

# Intel: Multinational Semiconductor Manufacturer

Thomas Smith

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## Introduction

Intel is currently the world's largest supplier of semiconductor technology[1], and has become so by successfully commercialising their early expertise with semiconductor manufacturing processes through effective management. Throughout their 43-year history so far, they have demonstrated this in a number of ways and this report will examine the techniques they have used. These range from intelligent marketing campaigns, good treatment of workforce and local communities, to (possibly most importantly) their continued innovation and expansion.

## Early History

Intel's first two decades put it firmly in a dominant position within the semiconductor industry. Founded in 1968 by two experts from an existing company, and an investor with \$2.5 million, the company's initial successes came from its proficiency at manufacturing semiconductor memory for the mainframe computers of the time. By 1971, the company was valued at \$6.8 million in its Initial Public Offering (IPO), or \$23.50 per share. After developing the first commercially available microprocessor in 1971 and the first truly general-purpose microprocessor in 1974[2], Intel became part of the rapid growth of the Personal Computer (PC) industry during the 1980s. In 1975, the Intel 8080 chip had been used in one of the first PCs, and by 1981 IBM (the largest PC manufacturer at the time) had chosen to use Intel's 8088 chip in their IBM PC. In 1982, the

company released the 80286, one of the first 16-bit microprocessors, and it was built into numerous PCs as the industry truly took off. During this period the company entered the Fortune 500 list at #486 in 1979, and by the time of its 20th anniversary celebrations was one of the largest semiconductor manufacturers in the world.

## Marketing

Part of Intel's considerable success at commercialising their semiconductor technology is down to their effective use of marketing: by making Intel a household name and ensuring a consistent positive association, they have achieved desirability even among users unfamiliar with computers. In 1989 they launched the 'Red X' advertising campaign, their first targeted directly at consumers rather than manufacturers. This was unexpected creativity on Intel's part, but successfully changed purchaser's buying behaviour. By 1991, the 'Intel Inside' campaign and associated jingle[3] had made Intel a household name, while competitors remained largely unknown. In 1993, Financial World listed Intel as the third most valuable brand worldwide. In 1994, Intel's Pentium<sup>1</sup> chips were the subject of a well publicised numerical flaw. After initial reticence, Intel offered to replace the chips at great cost to the company. However, the media coverage of the incident greatly increased the public's awareness of the Intel brand and, coinciding with the Intel Inside campaign, the response had a positive effect on the company's image. Intel's

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<sup>1</sup>Intel's decision to switch to memorable names for chips - rather than the obscure numbers used by their competitors (and previously themselves) - was part of their new consumer focus.

marketing since has been focused on cementing their product's desirability in consumers' minds: their branding has been evolutionary rather than revolutionary[4], and even new product directions have been consistent with emphasising the focus on speed[5].

## **Social Responsibility**

In line with their efforts to be viewed positively by both consumers and their own workforce, Intel undertakes a range of charitable and morale-boosting activities. This seems incongruous for a company based on manufacturing technology, but especially in light of modern cultural expectations of companies to be morally responsible it has proven to be a sound strategy. The company aims to be a 'great place to work'[6], and has done so since the beginning. Even early events such as the emphasis on the 10th anniversary celebrations were designed to make employees feel valued, and this helped the company through the 1981 tech industry recession where employees voluntarily worked an extra 25% each week unpaid. In 1984, the company was chosen as one of the 100 best to work for in America, and in 1987 when the company exited the recession it held 'Back in Black' celebrations to recognise employees' contributions. Intel embarked on their programme of wider social responsibility with the creation of the Intel Foundation[7] (a philanthropic organisation), on the year of their 20th anniversary, and has continued by training teachers and encouraging workers to volunteer in the communities where they live. More recently, it has focused on ensuring that both the company and its products are seen as 'Green' and environmentally-friendly. These efforts have ensured that Intel continues to receive the support of both its own workers and the wider public.

## **Innovation**

Aside from its innovations with customer perceptions, Intel has thrived on its technical prowess. In order to successfully commercialise its semiconductor technology, and retain its dominant

position within the industry, the company has continuously innovated to ensure that its product are at the cutting edge. This has often involved considerable risk, such as the company's decision in the early 80's to eliminate the manufacture of computer memory (Intel's previous fort) and focus on microprocessors. Innovation in this area has largely consisted of improvements and efficiencies in either the manufacturing processes<sup>2</sup> or the chips themselves, but has also included discovering underutilised niches in the industry, leading to the Celeron processor for value PCs, the Centrino for laptops, and the Atom processor for netbooks. Later, this has involved identification and exploitation of related technologies, such as their expansion to Flash memory, wireless networking, and most recently peripheral interconnection[5]. Not all of Intel's investments have been successful (a solar energy startup was spun off and then failed in 2011[9]), but by continually risking investment in new technologies and processes Intel has ensured that their core semiconductor technologies have remained competitive and successful.

## **Conclusion**

Intel's effective management has manifested in a number of different manners. From the ultimately beneficial resolution to the Pentium flaw, to the emphasis on employee wellbeing, to the continued focus on product and process improvement and development, the company has demonstrated an ability to ascertain which actions will ensure continued success for its commercialised technologies. They have found product opportunities both within their own core expertise and within related fields, but have also found many opportunities to ensure the success of these products by cultivating both a positive image of the company itself, and a loyal and motivated workforce. In conclusion, the successful commercialisation of Intel's semiconductor technologies has been due to its effective management of both existing situations and viable opportunities.

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<sup>2</sup>Intel's vaunted 'Copy Exactly' process has greatly improved speed and consistency[8]

## References

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