaccessible technologies. For companies to succeed, they can no longer afford to be either marketing, technology, *or* design driven. In order to stay competitive, they must integrate the way designers, engineers, market

researchers, and market strategists work. Corporations can no longer just rely on large statistical surveys or just search for applications for promising technologies. Instead, qualitative research tools have proven to be an excellent source for deep understanding of the potential customer and product opportunities. This new trend means that companies should plan technological innovation around an insightful understanding of consumer trends and the constant changes in the needs, wants, and desires of the customer. Companies must learn to *identify opportunities* for the potential of products before they think in terms of concrete product concepts.

## Identifying Product Opportunities: The SET Factors

The identification of product opportunities should be the core force that drives companies that manufacture products, supply services, and process information. A product opportunity exists when there is a gap between what is currently on the market and the possibility for new or significantly improved products that result from emerging trends. A product that successfully fills a Product Opportunity Gap (POG) does so when it meets the conscious and unconscious expectations of consumers and is perceived as useful, useable, and desirable. No one asked for a SnakeLight before it came out and no one in the auto industry expected the success of the Mazda Miata. Successfully identifying a POG is a combination of art and science. It requires a constant sweep of a number of factors in three major areas: Social trends (S), Economic forces (E), and Technological advances (T) (see Figure 1.2).

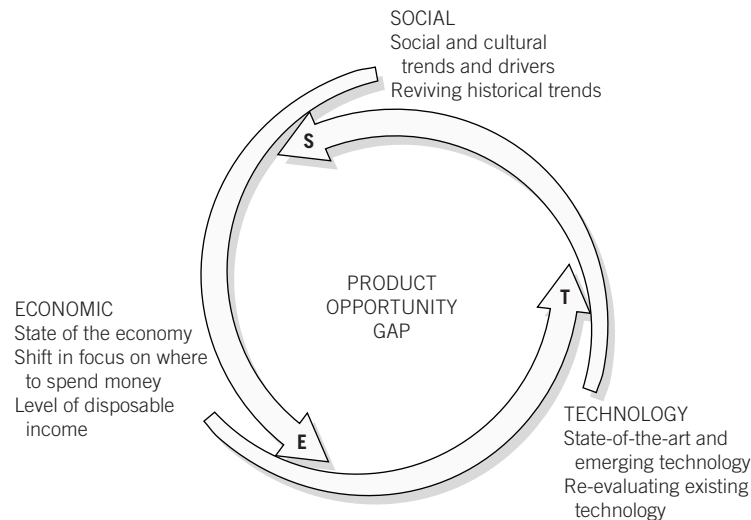


Figure 1.2 Scanning SET Factors leads to POGs.



The Social factors focus on culture and social interaction. The Social factors include

#### SOCIAL FACTOR: ENTERTAINMENT

Some of the most powerful trends in the country come from the entertainment fields. Entertainment is all about fantasy and desire. Movies can vary from pure diversion to infotainment or documentary; every film, however, must hold a person's attention to succeed. Entertainment has all of the factors needed to make it a trendsetter—rapid turnover of products, access to investment capital, and a constant need to find the next story or special effect. Movie producers require a global distribution to maximize profit. They use powerful marketing techniques to get consumers into theatres and rent videos for their homes. The actors, clothing, activities, sets, and special effects create trends that lead to a variety of new aesthetic influences. The technology used in films has as much trickle down or tech transfer as NASA and military research. The scenarios created through science fiction set expectations for new technologies and space exploration.

- family and work patterns (e.g., the number of single parents with two jobs or double income households with flexible hours),
- health issues (e.g., people living longer with more active lives),
- the use of computers and the Internet,
- political environments,
- successful products in other fields,
- sports and recreation (e.g., X-generation snow boarders creating a new “loose fitting grunge wear” fashion aesthetic and lifestyle),
- sporting events (e.g., the emergence of new, retro state-of-the-art facilities and the athletes who perform in them),
- the entertainment industries including film and television,
- vacation environments (e.g., the fantasy fulfillment provided by Disney World, Las Vegas, and Club Med),
- books (e.g., the Oprah Book Club),
- magazines, and
- music (e.g., from hip-hop to new classic-chic).

#### ECONOMIC FACTOR: THE '90s BOOM

The economic boom in the 1990s created multi-millionaires overnight through IPOs, stock options, and individual investment in the stock market. Excess disposable cash left a void in material goods meeting the expectations of this young, geeky, intelligent, socially responsible, technology-oriented—and rich—new group of consumers. Recreational SUVs, clothing, and products, PDAs that connect through the web for constant stock price monitoring, and the proliferation of coffee houses until there are half a dozen in one block are all outcrops of this excess and available, lifestyle-directed cash. As the economy goes through a downturn, people's attitudes about spending will shift.

The second major SET Factor is Economics. The economic factors focus on excess income that people perceive they have, or that they expect to have, to give them purchasing power. We call this *psychometrics*, namely the spending power people believe they have to buy the products and services they believe will enhance their lifestyle. These factors are influenced by the overall strength of and forecast for the economy, fuel costs, raw material costs, loan rates, availability of venture capital, the stock market and its forecasts, and real disposable income. Other economic issues that influence product development come from understanding who has the income, who is doing the purchasing, and for whom the purchasers are buying. As social factors change, where people spend their money changes.

**TECHNOLOGY FACTORS: COMPUTERS TO GENETICS**

Fifty years after the first computers cranked out calculations to help the U.S. win WWII, the always-increasing power and speed of each month's latest PC chip (at the time of this writing we're at 1.5 Gig) has brought computing into every part of modern life, from the home PC to the car transmission to the oven to the stereo. The latest technologies, from micro-electromechanical systems (MEMS) in automobile airbags to layered manufacturing technologies creating structures for tissue growth, will lead to the emergence of new industries and applications. The first genetic fingerprint of the human species in the year 2000 and the first cloning of Dolly the sheep in 1997 promise to open up a new century of technological advancement, new products, and new influences on and potential improvements in lifestyle.

The Technology factors focus on direct and imagined results from new scientific discoveries in corporate, military, and university research and the implied capabilities stemming from that research. These factors include the amazing growth in computing power predicted by Moore's Law (Intel co-founder Gordon Moore's prediction in 1965 that the number of transistors per square inch on integrated circuits would double every year) and the analogous reduction in physical size of peripherals and supporting functions, new material and manufacturing advances, electrical and mechanical innovations, aerospace and military technologies, film and sports entertainment technologies, and micro- and bio-technologies.

This SET of factors generates opportunities for producing new products that can have an effect on the way people live their lives at any given moment. The goal is to create products and services by identifying an emerging trend and to match that trend with the right technology and understanding of the purchasing dynamics.

■ The goal is to create products and services by identifying an emerging trend and to match that trend with the right technology and understanding of the purchasing dynamics.

The window of opportunity is often small and a product that comes out either too early or too late can fail even if the opportunity was there initially. For example, in the 1970s AMC introduced the Pacer, a shorter, wider car with a larger window area to maximize the internal sense of space. Many of the attributes the Pacer incorporated became the goal of all car manufacturers in the two decades that followed. The Apple Newton was an early PDA with many of the attributes of PDAs today, but cost and size compromised its appeal beyond the lead users and early adopters. Perhaps the most salient example of introducing products too late is the US automotive industry's failure to understand the potential growth in small, well-made, fuel-efficient cars, which allowed Japanese car manufacturers to dominate the 4- and 6-cylinder engine car market for decades. Even today, American car manufacturers generate their profits from small trucks and SUVs, rather than the smaller fuel-efficient vehicles.

Successful new products become necessary once they hit the market. Most consumers are not even aware they need the product because they are immersed in the trend. If the company hits the trend at the point it is just catching on, the product will become instantly desirable. The length of a trend combined with the attributes of use and usability will determine the lifetime of the product. Las Vegas has continued to be successful by complementing the fantasy and dreams of gambling with the quality of a family amusement park; Disney World extended its market by creating vacation programs and packages for adults as well as kids. Coca-Cola has been able to maintain its position as the leading soft drink for an entire century while Tang (the drink

of astronauts) was a hit when NASA was a major cultural influence and has now been replaced by Michael Jordan and Gatorade. Barbie has lasted decades; the Cabbage Patch Dolls frenzy lasted for only a few years.

#### SET FACTORS: GM IN THE '50s

The Post WWII economic boom, cheap gasoline, the creation of the suburban lifestyle, and the look of jets and rockets were the SET Factors that created the opportunity for large eight cylinder cars with large tail fins that dominated the auto industry during the 1950s. Harley Earl, head of styling and color for GM, saw the opportunity and introduced fins on the rear of cars starting with the low-end Chevy all the way up to Cadillac. The 1957 Chevy and the 1959 pink Cadillac are two cars that epitomize car design of that era (see Figure 1.3). By today's standards, those cars are viewed as totally impractical gas guzzling vehicles, and the look of fins no longer fits with the current trend for organic aerodynamic bodies with aluminum frames.

#### SET FACTORS: HEAD SHAVING

In the 1970s, the Beatles and other rock groups let their hair down and soon men everywhere were growing their hair down to their shoulders. This was part of a cultural revolution. But in the last three decades the situation has completely reversed. Why are more men suddenly shaving their heads? The trend started with Michael Jordan and other major athletes. This hairstyle was supported by an X-generation trend toward a more active lifestyle in which long hair became a nuisance. Now anyone can shave their head and "be like Mike" ... and Shaq and Agassi and Jessie Ventura and the list goes on. It should not be a surprise that this Product Opportunity Gap was filled recently by the HeadBlade, a razor designed specifically for shaving heads (see Figure 1.4).

Changes in the SET Factors produce Product Opportunity Gaps (POGs). Once a POG is identified, the challenge becomes translating the POG into the development of a new product or the significant modification of an existing product. In both cases, these products are a hybrid combination of a new aesthetic and a set of features stemming from the possibilities of new technology that match emerging shifts in consumer preference. An example of a product hybrid that successfully filled a gap is the Apple iMac. By integrating the monitor and CPU, and by using translucent plastic combined with a variety of bright candy colors, the iMac has become easier and more fun to use than other computer. Offices and homes look sharp with an iMac on the desk, setup is a breeze, and cable management issues have all but disappeared.

You may not find that all of the products and services included in this book are ones that you would buy. This is an important point to make. The products that we include are highly successful within their *intended* markets. Understanding how your views differ from the user's views is critical to the development of successful products. The SET Factors identify POGs for a targeted user group; that target may not be you.

## POG and SET Factor Case Studies

The remainder of this chapter examines four case studies that illustrate how the SET Factors and resulting POGs have led to successful products in the marketplace. The studies also give a brief introduction to the issues laid out in the rest of the book and we will refer to them often. These examples from the Upper Right represent simple and complex products and services. These four products join a comprehensive collection of case studies appearing throughout the book. While all products in this book are on the market at the time of this writing, some have recently been introduced while others have established an impressive run of market success.

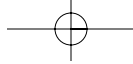
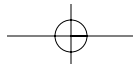


Figure 1.3 1957 Chevy and 1959 pink Cadillac. (Reprinted with permission of General Motors.)



Figure 1.4 The HeadBlade. (Reprinted with permission of The HeadBlade Company.)



## The OXO GoodGrips Peeler

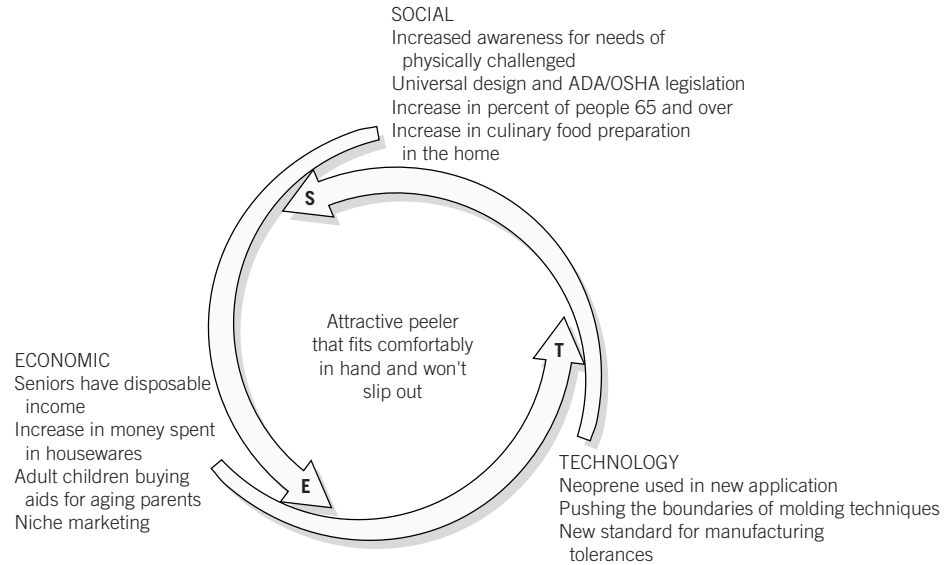
The kitchen tools designed by OXO GoodGrips were recently awarded a “Design of the Decade” Award by the Industrial Designers Society of America (IDSA) and *BusinessWeek* magazine. These products have won numerous awards in recognition of their usability, aesthetics, and innovative use of materials. Even after designing 350 products, the company continues to win new awards every year. It is important to revisit the basis of the initial success to understand how this company has continued to maintain its competitive edge in the marketplace.

Sam Farber is a successful entrepreneur who has owned several companies. He sensed there was a product opportunity in the housewares industry. The insight for this opportunity came from his wife, who had developed arthritis in her hands. She liked to cook but found that most cooking and food preparation utensils were painful to use. She also found that most of the solutions, because they were ugly, stigmatized the person with disabilities while using them. In addition, these solutions often supplied only minimal relief or support. The opportunity (POG) was not just to design cooking utensils that were comfortable to hold in your hand; the products also had to set a new aesthetic trend that would not stigmatize the user as “handicapped.” The product that had the most opportunity for improvement was the vegetable peeler. The generic peeler (Figure 1.5) was the technological evolutionary equivalent of the alligator; it had existed since the beginning of the industrial revolution without change. Comfort and dignity were two attributes (aspects of *Value Opportunities* which will be introduced in Chapter 3) that Sam Farber recognized were key to making a better cooking utensil.

In retrospect, the executives in the housewares industry have had to ask why no one else saw this opportunity earlier. It is surprising that it took so long to replace the original design. If, however, someone had observed the potential need twenty years ago, the public may not have been ready for the idea. There were several SET Factors at work here that made OXO the right product at the right time (Figure 1.6). The four primary ones were:



Figure 1.5 Generic potato peeler.



**Figure 1.6** SET Factors that led to the GoodGrips peeler.

- The American public became sensitive to the needs of people with physical challenges.
- Those with challenges demanded that products be made to accommodate their needs.
- Another factor was the change in the nature of business: mass marketing gave way to niche markets—the one-size-fits-all mentality that allowed the original potato peeler to last for over a century gave way to a new market segmentation approach.
- The fourth factor was an increase in interest in the best products for use in the home, particularly in food preparation. The economic boom of the '90s fueled this trend. Consequently, spending up to \$7 for a peeler was acceptable.

In essence, trends had changed and people were able to recognize and were willing to pay for the *value* embedded in this product.

The product opportunity was translated into several opportunities to add value. The product function was already established as useful: a peeler is a necessity for any kitchen. The two major areas for improvement were the limited usability and the ugly form-follows-function 19th-century aesthetic of the generic peeler. The product had to

be usable by a broad range of people. The handle had to be comfortable to grip for short and long periods of use and it had to be able to be held securely when wet. The latter feature, in particular, was responsible for the higher costs and so it needed to be perceived as being of much higher quality and innovative. The product had to be desirable. If the product ended up looking clumsy and awkward the core market would have rejected it. The optimum result would be a new aesthetic that would establish a new trend in products for the home and would be seen as usable and desirable by all potential customers.

The next move was equally insightful. Instead of paying design consultants a large upfront fee, Sam Farber offered to make them partners with a share of the profits. Smart Design, true to its name, jumped at the opportunity to create the GoodGrips peeler (Figure 1.7). After extensive human factors tests, an ideal overall shape was developed for the handle. The overall handle shape included fins carved perpendicular to the surface of the handle that allowed the index finger and thumb to fit comfortably around it and added greater control. A suitable material was sought for the handle that would make a comfortable interface between the hand and the peeler and would also provide sufficient friction that would prevent the handle from slipping in your hand when wet. The result was the use of Santoprene, a neoprene synthetic elastomer with a slight surface friction, soft enough to squeeze, firm enough to keep its overall shape, and capable of being cleaned in the dishwasher.

A number of manufacturers decided that molding the fins was not possible to do in Santoprene. The product development team found manufacturers in Japan who felt the product specs were achievable. Their willingness to work within the high standards that OXO was looking for helped to create the product quality that became such a successful attribute of the product. Subsequently, the standards developed by the Japanese manufacturers were successfully transferred to a less expensive manufacturing company in



Figure 1.7 OXO GoodGrips. (Reprinted with permission of Smart Design.)

Taiwan. This became necessary when the strength of the dollar against the Yen made it too costly to use the original manufacturer.

Figure 1.8 shows that the peeler has attributes that combine aesthetics, ergonomics, ease of manufacture, and optimum use of materials. Taking full advantage of the surface friction of Santoprene, the handle was press-fit around a plastic core. The core extended out of the handle to form a protective curve over the blade and ended in a sharp point that can be used to remove potato eyes. The plastic guard also serves as the holder for the metal blade (the only metal part left) and the blade is made out of high-grade metal that is sharper and lasts longer than the blade on the original all-metal version. A final detail was a large counter-sunk hole carved into the end of the handle to allow owners to hang the peeler on a hook if they preferred. This hole also added an aesthetic detail that offset the large mass of the handle and, along with the

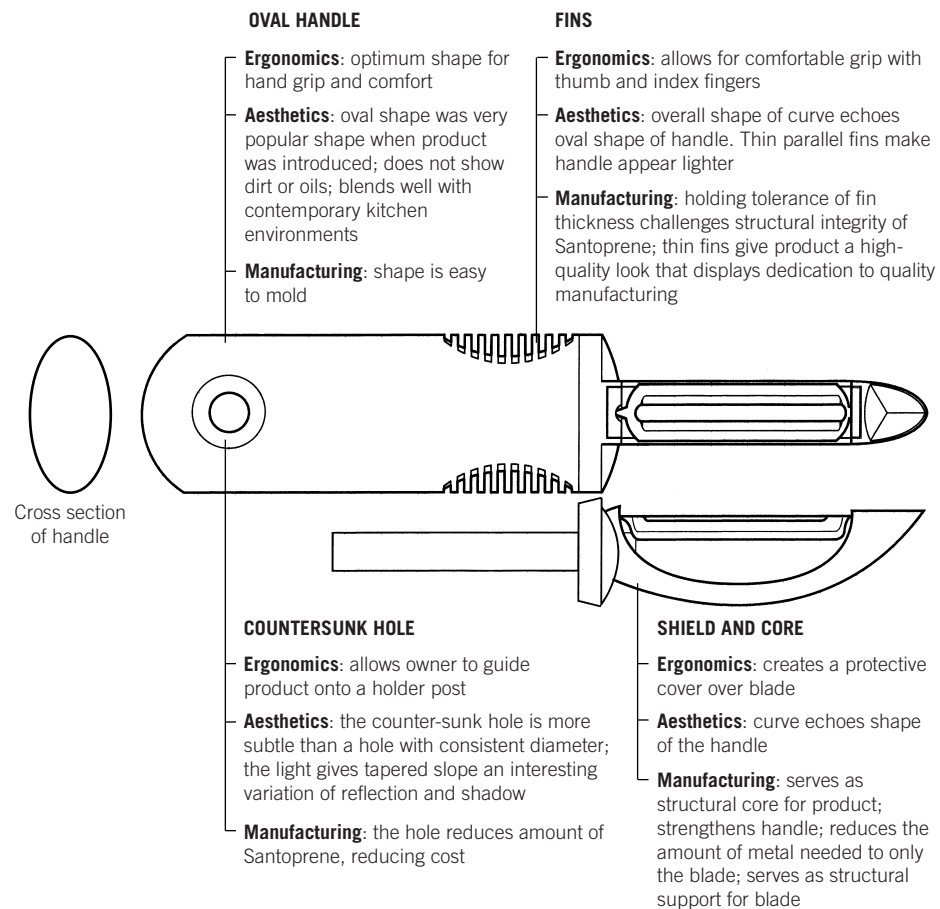


Figure 1.8 Product details of OXO peeler showing integration of style and technology.



fins, gave the product a contemporary look that made it appealing to a much broader audience than originally targeted.

The overall effect is that of a very sophisticated product with a contemporary look that is superior in every way to its predecessor except for one aspect, the cost. As will be shown in Chapters 2 and 3, a comparison of the original peeler with the OXO clearly represents where the opportunities for added value were met and exceeded by OXO. Sam Farber felt that the public would recognize the value designed into the product and would be willing to pay the difference. He had the insight to predict that the public would pay several times the price of the original peeler. He went against the advice of most of his peers. He was right. The SET Factors were in place and consumers were ready to show their appreciation for a useful, usable, and desirable product and were more than willing to pay the difference. This product won numerous awards and, as a result of the positive praise generated by word of mouth, the product has never been aggressively advertised. As adult children bought the product for their older parents, they found that they liked the product as well. Younger children found it more fun to use and more comfortable to hold. The market swelled and the momentum grew.

The OXO peeler is also a good example of how one successful product can become a brand strategy that can be extended to other products. The success of the handle of the OXO peeler established the core competency of the company and became the secondary phase in the brand identity and labeling of the company (OXO GoodGrips). The company decided to build its brand strategy by extending the value designed into the peeler to the grip of every future product that they produce. The core concept has now extended beyond kitchen tools and has been applied to all subsequent products that are held by the hand, which includes teakettles, salad spinners, cleaning devices, tools, and gardening equipment. OXO has introduced a new material into the housewares industry. Santoprene was not perceived as a material suitable for use in the kitchen prior to OXO's success. Since OXO's debut, many other housewares manufacturers have used neoprene, the generic name for Santoprene, in their products to catch up with the success of the OXO brand. The use of new manufacturing techniques for thin features and tighter mold tolerances has also become commonplace. Combining insight, design, material choice, and manufacturing processes led to the creation of a new product that has redefined kitchen utensils.

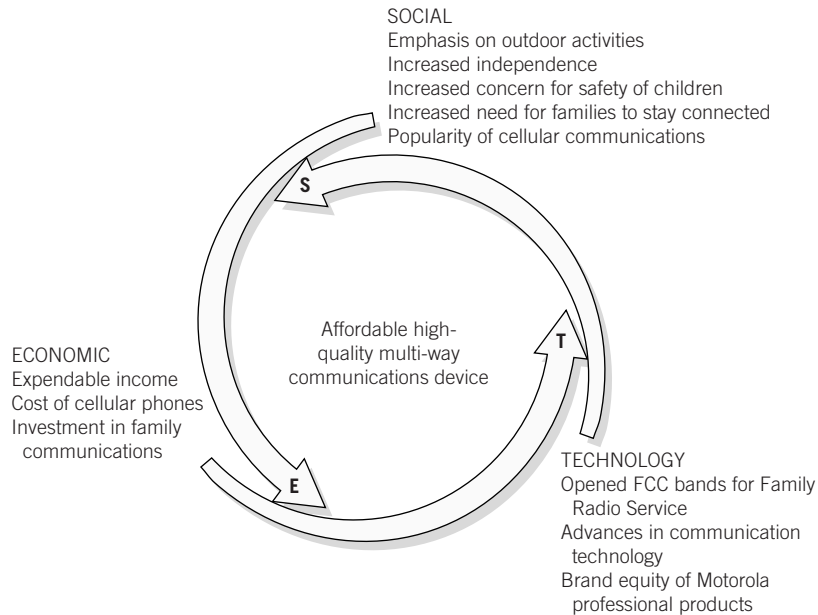
### **The Motorola Talkabout**

The Talkabout (Figure 1.9) is another excellent example of a manufacturer understanding the change in SET dynamics. Motorola is well known for its communication products. Its reputation was built on high-quality wearable and portable communication,



Figure 1.9 Motorola Talkabout two-way radio. (Reprinted with permission of Motorola.)

primarily for professional applications. With the advent of small portable phones in the '90s, Motorola moved from the business sector to the private sector seamlessly as “business phones” became useful in everyday life. The growth of wireless portable communication became an inexorable trend. Cellular phones generated a new trend that allowed families to “stay in touch,” no matter where they were, throughout the day. But the cost of multiple phones and constant calls made this format impractical for constant communication during family activities. The wireless and portable phone was complemented by the use of wireless transmitters and receivers as devices that allowed parents to keep tabs on their infants. These various trends in combination created a new trend: parents wanting to constantly monitor their children. Sensational cases in the media of child kidnapping and murders created an atmosphere of fear that led parents to believe that they needed to monitor their child throughout childhood. At the same time, parents in active families were attempting to include their children in activities both as a way to have more fun and concern for the need to stay in touch as part of the parent-child relationship. These SET Factors created the POG for a new communication product that stood to be a big growth area in an entirely new market for Motorola: hand-held two-way radios, or what used to be called walkie-talkies (Figure 1.10). The advantage of this type of device was that it allowed for communication without having to pay for each call.



**Figure 1.10** SET Factors that led to Talkabout.

However, at that time walkie-talkies had limited range and a low number of frequencies available. These were some of the obstacles Motorola had to overcome.

The challenges were finding the right value opportunities and then combining the right features, look, and cost that would allow Motorola to gain a fast penetration into the consumer market, as consumers had come to expect high-performance, compact wireless communication. The product opportunity was the gap between high-cost, professional two-way radio systems used by police, fire departments, and the military, and the low-cost, poor performing walkie-talkies serving a small market niche. The existing consumer products did not have the range, nor were they rugged enough or contemporary enough to fit into the current market opportunity. There were several challenges to finding the right level of value and quality that would allow Motorola to extend its established professional brand identity into a consumer market. The cost of Motorola's professional products was much higher than the products purchased by consumers. While the perceived value for these products had increased, the gap between the cost of professional products and consumer products was significant. There were two questions the development team had to answer. The first was how much would consumers pay. The second was how much could Motorola afford to redefine its technology, i.e., from supporting "mission critical," namely use in

extreme situations where people's lives are at stake, to augmenting lifestyle. They also had to be sure not to damage their brand equity in the professional sector at the same time. Motorola also had the legislative challenge of obtaining new frequencies for two-way public communication from the FCC.

Because consumer walkie-talkies were considered to be of poor quality, the team decided to benchmark against other product categories that were comparable in feel and level of expression, rather than in application. So they looked at expensive athletic shoes, inline skates, the Walkman, and the Discman. For aesthetic benchmarking, they drew from outdoor products that were rugged and dependable. They also looked at icons of American culture: the Jeep, Levis, Coke. The team successfully lobbied for and received permission from company management to develop a new way of looking at commercial products for integration into the consumer world. Motorola anticipated that the increase in the number of public radio service frequencies would come in time for product introduction, and also worked with the government to make this happen. This example demonstrates both a scanning of the SET Factors and an ability to influence change in those factors by a large company. The program could only start with the confidence that Motorola could get the approval in time for the proposed product launch.

As illustrated in Figure 1.11, the Talkabout nicely integrates state-of-the art technology into a carefully designed form. The rounded bottom presents a palm-friendly shape and the large display and push-to-talk button communicate to the user that it is an easy-to-use device. The push-to-talk button is located on the front center of the product; the location made the function obvious and the oversized button makes it easy to locate visually and by feel. The visual and tactile aesthetics were designed to fit into an active, outdoor, wireless consumer lifestyle, while the textured black details capture the look of contemporary X-generation products. This is a product that fulfills the motto "high tech, high touch."

■ Finding the right level of core technology and visual interaction in the product produced the right fit for the evolving market.

Through the appropriate reduction of cost and performance features from professional products, designing the right look and feel, and the approval of their Family Radio Service band, Motorola was able to fill the POG perfectly. The shift in social dynamics created the opportunity for a new communication device. The successful economy created the purchasing opportunity allowing consumers to buy an array of communication products for every phase of life. Finding the right level of core technology and visual interaction in the product produced the right fit for the evolving market. As you will see later, the Motorola product development team improved the value of the product significantly over the competition and successfully differentiated the product from its own line of professional products, creating a new family-targeted communications category.

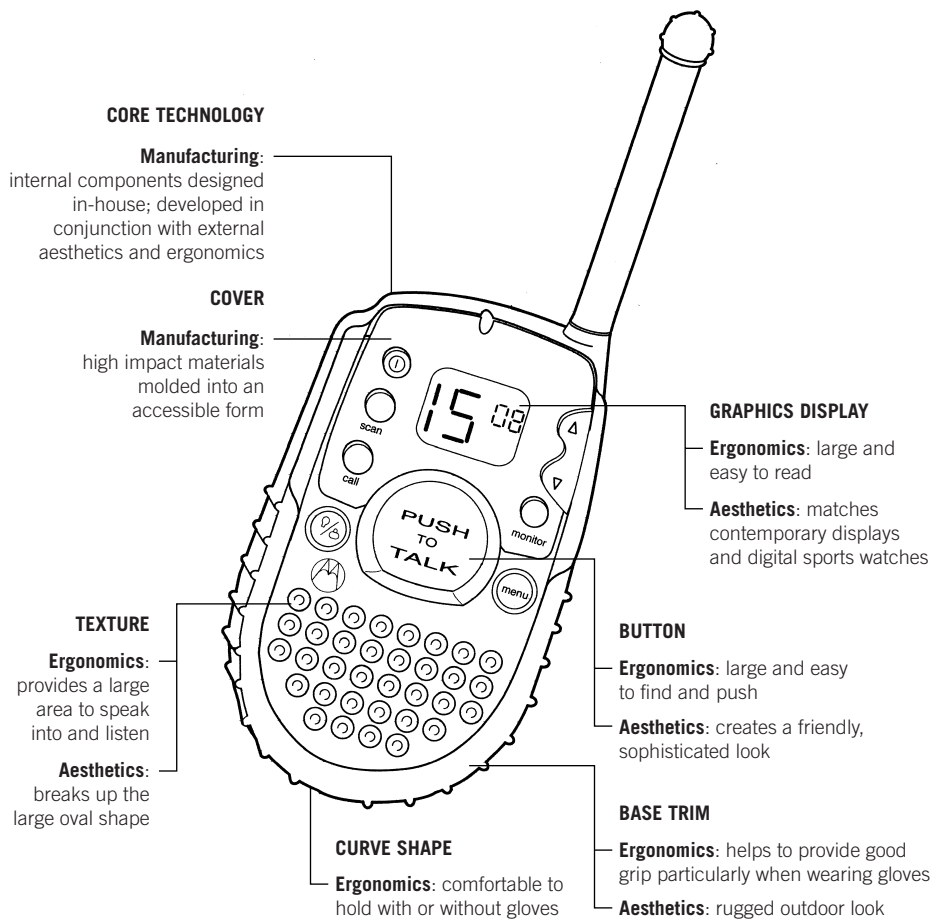


Figure 1.11 Product details of Talkabout showing integration of style and technology.

## The Crown Wave

The Wave, developed by Crown Equipment Corporation, is another success story that supports the SET theory. The Wave, which stands for Work Assist Vehicle, is a new product for Crown and a new product in the lift truck market (Figure 1.12). In fact it is not really a lift truck in the traditional sense. Crown produces lift trucks and devices for use in industrial settings, particularly warehouses and retail environments. While a relatively small company by international standards, this privately owned company, based in New Bremen, Ohio, holds a significant market share in battery-powered lift equipment. Tom Bidwell, Executive Vice President, was the visionary who saw the POG for



(a)



(b)



(c)

**Figure 1.12** Crown Wave: (a) product shot, (b) operator controls, (c) product in use. (Reprinted with permission of Crown Equipment Company.)

a new type of lift device. He had been at a warehouse and seen the difficulty the employees had in using rolling ladders to get parts. He then spoke to Dave Smith, a long-term design consultant for Crown, who worked with Bidwell to clarify the product opportunity emerging from a number of Social and Economic factors. Social factors included changes in employers' attitude toward workers in the warehouse industry, changes in policy by insurance companies and OSHA (Occupational Safety and Health Administration), while Technology factors included changes in the types of warehousing for parts and packages and the compression of technology (see Figure 1.13).

The incidence of repetitive stress and injury as a result of falling and lifting has become a major concern for employers, insurance companies, and OSHA. The result of these injuries has created a loss of work time, limitations in worker effectiveness upon returning to the workplace, significant lifelong injuries, and the need to constantly replace workers as they "burn out."

Crown is a company that creates products which allow people to move heavy objects. However, it has a core competency that is slightly broader. Crown moves people and/or objects with the goal of redistributing goods with the safest and most effective interaction between the operator and others in the work environment. The Wave concept was a new POG that fit in that slightly broader brand identity.

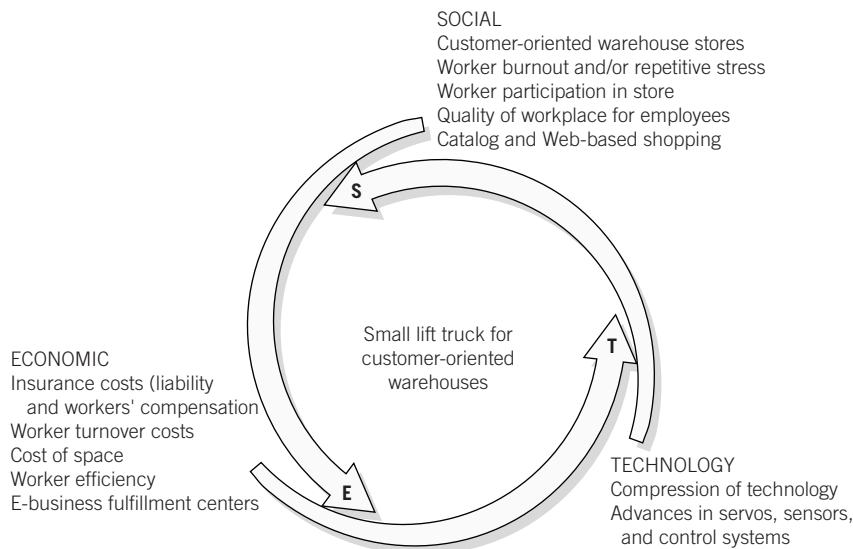


Figure 1.13 SET Factors that led to the Wave.

There have been numerous products developed to fill this POG including orthotics designed to give support and protect areas of the body most often affected. Ten years ago, companies would not have seen the economic value in having a product that could address the needs of a small parts picker or a restocking employee. Even with the orthotics, high turnover was a common trend in this type of occupation and employers accepted the economic consequences of that turnover. However, the cost of doing business and attitudes toward turnover have since changed.

Employees in warehouse stores are often experts in and are expected to perform multiple tasks. It is harder to find people to fill the jobs in stocking and picking, particularly when paying insurance and training new employees can have a significant impact on stores that are working on a small profit margin. Reducing injury and repetitive stress and creating more meaningful work environments are the new mission for store managers. In many ways, this trend began at Disney theme parks, where every employee is a performer and the environment is their stage. Every aspect of a store employee's performance and attitude should contribute to a positive atmosphere for consumers, who view shopping as a form of entertainment. Home Depot's employees are all trained to be expert advisors on their area of the store. Target has made the biggest move toward the Disney philosophy and has been a major investor and supporter of the new Wave. It makes good sense; employers realize that long-term employees are more invested in the success of a store and can develop better relationships with customers.

As a result of changes in products and methods for storing parts, a new type of warehouse has emerged. These new warehouses store small parts in smaller aisles that cannot be easily serviced by current lift equipment, which is designed for larger aisles and heavier parts and packages. The development of new warehouse store interiors with large shelves and storage typically located on top of those shelves created the need for new lift equipment that can work effectively while safely operating in areas with customers in retail environments. A "just in time" mentality has also put pressure on store managers to maintain an active relationship between storage and retail shelves, with restocking being a constant job not just for after-store hours. In addition, there is the need to constantly change merchandise on shelves to match seasonal changes and new product promotions. During this evolution, storeowners have used a variety of solutions. As noted by Dave Smith, this ranged from roller skates to rolling ladders. Sometimes companies have used pallet trucks inside of stores, distracting and annoying customers with the constant watch for the beeping lift trucks moving down the aisles or backing away from a shelf.



In order to respond to this new POG, Crown needed to develop an entirely different product. It had to be an extension of Crown's core ability but at a scale and weight that Crown had not been used to. Dave Smith ran a "skunk works" offsite interdisciplinary team for 10 months to develop the initial product concept. The co-located team consisted of one engineer, two designers, plus a design intern, and a part-time marketing and manufacturing person. Once the product concept was acceptable to both the company and potential customers, the product development process was brought back into Crown for design-to-manufacture. Creating a light duty lift vehicle that can lift and move an operator with a minimal footprint proved to be a significant challenge for Crown. In addition to the design impact (the visual design, product graphics, and choice of material), the team took advantage of emerging technology in the industry to add safety, nimbleness, and control to the design. Innovation came from unusual places such as borrowing the simple two-finger control mechanism from electric wheelchairs.

Comparing the value of the Wave and previous attempts to accomplish the same task demonstrates how successful Crown has been. They have created a product that improves employee sense of security and makes a series of dull tasks enjoyable. The product is safe, easy to learn to use, and reduces time. It successfully blends a sense of ergonomics, aesthetics, and technical performance consistent with the performance of Crown's other products. The Wave product identity is distinct and the use of the word "Wave" in conjunction with a swish of color gives it a lighter contemporary look. Crown has strategically chosen to make its corporate identity secondary to the product for the first time in its history.

The result has surpassed the original projections for the product and created a new market for Crown. Employees in stores and warehouses that use the product are reporting more effective and less stressful completion of their tasks. The product has led to higher morale and job satisfaction and is fun and easy to operate. It has allowed one operator to do the job usually done by two people. The Wave has been used in a variety of new tasks. The product has spawned a new company line and other variations are in development to build on the success of the Wave.

## Starbucks

Starbucks is an example of a service company that provides an optimal experience to the customer. Starbucks recognized the possibility of taking a core part of the American culture and integrating it with the style and attitude of an Italian café. The act of drinking

coffee has been transformed from a quick, mindless experience into a major new form of cultural interaction and entertainment. Starbucks is an interesting hybrid between a product and service company. The core product that Starbucks provides is coffee. The service it provides is serving coffee using a range of options and complementary products in a comfortable environment that significantly enriches the experience of drinking coffee and enhances the beginning, middle, or end of your day.

Starbucks filled a POG that started in one city, Seattle, and then spread exponentially across the U.S. and then internationally. It has had the same effect at the end of 20th century that Coca-Cola had at the beginning and McDonalds had at mid-century. It is our latest global export. What were the factors that allowed Starbucks to become the last great food specialty retailer of the century? If you have ever traveled to Seattle, you will notice that it is a city with some unique attributes. The city not only started the new coffee culture, but it also helped to start the new beer culture with the development of microbreweries. Seattle has a gray, cloudy climate and stays fairly cool throughout the year. Many people commute using the ferry system and then drive or walk to work. Americans in general rarely have time to eat breakfast before they leave the house; breakfast on the run is a common experience. Early morning fatigue is also a common situation that most commuters have to deal with, especially in Seattle's climate. Drinking coffee is a custom that many Americans use to ramp up for the day, to maintain momentum during the day, and to relax at the end of the day. Seattle is also one of the primary new centers of the information age and, as home to Microsoft, is the land of expendable income. Howard Schultz, the visionary and CEO of Starbucks, saw the POG after experiencing the espresso bars in Milan. Given the Social (S) and Economic (E) factors that are both highlighted by Seattle inhabitants and more recently shared by the rest of the U.S. and the world, it is not surprising that Starbucks started in the Great Northwest and spread to the rest of the country and beyond (see Figure 1.14). It is now possible to get a café latte in local neighborhoods and on university campuses and on turnpikes and now in Taipei and London (see Figure 1.15). Now that is what we call a global brand!

In lower Manhattan, there is an area known as Little Italy, just north of Canal Street. Canal is the street that separates Little Italy from China Town. Both areas are favorite sites for New Yorkers and tourists. For a long time, there have been a number of little restaurants where you can order espresso and dessert, often after eating dinner in China Town. This concept never expanded outside of Little Italy, except in other Italian neighborhoods in other big cities.

Berkeley, California, home of UC Berkely and the '60s revolution, has for years had coffee houses in which students and faculty pontificated, studied, and hung out. Pete's Coffee

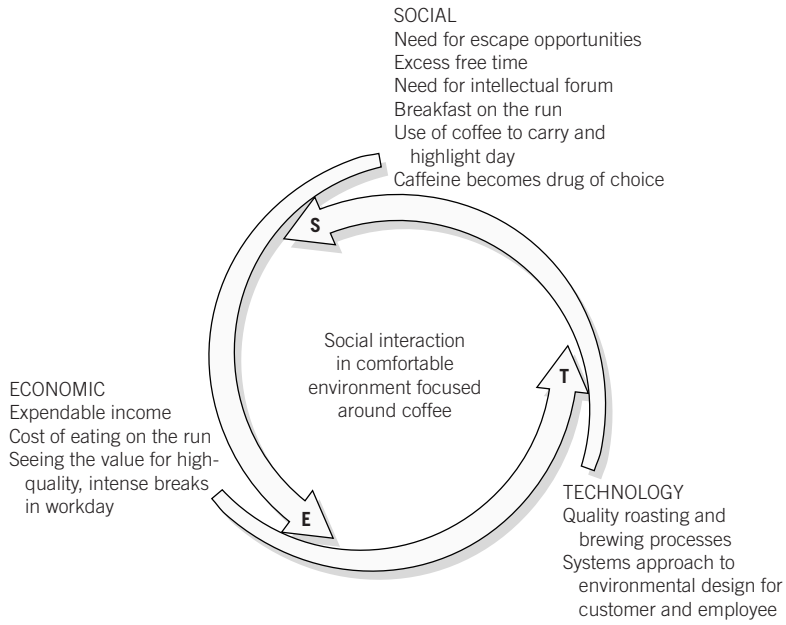
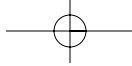
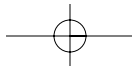


Figure 1.14 SET Factors that led to Starbucks' success.



Figure 1.15 Starbucks' global positioning shown through unique mug designs from international cities: London, New York, Taipei, Vancouver, and Boston.



began there in 1966 and preceded Starbucks. As a matter of fact, Alfred Pete trained the founders of Starbucks in the art of roasting arabica coffee beans. An addiction of locals, Pete's is well known to anyone who has lived in or visited Berkeley. Once a Berkeley resident rented a ski chalet in the Swiss Alps; it turned out the chalet owner had lived in Berkeley and regularly mail ordered Pete's coffee all the way to Switzerland.

Why didn't one of the restaurants in Little Italy become the original inspiration for Starbucks? Even though eventually Pete's would become the coffee of choice for the Au Bon Pain bakery chain, why wasn't Pete's Coffee the first to expand across the country? The SET Factors were not right in New York and no one in the Bay Area either saw or acted on the potential that Starbucks' visionary Schultz saw in Seattle. Not only do the SET Factors have to be right, they also have to be scanned, interpreted, and developed with a vision.

Part of the technology of Starbucks is in the machines used to prepare the coffee. The best machines for producing hot or cold coffee (and now tea) drinks are used and promoted along with the sounds they produce. Each Starbucks is a retro factory hissing and steaming away, producing espresso and lattes at a constant rate. Other aspects of technology include special water filtration systems in each store and sophisticated roasting facilities. Their investment and partnerships in R&D have led to innovations such as a process to extract the essence of their coffee for use in products such as Frappuccino® and ice cream.

The interiors of Starbucks stores have been designed to transcend the original concept of an Italian brasserie and to combine the global nature of coffee bean production with a comfortable old college coffee house including sophisticated contemporary colors, graphics, and furniture. It is inviting to walk into as an individual or with others. When you are in Starbucks, you are not just drinking coffee, you are having a mind-altering experience. Even if you order one to go, you can leave with a sense of the store experience while holding onto a cup with a protective corrugated holder that clearly states that it is made from recycled paper. It doesn't get any better than that. Starbucks has developed a flexible brand identity (discussed in Chapter 4), which uses a consistent color theme that allows for variation in secondary graphics for packaging, products, and store interiors (Figure 1.16). The response to Starbucks has been equally impressive, with the emergence of a number of national, regional, and local competitors fighting for their share of this new, lucrative market. As traditional coffee makers have responded to the trend, Starbucks has countered by extending their products into grocery chains by offering dark arabica coffee beans and even a range of ice cream flavors.

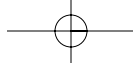
In his book *Pour Your Heart Into It*,<sup>1</sup> Schultz chronicles the evolution of Starbucks. Starbucks is a company that epitomizes the characteristics found in a company in the



**Figure 1.16** Starbucks store interior and logo. (Reprinted with permission of Starbucks Coffee Company.)

Upper Right. They see their product as the coffee, the people who work for the company, and the experience of buying and drinking coffee in their stores. The company maintains a high standard of values, from the CEO to each employee, and connects to the values of their customers. These values are clearly articulated in a corporate mission statement. The company sees its people as core to its brand in parallel with its coffee and recognizes that the company's long-term success is dependent on high standards for both. Each employee of the company is called a "partner" and given stock options. Even part-time employees are given full health care benefits. Starbucks has relied on the power of its experiential brand, loyally conveyed by its customers, to promote the company, rather than falling back on advertising. As Schultz says, "Starbucks built up brand loyalty one customer at a time." Finally, the company is constantly looking for the next new product to "surprise and delight" the customer, from new coffee drinks, to Frappuccino, to ice cream, to jazz CDs.

Upper Right products, services, and companies merge style and technology in a way that creates strong customer value and promotes a positive user experience. Strong brand, corporate values, and connection to customer values lead to both short-term and long-term customer satisfaction. Many breakthrough products stay in the Upper Right through the constant injection of useful, usable, and desirable features for the customer. The end result is greater profits to shareholders.



## Summary Points

- Social, Economic, and Technology (SET) Factors lead to Product Opportunity Gaps (POGs).
- Breakthrough products merge style, technology, and value.
- It takes a combination of vision and sound methodology to succeed in developing breakthrough products.
- These ideas and methods are applicable to both tangible products and services.

## References

1. Schultz, H., and D. J. Yang, *Pour Your Heart Into It*, Hyperion, New York, 1997.

